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Intellectual Capital Performance and Cash-Based Incentive Payments: Impact of Remuneration Committee and Corporate Governance Features

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INTELLECTUAL CAPITAL PERFORMANCE AND CASH-BASED INCENTIVE PAYMENTS FOR EXECUTIVE DIRECTORS: IMPACT OF REMUNERATION COMMITTEE AND CORPORATE GOVERNANCE FEATURES

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Abstract

We use a sample of 964 executive directors representing 354 Singapore publicly listed firms to examine linkage between firm performance and cash-based bonus payments. As a pooled OLS regression model may hide different models that characterize subsets of observations we use latent class analysis to further examine the data and to identify more specifically the influence of corporate governance features. Our latent class analysis results indicate that remuneration committees with members having their interests better aligned with shareholders (such as presence of a significant owner) appear more likely to consider the incremental value of tying executive director compensation to intellectual capital performance. Remuneration committees with a lower risk of influence from managerial power were also found to be more likely to support a compensation linkage for executive directors to intellectual capital performance. The influence of the remuneration committee features is evident for both entrepreneurial and traditional firms. Overall, our findings are consistent with both the optimal-contract pricing and managerial power views of executive compensation setting.

Keywords: executive compensation, corporate governance, remuneration committee

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1. Introduction

In the wake of the corporate scandals that plague developed economies at the turn of the millennium there is renewed concern and debate on how best to align the interests of corporate executives with shareholders. During the 1980s and 1990s there was a steady growth in the use of stock options. This technique was particular evident amongst "new economy" and entrepreneurial firms. The preceding bursting of the "Internet Bubble" has renewed calls a scaling back on the use of options in favor of more traditional cash-based incentives. With a refreshed emphasis on cash-based incentives and calls for the development of alternative compensation mechanisms, it is an opportune time to determine if measures of the pivotal driver of value creation – namely intellectual capital - in the new economic age can provide guidance. This is particular true for entrepreneurial firms that are primarily not based on fixed assets but intangible elements. Cash-based incentives play an important role in the compensation packages of executive in Singapore; thus, this domestic setting provides an opportune environment for analyzing the influence of remuneration committee composition.

The purpose our study is to examine the association between intellectual capital performance and the cash-based bonus payments to executive directors. We further extend the analysis to determine the potential mitigating or contributing influence of corporate governance features. Our analysis is based on a sample of 964 executive directors representing 354 Singapore publicly listed firms. Data on executive director remuneration and intellectual capital performance is based information collected for the 2003 fiscal year. Using a pooled sample we find that intellectual capital performance is not significantly associated with the level of cash-based bonuses paid to Singapore executive directors. Using latent class mixture models to identify clusters with a homogenous regression structure reveals, however, that 21.7% (11.2%) of the sample have a positive (negative)

association between intellectual capital performance and the level of cash-based bonus payments. The latent class analysis indicates that the positive (negative) association is evident with a corporate governance structure in effect is strong (poor).

Traditionally, firms have relied on accounting metrics – such as earnings, return on asset or investments – when rewarding corporate management. Some recent evidence, however, suggests a growing number of firms are increasingly turning to non-financial performance metrics when negotiating compensation contracts with corporate management (e.g., Ittner et al., 1997; Banker et al., 2000). The growing disparity between a firm's market and book values is likely to be a significant contributing factor for growing emphasis on use of non-financial performance measures in rewarding corporate management. There is a growing discontent that in the new economic age in which intellectual rather than physical capital is the pivotal force behind value creation the traditional accounting model can no longer accurately picture firm performance. Cast in this light it has been suggested non-financial performance measures are becoming increasingly important as predictors of future firm performance providing incremental information above that of traditional accounting based metrics (e.g., Kaplan and Norton, 1996; Lipe and Salterio, 2000; Libby et al., 2004).

During the 1990s stock prices were increasingly used in executive compensation contracts (Murphy, 1999). Growth in stock price use in compensation arrangements stemmed from the perception they capture both current and future actions of executives. The stock price is viewed as a statistic that sufficiently covers both accounting and non-financial issues. Agency theory advocates, however, argue that whilst accounting and non-accounting metrics may be impounded in the stock price these measures will complement stock prices when compensating executives (e.g., Feltham and Xie, 1994). Some previous research finds accounting numbers provide incremental information to market-based measures in executive compensation contracts (e.g., Lambert and Larcker, 1987; Sloan, 1993). Meanwhile, few studies examine the economic value of non-performance metrics in executive compensation packages (e.g., Ittner et al., 1997; Davila and Ventratachalam, 2001).

Our paper diverges from the prior extant financial/non-financial – performance literature by defining firm performance in terms of intellectual capital contributions. Whilst previous studies looking at the non-financial performance – executive compensation linkage may have used a metric that is intellectual capital in nature these metrics generally only capture a single element of the intellectual capital jigsaw. We adopt a more holistic metric of intellectual capital in an effort to better determine if this pivotal driving force behind present and future wealth creation is currently being reflected cash-based bonus payments to executive directors. We focus on cash-based bonus payments rather than total compensation as we consider the incentive components of an executive director's remuneration will best reflect their efforts in truly using all assets at their disposal in an effective and efficient manner (*endnote 1*). Our study focuses on intellectual capital because whilst practitioners and scholars increasing recognize its significance no study to our knowledge as attended to analyze directly the performance of this class of asset with executive remuneration. Our study contributes to the intellectual capital literature by pursuing an alternative avenue then previous taken within this field. In general intellectual capital research has concentrated on two major streams of investigation. There have been recent calls for more expansive empirical research into alternative areas of interest so as to broaden understanding of the intellectual capital discipline (e.g., Bukh et al., 2005). Our study is motivated, in part, by these calls. Finally, while other firm performance – executive compensation studies have considered the influence of corporate governance features we supplement our analysis by using latent analysis. Prior related research has relied primarily on OLS regressions with analysis built on the presumption that one structural model is appropriate for the entire sample. However, if alternative models characterize subsets of observations the pooled estimation results can be highly misleading. To supplement our pooled analysis we classify the sample into homogenous clusters to determine distinguishing corporate governance features affecting the intellectual capital performance – executive director compensation association.

The paper proceeds in the following manner. The next section develops our hypothesis and discusses the related research. Section 3 describes the research method used to test our hypothesis including the sample and variable proxies. Section 4 presents our primary pooled sample results followed in the next section by latent analysis findings. In Section 6 we discuss our conclusions, and the limitations of our study and ideas for future research.

Section 2. Hypotheses Development and Related Research

Intellectual Capital Performance and Executive Director Remuneration

Interest in executive compensation amongst financial economists has a lengthy and pronounced history. Indeed, the increase in academic enquiries into the subject of CEO compensation throughout the 1990s appeared to virtually outpace the dramatic

increases in CEO pay during this time (Murphy, 1999). Apart from the growth in the magnitude of executive compensation worldwide, there has been an economically significant evolution toward a greater proportion of pay being awarded on a performance basis (e.g., Byrd et al., 1998; Harvey and Shrieves, 2000) (*endnote 2*). The recent spate of corporate scandal merely serves to renew international interest and debate in the magnitude and type of executive remuneration (Ryan and Wiggins, 2004). Questions have recently been raised by popular literature commentators, corporate governance reformists, policymakers and some academics about the validity of rewarding executive directors primarily in the form of equity-based incentives based on a firm's stock performance. For example, it is suggested a concentration on stock prices may serve as an incentive for corporate management to develop strategies and policies that may boost stock prices but are detrimental to the other key elements of the firm's operations.

Stock prices can be perceived as an aggregate measure of the firm's future value after impounding all existing public information. Thus, performance based on stock prices can be viewed as an aggregate and sufficient statistic for more specific financial and non-financial metrics. Several theoretical arguments, however, have been forwarded to explain why stock price based measure for rewarding executives should be supplemented with other performance measures. The first stems from the congruency of stock prices (Datar et al., 2001). Feltham and Xie (1994) show that whilst stock prices are an aggregate of all existing public information they may not do so in a way that is not congruent with the weights required on the various signals from a contracting perspective. Put otherwise, weights on different signals that are implicit in determining the stock price is established with firm valuation as the objective rather that for assessing the performance of executives. Thus, "price is *not* necessarily, nor even likely to be, a perfectly congruent performance measure" (Feltham and Xie, 1994, p.447). If stock prices are not congruent with intended actions and decisions of executive then additional performance measures should be included in executives contracting process.

If one relaxes the view stock prices are efficient aggregators of publicly available information it is argued various other metrics – such as intellectual capital performance – should be used to supplement stock prices when rewarding executives so as to better determine an executives trading incentives (e.g., Bushman and Indjejikian, 1993; Kim and Suh, 1993; Feltham and Wu, 1999). Specifically, relaxing the constraint that a stock price is an effective public information aggregator will better enable the executive to make trade-offs during the contracting negotiating process by allowing alternative performance measures to be introduced during contracting (Bainman and Verrechia, 1995).

The underlying properties of intellectual capital are generally described as being intangible in nature and difficult to formally measure. It is reasonable, therefore, to suggest measures of intellectual capital are more likely to be affiliated with non-financial measures than financial accounting and stock price measures. Few studies have formally investigated the association between non-financial performance measures and remuneration contracts. Ittner et al., (1997) provide initial ground breaking research using data from proxy statements on CEO bonus contracts to provide evidence on the determinants of relative weights on non-financial performance measures. They (Ittner et al., 1997) found companies following an innovation-oriented strategy, or when stock price based performance measures were less noisy, put more weight on non-financial measures in determining CEO bonuses. A key limitation of the study by Ittner et al., (1997), however, is disclosure of compensation contracts in proxy statements (documentation form used) are quite limited meaning firms not disclosing specific weights to financial and non-financial performance measures were excluded. Consequently, Ittner et al., (1997) may have excluded a number of firms from their sample that actual use non-financial performance measures but did not disclose the fact explicitly. Davila and Venkatachalam (2001) sought to overcome this limitation by examining the association between a specific non-financial performance measure (i.e., web traffic) deemed important to firms in Internet industry and CEO total compensation and the total change in CEO wealth. They (Davila and Venkatachalam, 2001) report a positive association suggesting non-financial performance measures provide incremental information about the actions of CEOs above that provided by financial (accounting and stock) measures. Davila and Venkatachalam (2001) also show the association between non-financial performance and CEO compensation is influenced by a CEO's power. By focusing on a single industry sector and non-performance measure Davila and Venkatachalam (2001) acknowledge there is some question about the ability to extend their findings more broadly.

Whilst the extant literature on the association between non-financial performance measures and executive compensation is rather thin, and empirical findings potentially questionable these studies do provide initial guidance on the possible association between intellectual capital performance and executive remuneration. Specifically, given the focus of our study, we propose intellectual capital performance metrics a likely to have a possible incremental value above that of traditional accounting and stock based performance measures. We examine this proposition by seeking to

determine whether cash-based bonus payments to executive director vary just as if the executive director is being evaluated based on intellectual capital performance measures (*endnote 3*).

3. Research Method

We infer the use and economic importance of intellectual capital related performance metric in compensation contracts by examining the cross-sectional association between the ratio of cash-based bonus payments to total non-contingent remuneration, and a composite measure of intellectual capital performance.

Proxy Measure for Dependent Variable

Prior to the CGC (2001) coming into effect on 1 January 2003 disclosure requirements on the compensation of executive directors and top management was limited. Specifically, firms were only required to disclose the remuneration of directors in three $250,000 bands (*endnote 4*). Whilst compensation disclosures have increased since the introduction of the CGC the nature and extent still lags behind that in major developed economies like the United States, United Kingdom and Australia. Annual report compensation disclosure requirement do not provide standardized categorization of compensation components. In their 2003 annual reports Singapore firms typically categorized compensation components as: (1) salary; (2) director's fee; (3) bonuses; (4) allowances/fringe benefits; and (5) others. For the majority of firms (more than 90% listed on SGX) disclosure of compensation components was expressed in percentages rather than actual dollar amounts. Disclosure of stock option information was usually not included as a direct aspect of a director's compensation being reported in alternative sections. Also, during 2003 few companies issued stock options suggesting equity-incentive compensation is not as popular relative to United States firms. As it is our intent to focus on incentive payment we limit our analysis to cash-based incentives, specifically the amount of bonus compensation paid (*endnote 5*). With this in mind our proxy (hereafter *Prop_Incentive_Pay*) is defined as the ratio of cash-based bonus payments made to executive director *j* as disclosed by Singapore firm *k* in their 2003 annual reports to total non-contingent salary payments (*endnote 6*).

Proxy Measure for Intellectual Capital Performance

One of the two major research streams within the intellectual capital discipline has concentrated on developing measures of intellectual capital performance. Whilst a number of metrics have been proposed there as yet a lack of consensus on any one specific approach (see Bontis, 2001, 2003 for a comprehensive review of the major intellectual capital performance measures developed). Intellectual capital researchers have identified a number of key indicators that can be used in the construction of a comprehensive measure of intellectual capital performance. Ideally an examination of the explicit use of intellectual capital indicators in compensation contracts would best meet the objectives of our study. Data unavailability on which indicators firms precisely use, and the weights applied to these indicators restricts our ability to conduct an explicit analysis. Our selection of an intellectual capital metric is also restricted by a general lack of disclosure that restricts our ability to focus on specific indicators. As we wish to capture remuneration and intellectual capital details from as many firms across the Singapore capital market as possible we decided to use a composite intellectual capital metric that is based on information routinely reported in annual reports. Specifically, for this analysis we use the *intellectual capital efficiency coefficient* (*ICE*) based on the *Value Added Intellectual Coefficient*™ (*VAIC*™) methodology developed by Ante Pulic (1998). *VAIC*™ is an analytical procedure designed to enable management, shareholders and other relevant stakeholders to effectively monitor and evaluate the *efficiency of VA* by a firm's total resources and each major resource component. Formally, *VAIC*™ is a composite sum of three indicators formally termed: (1) Capital Employed Efficiency (CEE) – indicator of *VA* efficiency of capital employed; (2) Human Capital Efficienca (HCE) – indicator of *VA* efficiency of human capital; and (3) *Structural Capital Efficiency* (*SCE)* – indicator of *VA* efficiency of structural capital. Equation (1) formalizes the *VAIC*™ relationship algebraically:

$VAIC™_i = CEE_i + HCE_i + SCE_i$ *[Equation (1)]*

Where:

$VAIC™_i$ = VA intellectual coefficient for company *i*;

CEE_i = VA capital employed coefficient for company *i*;

HCE_i = human capital coefficient for company *i*; and

SCE_i = structural capital VA for company *i*.

Pulic (1998) states the higher the *VAIC*™ coefficient, the better the *efficiency of VA* by a firm's total resources. The first step in calculating CEE, HCE and *SCE* is to determine a firm's total *VA*. This calculation is defined by the following algebraic equation:

$VA_i = I_i + DP_i + D_i + T_i + M_i + R_i$ (*endnote 7*) [Equation (2)]

Where: *VA* for firm *i* computed as the sum of interest expenses (I_i); depreciation expenses (DP_i); dividends (D_i); corporate taxes (T_i);

equity of minority shareholders in net income of subsidiaries (M_i); profits retained for the year (R_i) and Salaries and Wages (HC).

Pulic (1998) stated CEE is the ratio of total *VA* divided by the total amount of capital employed (*CE*) where capital employed is defined as the book value of a firm's net assets. Equation (4) presents the CEE relationship algebraically:

$CEE_i = VA_i/CE_i$ *[Equation (3)]*

Where: CEE_i = capital employed efficiency coefficient for company *i*;
VA_i = VA for firm *i* (see formal definition above); and
CA_i = book value of the net assets for firm *i*.

Consistent with views of other leading IC authorities (e.g., Edvinsson, 1997; Sveiby, 2001), Pulic (1998) argues total salary and wage costs are an indicator of a firm's human capital (*HC*). HCE, therefore, is calculated as the ratio of total *VA* divided by the total salary and wages spent by the firm on it employees. Equation (4) shows this relationship algebraically:

$HCE_i = VA_i/HC_i$ *[Equation (4)]*

Where: HCE_i = human capital efficiency coefficient for company *i*;
VA_i = VA for firm *i* (see formal definition above); and
HC_i = total investment salary and wage for firm *i*.

In order to calculate *SCE*, it is first necessary to determine the value of a firm's structural capital (*SC*). Pulic (1998) proposes a firm's total *VA* less its human capital is an appropriate proxy of a firm's *SC*. That is:

$SC_i = VA_i - HC_i$ *[Equation (5)]*

Where:
SC_i = Structural capital for company *i*;
VA_i = VA for firm *i* (see formal definition above); and
HC_i = total salary and wage costs for firm *i*.

Based on prior empirical research findings, Pulic (1998) argues there is a proportionate inverse relationship between *HC* and *SC* in the value creation process attributable to the entire *IC* base (*endnote 8*). Consequently, Pulic (1998) argues the formula for calculating *SCE* differed to that for CEE and HCE respectively. Specifically, Pulic (1998) stated *SCE* is the ratio of a firm's *SC* divided by the total *VA*. This relationship is shown in Equation (6):

$SCE_i = SC_i / VA_i$ *[Equation (6)]*

Where:
SCE_i = structural capital efficiency coefficient for company *i*;
SC_i = Structural capital for company *i*; and
VA_i = VA for firm *i* (see formal definition above).

ICE is the sum of human capital efficiency and structural capital efficiency coefficients. Apart from points raised above, several other reasons justify the selection of *ICE* as the measure of intellectual capital. First, *ICE* provides a standardized and consistent basis of measure. This better enables us to conduct of an analysis of a large sample of firms across various industrial sectors. Second, all data used in the calculation of *ICE* is based on audited information. Thus, calculations can be considered objective and verifiable. Other intellectual capital metrics have been criticized for allowing possible subjectivity into the determination of underlying indicators using information that cannot be readily verified. Third, *ICE* is a straightforward technique that enhances cognitive understanding and enables ease of calculation by various internal and external stakeholders. Alternative intellectual capital metrics, whilst providing valuable insights are limited as they can only be calculated by internal parties, or rely upon sophisticated models, analysis and principals. Finally, methodology underlying *ICE* has been the subject of prior empirical research and been applied previously by firms (e.g., Williams, 2001; Ho and Williams, 2003).

Corporate Governance Measures

As noted earlier the primary focus of our study is to analyze the cash-based bonus – intellectual capital performance linkage. Prior executive compensation literature, however, suggests that whilst incentive based remunerations are likely to assist in aligning the interest of corporate management with those of shareholders, corporate governance features will likely have a bearing on the incorporation of such incentives into remuneration packages for executives. Further, corporate governance features may also influence corporate performance. Mehran (1995), for example, finds boards of directors with a higher proportion of inside directors were less likely to link executive remuneration with incentive measures, and this led to lower firm performance. Meanwhile, Core et al., (1999) show that firms with a weak corporate governance structure were associated with higher CEO compensation and low firm performance. With these points in mind our analysis is extended to determine how corporate governance features may influence the association between cash-based bonus payments and intellectual capital performance.

Prior research has generally concentrated on the influence of board of director features on executive compensation when addressing corporate governance concerns. Increasingly the responsibility for reviewing, developing and recommending remuneration arrangements for executives is being delegated to remuneration committees. Indeed, in Singapore all publicly listed firms are now required to establish a remuneration committee to undertake

remuneration responsibilities. Consequently, we focus corporate governance features pertaining to the remuneration committee rather than the board of directors specifically. The extant literature has typically examined compensation decisions from the perspective a board of directors/remuneration committee wishes to establish an optimal contract to mitigate agency conflicts (Ryan and Wiggins, 2004). A growing body of literature, however, suggests the compensation process will also depend upon the influence of managerial power over the board of directors/remuneration committee (e.g., Bebchuk et al., 2002; Hermalin and Weisbach, 1991). It is not the purpose of this study to rectify differences between the optimal contract pricing and managerial power models. Rather, following Conyon and He (2004) we use a joint framework (*endnote 9*) to select variables representative of each model; specifically, three for the optimal contract pricing model and four for the managerial power model. Each respective remuneration committee feature and the relevant proxy is described as follows. We use a dichotomous scale to measure the presence of a significant shareholder on the remuneration committee (hereafter *SignOwner*). Specifically, firms with a remuneration committee member owning five percent or more common outstanding shares are scored one, otherwise zero. A dichotomous scale is also used to measure 'subcommittee' composition (hereafter *AllSame*). That is, firms with the membership of the audit, remuneration and nomination committees being the same individuals being scored a one, otherwise zero. The influence of a member having an accounting or legal education and work background on the decision making process of the remuneration committee is captured by the proxy *RCAccLegal*. This proxy is the proportion of remuneration committee of members with an accounting or legal education and work background. The conscientiousness of the remuneration committee (hereafter *RCDiligence*) is measured as the total number of meetings held by the subcommittee during firm *i*'s 2003 fiscal year. *RC_Independence* is measured as the proportion of inside directors (defined as executive directors, non-executive directors originally employed by firm *i* and founding members of firm *i*) to total remuneration committee membership. This proxy is designed to capture the possible influence on the level of cash-based incentive payment recommended by the remuneration committee of having executive directors directly involved in the decision-making process. The influence of the presence of senior executive directors (defined as executive chairman, chief executive officers or managing directors) from other firms sitting on the remuneration committee of firm *i* (hereafter *Snr_Exe_Presence*) is measured as the proportion of the remuneration committee comprised of senior executive directors from other firms. Finally, the number of individuals sitting on the remuneration committee of firm *i* is used to proxy for the possible influence of committee size. This proxy is terms *RCSize*.

Basic Econometric Model: Pooled Cross-Section OLS Regression Analysis Model

Consistent with the majority of prior literature we use a pooled-sample cross-sectional ordinary least square regression model to estimate the association between intellectual capital performance and cash-based bonus payments to Singapore executive directors. The basic model is defined as follows:

$$Prop\_Incentive\_Pay_i = a_i + \lambda_{i1}ICE_i + \alpha_{i1}Tenure_i + \alpha_{i2}Founder_i + \alpha_{i3}Family_i + \alpha_{i4}BoD\_Size_i + \alpha_{i5}BoD\_Independence_i + \alpha_{i6}Duality_i + \alpha_{i7}\%\_Exe\_Dir\_Own_i + \alpha_{i8}GLC_i + \alpha_{i9}OwnCon\%_i + \alpha_{i10}Big\text{-}4_i + \alpha_{i11}Ln(Aud\_Tenure)_i + \alpha_{i12}AbsDAC_i + \alpha_{i13}Ln(TotalAssets)_i + \alpha_{i14}Ln(Age)_i + \alpha_{i15}ROI_i + \alpha_{i16}Losses_i + \alpha_{i17}Leverage_i + \alpha_{i18}MVTotalAssets_i + \alpha_{i19}Ln(No.\ Employees)_i + \alpha_{i20}IndMan_i + \beta_{i1}SignOwner_i + \beta_{i2}AllSame_i + \beta_{i3}RCAccLegal_i + \beta_{i4}RCDiligence_i + \beta_{i5}RC\_Independence_i + \beta_{i6}Snr\_Exe\_Presence_i + \beta_{i7}RCSize_i + \varepsilon_i$$ [Equation (7)]

Apart from the dependent, independent and corporate governance features already described, we also include six groups of control variables in our regression analysis. The first group comprises three executive director features: (1) tenure of the executive director (*Tenure*); (2) designation of the executive director as a founder of the firm (*Founder*); and (3) immediate family member of founding family (*Family*). Inclusion of these variables are consistent with prior research (e.g., Core and Guay, 1999; Finkelstein and Hambrick, 1989; Conyon and He, 2004). Our second set of control variables focus on the possible compounding influence of board of director features. Factors covered are the size of the board (*BoD_Size*), independence level (*BoD_ Independence*), percentage of common outstanding shares owned by inside directors (*%_Exe_Owners*) and combined roles of chairperson and chief executive director (*endnote 10*) (*Duality*) (e.g., Beasley and Salterio, 2001; Gul et al., 2003; Conyon and Peck, 1998). Our third batch of control variables addresses specific features of the Singapore capital market. Specifically, the government is a major investor in the Singapore capital market. We use an indicator variable (hereafter *GLC*) where firm *i* is scored one if a government-linked organization (*endnote 11*), otherwise zero. As ownership concentration is considerably high amongst Singapore publicly traded firms (*endnote 12*) we control for this point using the proportion of common outstanding shares

held by the top 20 shareholders. As this topic is interlinked with corporate governance concerns we include several variables to control for corporate governance features. These are: (1) type of auditor (*Big-4*); (2) tenure of auditor (*Ln(Aud-Tenure)*); and (3) absolute magnitude of discretionary accruals (*AbsDAC*). The fifth group of control variables reflects a firm's economic characteristics. Factors included in this group are firm size (*Ln(TotalAssets)*), age of the firm (*Ln(Age)*), financial position (*Leverage*) and growth opportunities (*MVTotalAssets*). We also include an indicator variable (*IndMan*) to control for industry type. Finally, consistent with the extant literature we include three financial performance measures: (1) stock return (*StockRet*); (2) accounting return on assets (*ROA*); and (3) financial losses (*Losses*). *StockRet* is defined as one plus the holding period return of the stock for the 2003 fiscal period. *ROA* is measured as the income before extraordinary items scaled by total assets as reported in the 2003 annual report of each firm. Finally, *Losses* is a dichotomous variable where a firm is scored one if it recorded a financial loss during the 2001 – 2003 period; otherwise the firm is scored zero. Table 1 summarized formally the dependent, independent, corporate governance and control variables.

[Insert Table 1 About Here]

Alternative Econometric Approach: Latent Analysis

As noted earlier the most common econometric approach adopting in investigations of the association between pay incentives and firm performance is the use of a single structural model to encompass the entire sample. Larcker and Richardson (2004, p.638) argue, however, that "if different models characterize subsets of observations, the pooled estimation results can be highly misleading." Prior research has sought to overcome the limitations of a single (pooled) regression model by extending them to include interaction terms for subsets of interest. Whilst interaction terms may provide useful insights into the conditional association between intellectual capital performance and cash-based performance payments, such an approach has a number of inherent limitations. For example, a number of corporate governance variables of interest exist; hence, the any interaction analysis will require the development of a large number of interactions in the regression model. The resulting interactions will virtually produce with a high degree of certainty high levels of mutlicollinearity making the interpretation of statistical significant for the coefficients highly problematic (Yi, 1989; Larcker and Richardson, 2004).

Latent class mixture models do not impose the same structure limitations inherent in pooled regression models with interaction terms. Rather, these models explicitly allow for the possibility that there are alternative models linking executive compensation payments and firm performance (including intellectual capital performance). Larcker and Richardson (2004) note that whilst latent analysis has a different orientation from pooled regression models with interactions, interaction structures are merely special cases of latent class mixture models. With latent class analysis the sample is classified into homogeneous clusters comprising observations that appear to follow similar regression model paths. Once such clusters are identified it is then possible to determine what distinguishing features (such as corporate governance characteristics) are associated with the observations in each respective cluster. Given the prior mixed results surrounding the precise relationship between executive pay incentives and firm performance, a more general approach (i.e., latent class analysis as opposed to pooled regression analysis with interactions) is an appropriate choice when further analyzing the impact of corporate governance features on cash-based payment – intellectual capital performance linkage. As the sole focus of study is not a critique or development of latent class analysis we do not provide an in-depth discussion on the econometrics underlying this statistical technique. For a full description refer to DeSarbo and Cron (1988), Wedel and DeSarbo (1995) and Larcker and Richardson (2004). Suffice to say, however, clusters formed for our analysis is based on *Equation 8* defined as follows:

$$Prop\_Incentive\_Pay_{ij} = a_i + \lambda_{j1} ICE_j + \varepsilon_j \quad \text{[Equation (8)]}$$

Where:

$Prop\_Incentive\_Pay_{ij}$ = Proportion of cash-based payment to executive director *i* in firm *j*;

ICE_i = Intellectual capital performance for firm *j* (see formal definition above);

λ_j = unknown proportion of the sample contained in respective cluster; and

ε_j = error term.

4. Results

4.1. Sample Selection

Our initial sample population comprised all 551 firms listed on the two principal listing boards (*endnote 13*) (denoted *Mainboard* (413) and *Sesdaq* (138) respectively) of the Stock Exchange of Singapore as at 31 December, 2003. At the end of the 2003 calendar year the total market capitalization for all boards (millions) of the SGX was SGD$610,694.1 (*Mainboard* – $383,388.9; *Sesdaq* - $6,079.3; *SGX Xtranet* - $78,750.5; and *Clob International* - $142,478.4). For this study we hand collected information from published 2003 annual reports to construct the proxy measures for the dependent and experimental variables. Of firms in the initial sample population 531 produced 2003

annual reports (*endnote 14*). As we focus on Singapore incorporated entities listed on the SGX we excluded foreign incorporated firms. We then eliminated all firms from the finance (this includes bank, insurance, unit trusts and finance firms) sector as firms is this sector are subject to different regulatory requirements that could unduly affect firm performance, construction of remuneration packages and bonuses paid. To avoid any adverse variations in pay due to listing we exclude all 2003 IPOs from the sample. Following the aforementioned exclusions 2003 annual reports were sought from 402 firms of which 392 firms were collected. Reliable remuneration data could not be assessed from eleven annual reports due either non- or inadequate disclosure. We also eliminated a further twelve firms that had yet to establish a remuneration committee. Data to construct proxy measures for the control variables were obtained directly from collected annual reports or where data was unavailable reputable databases such as *Datastream* and *Compustat International*. Nonetheless, we were unable to collect sufficient information to construct a full set of proxy measures for fourteen entities. Five did not have complete corporate governance data the remainder having insufficient financial information related disclosures. Finally, we exclude three outlier (>4 standard deviations from the mean absolute discretionary accruals) (*endnote 15*). For purposes of statistical analysis, therefore, we are left with a final usable sample of 354 firms. Table 2 summarizes the sample selection process.

[Insert Table 2 About Here]

4.2. Descriptive Statistics

Table 3 presents the descriptive statistics for the dependent, independent and control variables. Descriptive statistics for characteristics related to some dependent, independent and control variables are also reported.

[Insert Table 3 About Here]

Relative to the United States Singapore executive directors appear to receive a significantly higher proportion of total remuneration received in the form of a non-contingent payment than contingent-based payments. Of the sample, total remuneration for the majority (42.53%) in 2003 is below SDG$250,000 with just over a fifth (21.37%) receiving SGD$500,000 or more. The main form of remuneration for executive directors of Singapore publicly listed firms during 2003 is shown to be fixed salaries accounting for nearly three-quarters of total compensation. Conversely, only about a fifth of an executive director's total compensation came in the form of cash-based bonus incentives. The remaining proportion of an executive director's total remuneration was usually received in the form of allowance, benefits-in-kind or fringe-benefits.

Across the remuneration committees covered in this study nearly two-thirds (63.24%) had at least one member being a substantial shareholder in the firm. Also, membership of 23.49 per cent of the remuneration committees is precisely the same as for the other major subcommittees (audit and nomination) of the board of directors. Overall, nearly half of the members of the remuneration committees surveyed had members with an accounting and/or legal education and subsequent work related experience. This infers remuneration committees of Singapore publicly traded firms are likely to have a strong awareness of financial and/or fiduciary consequences associated with awarding inappropriate remuneration packages. Consistent with requirements of *The Code* (2001) remuneration committees have a majority of independent directors. The descriptive statistics for *RC_Independence*, however, suggest few remuneration committees a comprised solely of independent directors. Of outsiders sitting on remunerations within the sample only 17.22 per cent are senior executive directors (i.e., chairman, chief executive officer or managing director) of another firm. The size of the remuneration committee also appears to comply closely with the minimum size requirements as specified by *The Code* (2001) with few remuneration committees comprising more than three members. Finally, during the 2003 fiscal year the number of meetings held by each remuneration committee on average is just over one (1.23). The most number of meetings held was five (5) with a small number holding no meetings at all. The low number of meetings held per remuneration committee could imply that in many circumstances the committee did not seek to review executive directors' remuneration on a regular periodic basis.

4.3. Correlation Analysis

Table 4 presents a correlation matrix between the dependent, experimental and corporate governance variables (*endnote 16*). The upper half of each panel reports Pearson pairwise correlation coefficients (cr_p), the lower half Spearman correlation coefficients (cr_s). Results provide initial support for our presumption of a positive association between intellectual capital performance and the ratio of cash-based bonus payments to non-contingent compensation ($p<0.01$, cr_p and cr_s). Also, *Prop_Incentive_Pay* is negatively significantly correlated with *Snr_Exe_Presence* ($p<0.01$, cr_p and cr_s) and *RCSize* ($p<0.05$, cr_p and cr_s). Meanwhile, *RCAccLegal* ($p<0.05$, cr_p), *RC_Independence* ($p<0.01$, cr_p and cr_s) and *RCDiligence* ($p<0.05$, cr_p and cr_s) are positive and significantly correlated with the dependent variable. *AllSame* ($p<0.01$, cr_p and cr_s) is also significantly correlated but the directional sign is opposite to that expected. Both

Pearson and Spearman correlation values between *Prop_Incentive_Pay* and *SignOwner* are both insignificant from zero.

[Insert Table 4 About Here]

Prop_Incentive_Pay is also significantly associated with several of the control variables: (a) *%_Exe_Owners* – negative; $p<0.01$, cr_p and cr_s; (b) *Duality* – positive; $p<0.01$, cr_p and cr_s; (c) *Ln(Aud_Tenure)* – positive; $p<0.05$, cr_s; (d) *Ln(TotalAssets)* – positive; $p<0.01$, cr_p and cr_s; (e) *Ln(Age)* – negative; $p<0.01$, cr_p and cr_s; (f) *ROI* – positive; $p<0.01$, cr_p and cr_s; (g) *Losses* – negative; $p<0.01$, cr_p and cr_s; and (e) *IndMan* – positive; $p<0.01$ cr_p and cr_s. Between experimental and control variables, and amongst control variables themselves, significant correlations exist. The highest correlation value is -0.5241 (*ROI* and *Losses*), which whilst high is below the critical limit of 0.8 (*endnote 17*). Variance inflation factors calculated for all experimental and control variables in the regression models reported in Tables 5 and 6 are under 2.9. This further suggests multicollinearity is not a major problem in the model estimations (Greene, 1999; Hair et al., 1995).

4.4. OLS Pooled-Sample Regression Results

Table 5 reports three OLS regression results: (1) baseline model (Panel A); (2) baseline model and remuneration committee characteristics (Panel B); and (3) baseline model with remuneration committee characteristics and intellectual capital performance measure (Panel C). Of the three OLS regressions, the model reported in Panel C explains the greatest variation in the dependent variable (38.0%) with Panel A the least (34.9%).

[Insert Table 5 About Here]

Whilst univariate correlation results may support our initial presumption our pooled-sample OLS regression results reported in Table 5 Panel C suggests that when other factors are considered in conjunction the aforementioned association does not appear in question. Specifically, the coefficient on *ICE* is positive but insignificant from zero at normally reported levels (i.e., one and five per cent significance levels). It is noted, however, that the coefficient is moderately significant at the ten per cent confidence level. Amongst the remuneration committee characteristics there appears support for the managerial power model with only marginal support the optimal contract pricing model. Specifically, contrary to expectations the directional sign on the coefficient for *SignOwner* in Panel B and C were negative but the coefficients are insignificant from zero. The lack of any influence of a significant owner on the remuneration committee and level of cash-based bonus payments is consistent with Core et al., (1999). They (Core et al., 1999) report the percentage of stock ownership amongst outside directors did not influence CEO compensation. Conversely, Conyon and He (2004) find a significant negative association between CEO compensation and CEO incentive payments. Meanwhile, consistent with expectations the directional sign on the coefficients on *RCAccLegal* in Panel B and C were positive. Again, however, the coefficients on *RCAccLegal* are insignificant from zero. The lack of an association between accounting and/or legal education qualifications and executive director bonus payments contradict arguments of Beasley and Salterio (2001). They (Beasley and Salterio, 2001) suggest accounting and legal qualifications are important properties in improving the effectiveness of an audit committee. Our findings suggest these qualifications do not necessarily influence the remuneration committee's effectiveness. Coefficients on *AllSame* are negative and statistically significant at conventional levels in Panel B and C ($p<0.01$). Our result may provide some grounds to support a recent recommendation of the *Higgs Report* (2003, A.3.7) that no individual director be allowed to sit simultaneously on the major subcommittees of a board of directors. Coefficients on *RCDiligence* are positive and statistically significant (Panel B and C – $p<0.01$). This result supports the presumption that remuneration committees meeting more actively to review the compensation of executive directors are likely to act more autonomously from management. As hypothesized in the extant literature the coefficient on *Snr_Exe_Presence* is negative and significant in Panel B and C ($p<0.05$) respectively. Our finding contrast with some previous related research (e.g., Daily et al., 1998; Newman and Mozes, 1999; Conyon and He, 2004) that do not find a significant association between the presence of another firm's senior executive director on the firm's remuneration committee and the remuneration of executive directors. Coefficients on *RC_Independence* are also consistent with prior predictions being positive and statistically from zero (see Panel B ($p<0.01$) and C ($p<0.01$) respectively. Finally, the coefficients on *RC_Size* in Panel B and C of Table 5 are negative but insignificant from zero. As, if suggested by some researchers, diversity increases when committee size increases, the lack of an association between *RC_Size* and *Prop_Incentive_Pay* infer remuneration committee diversity does not influence the committee's decision making on compensation approaches. These findings are consistent with Conyon and He (2004).

4.5. Latent Class Analysis Results

The regression model defined by *Equation 8* is estimated using a latent class mixture approach. The

minimum consistent Akaike information criterion (CAIC) statistic (not tabulated) results in four latent class clusters. Estimation results of *Equation 8* for each individual cluster is reported in Table 6 Panel A. Findings shows for *Cluster I* (comprising 30.498% of the sample) the coefficient on *ICE* is positive and significant ($p<0.01$), whereas for *Cluster II* (composed of 48.755% of the total sample) the coefficient on *ICE* is negative and significant ($p<0.01$). In contrast, the coefficient on *ICE* for *Cluster III* and *IV* (9.959% and 10.788% of the sample) respectively are positive but insignificant from zero.

[Insert Table 6 About Here]

Examining *Cluster I* more closely in relation to Panel B findings, we find that firms in the cluster having a positive association between intellectual capital performance and cash-based bonus payments had, relative to the other clusters a: (a) higher presence of significant owners on the remuneration committee; (b) more active remuneration committee; (c) lower proportion of directors on remuneration committee with accounting and/or legal background; and (d) higher proportion of outside directors on the remuneration. Conversely, amongst the *Cluster II* group, having a negative *ICE - Prop_Incentive_Pay* association, the higher proportion of remuneration committees having the same directors serving on the audit and nomination committees were higher than other clusters. In addition, firms in *Cluster II* have a higher presence of outside director who concurrently hold senior executive positions with other firms but a lower proportion of outside directors on the committee. Based on prior CEO/director remuneration research, Table 6 findings suggest firms having remuneration committee comprised on members with their interests better aligned with the firm's shareholders were more likely to pay attention to the incremental value of *ICE* measurement in determining the cash-based bonus payments to executive directors. Furthermore, Table 6 results suggest firms with remuneration committees that are not under as much scrutiny and pressure from managerial power were more likely to have consider the incremental value of intellectual capital performance in determining the appropriate compensation of executive directors.

5. Concluding Remarks and Future Research Ideas

The primary purpose of the paper is to investigate the association between intellectual capital performance and the proportion of cash-based bonus payments. The role and responsibility for determine the compensation of executive directors falling to the hands of the remuneration committee. Consequently, using a joint optimal contract pricing – managerial power framework we extend the analysis to examine if remuneration committee characteristics may influence any intellectual capital performance – cash-based bonus payments linkage. Our study contributes to the corporate governance literature being the first to empirically examine whether firms were likely to see any incremental value in using intellectual capital performance as an additional measure beyond stock prices as a means for determining cash-based bonuses for executive directors. We further contribute to this literature being one of the first studies to have considered the possible features of the remuneration committee that may affect its decision making process when determining remuneration packages for executive directors. Finally, we also add to the intellectual capital literature by conducting one of the first empirical studies outside of the two major streams that have dominated this discipline during its initial evolutionary development. The approach our study adopts can head build further foundations for extending current intellectual capital research in new directions so as to enhance greater understanding. Our analysis draws on intellectual capital performance and remuneration committee data hand collected from 354 Singapore publicly listed companies. From these firms we were able to collate remuneration package related information for 964 executive directors. All data collected is for the 2003 fiscal year. Using an OLS pooled-sample regressions approach we a positive and significant association between intellectual capital performance and the proportion of cash-based bonus payments to non-contingent payments for executive directors. This result supports our proposition that firms are likely to see incremental value in using intellectual capital performance measures to complement existing stock price measures in determining cash-based bonus payments to executive directors. Latent class analysis, however, indicates that the positive intellectual capital performance – cash-based bonus payment linkage does not extend to the entire sample. Specifically, latent class analysis infers firms where the interests of the remuneration committee members are not as closely aligned with those of shareholders and/or where managerial power enables corporate executive to determine in part their remuneration packages the aforementioned positive linkages is actually negative. Results from latent class analysis, therefore, suggest remuneration committee features influence the intellectual capital performance – cash-based bonus payment linkage.

There are several limitations of our study that provides avenues for further investigation. First, our study focuses on only a single remuneration mechanism. This may limit the ability to generalize our findings to encompass other component of an executive director's total remuneration in other domestic setting. In the United States, for example, equity-based incentives dominate the remuneration

structure of executives rather than the cash-based bonus payment. As cash-based bonus payments and equity-based incentives are similar in that they are contingent on performance, future research will assist in clarifying more clearly the extent of the association between intellectual capital performance and executive director remuneration. Second, due to data limitations and metric constraints we have relied on a composite measure of intellectual capital performance. Classification studies of intellectual capital, however, clearly highlight the general consensus that this discipline is multi-dimensional such that a metric measuring this phenomenon should be reflective of each element. Use of a composite metric restricts our ability to determine or predict which element of intellectual capital may be the pivotal factor driving the association with executive director remuneration. Additional insights may be forthcoming if future research focuses on specific aspects of intellectual capital rather than presuming a totalitarian association with remuneration. This could be achieved by examining a smaller sample from a specific industry. Third, we merely document an association between intellectual capital performance and an executive director's cash-based bonus payments, and the mitigating influences of remuneration committee characteristics. Our empirical evidence, however, does not explicitly imply that measures of intellectual capital performance are formally used in remuneration contracts. Hence, we cannot formally rule out the possibility our proxy measure is correlated with other subjective measures actually used in remuneration contracts. When sufficient disclosure becomes available future research our analysis can be conducted again to determine the validity of our findings. Finally, our study focuses on a time period unique to Singapore publicly listed companies in being the first year in which more extensive remuneration transparency was required. Thus, our results may be time-period specific and does not consider potential changes in remuneration contracts across time. Such a focus is beyond the scope of our study though the timeliness of our research provides a valuable contribution to policy makers. Overall, a longitudinal analysis is a fertile area for future research.

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Endnotes

1. Apart from cash-based bonus payments it is also possible to have focused on equity-based incentive payments or other long-term incentive initiatives. In Singapore during 2003 equity-based incentive compensation was not readily used by firms and the quality of disclosure was quite limited preventing the ability to make a valid calculation of the value of stock options issued. Also, remuneration disclosure by Singapore publicly listed firms did not divide compensation into long-term or short-term incentive payments as provided by United States firms. As cash-based bonus payments appears to be the largest form of incentive payments in Singapore and disclosure on this component is frequently provided we concentrate on this form of payment.
2. Growth in the magnitude of executive remuneration and incentive based pay mechanisms is likely to be more pronounced in the United States this phenomenon has occurred in other domestic setting such as Australia, New Zealand and United Kingdom. These trends internationally a likely to continue as corporate governance advocates and government (such as in Singapore) intensify calls for firms to pay a higher proportion of executive compensation based on performance rather then non-contingent factors.
3. We adopt this approach because few (if any) companies explicitly state whether intellectual capital performance measures are used in determining remuneration of executive directors. Thus, to enable the analysis to draw data from a reasonable sized sample to perform statistical analysis we assume firms use such metrics.
4. The specific bands were: (1) SGD$250,000 and below; (2) between SGD$250,000 and SGD$499,999; and (3) SGD$500,000 and above. There were no specific requirements to disclose remuneration by executive director or non-executive. Nonetheless, a small group of firms routinely provided this segregation. Voluntary compensation disclosures beyond the aforementioned mandatory requirements are practically non-existent. The calendar year 2003, therefore, represents the first year for which any meaningful compensation data is available to enable any form of statistical analysis.
5. We acknowledge Singapore firms are not required to disclose if bonuses are purely tied directly to either accounting or market values of firm performance. Nonetheless, for purposes of our study we presume that such bonuses are a function of accounting or market value measures.
6. We also developed a second proxy (hereafter *Ratio_Incentive_Fixed*) defined as the percentage of bonus compensation to executive director *j* as disclosed by Singapore firm *k* in their 2003 annual reports to measure the dependent variable. Regression results using the second proxy measure were qualitatively similar to those using the first proxy measure, though significance of relationships between the independent and dependent variable is slightly stronger than reported in the main results. Preferring to yield on the side of caution we report the main results based on *Prop_Incentive_Pay* proxy.
7. Prior research has defined *VA* by the following algebraic equation: Rev – B + Inv = W + I + DP + D + T + M + R or S – B + Inv – DP = W + I + DP + D + T + M + R. The former is commonly referred to as the gross *VA* and the latter is termed the net *VA*. Theoretical arguments have been forwarded supporting both approaches. Empirical research indicates both methods have been used in practices. Pulic (1998) argues that because of the central active role human resources plays in the value creation process labour costs (wages expense) should not be included in *VA* computations. This view is consistent with the opinions of other *IC* experts (Edvinsson 1997; Sveiby, 2000).
8. This relationship can be defined as follows: (a) if VA by a firm's IC its entirely attributed to human capital, the VA by structural capital would be zero; (b) if 50% of the value of the firm's IC is attributed to human capital the remaining 50% is contributed by structural capital; and (c) if human capital contributes nothing to VA then all of the VA by the firm's IC base would be attributed entirely to structural capital.
9. For a full discussion on this joint framework see Conyon and He (2004).
10. For many Singapore publicly listed firms the position of chief executive officer is not used. Rather, the senior executive position is commonly the managing director. For our study the roles of chief executive officer and managing director are considered comparable.
11. A government-linked organization is a firm having the government's investment arm (Temask Holdings Private Limited) as a substantial shareholder (five percent or more of the common outstanding shares).
12. Whilst high ownership concentration in Singapore is lower than found in the United States and United Kingdom, it is a common characteristic in Asia nations.
13. The Stock Exchange of Singapore has two further boards (or mechanisms) (known as the SGX Xtranet and Clob International) through which equity instruments are traded.
14. Some firms, whilst officially listed on the SGX, did not produce 2003 annual reports as they had only just listed (that is, in November or December 2003) or were currently in receivership.
15. Our statistical tests are not influenced by the retention or removal of outliers. However, the explanatory power of models tested is lower if the outlier data points are retained.
16. The full correlation matrix is not tabulated due to brevity.

17. As a further check for multicollinearity we perform the model estimations reported in Table 6 and 7 again after first excluding *ROI* and then *Losses*. The independent exclusion of each respective control variable does not significant alter the findings reported in the main text.

Appendices

Table 1. Variables definitions and descriptions

Variable Description	Variable Title
Dependent Variables	
Ratio of executive director's remuneration paid in accounting or market based performance bonuses to proportion paid in non-contingent salary.	*Prop_Incentive_Pay*
Control Variables	
The number of years the executive director has sat on the board of directors of firm *i*.	*Tenure*
Indicator variable where the executive director of firm *i* is scored one(1) if also a founder of firm *i*; otherwise a score of zero (0).	*Founder*
Indicator variable where the executive director of firm *i* is scored one if the executive director is not a founder of firm *i* but is a family member of the founding family; otherwise a score of zero (0).	*Family*
Number of individuals serving on the board of firm *i* as at the end of year *t*-.	*BoD_Size*
Percentage of the board of directors of firm *i* comprised of independent directors at the end of year *t*-.	*BoD_Independence*
Indicator variable with firms having same individual occupying the roles of Chairperson and CEO jointly being scored a value of one (1); otherwise firms are scored a value of zero (0).	*Duality*
Percentage of outstanding common shares of firm *i* owned by executive directors on the board of directors of firm *i* at the end of year *t*-.	*%_Exe_Dir_Own*
Indicator variable with firm *i* scored one (1) if it is a government linked entity; otherwise scored zero (0).	*GLC*
Percentage of outstanding common shares owned by top twenty shareholders of firm *i* for year *t*-.	*OwnCon%*
Indicator variable with firm *i* scored one (1) if their incumbent auditor in fiscal year *t*- is a Big-4 firm; otherwise scored zero (0).	*Big-4*
Natural logarithm of number of days since first time auditor appointed to day auditor's report for firm *i* in year *t*- signed.	*Ln(Aud-Tenure)*
Absolute discretionary accruals for firm *i* for year *t*- measured by the *modified*-Jones (1991) model.	*AbsDAC*
Natural logarithm of the total book reported assets of firm *i* for their fiscal year *t*-1.	*Ln(Total Assets)*
Natural logarithm of number of days since the date of incorporation for firm *i*.	*Ln(Age)*
Ratio of earnings before extraordinary items of firm *i* for year *t*- to book value total assets of firm *i* for year *t*-1.	*ROI*
Indicator variable with firm *i* scored one (1) if it has occurred a financial loss at least once in the three prior fiscal years; otherwise scored zero (0).	*Losses*
Natural logarithm of one (1) plus the stock return of firm *i* during year *t*-.	*StockRet*
Ratio of book value total debt of firm *i* for year *t*- to book value total assets of firm *i* for year *t*-1.	*Leverage*
Ratio of firm i's market value to book value of total assets	*MVTotalAssets*
Natural logarithm of number of employees of firm *i* in year *t*- signed.	*Ln(No. Employees)*
Indicator variable with firm *i* scored one (1) if from the manufacturing industry; otherwise scored zero (0).	*IndMan*
Remuneration Committee Features	
Indicator variable where firm *i* is scored one (1) if a member of the remuneration committee is a substantial shareholder (i.e., holds 5% or more of the common outstanding stock) of firm *i*; otherwise scored zero (0)	*SignOwner*
Indicator variable where firm *i* is scored one (1) if all members of the remuneration committee also form the membership for the audit and nomination committees; otherwise scored zero (0).	*AllSame*
Proportion of the remuneration committee members with an accounting or legal education and related work background.	*RCAccLegal*
Number of meetings held by the remuneration committee of firm *i* during year *t*-.	*RCDiligence*
Percentage of the remuneration committee of firm *i* defined as independent directors at the end of year *t*-.	*RC_Independence*
Indicator variable where firms having a senior executive (i.e., executive chairman, CEO or managing director) of another firm sitting on the remuneration committee at the end of year *t*- being scored a value of one (1); otherwise firms are scored a value of zero (0).	*Snr_Exe_Presence*
Number of individuals serving on the remuneration committee of firm *i* as at the end of year *t*-.	*RC Size*
Independent Variable	
Sum of the human capital coefficient and structural capital coefficient calculated from the *VAIC*™ methodology for firm *i* during the year *t*-.	*ICE*

Table 2. Sample used in analysis and industry breakdown

Description of selection process:	Number
Firms listed on SGX (Mainboard and Sesdaq) as at December 31, 2003	551
Less: Firms listed on SGX that did not issue annual report during 2003 calendar period	20
Foreign incorporated firms listed on SGX as at December 31, 2003	63
Bank and Insurance industry firms listed on SGX as at December 31, 2003	11
Firms that were IPOs during the 2003 calendar year	55
Firms producing 2003 calendar year annual reports BUT collectible	10
Firms with inadequate executive director remuneration disclosures	11
Firms without a remuneration committee	12
Firms with incomplete corporate governance data to calculate experimental proxies	5
Firms with insufficient information for which to construct all proxy measures	9
Outliers	3
Final sample used	354

Table 3. Descriptive statistics (Dependent, independent and control variables are in *italics*)

	Mean/Percent$^{\infty}$	Std. Dev.	Median	P'tile 25	P'tile 75
Dependent Variable Characteristics$^{\beta}$					
$500,000 and Above	21.37				
$250,000 - $499,000	36.31				
$250,000 and Below	42.53				
Prop_Incentive_Pay	33.33	62.73	9.02	0.00	37.50
Independent Variable					
ICE	1.31	2.48	1.03	-0.42	2.64
Remuneration Committee Characteristics$^{\beta}$					
SignOwner	63.24				
AllSame	23.49				
RCAccLegal	45.20	50.00	29.97	20.00	60.00
RC_Independence	69.23	14.42	66.67	66.67	66.67
Snr_Exe_Presence	17.22				
RCSize	3.32	0.64	3.00	3.00	3.00
RCDiligence	1.23	1.07	1.00	1.00	2.00
Control Variable Characteristics$^{\alpha}$					
Tenure	5.91	3.92	6.11	3.18	9.45
Founder	38.72				
Family	23.41				
BoD_Size	7.34	1.83	7.00	6.00	8.00
BoD_Independence	41.69	10.72	40.00	33.33	50.00
%_Exe_Owners	18.40	21.59	8.30	0.79	30.36
Duality	29.25				
Top_20	78.45	10.70	79.94	71.11	86.56
GLC	10.73				
Big-4	86.23				
Ln(Aud_Tenure)	6.57	0.65	6.68	6.10	7.05
AbsDac	0.08	0.79	0.03	-0.35	0.48
Total Assets (SGD$'000)	2,037,090.31	13,325,265.9	95,438.00	40,805.00	222,431.00
Ln(TotalAssets)	18.63	1.61	18.37	17.52	19.22
Ln(Age)	7.55	1.20	7.67	7.12	8.19
ROI	2.23	8.42	2.85	-0.39	6.96
Losses	26.56				
StockRet	0.73	2.92	-0.57	-0.11	1.05
Leverage	21.17	16.73	18.47	6.16	34.29
MVTotalAssets	1.3312	0.7572	1.4243	0.5488	1.5771
No. Employees	1448.01	2896.95	466.00	175.50	1211.00
Ln(No. Employees)	6.21	1.40	6.14	5.17	7.10
IndMan	40.46				

Where: ∞ - for continuous scale variables the mean is shown, whilst for dichotomous scale variable the percentage of the sample with the defined characteristic is shown; β – Dependent and independent variable descriptive statistics are based on total number of executive directors (i.e., 964) covered in the study; and α – Control variable descriptive statistics are based on the number of firms included in the study (i.e., 304). See Table 2 for formal definitions of the dependent, experimental and control variables.

Table 4. Pearson (Spearman) correlation matrix for dependent and independent variables

	Prop_ Incentive _Pay	*ICE*	*SignOwner*	*AllSame*	*RCAccLegal*	*RC_ Independence*	*Snr_Exe_ Presence*	*RCSize*	*RCDiligence*
Prop_Incentive_Pay		0.143*	-0.072	-0.179*	0.108**	0.238*	-0.134*	-0.091**	0.201*
ICE	0.123*		0.065	0.219*	0.074**	-0.036	0.043	-0.002	0.128*
SignOwner	-0.050	0.040		-0.051	0.039	0.010	-0.004	0.042	-0.001
AllSame	-0.183*	0.208*	-0.051		0.161*	0.399*	-0.116**	-0.196*	-0.124*
RCAccLegal	0.073	0.126*	0.051	0.161*		0.043	0.064	-0.111**	-0.037
RC_Independence	0.181*	-0.054	0.087	0.359*	0.020		-0.198*	-0.165*	-0.003
Snr_Exe_Presence	-0.150*	0.038	-0.004	-0.116	0.071	-0.147*		0.102**	0.030
RCSize	-0.103**	0.026	0.100**	-0.207*	-0.115**	-0.083	0.105**		0.064
RCDiligence	0.229*	0.078**	-0.009	-0.121*	-0.054	0.042	0.040	0.014	

Where: * = coefficient significant at the $p \leq 0.01$, two-sided; and
** = coefficient significant at the $p \leq 0.05$, one-sided.

Table 5. OLS regression results for pooled-sample (N – 964)

	Model A		Model B		Model C	
	OLS Est.	t-stat.	OLS Est.	t-stat.	OLS Est.	t-stat.
(Constant)		6.791*		7.425*		8.271*
Tenure	0.032	1.056	0.042	1.390	0.030	0.965
Founder	-0.042	-1.432	-0.018	-0.608	-0.035	-1.226
Family	0.014	0.518	0.018	0.656	0.022	0.814
BoDSize	0.060	1.601	0.045	1.105	0.047	1.172
BoDIndependence	0.029	0.872	-0.017	-0.492	-0.040	-1.143
%_Exe_Owners	-0.080	-2.684*	-0.074	-2.477*	-0.079	-2.686*
Duality	0.066	2.374*	0.061	1.993**	0.062	2.061**
Top_20	0.016	0.559	0.037	1.219	0.040	1.363
GLC	-0.036	-1.175	-0.026	-0.857	-0.028	-0.940
Big-4	-0.026	-0.955	-0.014	-0.492	-0.011	-0.409
Ln(Aud_Tenure)	0.040	1.454	0.046	1.642**	0.046	1.655**
AbsDac	-0.024	-0.780	-0.013	-0.409	-0.043	-1.384
Ln(TotalAssets)	0.412	7.393*	0.434	7.677*	0.454	8.161*
Ln(Age)	-0.195	-5.504*	-0.185	-5.070*	-0.184	-5.118*
ROI	0.185	3.690*	0.227	4.558*	0.181	3.646*
Losses	-0.084	-1.812**	-0.062	-1.330	-0.078	-1.716**
Leverage	-0.033	-1.032	-0.037	-1.125	-0.029	-0.877
MVTotalAssets	0.048	1.571	0.050	1.630	0.060	2.027**
Ln(No. Employees)	-0.003	-0.074	-0.024	-0.538	-0.029	-0.677
IndMan	0.089	2.798*	0.108	3.364*	0.096	3.035*
SignOwner			-0.041	-1.354	-0.042	-1.341
AllSame			-0.076	-2.536*	-0.099	-2.977*
RCAccLegal			0.014	0.455	-0.034	-0.667
RCDiligence			0.143	3.418*	0.097	3.114*
Snr_Exe_Presence			-0.056	-1.865**	-0.064	-1.999**
RCSize			-0.023	-0.825	-0.27	-1.021
RC_Independence			0.166	5.785*	0.153	4.354*
ICE					0.064	2.008**
Model Summary						
Adjusted R-Square	0.349		0.377		0.380	
F-statistic	20.978*		19.422*		18.832*	

Where: * = coefficient significant at the $p \leq 0.01$, one-sided, except for the intercept at two-sided; and
** = coefficient significant at the $p \leq 0.05$, one-sided.
See Table 2 for formal definitions of the dependent, experimental and control variables.

Table 6. Latent class mixture regression analysis results

Panel A: Cluster Regression Results Based on *Equation 8*					
	Cluster				
	I	*II*	*III*	*IV*	
(Constant)	10.678*	12.965*	5.697*	9.663*	
ICE	2.761*	-4.317*	0.518	0.865	
% Sample	30.498	48.755	9.959	10.788	
Panel B: ANOVA Results of Remuneration Committee Characteristics per Cluster					
	Cluster				
	I	*II*	*III*	*IV*	*F-Statistic*
SignOwner	0.229	0.154	0.170	0.163	0.868
AllSame	0.048	0.271	0.174	0.077	15.197*
RCAccLegal	0.081	0.109	0.077	0.162	13.147*
RCDiligence	1.423	1.249	1.021	1.204	2.440
Snr_Exe_Presence	0.163	0.269	0.188	0.153	2.807**
RCSize	3.265	3.357	3.146	3.423	4.629*
RC_Independence	0.712	0.651	0.707	0.703	11.823*

Where: * = coefficient significant at the $p \leq 0.01$, one-sided, except for the intercept at two-sided; and
** = coefficient significant at the $p \leq 0.05$, one-sided.
See Table 2 for formal definitions of the dependent, experimental and control variables.