CEO Board Membership: Evidence from NZ Data

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Abstract

This study examines the determinants and performance implications of CEO board membership. New Zealand firms exhibit significant variation in CEO board membership: approximately 70% of firms have their CEOs on the company board and 30% of firms have their CEOs off the company board. We find that the probability of CEO board membership is higher when (i) firms are larger, more complex (ii) the board is less independent and more capable. We also report evidence of a self-selection bias. After controlling for this effect, firms with CEOs on the board outperform firms with CEOs off the board in terms of ROA, but do not differ significantly in terms of ROE and market returns. The results suggest that firms make CEO board membership optimal. The performance benefits of CEO board membership become smaller following the introduction of the Best Practice Code in 2003.

JEL classification: G34, G38

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CEO Membership of New Zealand Boards

1 Introduction

Over the last 25 years, corporate governance and its impact on firm behavior has been one of the most researched issues in corporate finance. As a result, various corporate governance guidelines and codes have been developed to promote so-called 'best-practice' models of governance.[2] Boards of directors lie at the heart of the corporate governance system and are critical to its operation. Corporate boards of directors are responsible for ensuring the firm complies with guidelines and codes. Board independence is the central theme of the recommendations. Independence improves the quality of board oversight, which is expected to have a favorable impact on firm performance, and hence improve shareholder wealth.

Underpinning this wave of legislative activity, a substantial volume of research has investigated different aspects of board independence. For example, Linck et al. (2008), Guest (2009) and Prevost et al. (2002) have focused on independent directors representation on the board; Brickley et al. (1997), Dey et al. (2009) and Mak and Roush (2000) have examined the causes and consequences of CEOs acting as board chair; and Anderson and Bizjak (2003) and Newman and Mozes (1999) have looked at the independence of compensation committee in structuring executives' pay. However, an aspect of board independence rarely discussed in the existing literature is the separation of CEOs from their company boards. Obviously, any attempt to examine this issue empirically requires a setting where there is significant variation in CEO board membership. Such variation is not always present: Leblanc and Gillies (2005, p92) claim that 'It is almost unheard of for the chief executive officer of the corporation not to be a member of the board of directors.

[2]For example, Principles of Good Corporate Governance and Best Practice Recommendations in Australia; The Toronto Report in Canada; Code of Best Practice in Hong Kong; Recommendations on Corporate Governance in France; Corporate Governance in New Zealand: Principles and Guidelines in New Zealand; Code of Corporate Governance in Singapore; Cadbury Report in the UK and Sarbanes-Oxley Act in the US.

Indeed, in many companies, particularly in the United States, it is not unusual for the role of the board and CEO to be combined.'; Zhou (1999) points out that in most Canadian firms, CEO board membership is a common practice; Fernandes (2008, p32) also mentions that 'the corporate board of the [Portuguese listed] company includes the CEO and a varying number of other board members, who can be either executive or nonexecutive.' By contrast, the required variation clearly exists in NZ firms: Boyle and Ji (2013) document that about one-third of NZ CEOs do not sit on their company board.[3] Using the unique involvement of CEOs on NZ boards, we ask two research questions: (i) What determines CEO board membership? and (ii) What are the consequences of variation in CEO board membership on firm performance?

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 presents regression results and the analysis of these results. Section 4 provides concluding remarks.

2 Motivation, Development of Hypotheses and Data

In order to examine CEO participation in company boards empirically, a meaningful variation in the number of firms with CEOs on the board and the number of firms with CEOs off the board is required. Table I presents annual statistics of CEO board membership between 1997 and 2008. Variation in CEO board membership is clear from this data.

Our initial sample consists of 1400 firm-year observations with 238 unique firms listed on the NZX between the years 1997 and 2008. The source of the data is the NZX Research Database. Firms were deleted from the sample if annual reports are unavailable, if the annual reports contain missing data on CEO and board information, the day-to-day operation of the business is managed by a paid professional management company, if the firms operated as trusts or funds managed by a group of executives with no individual CEO appointment, or if the firm is only listed on the secondary board. Our final sample consists of 956 firm-year observations over the 12-year period spanning 1997 to 2008 with 152 unique companies.

Table I shows that far from being 'almost unheard of', on average, approximately 30%

[3]They document 64% of firms had CEOs on the board in 1995 and 66.7% in 2010.

Table I Annual Statistics of CEO Board Membership

This table reports annual CEO board membership statistics from 1997 to 2008. The sample of firms is obtained from the NZX Research Database. The NZX Research Database includes New Zealand listed and unlisted companies' annual reports. The figures are reported as raw data and in percentage terms as shown in parentheses. The last row of this table shows the breakdown by CEO board membership by firm-year observations for the whole sample.

Year	Total	CEO on Board	CEO off Board
1997	70	56(80.00%)	14(20.00%)
1998	78	59(75.64%)	19(24.36%)
1999	74	58(78.38%)	16(21.62%)
2000	79	61(77.22%)	18 (22.78%)
2001	84	64(76.19%)	20(23.81%)
2002	81	59(72.84%)	22(27.16%)
2003	83	62(73.91%)	21(26.19%)
2004	81	59(74.70%)	22(25.30%)
2005	80	57(71.25%)	23(28.75%)
2006	85	58(68.24%)	27(31.76%)
2007	80	46(57.50%)	34(42.50%)
2008	81	47(58.02%)	34(41.98%)
Total	956	686 (71.76%)	270(28.24%)

of NZ CEOs do not sit on their company board. Moreover, there is an increasing trend in the number (percentage) of firm year observations where the CEO is not on the company board. Specifically, the percentage of CEOs off the board is approximately 20% in 1997, and this figure doubled to 42% in 2008.

To investigate the underlying reasons for the cross-sectional difference in CEO board membership, we argue that the observed CEO board membership is the consequence of shareholder interests and CEO interests. Specifically, in order to serve the interests of both shareholders and CEOs, the firm and the CEO may have a preference for whether CEOs

should sit on the board given the operating environment. When shareholder interests and CEO interests have the same preference, there is no ambiguity in the CEO board membership decision; when shareholder interests and CEO interests lead to different outcomes, opportunities arise to investigate whether the observed CEO board membership decision is driven by shareholder interests or CEO interests.

The rationale behind the shareholder interests argument is based on the theory proposed by Brickley et al. (1997). They suggest that firms' board structure is determined by the cost-benefit trade-off of each decision. Under this argument, the observed CEO board membership decision is an optimal response to the firms' operating environment after considering the benefits and costs of each alternative. A major benefit of CEO board participation is that information transfer costs are reduced.[4] Given the CEOs' information advantage about the firm, board involvement provides further opportunities to explore CEOs' 'private' information and reduce the misunderstanding of information through group discussion. CEOs who are off the board, on the other hand, have no opportunities to engage in board discussion, which reduces the chances to improve the board's knowledge.[5] The major cost of CEO board membership is that it increases agency costs. The agency costs arise from the diverging interests between the CEO and shareholders. Specifically, CEOs may have personal interests that hurt shareholders, such as managerial shirking, excessive perks consumption and non-optimal investments(Jensen and Meckling, 1976). CEO board membership allows CEOs to participate in the board meetings, which puts the CEO in a better position to expropriate shareholder interests. Hence, under the shareholder interests argument, CEOs are more likely to sit on the board only when the benefits outweigh the costs. In other words, CEO participation on the board is more likely in firms that benefit most or suffer least from such involvement.

The CEO interests argument considers a CEO's personal incentives for choosing to sit on the board. First, as discussed above, CEO board participation increases CEO

[4]Information transfer costs refer to the ease with which information can be transferred from the CEO to the board for decision-making and from the board to the CEO for strategy implementation.

[5]Even though the CEO can be a co-opted member during a board meeting, without treating the CEO as an equal on the board would cause the CEO to report to the chairman instead of the board directly(Tik, 2009).

bargaining power within the firm. This supports the CEOs' preference for opportunistic behavior. Second, CEO board membership adds further responsibility to the CEO role enhancing their reputation as a capable manager as well as providing tangible evidence of their management abilities. This may enhance their future employment prospects as they are more likely to gain an equivalent or even better position upon resignation from a current role. These incentives increase the likelihood of a CEO exerting more effort than is required to achieve future benefits.

We identify two operating environments, which may affect shareholder and CEO interests, and thus the CEO board membership decision. These two environments are the firms' information environment and the firms' governance environment. Next, we develop testable hypotheses based on the shareholder interests argument and the CEO interests argument within these operating environments.

When the corporate information environment is opaque, firms suffer from greater information transfer costs in acquiring firm-specific information. The opacity of the information environment affects the firms' CEO board membership decision. From the firms' perspective, having CEOs on the board is an optimal response to the opaque information environment to compensate for such costs. Meanwhile, CEOs also have greater incentives to sit on the board because it is easier for self-serving CEOs to expropriate shareholder interests by hiding crucial information from the board under such an information environment. Hence, both parties have a greater willingness to have CEOs on the board.

Hypothesis 1: Firms that operate in a more opaque information environment are associated with greater probability of CEO board membership.

CEO board participation is also affected by a firms' governance environment. The reasoning behind the shareholder interests argument is based on the recognition that individual governance provisions may substitute for one another in mitigating agency conflicts. Agrawal and Knoeber (1996) argue that because these alternatives exist, the use of one governance mechanism may depend on the use of the others, which means these mechanisms are interdependent. Hence, if other governance mechanisms are sufficient in imposing constraints on CEO actions, it may not be necessary to incur extra costs to separate the

CEO from the board. Thus, from a firms' perspective, a stronger (weaker) governance environment may reduce (increase) the need to separate the CEO from the board, which leads to a higher (lower) probability of CEO board membership. In contrast, the CEO interests argument dictates that entrenched CEOs in weaker (stronger) governance environments have greater (less) incentives to sit on the board. Given the conflicting consequences arising from the diverging interests between the firm and the CEO, this hypothesis allows us to test whether the CEO board membership decision is truly determined by shareholder interests or CEO interests. Since these two forces lead to a conflicting result, we offer no specific prediction about the direction of the CEO board membership decision for these firms.

Hypothesis 2: The CEO board membership decision is not significantly affected by the firms' governance environment.

The following table illustrates the relationships discussed by these two hypotheses:

	Information Opacity	Governance Strength
Shareholder Interests	Positive	Positive
CEO Interests	Positive	Negative

Tests of these hypotheses require identification of characteristics that describe firms' information and governance environment and their measurements. These are discussed in the next section.

Opacity of the Information Environment

We describe the opacity of the information environment by firm size, firm complexity and growth opportunities. Larger and more complex firms are likely to be characterized by more agents possessing information relevant for decision-making. The percentage of total information available to the board for decision making is reduced as the information is transferred through more information bearers, and this makes CEOs a more valuable source of information.[6] Previous examples from the US find CEOs are more likely to chair the

[6]Total information is defined as all information relevant for decision-making. This includes firm-specific

board in large, complex firms because of the costs of communicating information between the CEO and a separate board chair (Brickley et al., 1997; Grinstein and Valles, 2008; Dahya et al., 2002; Dey et al., 2009). In addition, firms with more growth opportunities are likely to be more complex due to greater operational risks and challenges. CEOs who are involved in the daily operation of these companies possess greater asymmetric information, which makes the information environment more opaque to the board.

We measure firm size by a firm's annual sales.[7] In order to ensure comparability across time periods, we express annual sale figures in 1997 NZ dollars. We adjust non-1997 sale values by applying the appropriate percentage increase in the NZ consumer price index, which can be obtained from the Reserve Bank of NZ website.[8] The proxies for firm complexity are the number of business units, the number of location units and firm age. In NZ, the 'segment reporting' section of companies' annual reports provides information on the number of business segments and the number of geographic segments.[9] Firm age is the number of years since firms were listed on the NZX. Boone et al. (2007) and Linck et al. (2008) argue that firm age is nonlinearly related to firm complexity. We also include firm age squared in the analysis to account for a non-linear relationship. Finally, we follow Grinstein and Valles (2008) and Guest (2009) to measure growth opportunities with Tobin's Q ratio and calculate it using the following formula[10]

$$\text{Tobin's Q Ratio} = \frac{\text{Market Capitalization + Long-Term Debt+ (Current Assets - Short-Term Debt)}}{\text{Total Assets}} \tag{1}$$

where Market Capitalization is number of shares on issue times share price at balance date.

Governance Environment

We use three measures to describe NZ firms' governance environment: percentage of independent

information and industry-specific information.

[7]We also used market capitalisation to replicate the analysis. This adjustment produced similar results.

[8]See http://www.rbz.govt.nz/statistics/an/2989609.html

[9]The NZ IFRS requires 'identification of operating segments on the basis of internal reports that are regularly reviewed by the entity chief operating decision maker in order to allocate resources to the segment and assess its performance'. NZ IAS 14 requires identification of two sets of segments, one is based on related products and services and the other is based on geographical areas.

[10]We also use the market-to-book ratio as a measure of growth opportunities and it does not alter the results.

directors on the board, board ownership and board busyness.[11]

Since independent directors are by definition less likely to be affiliated with management, they are expected to provide better board oversight. Consistent with this view, some studies find a positive association between the proportion of independent directors on the board and firm performance(Guercio et al., 2003; Ryan Jr and Wiggins III, 2004; Hossain et al., 2001).

Director share ownership helps align the interests of directors with those of shareholders. These directors, as subsequent bearers of CEO behavior, will impose greater scrutiny and try to influence other board members to make decisions that align shareholder and CEO interests. Bhagat and Bolton (2009) find a positive relationship between director ownership and firm performance.

Directors may hold directorships in other companies. Multiple directorships affects a firms' governance environment in two ways. On the one hand, due to time and energy constraints, these busy (distracted) directors may not provide sufficient monitoring. Instead, they may simply 'hand the reins' to the CEO, who works full-time in the company and is considerably more informed about challenges and opportunities faced by the firms. Fich and Shivdasani (2006) find boards with busier directors are linked to weaker firm performance. On the other hand, Ferris et al. (2003) find that past performance of firms for which an individual serves as a director correlates with the number of directorships subsequently held by that individual, suggesting that multiple directorships is an indicator of director quality. Gilson (1990) and Vafeas (1999) also argue that the number of directorships held by a director might proxy for reputational capital.

Our study uses the following proxies for the governance environment. *Percentage of independent directors* is the number of independent directors on the board divided by the total number of directors on the board. The identification of independent directors requires some judgement because there was no requirement to list independent directors in the annual reports before the release of the NZX Code in 2003. Therefore, the identification of independent directors is based on the following criteria: a director who owns less than 5% of the firm's shares and receives less than 10% of his annual income from the firm. However, the data for total director income for each fiscal year are unobtainable; directors' shareholding becomes the sole threshold for identification of independent directors in the years before the NZX listing rules required firms to list

[11]Some studies have emphasized the importance of other governance variables in providing a monitoring role, typically board size, block shareholding and leverage are selected (.e.gJensen (1993); Ryan et al. (2009); Reddy et al. (2010)). We have also repeated the analysis including other governance variables and the results do not differ significantly.

independent directors in their annual reports. *Board ownership* is the total percentage of shares held by all directors excluding CEO share ownership, and it includes beneficial shareholding and those shares held on behalf of associated persons. *Board busyness* is measured using the number of board seats held in other independent companies by all directors (excluding the CEO).[12]

Control Variables

Raheja (2005) and Adams and Ferrira (2007) suggest that the composition of the board should optimally differ across industries. Based on this result the CEO board membership decision may be optimally different across industries. In order to control for factors that may differ across industries and are not directly observable, industry dummies are used as a control variable in the analysis. In addition, year dummies are also included to control for any unobservable year effect.

We focus on two types of firm performance measures: accounting-based and market-based measures. Accounting-based measures include return on assets (ROA), which is calculated using the ratio of earnings before interest and tax divided by average total assets, and return on equity (ROE), which is calculated using the ratio of net income after tax divided by average total equity. Requiring the average measure for total assets and total equity in the denominator of each measure, respectively results in a smaller sample size. The market-based measure is Jensen's alpha from the CAPM. For the purpose of this analysis, we first use monthly returns to calculate the 3-year rolling beta and then calculate αs using $[(R_{i,t} - R_{f,t}) - \beta_i(R_{m,t} - R_{f,t})]$.

From Table II, firms on average achieve an annual ROA of 7.66 %, an annual ROE of 4.85% and a Jensen's alpha of -1.23%. In addition, all three proxies for firm performance indicate that firms with CEOs on the board perform better than firms with CEOs off the board. Specifically, firms with CEOs on the board outperform firms with CEOs off the board by 2.51 percentage points in terms of ROA and it is statistically significant at 5% level; firms in the former category outperform firms in latter category by 3.08 percentage points in terms of ROE and it is only marginally significant; the difference of 0.90 percentage points in Jensen's alpha is statistically significant at the 1% level.

[12]When director identity and director outside board seats in other companies are not recorded in the annual reports, we use NZ Companies Office as an additional data source. This web-site(http://www.business.govt.nz/companies/) contains information on all NZ-registered firms and their directors, including past and current directorships. However, since director information is only available on an individual basis and it does not specify the relationship between directors' current company and other companies the directors serve, this is a very time-intensive solution.

Table II Summary Statistics

This table reports means and standard deviations (in parentheses) for ROA, ROE and Jensen's Alpha from listed New Zealand companies between 1997 and 2008. ROA is earning before interest and tax divided by average total assets, ROE is net income before tax divided by average total equity, and Jensen's alpha is $[(R_{i,t} - R_{f,t}) - \beta_i(R_{m,t} - R_{f,t})]$ where β is calculated as the 3-year rolling beta calculated from monthly stock returns. The first column reports statistics for all firm-years appearing in the sample, while the remaining two columns report the summary statistics for firms with CEOs on the board and those with CEOs off the board.

	(1) All Firms (N=687)	(2) CEO on Board (N=473)	(3) CEO off Board (N=214)	(4) Difference between (2) and (3)
ROA (%)	7.617	8.343	6.012	2.331*
	(17.017)	(17.136)	(16.974)	
ROE(%)	5.044	5.867	3.223	2.640
	(29.077)	(29.913)	(27.117)	
Jensen's Alpha(%)	-1.232	-0.941	-1.876	0.935***
	(3.530)	(3.614)	(3.253)	

Although these statistics suggest that the variation in CEO board membership can influence firm performance, they do not control for differences in other variables across both groups of firms. This analysis will be examined in the next section. Variables that will be used in the determinant analysis and performance analysis are reported in Panel A and B of Table III

Table III Summary Statistics for Other Variables

Panel (A) and (B) of this table report means and standard deviations (in parentheses) for variables that are used in CEO board membership determinants and performance analysis, respectively for listed New Zealand companies between 1997 and 2008. Panel (A) includes information opacity variables, governance strength variables, leverage and CEO tenure; Panel (B) includes market capitalization and market-to-book ratio

	(1)	(2)	(3)	(4)
Panel A				
	All Firms (N=865)	CEO on Board (N=621)	CEO off Board (N=244)	Difference between (2) and (3)
Sales (000)	340.238	377.168	246.248	130.920***
	(670.677)	(722.268)	(504.381)	
Number of Business Units	1.766	1.818	1.635	0.183*
	(1.281)	(1.318)	(1.173)	
Number of Location Units	1.582	1.705	1.266	0.439***
	(0.878)	(0.944)	(0.573)	
Firm Age	14.927	15.961	12.297	3.119***
	(15.624)	(17.095)	(10.615)	
Tobin's Q Ratio	1.700	1.766	1.518	2.629***
	(1.254)	(1.323)	(1.041)	
Leverage(%)	43.687	44.831	40.775	4.056**
	(21.453)	(22.160)	(19.277)	
CEO Tenure	4.651	5.249	3.130	7.201***
	(4.008)	(4.341)	(2.409)	
Board Size	6.228	6.309	6.020	2.082**
	(1.838)	(1.740)	(2.058)	
Independent Directors(%)	59.049	54.818	69.817	9.183***
	(22.636)	(19.945)	(25.391)	
Block Shareholding(%)	52.146	48.022	62.640	-8.700***
	(23.180)	(22.021)	(22.785)	

Continued on next page

Table III – continued from previous page				
	(1)	(2)	(3)	(4)
Board Ownership(%)	17.070	17.918	14.913	1.769*
	(22.509)	(21.782)	(24.175)	
Board Busyness	39.636	36.960	46.447	-3.400***
	(37.153)	(37.125)	(36.420)	
Panel B				
	All Firms	CEO on Board	CEO off Board	Difference between
	(N=694)	(N=478)	(N=216)	(2) and (3)
Market Capitalisation(000)	362,022	364,342	356,899	7,453
	(642,775)	(662,708)	(597,754)	
Market-to-Book Ratio	2.378	2.523	2.057	0.466
	5.426	6.242	2.886	

3 Results

3.1 Results for the Determinant Study

To test the possibilities that a more opaque information environment and a weaker governance environment are associated with a higher probability of CEO board participation, we regress the CEO board membership dummy variable on proxy variables for the information environment and the governance environment while controlling for industry and year effects. The regression model is given in equation 2.

$$\begin{aligned}\text{CEO Board Membership}_{i,t} = \alpha_0 + \alpha_1 &\text{Information Opacity Variables}_{i,t} \\ + \alpha_2 &\text{Governance Strength Variables}_{i,t} + \alpha_3 \text{Control Variables} + \varepsilon_{i,t}\end{aligned} \tag{2}$$

where i denotes the individual firm and t represents time. The dependent variable is an indicator variable that takes the value of 0 if the CEO is off the board and 1 if the CEO is on the board. β_1 is a vector that represents the relationship between the probability of CEO board membership with the firms' information environment, and β_2 measures the effect of the firms' governance

environment on the probability of CEO board involvement. We are interested in the estimated coefficients for the information and governance environment-related variables. Equation(2) is regressed with a probit estimation model. In addition, Hermalin and Weisbach (1998) and Linck et al. (2008) suggest that board structure is relatively persistent over time, raising concerns for the independence of the year-to-year firm-level observations.[13] In order to address this issue, we estimate robust standard errors incorporating firm-level clustering.

The first column of Table IV reports the results by suppressing the governance environment-related variables and includes only the information environment-related variables and control variables. The estimated coefficients from column (1) suggest that firm size and the number of location units are positively associated with a higher probability of CEO board membership. This supports the hypothesis that a firms' opaque information environment leads to a higher probability of CEO board membership. In addition, the probability of CEO board membership exhibits a non-linear relationship with firm age; that is, CEO board membership is negatively related to firm age and positively related to firm age squared. This result shows that a firms' information environment is relatively less opaque when the firm is younger. Both the firm and the CEO have a smaller desire concerning CEO board participation. As firm age increases, the more opaque information environment aligns the interests of the firm and the CEO, which results in a higher probability of CEO board involvement. We use a restricted F-test to test whether the insignificant coefficients from Model (1) are jointly significant. The F-test shows that the number of business units, Tobin's Q ratio and leverage are not statistically significant. The regression results after suppressing these variables are reported in Column (2). Model (3) reports the results when the number of business units is replaced with the instrument for the number of business units to control for the multicollinarity between the number of business units and firm size. The results do not differ significantly from those reported for models (1) and (2).

Table V reports the regression results when governance environment variables and control variables are the only explanatory variables. Three of the governance environment variables have negative coefficients and are statistically significant at the 1% level. Specifically, CEO board membership is less (more) likely in the presence of a greater (smaller) percentage of independent directors, greater(smaller) board ownership and more (less) capable directors on the board. These results are consistent with the CEO interests argument that a stronger corporate governance environment discourages CEO board participation while a weaker corporate governance

[13]To illustrate this, the sample correlation between CEO board involvement and its one year lag is 0.837.

Table IV Regression Results for the Determinants of CEO Board Membership (A)
This table reports the results from a probit regression where the dependent variable equals one if CEOs are on the board and 0 otherwise. The dependent variable is regressed on information opacity variables described in equation (2). The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

CEOBOD	Model 1	Model 2	Model 3
Ln Sale	0.204***	0.190***	0.215 ***
Number of business units	0.069		0.069
Number of location units	0.256**	0.275**	0.256 **
Firm age	-0.047**	-0.048 **	-0.047 **
Firm age squared	0.001***	0.001***	0.001 ***
Tobin's Q ratio	0.114		0.114
Control Variables			
Leverage (%)	-0.002		-0.205
CEO Tenure	0.103***	0.101***	0.103 ***
Constant	-2.467***	-2.118*	-2.467 ***
Year Dummies	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes
No. of Observations	809.000	809.000	809.000
Pseudo R-squared	0.410	0.403	0.410

environment is conducive to CEO entrenchment, manifested through higher probability of CEO board membership. Model (2) reports the results when firm size is used as an additional control variable and Model (3) shows the results when board ownership squared is included to control for the possibility of non-linearity. From the results, it shows when board ownership squared is included, its effect on the probability of the CEO serving on the board becomes insignificant.

To get an overall understanding of the probability of CEO board membership, we include both information environment variables and governance environment variables and report the result in Table VI. Model (1) shows that the probability of CEO board membership is positively related to firm size and the number of location units, and non-linearly related to firm age. In addition, all

Table V Regression Results for the Determinants of CEO Board Membership (B)

This table reports the results from a probit regression where the dependent variable equals one if CEOs are on the board and 0 otherwise. The dependent variable is regressed on governance strength variables described in equation (2). The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

CEOBOD	Model 1	Model 2	Model 3
Instrument for Board Size	0.078	0.098	0.081
Independent Directors (%)	-0.017***	-0.014***	-0.014***
Board Ownership	-0.014***	-0.013***	0.007
Board Ownership Squared			0.000
Board Busyness	-0.009***	-0.011***	-0.011***
Block Shareholding (%)	-0.003	-0.004	-0.003
Constant	1.697	-0.998	-1.114
Control Variables			
Leverage	0.005	0.000	0.000
CEO Tenure	0.123***	0.116***	0.119***
Ln Sale		0.245***	0.250
Industry Dummies	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes
No. of Observations	809	809	809
Pseudo R-squared	0.4284	0.4648	0.4682

three statistically significant measures of governance environment are negatively associated with the probability of CEO board membership. Model (2) shows the results when board ownership squared is included and Model (3) regresses the CEO board membership dummy on variables that are statistically significant after the restricted F test.

Table IV, V and VI shows that the probability of CEO board membership is positively related to some measures of the firms' information opacity and negatively related to board independence and board busyness. To estimate the magnitudes of these effects, we calculate the marginal probabilities to provide some economic significance. We calculate the marginal effects at the

mean values of the explanatory variables based on Model (3) of Table VI. The results of this exercise appear in Table VII.

The results show that firm size, the number of location units, and percentage of independent directors on the board possess economic significance. Specifically, a 1% increase in firm real sales from the mean value increases the probability of CEO board membership by 6.2 percentage points; an additional increase in the operating location increases the probability of CEO board membership by 8.6 percentage points; a one-percentage-point increase in independent directors representation on the board from the mean value causes a 0.5-percentage-point decrease in the probability of CEO board membership. In other words, an additional independent director on a typical NZ board (six board members and 3.6 independent directors), while holding other variables at the sample average, decreases the probability of CEO board membership by approximately 10.8 percentage points.[14]

In addition, to check the Goodness-of-fit of the model, we conducted the sensitivity test and selectivity test from Stata. The results show that the model successfully predicts 93.13% of all companies with CEOs on the board, and 73.03% of all companies with CEOs off the board, with an overall correct prediction rate of 87.14%.

3.2 Results for the Performance Study

From Section3.1, it is clear that CEO entrenchment plays a part in determining CEO board participation. This section analyzes whether CEO board involvement affect firm performance and shareholder wealth.

Column (1) of Table IX reports the results when ROA is used as the dependent variable and CEO board membership is included as the only explanatory variable after controlling for industry and year effects. The estimated coefficients show that having a CEO on the board is associated

[14]Given the nonlinear function in the Probit model, the effect of a unit change in the independent variable varies greatly depending on the initial value chosen to calculate the marginal effect. To calculate the marginal effect of one additional independent directors on a typical NZ board (60% independent directors on the board to 76.6% independent directors on the board), we also estimate the marginal effect from 75% to 76% and the change predicts a 0.8-percentage- point decrease in the probability of CEO board membership. On average, a 0.65-percentage-point decrease is expected for every percentage-point increase in the percentage of independent director representation from 60% to 76.6%. Hence, an additional independent director on the board leads to an approximate decrease of 10.8-percentage-points (0.65*16.6) in the probability of CEO board membership.

Table VI Regression Results for the Determinants of CEO Board Membership (C)

This table reports the results from a probit regression where the dependent variable equals one if CEOs are on the board and 0 otherwise. The dependent variable is regressed on information opacity variables and governance strength variables while keeping other variables constant. The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

CEOBOD	Model (1)	Model(2)	Model (3)
Constant	-1.506	-1.635*	-0.978
Information Opacity			
Ln Sale	0.245***	0.250***	0.230***
Instrument for the number of business units	0.076	0.091	
Number of location units	0.284**	0.293**	0.322**
Firm age	-0.063***	-0.065***	-0.062***
Firm age squared	0.001***	0.001***	0.001**
Tobin's Q ratio	0.100	0.096	
Governance Strength			
Instrument for board size	0.113	0.095	
Percent of independent directors	-0.016***	-0.017***	-0.018***
Board Ownership	-0.011***	0.013	0.015
Board Ownership Squared		0.000*	0.000**
Board Busyness	-0.012***	-0.012***	-0.011***
Block Shareholding	-0.002	-0.001	
Control Variables			
Leverage	0.002	0.001	
CEO Tenure	0.108***	0.112***	0.112
Year Dummies	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes
No. of Observations	809.000	809.000	809.000
Pseudo R-squared	0.498	0.502	0.493

Table VII Marginal Probabilities of CEO Board Membership Based on Model (3)

This table reports the marginal changes in the probabilities of CEO board membership using the output from Model(3) in Table VI. These marginal effects are calculated at the mean values of the explanatory variables. The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

Ln Sale	0.062***
Number of location units	0.086**
Firm age	-0.017***
Firm age squared	0.000***
Independent Directors (%)	-0.005***
Board Ownership	0.004
Board Ownership Squared	0.000**
Board Busyness	-0.003***
CEO Tenure	0.030
Year Dummies	
Industry Dummies	

with 1.25 percentage points increase in ROA, however the result is statistically indifferent from zero. The coefficient for firm size is positive and the coefficient for leverage is negative, and both of them are statistically significant.

Model (2) reports the model after controlling for any self-selection bias associated with the CEO's decision to be on the board of directors. The models are estimated including an explanatory variable to account for CEO selection bias. Intuitively, if some firm characteristics and CEO attributes are useful in explaining the cross-sectional differences in the CEO board membership decision and firm performance simultaneously, then not taking their effects on CEO board participation into account will result in attributing their impacts on firm performance to CEO board membership, rather than to these underlying attributes. Failing to control for this correlation will yield an estimated CEO board membership effect on firm performance will bias the true relationship between CEO board membership and firm performance. Controlling for these characteristics, on the other hand, isolates the impact of CEO board membership on firm

Table VIII Goodness-of-Fit of the Model

This table reports separate percent correctly predicted values for CEO board membership =1 and CEO board membership = 0, respectively.

Probit model for CEOBOD		
Classified + if predicted Pr(D) >= .5		
True D defined as CEOBOD != 0		
Sensitivity Pr(+ D)	93.13%	
Specificity Pr(- D)	73.03%	
Positive predictive value Pr(D +)	89.06%	
Negative predictive value Pr(D -)	81.86%	
False + rate for true D Pr(+ D)	26.97%	
False - rate for true D Pr(- D)	6.87%	
False + rate for classified + Pr(D +)	10.94%	
False - rate for classified - Pr(D -)	18.14%	
Correctly classified		87.14%

performance. To investigate the possibility of self-selection, we employ the treatment effect model based on Heckman (1979)'s two-step procedure by introducing the Inverse Mill's ratio into the regression.

From Model (2), the coefficient for CEOs on the board is positive and statistically significant and the inverse Mills ratio (IMR) is negative and statistically significant. The significant IMR coefficients indicate the presence of a self-selection bias and suggests that characteristics that encourage firms to allow CEO board membership are negatively correlated with ROA. Controlling for the self selection bias shows that CEO board membership improves firm performance as measured by ROA. Hence, the decision to have CEOs on the board is consistent with shareholders' interests.

Models (3) and (4) show that regression results when ROE is used as the dependent variable. Unlike the results for ROA analysis, even after controlling for the negative self-selection bias, the coefficient for CEO board membership is still indifferent from zero.

Table X presents the estimation results of Jensen's alpha on lagged CEO board (LagCEOBOD) membership and lagged control variables. Model (1) shows that the after controlling for

Table IX Regression Results for Accounting Performance Analysis

This table reports the results for performance analysis. The dependent variables, ROA and ROE, are regressed on CEO board membership dummy, firm size, debt ratio, industry and year dummies. The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

	ROA		ROE	
	Model (1)	Model (2)	Model (3)	Model (4)
CEOBOD	1.251	2.556***	0.086	2.218
IMR		-0.545***		-1.371***
Ln Sale	3.554***	3.781***	5.787***	6.488***
Leverage	-0.093***	-0.102***	-0.129***	-0.140***
Constant	-34.779***	-39.875***	-62.816***	-74.670***
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
No. of Obs	584	584	584	584

market size and market-to-book ratio, the coefficient for CEO board membership is indifferent from zero. Model (2) accounts for possible self-selection bias. The coefficient for the inverse Mills ratio is positive and statistically significant at the 5% level. This suggests that characteristics that support CEO board membership also tend to lead to better stock market performance. After taking this positive selection effect into account, the coefficient for CEO board membership is smaller in magnitude compared to the coefficient from Model (1) although still insignificant.

Overall, the regression results for performance analysis indicate that firms with CEOs on the board perform better in terms of ROA than firms with CEOs off the board after controlling for self-selection bias. However, CEO board participation does not affect ROE and market return significantly.

3.3 Firm Performance before and after 2003

The introduction of Best Practice Code in 2003 changed the director independence requirement of boards in New Zealand. As a result of the change in the listing rule we suspect there may be no difference between CEO board involvement and firm performance. To investigate this

Table X Regression Results for Market Return Analysis

This table reports regression results when the dependent variables, Jensen's alpha, is regressed on CEO board membership dummy, market capitalization, market-to-book ratio, industry and year dummies. The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

	Model (1)	Model (2)
LagCEOBOD	0.342	0.153
IMR		0.119**
Lag lnmktcapbal	0.483***	0.469***
Lag Mktbook	-0.019	-0.018*
Constant	-8.413***	-7.800***
Year Dummies	Yes	Yes
Industry Dummies	Yes	Yes
No. of Obs	579	572

possibility, we separate our data into two subsamples representing the period before and after the implementation of the Code in 2003. We examine whether the effect of CEO board membership on firm performance changes in each of the subsamples.

Table XI provides evidence for the change of the effect of CEO board membership on accounting performance measures before and after the implementation of the 2003 Code. From Model (1) to (4), it is clear that the magnitude of the positive effect of CEO board membership on ROA and ROE decreased after 2003. In addition, the inverse Mills ratios become less negative after 2003, suggesting that the selection bias due to firm and CEO characteristics which encourage CEO board membership also tend to discourage higher ROA have been mitigated. After controlling for selection bias, the impact of CEO board membership on ROA and ROE is smaller after 2003.

Table XII shows that selection bias is not a significant factor in the market return model for both the pre- and post- 2003 models. However, the relationship between CEO board membership and market performance changes dramatically after 2003. Prior to 2003 CEO board membership enhances market returns but the relationship is reversed after 2003. The results suggest that market participants perceive CEO board participation as an unfavourable characteristic after the introduction the Best Practice Code in 2003, whereas it was favourable prior to this regulatory

Table XI Regression Results for Accounting Performance Analysis Before and After 2003

This table reports the results for performance analysis before 2003 and after 2003. The dependent variables, ROA and ROE, are regressed on CEO board membership dummy, firm size, debt ratio, industry and year dummies. The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

	ROA		ROE	
	1997-2002	2004-2008	1997-2002	2004-2008
	Model (1)	Model(2)	Model(3)	Model (4)
CEOBOD	2.963***	1.378*	7.209**	3.231***
IMR	-0.704***	0.125	-2.022***	-1.409***
Ln Sale	2.037***	5.009***	4.020***	7.381***
Leverage	-0.201***	-0.031***	-0.489***	-0.056***
Constant	-17.190***	-55.407***	-37.871***	-86.258***
Year Dummies	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes
No. of Obs	244	283	244	283

change.

4 Conclusion

The primary objectives of this paper are to explore and examine the determinants and financial implications of CEO board membership. The stylized fact that New Zealand firms, unlike those in many other countries, exhibit significant variation in the extent to which CEOs are involved with their board, provides a unique opportunity to explore these issues. To this end we ask two research questions: (i) What determines CEO board membership? and (ii) What are the consequences of variation in CEO board membership on firm performance? This paper provides a starting point for documenting evidence of CEO board membership studies.

Our analysis shows that (i) CEO board membership is positively related to firm size, number of locations and non-linearly related to firm age; (ii) CEO board membership is negatively related

Table XII Regression Results for Market Return Analysis Before and After 2003

This table reports the results for performance analysis before 2003 and after 2003. The dependent variable, Jensen's alpha, is regressed on CEO board membership dummy, market capitalization, market-to-book ratio, industry and year dummies. The significance levels are indicated with ***,**,* denoting statistical significance at the 1%, 5% and 10% level, respectively.

	1997-2002	2004-2008
	Model (1)	Model(2)
LagCEOBOD	1.839***	-0.842***
IMR	-0.020	0.095
Laglnmktcapbal	0.453***	0.480***
Lagmktbook	-0.106	-0.015***
Constant	-10.506	-6.740
Year Dummies	Yes	Yes
Industry Dummies	Yes	Yes
No. of Obs	240	274

to the percentage of independent director on the board, board busyness and non-linearly related to board ownership squared. This finding indicates that the observed CEO board participation is at least partly attributed to CEO entrenchment.

Further, we find evidence for self-selection bias. After controlling for this effect, firms with CEOs on the board outperform firms with CEOs off the board in terms of ROA, but do not differ significantly in terms of ROE and market returns. This may suggest that firms make CEO board membership optimal. In addition, the evidence from the accounting performance measures shows that after controlling for the self-selection bias, the effect of CEO board membership on firm performance becomes smaller following the introduction of the Best Practice Code in 2003. The results from the market return analysis show that CEO board membership enhanced market performance prior to 2003 this effect is reversed after 2003. Our results show that CEO board involvement is unfavorable to stock market participants after the implementation of the Code in 2003.

This paper finds that CEO board membership does not contribute negatively to firm perfor-

mance and there is even evidence of a positive effect when ROA is used as a performance measure. If so, an immediate question to ask is why some countries do not adopt this level of CEO board involvement and why NZ is so different in the number of CEOs sitting on boards compared to other countries. This question is a worthwhile topic of future research. Future direction for this research could include a comparison of institutional, legal and cultural differences between NZ and other countries, such as the US, to investigate if these factors reflect differences in agency costs and contribute to variation in CEO board membership.

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