CEO Quality, Firm Performance and CEO Compensation

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Abstract: Using an Australian a sample of 556 CEOs, this paper provides evidence that CEO quality (1) has a positive effect on firm performance (2) has a substitute effect on good corporate governance and (3) explains cross-sectional variation in CEO compensation even after controlling for industry-effects, economic factors and corporate governance factors associated with CEO compensation. Although CEO quality is potentially correlated to CEO compensation, it has been mostly ignored in CEO compensation models. Thus, this paper makes an important contribution to the CEO compensation debate and highlights the role of CEO quality in firm performance and corporate governance.

1. Introduction

Because of its explosion in recent decades, CEO compensation has drawn considerable attention from media, trade unions, investors and politicians (Murphy 1999). Further, the need to understand the magnitude and structure of CEO compensation has heightened in the aftermath of the major corporate collapses of 2001 in the US, Australia and the European Union. CEO pays of many of the collapsed firms grabbed headline news and were the subject of comments from politicians. The corporate collapses of 2001 also highlighted the need for good corporate governance and financial reporting quality. Although the CEO plays a key strategic role in the firm, the role of CEO quality has been mostly ignored in research on financial reporting quality, corporate governance and CEO compensation.[1] This paper investigates the role of CEO quality in firm performance, corporate governance and CEO compensation in an Australian setting.

The sheer size of CEO compensation when compared with the average salary of employees within the same firm appears puzzling. For example, in 1970, the average S&P 500 CEO in the US made about 30 times more than the average production worker but by 1996, the average S&P 500 CEO received cash compensation of nearly 90 times and total realised compensation of 210 times of the earnings of an average production worker (Murphy 1999). Associated Press in 2007 claimed that "…compensation for America's top CEOs has skyrocketed into the stratospheric heights of pro-athletes and movie stars…as salaries rose, stock options paid off like lottery jackpots, and perks like chauffeured cars and private jets spread (Associated Press Newswires 2007). Similarly, in 15 years the average yearly income of some of Australia's most powerful CEOs has risen 564 percent to $A3.4 million by 2006 (Asia Pulse 2006). As a result, CEO compensation continues to receive wide

[1] Notable exceptions are Francis et al. (2007) who provide some early evidence on the effect of CEO reputation on earnings quality, and Ryan and Wiggins (2001) who document a concave relation between cash bonus and CEO age.

spread, international attention from academic researchers, trade unions, media, investors and politicians.

The contribution of this paper comes from documenting the role of CEO's human capital in CEO compensation debate. Unless CEOs are hired randomly, board of directors are likely to consider CEO quality in setting CEO compensation. Thus, CEO quality has potential to explain cross-sectional variation in CEO compensation. Because of the CEO's key strategic role in the firm, CEO quality is also potentially linked to firm performance and corporate governance structure.

To investigate the role of CEO quality on firm performance, corporate governance and CEO compensation, I identify an Australian sample of 556 CEOs for 2006. CEO compensation (measured at CEO's base salary and total pay) is regressed on CEO quality, board characteristics, industry dummies, and economic factors that determine CEO compensation. CEO quality is measured by two constructs: CEO tenure, and CEO's formal education. In both base salary and total compensation regressions, CEO tenure appears to be statistically significant at five percent level whereas CEO education is significant at 10 percent level. Although CEO education apparently has no effect on firm performance (measured by three-year average return on assets) and variability of firm performance (standard deviation of return on assets over three years), firm performance (variability of performance) significantly increases (decreases) with CEO tenure. If the length of CEO tenure is considered as a reflection of CEO quality, then CEO quality has an inverse relation with desirable board characteristics (i.e., more independent board, more frequent board meetings, and separation of board chair from CEO).

This paper presents the first evidence in Australia on the role of CEO quality in firm performance, corporate governance and CEO compensation. Several overseas studies (e.g., Child 1972, Mambrick and Mason 1984, Tushman and Romanelli 1985) document that firm executives have important effect on firm outcome. There is also evidence that firms choose

directors optimally based on director-specific characteristics (e.g., Hermalin and Weisbach 1988, Agrawal and Knoeber 2001). This paper contributes to this literature by documenting that CEO characteristics play an important role in CEO pay, board characteristics and firm profitability.

The remainder of the paper is organised as follows. Section 2 develops the hypotheses. Section 3 explains the research model and the sample selection procedure. Results are discussed in section 4. Section 5 summarises the paper and discusses limitations of the paper.

2. Prior research and hypothesis development

CEO quality and firm performance

The CEO perhaps occupies the most important position in the entire firm. The CEO is an executive of the highest level in the firm and is entrusted with the responsibility to provide leadership and strategic directions for the firm. In dispensing their role, CEOs bring in their innate talents and entrepreneurial skills to the firm. In addition, CEOs undertake formal education in specific fields and gain substantive industry experience that become part of their human capital. Moreover, it is unlikely that CEOs are appointed to firms randomly. Firms likely select CEOs with specific attributes based on the needs of the firm (Francis et al. 2007, Rosen 1990).

Although CEO quality is likely to play a pivotal role in firm performance, financial reporting quality and CEO compensation, it has been addressed in a handful of papers in accounting literature. In a recent paper, Francis et al. (2007) examine the association between CEO reputation (proxied by the extent of press coverage) and earning quality on about 2000 firm-year observations for S&P 500 firms over 1992-2001. They conclude that more reputed CEOs are employed by firms with poor earnings quality because volatile operating environments of such firms require more talented managers. Similarly, Milbourn

(2003) finds a positive and economically meaningful relation between stock-based compensation and CEO's reputation.

The ultimate test of a CEO's performance is their ability to generate returns for shareholders and increase shareholder wealth. If generating returns and increasing shareholder wealth are not random processes totally beyond CEO influence, higher quality CEOs are likely to produce higher returns for shareholders.

The above discussion leads to the following hypothesis:

H_1: Firm performance is positively related to CEO quality.

The quality of CEOs can be indirectly measured by the length of CEO tenure. Apart from CEOs who have entrenched their position through ownership, the market for CEOs is likely to be competitive. A CEO who fails to perform may be removed from the position by existing shareholders or the firm might face hostile takeover in which case the CEO of the acquired firm might be removed or demoted by the acquirer. Thus, the length of CEO tenure is potentially a good proxy for CEO quality. Another construct that is observable about the CEO quality is CEO's formal education. If formal education has a role in forming human capital, then it can be argued that CEOs with more formal education are of higher quality than others.

CEO quality and corporate governance

The role of corporate governance is to monitor management actions and the board of directors is the most important element in monitoring management (Fama and Jensen 1983). The relation between the board and the CEO is likely to be conditional on CEO's ability to deliver performance and the board's confidence in the CEO. A CEO who has delivered high returns to shareholders in the past is likely to enjoy more power and exert more influence on the board. On the other hand, a CEO who has "failed" to deliver high returns will face more pressure from the board and shareholders to yield to stricter monitoring mechanisms. The power of the CEO vis-à-vis the board can be measured by the extent to which the board is

independent or controlled by the CEO. If CEO quality is positively associated with firm performance, then high-quality CEOs will enjoy more power relative to the board and vice versa. Thus, CEO quality is likely to have an inverse relation with the desirable characteristics of a board and a high-quality CEO is likely to reduce a firm's demand for good corporate governance.

The above discussion leads to the following hypothesis:

H_2: CEO quality reduces a firm's demand for good corporate governance.

Some of the board characteristics which have been used to measure the effectiveness of a board are whether the board chair is separate from the CEO, the board size, frequency of board meetings, and board independence. Jensen (1993) argues that the board's ability to monitor management behaviour is compromised when the CEO is also the board chair. Regarding board size, the evidence is large boards are ineffective in terms of their ability to advise and engage in long term strategic plans (Jensen 1993, Lipton and Lorsch 1992) and prevent financial statement fraud (Beasley 1996). In terms of board meetings, boards that meet more frequently are likely to be more effective in monitoring of management (e.g., Lipton and Lorsch 1992, Conger et al. 1998, Vafeas 1999).

CEO quality and CEO compensation

As already discussed, CEOs bring their innate talents, entrepreneurial skills and industry experience to their firms. Thus, if CEOs are not appointed by boards in a random process, and they are selected to best match the needs of firms (Francis et al. 2007), and then efficient contracting would suggest that CEO quality will be explicitly or implicitly reflected in CEO compensation. Thus, cross-sectional differences in CEO compensation can be explained by differences in CEO quality across firms.

The above discussion leads to the following hypothesis:

H_3: CEO compensation is positively related to CEO quality.

3. Research design

Research model

Hypothesis one (H_1) is tested by the following model:

$$firm\_performance_i = \alpha + \beta_1 CEO\_TENURE_i + \beta_2 CEO\_EDUCATION_i + \beta_3 MKT\_CAP_i + \beta_4 AVG\_P\_B_i + \beta_5 STD\_P\_B_i + \varepsilon_i \quad (1)$$

where *firm_performance* is firm performance measured by three-year average return on assets (*AVG_ROA*) and the variability of return on assets over three years (*STD_ROA*); *CEO_TENURE* is measured by the number of years the current CEO has been in that position in the current firm; *CEO_EDUCATION* is an ordinal variable capturing CEO's formal education; *MKT_CAP* is market capitalisation of the firm at year end; *AVG_P_B* is the three-year average of the price-to-book ratio as a proxy for the firm's investment opportunity set; *STD_P_B* is the standard deviation of the price-to-book ratio over a three-year period. Equation (1) is estimated using ordinary least squares (OLS) method.

Hypothesis two (H_2) is tested by the following model:

$$CEO\_TENURE_i = \alpha + \beta_1 BOARD\_SIZE_i + \beta_2 BOARD\_INDEP_i + \beta_3 BOARD\_MEETINGS_i + \beta_4 CHAIR_i + \phi_i \quad (2)$$

where *CEO_TENURE* is the number of years the current CEO has been employed in that position; *BOARD_SIZE* is the number of directors in the board including the board chair; *BOARD_INDEP* is the board independence measured by the ratio of non-executive directors in the board to board size; *BOARD_MEETINGS* is the number of board meetings held during the year (2006); *CHAIR* is a dummy variable taking a value of one if the CEO is also the board chair.

Because larger boards are relatively ineffective and duality of the CEO as board chair indicates CEO's control over board (suggesting weak corporate governance), signs of β_1 and β_4 should be positive to suggest that CEO tenure is a function of weak corporate governance. More independent boards and higher frequency of board meetings are indications of good

corporate governance. Thus, signs of β_2 and β_3 should be negative for longer CEO tenure to be associated with weak corporate governance.

Hypothesis three (H_3) is tested by the following model:

$$ceo\_pay_i = \alpha + \sum_{i=1}^{j} \beta_i ceo\_quality_i + \sum_{i=1}^{k} \delta_i economic\_factors_i + \sum_{i=1}^{m} \lambda_i board\_structure + \gamma_i ceo\_history + \sum_{i=1}^{p} \varphi_i industry + \xi_i \quad (3)$$

Equation (3) is measured for two levels of CEO compensation: fixed salary and total compensation. Total compensation includes fixed salary, cash bonus, superannuation payments, value of stock options granted and any other benefits paid to the CEO.

CEO quality is proxied by two constructs: CEO tenure (*CEO_TENURE*) and CEO education (*CEO_EDUCATION*). Economic factors that are tested in the model are the number of employees (*EMPLOYEES*), total sales revenues (*REVENUES*), average return on assets (*AVG_ROA*), standard deviation of return on assets (*STD_ROA*), average of price-to-book ratio (*AVG_P_B*), and standard deviation of price-to-book ratio (*STD_P_B*). The number of employees measures the size and complexity of operations whereas sales revenues measure the size of operations. *AVG_ROA* (operationalised as a three-year average) captures firm performance and *AVG_P_B* (also operationalised as a three-year average) captures the investment opportunity set of the firm. *STD_ROA* and *STD_P_B* both measure firm risk in terms of variability of returns and variability in investment opportunity set.

The variables that capture governance structure are board size (*BOARD_SIZE*), the proportion of independent directors in the board (*BOARD_INDEP*), the dual role of the CEO as the board chair (*CHAIR*), and whether the CEO is a member of the remuneration committee (*CEO_REMU*). The only ownership variable that is included in the model is in terms of CEO history whether the CEO is a founder CEO. Equation (3) includes dummy variables to capture the industry-effects on CEO compensation.

Sample

Data for this study were collected from three different sources. Corporate governance including data on CEO quality were hand-collected from *Aspect Huntley Annual Report Online*. Financial statement data for computing return on assets and price to book ratio were collected from the database *Aspect Huntley FinAnalysis*. CEO compensation data were collected from the *Connect4 Boardroom* data base. Matching data from these three data bases caused significant data attrition as explained below.

The initial sample comprises of all ASX listed firms for annual reports are available in *Aspect Huntley Annual Report Online* data base for the year 2006. This database contained annual reports for 1540 firms in 2006. However, compensation data were not available for 376 firms and several corporate governance variables were missing for 213 firms. Data on price to book ratio and return on assets were not available for 234 firms. Finally, CEO tenure could not be calculated for 161 firms. Thus, the final sample comprises 556 firms. Table 1 shows the sample selection process.

INSERT TABLE 1 HERE

4. Results and discussion

Table 2 presents descriptive statistics for the key variables. Panel A shows that the mean (median) salary of CEOs of the sample firms in 2006 was $417,129 ($266,064). The mean (median) total compensation was $900,225 ($387,281). Thus, both salary and total compensations are negatively skewed. Revenues (expressed in thousands) and number of employees show similar pattern. The mean (median) revenues were $981,360,000 ($30,191,000) whereas the mean (median) number of employee was 2,224 (92). Average return on assets (*AVG_ROA*) shows positive skewness with a mean of -14.35% and a median of 1.97%. On the other hand, STD*_ROA*, *AVG_P_B*, and *STD_P_B*, all these variables exhibit negative skewness with the medians less than the means. The mean (median) board size is 5.53 (5.00) while the mean (median) proportion of independent directors was 82%

(86%). The mean (median) CEO tenure is 5.85 (4.00) years. In terms of CEO education, the median CEO has a bachelor's degree. Among the binary variables, 15% of the sample firms had their CEOs in the remuneration committee whereas 18% of the firms had their CEOs acting as the board chair. Twenty percent of the CEOs were founder CEOs in their firms.

INSERT TABLE 2 HERE

Table 3 presents a Pearson's bivariate correlation matrix of 16 variables covering CEO compensation, CEO quality, firm performance, firm risk and corporate governance structure. Among these variables, CEO's fixed salary compensation (*Salary*) strongly positively correlated to cash compensations (Cash_Comp) comprising fixed salary and bonus and total compensation (Total). The coefficient of correlation is 0.73 (p-value = 0.00) in both cases. CEO's salary is positively correlated to the number of employees (r = 0.64), sales revenue (r = 0.59), board size (r = 0.54), and board independence (r = 0.15) (p-value for all coefficients = 0.00). CEO's salary is negatively correlated to firm risk (coefficient for STD_P_B = -0.12, STD_ROA = -0.21), when the CEO is also the board chair (r = -0.14) and positively correlated to firm performance (coefficient for AVG_ROA = 0.28). CEO's cash compensation is positively correlated to the number of employees (r = 0.63), revenues (r = 0.54), and board size (r = 0.47) at a p-value of 0.00. CEO's cash compensation is lower when the CEO is also the board chair (r = -0.13) and high when firm performance is higher (r = 0.19) and firm risk is lower as measured by STD_P_B (r = -0.10) and STD_ROA (r =-0.15). CEO's total compensation shows similar association with these variables. CEO tenure has positive association only with cash compensation (r = 0.07, p-value = 0.10). It is also increasing in firm performance (r for AVG_ROA = 0.14, p-value = 0.00) and lower firm risk (r = -0.09, p –value =0.03). CEO tenure decreases when the board becomes more independent (r = -0.11, p-value = 0.01), the number of board meetings increase (i.e., the board is more active, r = -0.11, p-value = 0.01) and the CEO's level of education is higher (r = -0.13, p-value = 0.00). It suggests that CEOs with more formal education are hired in firms

where boards are more independent and active. Interestingly, firm performance decreases (r = -0.13, p-value = 0.00) and firm risk increases (r for STD_P_B = 0.18 with a p-value of 0.00 and r for STD_ROA = 0.10 with a p-value of 0.02) when the CEO is the board chair.

INSERT TABLE 3 ABOUT HERE

If firm performance does not improve and firm risk does not decline with CEO tenure then longer CEO tenure could be interpreted as a consequence of weak corporate governance structure. To investigate this possibility, average return on assets (AVG_ROA) is regressed on the two proxies for CEO quality, CEO tenure and CEO education. Table 4, panel A reports the results of this regression. As the table suggests, CEO tenure has a positive and significant effect on average return on assets (t-statistic = 3.442, p-value = 0.001) while the coefficient of CEO education is contrary to expectation and insignificant (t-statistic = -0.326). Similarly, Table 4, panel B suggests that CEO tenure decreases firm risk (t-statistic = -2.252, p-value = 0.025). The coefficient of CEO education is insignificant (t-statistic = -1.003) but consistent with expectation. Thus, CEO quality, as proxied by CEO tenure and CEO education, appears to reduce firm risk.

Table 4, panel C presents the results of regressing corporate governance variables on CEO quality. In examining the role of corporate governance, prior research has not taken into consideration the effect of CEO quality on corporate governance. CEO quality potentially has a complimentary effect or a substitute effect on corporate governance. A low-quality CEO in a poor corporate governance structure is potentially have much more negative effect on the firm performance relative to a high-quality CEO. Table 4 reports the results of regressing board size, board independence, number of board meeting and whether the CEO is also the board chair on CEO tenure. CEO tenure as a proxy for CEO quality is potentially a substitute for good corporate governance if firm characteristics associated with good corporate governance are negatively related to CEO tenure.

Smaller board size, a more independent board, the (higher) frequency of board meetings, the independence of the board chair from the CEO are considered some characteristics of good corporate governance structure. As panel C of Table 4 suggests the effect of board size on CEO quality is unclear as the *t*-statistic of -0.169 is insignificant. But board independence (*t*-statistic = -2.439), the frequency board meetings (*t*-statistic = -2.253) and the CEO acting as board chair (*t*-statistic = 2.682) are all statistically significant at five percent or below. Moreover, the coefficients are all contrary to expectations in a good corporate governance environment. Thus, it appears that to the extent CEO tenure represents CEO quality, high-quality CEO can work as a substitute for good corporate governance and CEO quality likely reduces a firm's demand for good corporate governance.

INSERT TABLE 4 HERE

Table 5 reports the results of estimating model (3) and two variations of the model on 556 firms for the year 2006. Model (3) explains about 55 percent of the CEO's cash salary. As the table suggests CEO tenure has the positive coefficient as expected and is significant at five percent in all three estimates (*t*-statistic = 2.293, 2.490, 2.372). The coefficient of CEO education is positive as expected and significant at 10 percent level (*t*-statistic = 1.848, 1.750, 1.915). If the number of employees are considered as a proxy for complexity of firms, then CEO's cash salary increases with firm complexity as the coefficient of *EMPOYEES* is positive and statistically significant at 1 percent (*t*-statistic = 8.450, 8.477, 8.462). CEO's cash salary increases with firm size; the coefficients of *REVENUES* are positive as expected and significant at one percent level (*t*-statistics = 2.914, 2.824, 2.948).

While firm performance is positively associated with CEO's cash salary compensation (*t*-statistic for *AVG_ROA* = 1.817 and 2.104 with p-values of 0.070 and 0.036, respectively), firm risk has no association with CEO's cash salary (t-statistic for *STD_ROA* = 0.470 and 0.566). Investment opportunity (as proxied by *AVG_P_B* and *STD_P_B*) appears to have very weak effect on CEO's cash salary. While *AVG_P_B* is not significant in any of

the two estimates of model (3), *STD_P_B* is significant at five percent level only in the absence of performance variables, *AVG_ROA* and *STD_ROA*. Thus, there is some multicollinearity between operating performance variables and investment opportunity set variables.

Among the corporate governance variables, board size has a positive and significant impact on CEO's cash salary. The *t*-statistics for BOARD_SIZE are 8.991, 9.726, and 9.034. Surprisingly, board independence appears to have a positive and significant impact on CEO's cash salary (*t*-statistics for *BOARD_INDEP* = 3.383, 3.399, 3.397). It is likely that board independence is higher in large, complex firms which have stronger demands for high quality CEOs. Therefore, independent boards end up in paying more to the CEO. The duality of the CEO as the board chair appears to have negative impact, contrary to expectation, but statistically insignificant (*t*-statistic = -0.325, -0.557, -0.542). CEO's cash salary is not influenced when the CEO is a member of the remuneration committee and if the CEO is the founder CEO. Among the ten industries analysed, it appears that CEOs in the Consumer Staples and Health Care industries earn less than their counterparts in other industries. In contrast, CEO's cash salary in the Consumer Discretionary appears to be significantly higher than CEOs in other industries.

INSERT TABLE 5 ABOUT HERE

Table 6 presents three estimates of model (3) using total compensation. The results are qualitatively similar to that in Table 5 and the model explains about 55% of the total cross-sectional variability in CEO's total compensation. As in Table 5, CEO's tenure has a positive coefficient and is statistically significant at 5 percent level in all three estimates (*t*-statistic for *CEO_TENURE* = 2.327, 2.311, and 2.443). Similarly, CEO's education has a positive coefficient and is statistically significant at 10 percent level (*t*-statistics for *CEO_EDUCATION* = 1.863, 1.826, 1.819). The number of employees and the sales revenue

are all significant at 1 percent. However, firm performance, firm risk and investment opportunity set do not appear to have any explanatory power for CEO's total compensation. Among the corporate governance variables, as in Table 5, board size has a positive and significant influence in CEO's total compensation (*t*-statistics for *BOARD_SIZE* = 7.559, 7.552, 7.964). Unlike in Table 5, board independence has a negative and significant association with total compensation (*t*-statistic for *BOARD_INDEP* = 2.564, 2.627, 2.590). As in Table 5, CEO's total compensation is not influenced by the CEO's dual role as the board chair or the presence of the CEO in the remuneration committee. The founder CEO's total compensation is lower compared to other CEOs as indicated by the negative and significant coefficients for the variable *FOUNDER_CEO* (*t*-statistic = -2.391, -2.371, -2.390). Among the industry dummies, CEOs in consumer staples industry appear to have lower total compensations than their peers in other industries. In sum, the results in Table 6 are qualitatively similar to that in Table 5. Moreover, two more corporate governance variables are significant in Table 6 (board independence and founder CEOs) compared with Table 5.

Robustness check

Hypothesis one is tested by a single equation which is estimated by OLS. But the relation between CEO tenure and firm performance is likely to be endogenous. That is, better firm performance extends the CEO tenure and longer CEO tenure leads to better firm performance (because of the CEO's longer experience with the firm and understanding the firm's operating environment better). In the presence of endogeneity, simultaneous equation methods are more appropriate than a single equation estimated by OLS. Thus, two-stage least squares regression (2SLS) method was used for testing the validity of the results reported in Table 4, Panel A and B. In the 2SLS, CEO's formal education, CEO's professional membership, year-end market capitalisation of the firm, *AVG_P_B* and *STD_P_B* were used as instrumental variables. Un-tabulated results are consistent with OLS estimates reported in

Panel A and B in Table 4. That is, longer CEO tenure is associated with better firm performance.

5. Summary and conclusion

This paper examines the role of CEO quality on CEO compensation, firm performance and corporate governance. As CEO is the leader of the top management of a firm, the innate qualities of the CEO and his(her) industry experience are likely to have a significant influence on firm performance and also in his (her) to command above average compensation. Thus, CEO quality is potentially an omitted correlated variable in the CEO compensation model. CEO quality has been largely ignored in CEO compensation studies. Thus, this paper makes a significant contribution to the CEO compensation debate.

Because of CEO's strategic and key role in the firm, cross-sectional differences in CEO quality are likely to have an effect on firm performance. This is also highlighted in this paper. Similarly, good leadership skills in the CEO and the CEO's ability to deliver firm performance is likely to reduce the demand of good corporate governance. This is so because the role of corporate governance is to monitor management behaviour. Monitoring is desired by shareholders to reduce agency costs and to guide the firm to wealth maximisation for shareholders. A CEO who is capable of delivering above average performance is likely to enjoy more freedom and play a more dominant role in the board compared to a CEO who fails to deliver. This paper empirically demonstrates that.

An obvious limitation of this paper is that it is a single-year study. Thus, a longitudinal study is likely to shed more light on the role of CEO quality in CEO compensation, firm performance and corporate governance. Also the model used in this study is to some extent under-specified as variables relating to ownership structure have been treated as exogenous variables. However, to the extent that ownership structure variables are not correlated to CEO quality, results of this study are likely to hold even after controlling for firm's ownership structure.

References

Baiman, S., and R. Verrecchia. 1995. Earnings and price-based compensation contracts in the presence of discretionary trading and incomplete contracting. *Journal of Accounting and Economics* 20(1): 93-121.

Bushman, R., and R. Indjejikian. 1993. Accounting income, stock price, and managerial compensation. *Journal of Accounting and Economics* 16(1-2-3): 3-23.

Carter, M., L. Lynch and I. Tuna. 2007. The role of accounting in the design of CEO equity compensation. *The Accounting Review* 82 (2), 327-357.

Chalmers, K., P. Koh and G. Stapledon. The determinants of CEO compensation: Rent extraction or labour demand? *The British Accounting Review* 38 (3): 259-275.

Cordeiro, J. and R. Veliyath. 2003. Beyond pay for performance: A panel study of the determinants of CEO compensation. *American Business Review* 21 (1), 56-66.

Core, J., R. Holthausen and D. Larcker. 1999. Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics* 51, 371-406.

Craighead, J., M. Magnan and L. Thorne. 2004. The impact of mandated disclosure on performance-based CEO compensation. *Contemporary Accounting Research* 21 (2), 369-398.

Davila, A. and F. Penalva. 2006. Governance structure and the weighting of performance measures in CEO compensation. *Review of Accounting Studies* 11 (4), 463-493.

Firth, M., P. Fung, and O. Rui. 2007. How ownership and corporate governance influence chief executive pay in China's listed firms. *Journal of Business Research* 60 (7), 776-810.

Francis, J., A. Huang, S. Rajgopal, and A. Zang. 2007. CEO reputation and earnings quality. SSRN working paper. (Forthcoming in *Contemporary Accounting Research*)

Grinstein, Y., and P. Hribar. 2004. CEO compensation and incentives: Evidence from M&A bonuses. *Journal of Financial Economics* 73 (1), 119-143.

Gul, F., A. Qiu and Q. Yang, 2006. CEO compensation, external monitoring and earnings quality. Working paper: The Hong Kong Polytechnic University.

Harford, J., and K. Li. 2007. Decoupling CEO wealth and firm performance: The case of acquiring CEOs. *The Journal of Finance* 62 (2), 917-949.

Healy, P. 1985. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics* 7: 85-107.

Holthausen, R., D. Larcker, and R. Sloan. 1995. Annual bonus schemes and the manipulation of earnings. *Journal of Accounting and Economics* 19(1): 29-74.

Lambert, R., and D. Larcker. 1988. An analysis of the use of accounting and market measures of performance in executive compensation contracts. *Journal of Accounting Research* 25: *85-129*.

Jiraporn, P., Y. Kim and W. Davidson III. CEO compensation, shareholder rights and corporate governance: An empirical investigation. *Journal of Economics and Finance* 29 (2), 242-258.

Kang, S., P. Kumar and H. Lee. 2006. Agency and corporate investment: the role of executive compensation and corporate governance. *The Journal of Business* 79 (3), 1127-1147.

Khan, R., R. Dharwadkar and P. Brandes. 2005. Institutional ownership and CEO compensation: A longitudinal examination. *Journal of Business Research* 58 (8): 1078-1088.

Milbourn, T. 2003. CEO reputation and stock-based compensation. *Journal of Financial Economics* 68 (2), 233-262.

Matolcsy, Z. and A. Wright. 2006. Are we paying our CEOs too much? *JASSA* 4 (Summer): 27-31.

Matolcsy, Z. and A. Wright. 2007. Australian CEO compensation: The descriptive statistics. *Australian Accounting Review* 17(3): 47-59.

Murphy, K. 1999. Executive compensation in *Handbook of Labour Economics* Vol. 3 : Vol. 3B ed. O. Ashenfelter and D. Card. North Holland Publishing: 2485-2566.

Nwaeze, E., S. Yang and Q. Yin. 2006. Accounting information and CEO compensation: The role of cash flow from operations in the presence of earnings. *Contemporary Accounting Research* 23 (1), 227-265.

Pourciau, S. 1993. Earnings management and nonroutine executive changes. *Journal of Accounting and Economics* 16(1-2-3): 317-336.

Sloan, R. 1993. Accounting earnings and top executive compensation. *Journal of Accounting and Economics* 16(1-2-3):55-100.

Table 1
Sample selection procedure

Number of firms listed for 2006 in the *Aspect Huntley Annual Report Online* data base	1540
Less firms for which compensation data were not available tenure could not be measured	376
Less firms for which corporate governance data were not available	213
Less firms for which price to book and return on assets data were not available for three consecutive years (2003-2005)	234
Less CEO tenure data could not be calculated	161
Final sample of firms for analysis	556

Table 2
Descriptive statistics
Panel A: Continuous variables
N = 556

Variables	Mean	Median	Std. Dev.	1st Quartile	3rd Quartile
SALARY	417,129	266,064	447,379	167,756	449,746
TOTAL	909,225	387,821	1,417,603	235,256	813,281
EMPLOYEES	2,224	92	8,049	9	888
REVENUES	981,360	30,191	3,910,284	1,439	310,480
AVG_ROA	-14.35%	1.97%	42.12%	-21.49%	7.13%
STD_ROA	17.92%	4.87%	40.50%	1.42%	16.40%
AVG_P_B	2.91	1.81	4.41	1.12	3.09
STD_P_B	1.89	0.53	5.67	0.23	1.22
BOARD_SIZE	5.53	5.00	2.08	4.00	6.00
BOARD_INDEP	0.82	0.86	0.21	0.67	1.00
CEO_TENURE	5.85	4.00	6.23	1.00	8.00
CEO_EDUCATION	2.44	3.00	1.36	1.00	4.00

Panel B: Binary variables
N = 556

Variable	*Proportion*
CEO_REMU	15%
CHAIR	18%
FOUNDER_CEO	20%

Variable definitions:
SALARY = CEO's total annual cash salary. *TOTAL* = CEO's total annual compensation that includes cash salary, bonus, value of stock options granted and other cash benefits. *EMPLOYEES* = The number of employees in the firm. *REVENUES* = Total sales revenue. *AVG_ROA* = Three-year average (2004, 2005 and 2006) of return on total assets. Return on total assets = Profit before interest and tax / Average total assets. *STD_ROA* = Standard deviation of return on assets over three years (2004, 2005 and 2006). *AVG_P_B* = Three-year average (2004, 2005 and 2006) of price to book ratio. *STD_P_B* = Standard deviation of the price to book ratio. *BOARD_SIZE* = The number of members in the board of directors including the chair. *BOARD_INDEP* = The ratio of non-executive independent directors in the board to board size. *CEO_TENURE* = The number of years including 2006 a CEO has been in that position in the firm. If tenure is less than six months, the variable is assigned a value of zero and one otherwise. *CEO_EDUCATION* = CEO's formal education as outlined in the corporate governance education. This is an ordinal variable and coded as 1 for High Secondary or below level of education, 2 for Trade Certificate or Diploma, 3 for Bachelor's degree, 4 for Honours and Masters degrees and 5 for PhD or equivalents. *CEO_REMU* = A dummy variable which takes a value of 1 if the CEO is in the remuneration committee and 0 otherwise. *CHAIR* = A dummy variable that takes a value of 1 if the CEO is also the board chair. *FOUNDER_CEO* = A dummy variable that takes a value of 1 if the CEO has been in that position for more than 15 years.

Table 3
Pearson's Bivariate Correlation Matrix

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*
SALARY	0.73															
	0.00															
TOTAL	0.73	0.92														
	0.00	0.00														
EMPLOYEES	0.64	0.63	0.64													
	0.00	0.00	0.00													
REVENUES	0.59	0.54	0.60	0.78												
	0.00	0.00	0.00	0.00												
CEO_REMU	0.01	0.00	0.02	0.03	-0.01											
	0.83	0.96	0.62	0.42	0.90											
BOARD_SIZE	0.54	0.47	0.48	0.38	0.42	0.00										
	0.00	0.00	0.00	0.00	0.00	0.92										
BOARD_IND	0.15	0.09	0.11	0.07	0.08	0.00	0.05									
	0.00	0.03	0.01	0.08	0.04	0.91	0.21									
MEETINGS	0.08	0.07	0.08	0.02	0.03	0.05	0.11	0.11								
	0.06	0.07	0.05	0.66	0.54	0.25	0.01	0.01								
CEO_TENURE	0.07	0.07	0.03	0.03	-0.03	0.02	-0.05	-0.11	-0.11							
	0.11	0.10	0.46	0.53	0.43	0.62	0.24	0.01	0.01							
FOUNDER_CEO	0.04	0.06	0.02	0.01	-0.04	0.03	-0.02	-0.09	-0.05	0.83						
	0.37	0.15	0.69	0.77	0.32	0.45	0.64	0.03	0.25	0.00						
CHAIR	-0.14	-0.13	-0.12	-0.08	-0.10	0.06	-0.23	-0.02	-0.09	0.12	0.05					
	0.00	0.00	0.00	0.07	0.01	0.11	0.00	0.67	0.02	0.00	0.21					
CEO_Education	0.01	-0.01	-0.01	-0.04	-0.01	-0.01	-0.01	0.05	-0.01	-0.13	-0.07	-0.01				
	0.82	0.77	0.86	0.38	0.86	0.86	0.73	0.19	0.78	0.00	0.09	0.75				
AVG_P_B	-0.03	-0.03	-0.02	-0.02	-0.02	0.03	-0.06	0.09	-0.04	-0.01	0.00	0.05	0.00			
	0.46	0.47	0.62	0.70	0.70	0.41	0.11	0.03	0.37	0.80	0.94	0.26	0.92			
STD_P_B	-0.12	-0.10	-0.08	-0.07	-0.06	-0.03	-0.16	0.08	-0.02	-0.04	-0.02	0.18	-0.03	0.72		
	0.00	0.02	0.05	0.11	0.13	0.48	0.00	0.05	0.56	0.35	0.65	0.00	0.45	0.00		
STD_ROA	-0.21	-0.15	-0.14	-0.10	-0.09	-0.07	-0.19	0.01	-0.04	-0.09	-0.06	0.10	-0.03	0.14	0.28	
	0.00	0.00	0.00	0.02	0.02	0.07	0.00	0.82	0.29	0.03	0.15	0.02	0.48	0.00	0.00	
AVG_ROA	0.28	0.19	0.18	0.13	0.12	0.07	0.26	-0.01	0.05	0.14	0.11	-0.13	-0.03	-0.20	-0.37	-0.88
	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.75	0.21	0.00	0.01	0.00	0.43	0.00	0.00	0.00

Column legend:
1 =SALARY, 2 = TOTAL, 3 = EMPLOYEES, 4 = REVENUES, 5= CEO_REMU, 6 = BOARD_SIZE, 7 =BOARD_INDEP, 8 = MEETINGS
9 = CEO_TENURE, 10= FOUNDER_CEO, 11 = CHAIR, 12 = CEO_EDUCATION, 13= AVG_P_B, 14=STD_P_B,
15=STD_ROA, 16 = AVG_ROA

Coefficients of correlation are followed by two-tailed p-values.
Variable definitions:
SALARY = CEO's total annual cash salary. *TOTAL* = CEO's total annual compensation that includes cash salary, bonus, value of stock options granted and other cash benefits.
EMPLOYEES = The number of employees in the firm. *REVENUES* = Total sales revenue. *AVG_ROA* = Three-year average (2004, 2005 and 2006) of return on total assets. Return on total assets = Profit before interest and tax / Average total assets.
STD_ROA = Standard deviation of return on assets over three years (2004, 2005 and 2006). *AVG_P_B* = Three-year average (2004, 2005 and 2006) of price to book ratio.
STD_P_B = Standard deviation of the price to book ratio. *BOARD_SIZE* = The number of members in the board of directors including the chair. *BOARD_INDEP* = The ratio of non-executive independent directors in the board to board size. *CEO_TENURE* = The number of years including 2006 a CEO has been in that position in the firm. If tenure is less than six months, the variable is assigned a value of zero and one otherwise. *CEO_EDUCATION* = CEO's formal education as outlined in the corporate governance education. This is an ordinal variable and coded as 1 for High Secondary or below level of education, 2 for Trade Certificate or Diploma, 3 for Bachelor's degree, 4 for Honours and Masters degrees and 5 for PhD or equivalents. *CEO_REMU* = A dummy variable which takes a value of 1 if the CEO is in the remuneration committee and 0 otherwise. *CHAIR* = A dummy variable that takes a value of 1 if the CEO is also the board chair. *FOUNDER_CEO* = A dummy variable that takes a value of 1 if the CEO has been in that position for more than 15 years.

Table 4

Panel A: Test of CEO quality as a determinant of firm performance. CEO quality is proxied by *CEO_TENURE* and *CEO_EDUCATION*. Firm performance is measured by *AVG_ROA*.

	Expected sign	***AVG_ROA***
Intercept	?	
CEO_TENURE	+	0.865 (3.252) [0.001]
CEO_EDUCATION	+	-0.976 (-0.780) [0.436]
MKT_CAP($'000)	+	0.000 (2.215) [0.027]
AVG_P_B	+	1.264 (2.224) [0.027]
STD_P_B	-	-3.632 (-8.268) [0.000]
Adj. R^2		0.162
F-statistic (*p*-value)		24.236 (0.000)

Panel B: Test of CEO quality as a determinant of firm's variability of performance. Variability of performance is measured by *STD_ROA*. CEO quality is measured by *CEO_TENURE* and *CEO_EDUCATION*.

	Expected sign	***STD_ROA***
Intercept	?	23.664 (5.335) [0.000]
CEO_TENURE	-	-0.569 (-2.023) [0.044]
CEO_EDUCATION	-	-1.038 (-0.785) [0.433]
MKT_CAP($'000)	-	-0.000 (-1.675) [0.094]
AVG_P_B	-	-1.423 (-2.368) [0.018]
STD_P_B	+	3.029 (6.525) [0.000]
Adj. R^2		.091
F-statistic (*p*-value)		13.085 (0.000)

Table 4, *Panel C*: Test of whether desirable board characteristics are associated with high-quality CEO. CEO quality is measured by *CEO_TENURE*.

	Sign expected in a weak corporate governance environment	*CEO_TENURE*
Intercept	?	9.652 (7.248) [0.000]
BOARD_SIZE	+	-0.022 (-0.169) [0.865]
BOARD_INDEP	-	-3.019 (-2.439) [0.015]
BOARD_MEETINGS	-	-0.131 (-2.253) [0.025]
CHAIR	+	1.802 (2.682) [0.008]
Adjusted R^2		0.029
F-statistic (*p*-value)		5.491 (0.000)

In all three panels, the number of observations is 556.

Variable definitions:

SALARY = CEO's total annual cash salary. *TOTAL* = CEO's total annual compensation that includes cash salary, bonus, value of stock options granted and other cash benefits. *EMPLOYEES* = The number of employees in the firm. *REVENUES* = Total sales revenue. *AVG_ROA* = Three-year average (2004, 2005 and 2006) of return on total assets. Return on total assets = Profit before interest and tax / Average total assets. *STD_ROA* = Standard deviation of return on assets over three years (2004, 2005 and 2006). *AVG_P_B* = Three-year average (2004, 2005 and 2006) of price to book ratio. *STD_P_B* = Standard deviation of the price to book ratio. *BOARD_SIZE* = The number of members in the board of directors including the chair. *BOARD_INDEP* = The ratio of non-executive independent directors in the board to board size. *CEO_TENURE* = The number of years including 2006 a CEO has been in that position in the firm. If tenure is less than six months, the variable is assigned a value of zero and one otherwise. *CEO_EDUCATION* = CEO's formal education as outlined in the corporate governance education. This is an ordinal variable and coded as 1 for High Secondary or below level of education, 2 for Trade Certificate or Diploma, 3 for Bachelor's degree, 4 for Honours and Masters degrees and 5 for PhD or equivalents. *CEO_REMU* = A dummy variable which takes a value of 1 if the CEO is in the remuneration committee and 0 otherwise. *CHAIR* = A dummy variable that takes a value of 1 if the CEO is also the board chair. *FOUNDER_CEO* = A dummy variable that takes a value of 1 if the CEO has been in that position for more than 15 years.

Table 5

OLS estimates of equation (3) using *SALARY* as the proxy for CEO compensation. Estimates of coefficients are followed by *t*-statistics and two-tailed *p*-values.

	Expected sign	***SALARY***	***SALARY***	***SALARY***
***N* =**		556	556	556
Intercept	**?**	-243,955 (-3.015) [0.003]	-273,363 (-3.398) [0.001]	-238,519 (-2.955) [0.003]
CEO_TENURE	+	8,540 (2.293) [0.022]	9,296 (2.490) [0.013]	8,819 (2.372) [0.018]
CEO_EDUCATION	+	17,894 (1.848) [0.065]	16,983 (1.750) [0.081]	18,492 (1.915) [0.056]
EMPLOYEES	+	22 (8.450) [0.000]	22 (8.477) [0.000]	22 (8.462) [0.000]
REVENUES	+	0.016 (2.914) [0.004]	0.015 (2.824) [0.005]	0.016 (2.948) [0.003]
AVG_ROA	+	1,201 (1.817) [0.070]		1,336 (2.104) [0.036]
STD_ROA	-	300 (0.470) [0.638]		356 (0.566) [0.572]
AVG_P_B	+	4,824 (1.125) [0.261]	5,869 (1.368) [0.172]	
STD_P_B	-	-4,226 (-1.186) [0.236]	-6,794 (-1.971) [0.049]	
BOARD_SIZE	**?**	66,362 (8.991) [0.000]	70,551 (9.726) [0.000]	66,571 (9.034) [0.000]
BOARD_INDEP	-	212,224 (3.383) [0.001]	214,143 (3.399) [0.001]	211,637 (3.397) [0.001]
CHAIR	+	-11,585 (-0.325) [0.746]	-19,920 (-0.557) [0.578]	-19,005 (-0.542) [0.588]
CEO_REMU	+	5,468 (0.149) [0.881]	10,354 (0.282) [0.778]	7,824 (0.214) [0.831]
FOUNDER_CEO	-	-89,763 (-1.582) [0.114]	-89,241 (-1.565) [0.118]	-92,931 (-1.640) [0.102]
Significant Industry Dummy:				
Health Care	**?**		-99,619 (-1.849) [0.065]	
Consumer Staples	**?**	-137,667 (-2.043) [0.042]	-138,723 (-2.051) [0.041]	-142,155 (-2.114) [0.035]
Consumer Discretionary	**?**	112,805 (1.875) [0.061]	116,041 (1.921) [0.055]	111,722 (1.858) [0.064]
Adj. R^2		0.553	0.547	0.553
***F*-statistic (*p*-value)**		32.280 (0.000)	34.783 (0.000)	35.459 (0.000)

iable definitions:

SALARY = CEO's total annual cash salary. *TOTAL* = CEO's total annual compensation at includes cash salary, bonus, value of stock options granted and other cash benefits. *EMPLOYEES* = The number of employees in the firm. *REVENUES* = Total sales revenue. *AVG_ROA* = Three-year average (2004, 2005 and 2006) of return on total assets. Return on total assets = Profit before interest and tax / Average total assets. *STD_ROA* = Standard deviation of return on assets over three years (2004, 2005 and 2006). *AVG_P_B* = Three-year average (2004, 2005 and 2006) of price to book ratio. *STD_P_B* = Standard deviation of the price to book ratio. *BOARD_SIZE* = The numbe the chair. *BOARD_INDEP* = The ratio of non-executive independent directors in the boa of years including 2006 a CEO has been in that position in the firm. If tenure is less tha zero and one otherwise. *CEO_EDUCATION* = CEO's formal education as outlined in ordinal variable and coded as 1 for High Secondary or below level of education, 2 for degree, 4 for Honours and Masters degrees and 5 for PhD or equivalents. *CEO_REMU* = the CEO is in the remuneration committee and 0 otherwise. *CHAIR* = A dummy variab board chair. *FOUNDER_CEO* = A dummy variable that takes a value of 1 if the CEO has

Table 6

OLS estimates of equation (3) using CEO's total compensation as the dependent variable. Estimates of coefficients are followed by *t*-statistics and two-tailed *p*-values.

	Expected sign	***TOTAL***	***TOTAL***	***TOTAL***
N =		556	556	556
Intercept	**?**	-836,860 (-3.380) [0.001]	-836,973 (-3.392) [0.001]	-878,054 (-3.577) [0.000]
CEO_TENURE	+	26,907 (2.327) [0.020]	26,630 (2.311) [0.021]	28,166 (2.443) [0.015]
CEO_EDUCATION	+	55,821 (1.863) [0.063]	54,468 (1.826) [0.068]	54,298 (1.819) [0.069]
EMPLOYEES	+	52 (6.386) [0.000]	52 (6.389) [0.000]	52 (6.424) [0.000]
REVENUES	+	0.115 (6.708) [0.000]	0.115 (6.712) [0.000]	0.114 (6.666) [0.000]
AVG_ROA	+	2,556 (1.262) [0.207]	2,220 (1.139) [0.255]	
STD_ROA	-	1,200 (0.649) [0.517]	1,070 (0.583) [0.560]	
AVG_P_B	+	-1,841 (-0.138) [0.890]		382 (0.029) [0.977]
STD_P_B	-	5,779 (0.520) [0.603]		278 (0.026) [0.979]
BOARD_SIZE	**?**	171,894 (7.559) [0.000]	171,371 (7.552) [0.000]	178,246 (7.964) [0.000]
BOARD_INDEP	-	489,307 (2.564) [0.011]	498,295 (2.627) [0.009]	494,453 (2.590) [0.010]
CHAIR	+	-54,631 (-0.508) [0.611]	-45,229 (-0.427) [0.670]	-62,057 (0.578) [0.564]
CEO_REMU	+	90,758 (0.803) [0.422]	89,136 (0.792) [0.429]	98,560 (0.873) [0.383]
FOUNDER_CEO	-	-419,655 (-2.391) [0.017]	-415,084 (-2.371) [0.018]	-419,254 (-2.390) [0.017]
Significant Industry Dummy: Consumer Staples	**?**	-452,227 (-2.142) [0.033]	-446,263 (-2.120) [0.034]	-455,856 (-2.160) [0.031]
Adj. R^2		0.548	0.549	0.547
***F*-statistic (*p*-value)**		32.744 (0.000)	36.104 (0.000)	35.866 (0.000)

Variable definitions:

SALARY = CEO's total annual cash salary. *TOTAL* = CEO's total annual compensation that includes cash salary, bonus, value of stock options granted and other cash benefits. *EMPLOYEES* = The number of employees in the firm. *REVENUES* = Total sales revenue. *AVG_ROA* = Three-year average (2004, 2005 and 2006) of return on total assets. Return on total assets = Profit before interest and tax / Average total assets. *STD_ROA* = Standard deviation of return on assets over three years (2004, 2005 and 2006). *AVG_P_B* = Three-year average (2004, 2005 and 2006) of price to book ratio. *STD_P_B* = Standard deviation of the price to book ratio. *BOARD_SIZE* = The number of members in the board of directors including the chair. *BOARD_INDEP* = The ratio of non-executive independent directors in the board to board size. *CEO_TENURE* = The number of years including 2006 a CEO has been in that position in the firm. If tenure is less than six months, the variable is assigned a value of zero and one otherwise. *CEO_EDUCATION* = CEO's formal education as outlined in the corporate governance education. This is an ordinal variable and coded as 1 for High Secondary or below level of education, 2 for Trade Certificate or Diploma, 3 for Bachelor's degree, 4 for Honours and Masters degrees and 5 for PhD or equivalents. *CEO_REMU* = A dummy variable which takes a value of 1 if the CEO is in the remuneration committee and 0 otherwise. *CHAIR* = A dummy variable that takes a value of 1 if the CEO is also the board chair. *FOUNDER_CEO* = A dummy variable that takes a value of 1 if the CEO has been in that position for more than 15 years. All variable definitions are as in Table 2.