Comprehensive Disclosure of Compensation and Firm Value: The Case of Policy Reforms in an Emerging Market

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ABSTRACT

This paper analyzes the association between voluntary disclosure of compensation and firm value based on the notion that comprehensive information on compensation provides higher transparency signals and lower agency conflict. The evidence shows that firms voluntarily disclosing comprehensive information on director and executive compensation are evaluated with higher market value. However, the compensation disclosure provided by firms using large proportion of reserved bonus and the medium or minimal disclosure help fewer for the market value creation. Furthermore, when the level of board independence is lower, that is, the ownership is concentrated or the board is controlled by fewer outsiders, firms tend not to disclose such comprehensive information.

Keywords: Compensation Information, Comprehensive Disclosure, Agency Conflict, Board Independence.

JEL Classification: G38, M48.

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1. INTRODUCTION

Using the natural experiment under the compensation disclosure policy reforms during which the gradual enforcement is adopted, the empirical evidence is provided that the voluntary disclosure of comprehensive information on director and executive compensation determined by board independence significantly provides higher market value of a firm. However, the medium and minimal disclosure helps fewer for the market value creation. The managerial power hypothesis presented by Bebchuk and Fired (2003) provides a departure of research on the association between compensation arrangement and agency conflict and also provides remedies to the limit of optimal contract hypothesis. The examination of the extant literature reveals that the mechanism reflecting the perceptions of shareholders and outsiders, with regard to the interests of shareholders served by compensation disclosure, has yet to be fully explored. Bushman and Smith (2001) suggest the channels of transparency signal by which disclosure affects economic performance. Using survey on comment letters, Lo (2003) indicates that the mandatory enforcement leads to higher stock returns for firms with opposing intentions of compensation disclosure. Therefore, we extend the notions and explore the economic value of the comprehensive information on compensation.

The data on Taiwanese firms provides an interesting scenario within which the

natural experiment might contribute the line of research in the following way. The directors and managers faced with agency conflict may tend to camouflage their bargaining rents and mutual favors, and the authorities currently stand in juxtapose positions. The compensation disclosure reforms in Taiwan were also faced with large pressures and opposing activities. Therefore, the authorities adopted a gradual enforcement approach to allow firms considerable discretion in disclosure information with increasing severe requirements. Firms with better governance mechanisms and higher independence of the board would voluntarily disclose the comprehensive information in form of tables proposed by the authorities. Although the regulations regarding compensation disclosure is already relatively rich in US, the criteria of voluntariness and the level of comprehensiveness of compensation disclosure are difficult to be examined in such settings. In our study, the long-horizon natural experiment provides such unique data for examining the effect of voluntary disclosure of comprehensive information on compensation on firm's market value under the compensation disclosure policy reforms during which the gradual enforcement is adopted.

As argued by Bebchuk and Fried (2003), some directors under consideration for re-nomination to the board in the subsequent year, particularly for those who are keen to bargain at arm's length, will attempt to influence their executives. This mutual favor

effect, examined by Brick et al. (2006), provides evidence for the limits of optimal contract hypothesis. The agency conflict could be exacerbated if both directors and executives camouflage their excessive power and their derived bargaining behavior. A solution to the problem is to ask for compensation disclosure (Jensen and Murphy, 1990; Bebchuk and Fried, 2003; Lo, 2003; Gordon, 2005), which would enable outsiders and professionals to evaluate the information relevant to market values. The transparency through the compensation disclosure provides direct benefits to shareholders and the derived improvements in corporate governance, whilst also enhancing economic performance. We further hand-collect the Taiwanese data of compensation disclosure and provide the evidence that under the compensation disclosure policy reforms during which the gradual enforcement is adopted, firms voluntarily providing comprehensive disclosure on director and executive compensation are evaluated with higher market value.

The empirical results from our analysis of 1996-2006 data on all listed companies in Taiwan suggest that voluntary disclosure of comprehensive information on director and executive compensation results in systematic variations in firm value. Additionally, the medium or minimal disclosure of compensation helps fewer for the market value creation. However, the comprehensive disclosure by electronics firms using large proportion of reserved bonus does not lead to significantly positive market

value. On the contrary, firms with higher proportion of concentrated family control would have higher market value through the improved compensation disclosure regardless of its level of transparency. We further control the endogeneity problem and self-selection effect with the instrumental variables and the Heckman model, suggesting that firms with higher (lower) outside (family) directors, supervisors and shareholdings, the higher incentives of managerial shareholding and the smaller board size would provide better board independence for further disclosing comprehensive information on director and executive compensation.

We tend to provide incremental contribution in following ways. First, the compensation disclosure is decomposed into different dimension of transparency levels that are explored yet, including minimal, medium and comprehensive disclosure. The evidence shows that only the comprehensive disclosure that firms with better governance mechanisms would provide leads to significantly positive economic values. The medium or the minimal disclosure helps fewer for the market value. Second, the data for discussing the issue of voluntary disclosure would be better to collect from the situation in which the authorities provide discretions on the content of compensation information. The authorities in Taiwan propose the suggested guidelines and form of tables and further provide large discretionary choices for firms to follow. The natural experimental data of all Taiwanese listed

companies satisfies the requirements for the issue as following: the data of different transparency levels of voluntary disclosure of compensation which is hand-collected directly from the annual financial report could clearly address the behavior that whether a firm support or oppose the regulation. Our findings may be applicable to other emerging capital markets with compensation disclosure policy reforms within which the authorities refrain from making compliance mandatory. Third, we provide evidence for both director and executive compensation disclosures. The compensation contract is an indirect contacting for shareholders to monitor and discipline management. Besides, the directors could also be faced with agency conflicts and benefits from the rents given by the executives. One resolution to the interlocks among the mutual-back-scratching directors and executives is the compensation disclosure for both of them.

The remainder of this paper is organized as follows. In section 2, the compensation disclosure policy reforms around the world are introduced, particularly addressing for the gradual enforcement in Taiwan. Section 3 associates the theories in literatures. Section 4 develops the hypothesis and research design. Section 5 shows the empirical evidence. Section 6 concludes and provides future applications.

2. COMPENSATION POLICY REFORMS

The compensation disclosure policy reforms are undertaken around the world

(Appendix A). The information on director and executive compensation satisfies the needs for outsiders to evaluate the governance mechanism of a firm, particularly in capital markets where disclosure regulations are under reforms. However, there are still many countries providing limited regulations and are attempting to build up appropriate legal systems.

Contrary to the disclosure reforms with mandatory enforcement, the Taiwan Financial Supervisory Commission (FSC) adopted a gradual enforcement approach and revised the regulations since 1996 (Table 1). The first stage of gradual enforcement continuously during 1996 and 2007, which provides the natural experiment for our analysis, is to mandatorily enforce firms disclosing the following information: (i) the compensation policies, association with performance; (ii) the lump sum of all director and executive compensation in the financial statements; and (iii) the total number of directors and executives under eight compensation levels in form of tables '*Levels of Directors'* (*Executives'*) *Compensation*' (Panel B in Appendix A and Panel B in Appendix B). During this period, firms could also voluntarily disclose more information in excess of the mandated requirements, e.g. the names under eight compensation levels and/or the details in form of tables '*Detailed Information on Directors'* (*Executives'*) *Compensation*' proposed by the authorities (Panel A in Appendix A and Panel A in Appendix B). The incremental requirement in

second stage addresses the names under each compensation level. The third stage will enforce mandatory disclosure for the comprehensive information in form of all tables proposed by the authorities. Since 2008, all the listed firms are mandatorily required to follow the second stage disclosure requirement.

<Table 1 is inserted about here>

The level of transparency of compensation disclosure is classified as either 'minimal', 'medium' or 'comprehensive' (Table 2). The term '*Minimal*' indicates the following conditions: the firm will follow the first stage requirement to disclose the mandated information only[2]. Conversely, the term '*Comprehensive*' disclosure includes all of the following information: (i) the disclosure required in the first stage; (ii) the voluntary disclosure of all detailed information on director and executive compensation in form of tables of '*Levels of Directors'* (*Executives'*) *Compensation*' and '*Detailed Information on Directors'* (*Executives'*) *Compensation*'. The term '*Medium*' indicates the level of completeness of compensation disclosure between 'comprehensive' and 'minimal'. That is, if the disclosed information on compensation is in excess of the mandated requirement but still not comprehensive, such information is labeled as medium disclosure.

<Table 2 is inserted about here>

[2] The (iii) requirement of the disclosure information (the total number of directors and executives under eight compensation levels in form of tables '*Levels of Directors'* (*Executives'*) *Compensation*'), during the first stage is mandatory since 2006.

The gradual enforcement approach provides discretions for firms to disclose their preferred level of transparency of compensation information (Table 3). With the booming increase of companies newly listed in Taiwan Stock Exchange, the proportion of firms disclosing minimal information on compensation reduces (from 11.83% to 1.97%), whilst the proportion of firms disclosing medium information is increasing (from 28.63% to 82.45%), indicating that most of the listed companies may voluntarily provide higher transparent information on compensation. Such fact is consistent with the argument of Wagenhofer (1990) that partial disclosure is more preferred by the firm because it can decide which favorable information is to be disclosed. Although the comprehensive disclosure is still not mandated, there are still a small number of firms with better governance mechanisms voluntarily disclosing comprehensive information on compensation in form of tables proposed by the authorities (from 59.54% to 15.58%).

<Table 3 is inserted about here>

The compensation disclosure policy reforms in Taiwan provide the policy implications for other emerging markets in the following ways. First, the gradual enforcement simultaneously takes into account for both final mandatory enforcement in the future and current opposing pressures, providing potential resolutions to the problems that the authorities in other emerging countries are faced with opposition

caused by immediate enforcement. The opposing activities against the 1992 US SEC compensation disclosure regulation might be due to the reason that the immediate mandatory enforcement caused large manifest or invisible costs particularly for firms with non-optimal compensation arrangement. On the contrary, under the gradual enforcement, well-governed companies in Taiwan can still provide the signals of greater transparency by voluntarily disclosing more information on compensation in excess of the mandated requirement.[3] Although firms providing minimum or medium information on compensation would not be punished by the authorities in accordance with the principle-based approach that is to encourage well governed firms to actively communicate the compensation arrangements with shareholders (Bushee and Leuz, 2005), it would be burdened with costs caused by lower transparency. Therefore, the empirical evidence from Taiwanese data could be of use to other emerging capital markets with relatively poor compensation disclosure policies.

3. VOLUNTARY DISCLOSURE OF COMPENSATION

Disclosure and transparency provide external market-based monitoring mechanisms that may compensate for the failure of board functions (Mallin, 2002; The Organization for Economic Co-operation and Development, 2004; Parum, 2005). Healy and Palepu (2001) indicate that the disclosure is for management to

[3] For responding more severe opposition against the regulation, Director Susan S. Chang, the former administrative vice chairperson, adopt the gradual enforcement for the compensation disclosure.

communicate performance and governance to investors. Besides, regulations and authorities created to facilitate credible disclosure are to mitigate the information asymmetry (Leftwich, 1980; Perotti and Von Thadden, 2003). Chen et al. (2004) argue that mandatory requirements would be insufficient to render the disclosure mechanism effective. Even in an efficient capital market, directors and executives have superior inside information to investors. Therefore, voluntary disclosure defined as the disclosed information in excess of mandated requirement (Healy and Palepu, 2001; Core, 2001) could lead to lower information asymmetry and cost of capital and change investors' perceptions of firm's transparency (Lev, 1992; Gelb and Zarowin, 2002; Laksmana, 2008).

The priori that the directors will seek to maximize shareholder value may not be suitably presumed because the executive compensation would be viewed as part of the agency conflicts itself (Bebchuk and Fried, 2003). Core et al. (1999) propose critics of ineffectiveness in setting appropriate compensation. First, the executive compensation arrangements designed by the committee might be influenced by the executives. Second, in the board meetings, directors may be unwilling to take positions adversarial to the executives, especially those account for the executive compensation. Third, the boards usually rely on compensation consultants hired by the executives. Therefore, the compensation contract may not satisfy shareholders' interests.

There are several channels through which the compensation disclosure improves the corporate governance mechanism. First, the compensation disclosure provides a window on the board and the quality of overall corporate governance (Laksmana, 2008). Firms with better governance mechanism provides more informative disclosures (Beekes and Brown, 2006; Coles, 2008), whilst Jensen and Murphy (1990) and Murphy (1996) suggest that the compensation disclosure provides non-pecuniary costs for directors and executives and a safeguard against looting by management in collusion with captive boards of directors.

Second, the camouflage of excess compensation could be reduced when the allocation is in public (Diekmann, 1997) and the compensation would be shaped by market forces (Core, et al., 1999; Bebchuk and Fired, 2003). The Enron case and other scandals in which directors and executives are highly paid indicate that the contract arrangement may provide excess compensation without incentives (Healy and Palepu, 2003; Brick et al. 2006). Since the directors are in the position to contract between shareholders and managers (Diekmann, 1997), managerial self-serving behaviors would be higher when the executives play important roles in re-nominating directors to the board and the boards could benefit from the rents (Bebchuk and Fried, 2003). However, the subjective reasonableness of compensation and how the contracts perceived by outsiders may lead to outrage or reputational harm to directors

and managers (Jensen and Murphy, 1990). Laksmana (2008) also indicates that compensation disclosure could diminish the managerial ability to negotiate with board for favorable arrangements.

Third, the compensation disclosure allows shareholders to enjoin the boards to compensate the executives with the arrangements re-aligning their interest (Ward, 1998; Zhou, 1999; Perry and Zenner, 2004; Craighead, et al., 2004; Gordon, 2005). It also strengthens the shareholders' position to monitor and punish the underperformance and empowers directors' hands to bolster their independence against managerial pressures (Conyon, 2001; Andjelkovic, et al., 2002; Van den Berghe and Levrau, 2004; Laksmana, 2008). Although the executive compensation is decided by directors, managers will still have at least some partial influence on the level, or the content, of the remuneration contract finally agreed (Murphy, 1999). Therefore, the buttressing board independence through the compensation disclosure undercuts the interlocks among mutual-back-scratching directors and executives (Hallock, 1997; Bebchuk and Fired, 2003; Gordon, 2005).

Forth, the compensation disclosure provides signals to outsiders that the directors' and executives' accountabilities and their compensation arrangement are well governed. Such information satisfying the outsiders' needs is perceived and understood by market professionals and further affects stock prices (Bebchuk and

Fried, 2003; Lo, 2003). Also, firms would voluntarily disclose more information on compensation in order to distinguish them from others and to cause the attentions of outsiders and professionals, determining their investment decisions.

The compensation disclosure helps investors to identify the agency conflict between shareholders and directors and/or executives (Elayan et al., 2003; Conyon and Sadler, 2001). If compensation disclosure is comprehensive beyond and supplement to the minimum requirements, investors and shareholders can be protected by using the information to evaluate whether the directors are placing sufficient effort on monitoring management and assessing voting rights for their interests (Ward, 1998; Conyon, 2001). Murphy (1996) suggests that during 1992, when compensation disclosure was not mandatory, voluntary compensation disclosure led to lower non-pecuniary costs from outside pressures. La Porta et al. (2004) indicate that the securities laws encourage the development of discipline and monitoring in firm-level private contracting. Gordon (2005) also demonstrates that the board independence could be strengthened by the comprehensive disclosure of compensation, thereby enhancing governance mechanisms. Therefore, the discretionary choices for disclosure content allow firms with better governance mechanism are likely to voluntarily provide compensation information in excess of the minimal requirements (Perotti and Von Thadden, 2003; Beekes and Brown, 2006).

4. HYPOTHESIS DEVELOPMENT AND RESEARCH DESIGN

(i) The Effect of Comprehensive Information

The role of compensation disclosure is to provide information that will ultimately reduce information asymmetry (Elliott and Jacobson, 1994; Healy and Palepu, 2001; Core, 2001). Even in an efficient capital market, the inside information possessed by directors and executives is invariably superior to that possessed by investors and such information asymmetry can be reduced by voluntary disclosure which alters the perceptions of investors on the transparency of a firm (Lev, 1992; Gelb and Zarowin, 2002). Van den Berghe and Levrau (2004) take notions that investors and creditors could be protected by the compensation disclosure that could be used to evaluate the pay-for-performance and to understand whether firms are returning benefits to their desired interests.

The lower information asymmetry and cost of capital provide the channels through which the increased level of disclosure transparency affects market value of a firm (Leuz and Verrecchia, 2003; Durnev and Kim, 2005). Daouk et al. (2006) indicate that the improved accounting law regarding information disclosure is associated with market performance. The association between compensation and firm performance is significantly positive only when the data on firms voluntarily disclosing executive compensation is used (Andjelkovic et al., 2002); such a positive

association is due to the benefit of long-term viability as a result of disclosure (Aksu and Kosedag, 2006). Therefore, the outsiders and professionals represent an additional monitoring mechanism, further reflecting the relevant information on future firm value (Bebchuk and Fried, 2003).

Voluntary disclosure of compensation in annual financial reporting can of course be particularly informative to investors; however, just how informative this information is will clearly be dependent on the level of disclosure. Barry and Brown (1986) argue that if the disclosure is incomplete, investors will be faced with increased risks in potential returns from their investment, particularly with regard to non-diversified risks. Hill (1997) indicates that the principle behind the disclosure is to make the information comprehensive. Therefore, what professionals and outsiders wish to acquire from voluntary disclosure is comprehensive information.

With the requirement from the authorities, outside investors, public media, and market pressures, firms voluntarily disclosing comprehensive information on compensation rather than the less mandatory standards tend to minimize, respectively, the bonding cost between shareholders and their agents, the cost of noncompliance signal, the cost of external capital, and information asymmetry (Noe, 1999; Lang and Lundholm, 2000; Sengupta, 1998; Richardson and Welker, 2001; Botosan and Plumlee, 2002; Chen et al., 2004; Laksmana, 2008) and further increase the market

values (Hyytinen and Pajarinen, 2005; Makhija and Patton, 2004; Durnev and Kim, 2005). Therefore, the effect of voluntary disclosure of comprehensive information on director and executive compensation on firm value under the compensation disclosure policy reforms during which the gradual enforcement is adopted is examined. It is anticipated that firms providing such comprehensive disclosure are evaluated with higher market value.

Hypotheses 1*: Firms with voluntary disclosure of comprehensive information on director and/or executive compensation are evaluated with higher market value*

(ii) The Effect of Medium and Minimal Information

The gradual enforcement of compensation disclosure provides discretionary choices for firms to follow. However, rather than the detailed compensation disclosure, the noncompliant firms would disclose the medium or minimal information mandated by the authorities that may occur when the (non-)proprietary costs of disclosure increases. Although the withheld information in which the favorable information on compensation is included would not be able to be decisively interpreted as the camouflage of rents seeking even though the market professionals have rational expectations about their motivations (Verrecchia, 1983), the outside speculation about such camouflage may affect the rents to be bargained by the

directors and/or executives. Lo (2003) suggest that firms imposing a minimum disclosure level would reduce shareholder wealth.

With the extant literature regarding the economic consequence of compensation disclosure, the question that whether the medium and/or minimum completeness level of transparency could contribute the same effect also remains controversial. Wagenhofer (1990) provides partial-disclosure equilibrium and indicate that, due to the flexibility of discretionary choices of disclosure of unfavorable information, firms always prefer to take actions of partial disclosure. Lo (2003) proposes hypothesis that if the benefits and the costs of compensation disclosure coexist, the partial or minimum disclosure would be imposed. Such incomplete information provides a signal that the disclosure may be harmful to the personal benefits of directors and executives. Therefore, it is expected that the incomplete disclosure of information on director and executive compensation may not provide market value creation.

Hypotheses 2*: The medium and/or minimum completeness level of transparency of director and/or executive compensation helps fewer for the creation of firm's market value*

(iii) The Data

As noted by Collett and Hrasky (2005), firms listed in the public exchange will tend to be more disposed to voluntarily disclosure of information. Therefore, only those

companies (excluding financial corporations) listed on the Taiwan Stock Exchange (TSE) between 1996 and 2006 are considered in the experimental sample, with the data ultimately yielding a sample of 5,259 firm-year observations. The compensation disclosure is hand-collected from the firms' annual reports. It is labeled in mutually exclusive order as 'comprehensive', 'medium' and 'minimal' in accordance with the level of transparency. The comprehensive disclosure of director (executive) compensation, *DCP* (*ECP*), is 1 if the 'comprehensive' information on compensation is disclosed and 0 otherwise; *DMD* (*EMD*) and *DMN* (*EMN*) are the indicators for the 'medium' and 'minimal' disclosure of director (executive) compensation. The integration of compensation disclosure, *MD* (*MN* or *CP*), is 1 if the comprehensive (medium or minimal) information on compensation received by both directors and executives are disclosed.

The control variables are categorized into two dimensions including firm characteristics and profitability. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Healy et al. (1999) examine the association between disclosure and firm performances after controlling earnings. Therefore,

profitability includes return on assets (*ROA*) and earnings per share (*EPS*). Firm value (*Q*) measured by Tobin's *Q* is the sum of the firm's market capitalization and book value of debt, divided by book value of total assets. The variables (in NT$ thousands) are acquired from the *Taiwan Economic Journal* database and the descriptive summaries are shown in Table 4.

<Table 4 is inserted about here>

5. EMPIRICAL ANALYSIS

(i) Preliminary Analysis

(a) Correlation Analysis

The significant correlation coefficient (Table 5) between *CP* (*DCP* and *ECP*) and *Q* is 0.07 (0.05 and 0.07 respectively), the results which provide broad support for our anticipation of *Hypothesis 1*. Besides, the medium and minimal compensation disclosure provides an inverse effect (-0.05 and -0.01 respectively), and so does the medium and minimal disclosures of director (-0.05 and -0.02 respectively) and executive (-0.05 and -0.04 respectively) compensation. The evidence could be inferred that firms only disclosing medium or minimal information on director and executive compensation may be faced with severe agency conflict and further evaluated with lower market value, supporting for our anticipation of *Hypothesis 2*.

<Table 5 is inserted about here>

(b) Regression Analysis

Adopting the OLS estimation, we expect to find a positive association between comprehensive disclosure and firm value using regression model (1):

$$Q_i = \alpha_1 + \delta_1 \cdot CP_i + \mathbf{X}_i \boldsymbol{\beta}_1 + \varepsilon_{1,i} \quad (1)$$

where Q_i is the market value of firm i; CP_i is the comprehensive disclosure of compensation; $\mathbf{X}_i$ is a vector of the control variables for firm i including firm specific (*SIZE*, ,*DEBT*, *INVST* and *FCF*) and profitability (*ROA* and *EPS*); ε_i is the corresponding error term; and α, δ and $\boldsymbol{\beta}$ are the parameters to be estimated.

The coefficient of the OLS regression of *Q* on *CP* in the *Model I* of Table 6 is significantly positive (0.107), thereby providing support for our anticipation. Moreover, firms may be more likely to voluntarily disclose comprehensive information only on director or executive compensation. We use the alternative variables to examine the effect of comprehensive disclosure of director or executive compensation (*DCP* or *ECP*) only.

$$Q_i = \alpha_2 + \delta_2 \cdot DCP_i + \mathbf{X}_i \boldsymbol{\beta}_2 + \varepsilon_{2,i} \quad (2)$$

$$Q_i = \alpha_3 + \delta_3 \cdot ECP_i + \mathbf{X}_i \boldsymbol{\beta}_3 + \varepsilon_{3,i} \quad (3)$$

It is anticipated that *DCP* and *ECP* will provide the same effect, but with lower rejection power; the results in the *Model II* and *III* of Table 6 also support the *Hypothesis 1* (0.084 and 0.106 respectively) that firms voluntarily disclosing

comprehensive information on director and/or executive compensation are evaluated with higher market value.

<Table 6 is inserted about here>

The *Hypothesis 2* that whether medium compensation disclosures provide market value creation is further examined.

$$Q_i = \alpha_4 + \delta_1 \cdot CP_i + \delta_4 \cdot MD_i + \mathbf{X}_i \boldsymbol{\beta}_4 + \varepsilon_{4,i} \quad (4)$$

$$Q_i = \alpha_5 + \delta_2 \cdot DCP_i + \delta_5 \cdot DMD_i + \mathbf{X}_i \boldsymbol{\beta}_5 + \varepsilon_{5,i} \quad (5)$$

$$Q_i = \alpha_6 + \delta_3 \cdot ECP_i + \delta_6 \cdot EMD_i + \mathbf{X}_i \boldsymbol{\beta}_6 + \varepsilon_{6,i} \quad (6)$$

After controlling the firm characteristics, performance and comprehensive disclosure of compensation, it is anticipated that *MD* (*DMD* or *EMD*) do not provide additional significantly positive effect on market value. The results in the *Model IV*, *V*, and *VI* of Table 6 indicate that besides the significant effect of comprehensive disclosure of compensation (0.127, 0.087 and 0.126 respectively), there is no significant association between firm value and medium disclosure of compensation (0.034, 0.004 and 0.034 respectively), supporting *Hypothesis 2* that firms disclosing medium information on compensation helps fewer for the market value creation.

It is also anticipated that the minimal disclosures of compensation do not provide additional effects on market value creation.

$$Q_i = \alpha_7 + \delta_1 \cdot CP_i + \delta_4 \cdot MD_i + \delta_7 \cdot MN_i + \mathbf{X}_i \boldsymbol{\beta}_7 + \varepsilon_{7,i} \quad (7)$$

$$Q_i = \alpha_8 + \delta_2 \cdot DCP_i + \delta_5 \cdot DMD_i + \delta_8 \cdot DMN_i + \mathbf{X}_i \boldsymbol{\beta_8} + \varepsilon_{8,i} \quad (8)$$

$$Q_i = \alpha_9 + \delta_3 \cdot ECP_i + \delta_6 \cdot EMD_i + \delta_9 \cdot EMN_i + \mathbf{X}_i \boldsymbol{\beta_9} + \varepsilon_{9,i} \quad (9)$$

The results in the *Model VII*, *VIII*, and *IX* of Table 6 show that the minimal disclosures do not provide additional effect on firm value (0.084, 0.047 and 0.009 respectively), also supporting *Hypothesis 2*. The results from model (4) to (9) could be inferred that the comprehensive disclosure is the only information on director and executive compensation that helps firm to improve transparency and governance mechanism and further increase the market value. Other level of transparency of compensation information helps fewer for the market value creation.

(ii) Accounting-based Evaluation Model

The accounting-based valuation model could also be used that relates the association between firm value and the information disclosed in the financial statements. The Ohlson model (1995) including earnings and book value could be written as follows.

$$MV_i = \alpha_{0,10} + \alpha_{1,10} \cdot BV_i + \alpha_{2,10} EPS_i + \beta_{10} Z_i + \varepsilon_{10,i} \quad (10)$$

where MV_i is the stock market value of firm i, BV_i is the book value per share, EPS_t is earnings per share, Z_i is the other value-relevant information, particularly addressing different level of transparency of voluntary disclosure of compensation: 'Comprehensive' (*CP*, *DCP*, and *ECP*), 'Medium' (*MD*, *CMD*, and *EMD*) or

'Minimal' (*MN*, *DMN*, and *EMN*). The evidence from *Model I*, *IV*, and *VII* of Table 7 also supports the *Hypothesis 1* (702.089, 448.826, and 424.850) that firms voluntary disclosing comprehensive information on compensation are valued higher after controlling the book value of assets and earning performance. Also, the evidence from *Model II*, *III*, *V*, *VI*, *VIII*, and *IX* of Table 7 also supports the *Hypothesis 2* that the medium and minimal disclosure is not helpful for the market value creation.

<Table 7 is inserted about here>

(iii) Subsample Analysis

The distributed bonus that is taken as reserves in accordance with current accounting regulation would be a particularly useful mean for directors and executives to camouflage their rents bargained. Outsider may no longer use the compensation disclosure to identify the problem of conflict of interest. The fact is particularly true for the companies of electronics industry in Taiwan. Therefore, we use the subsample of companies in electronics and non-electronics industry[4] to examine the varied effects of compensation disclosure. The electronics companies yield 1,566 firm-year observations, whilst the non-electronics companies yield 3,693 firm-year observations (Table 8). The proportion of electronics companies disclosing comprehensive information (88.78%) is higher than those of the non-electronics

[4] The companies in electronics industry are coded as 23XX, 24XX and 3XXX in the TSE.

companies (17.64%) even referring to the subsample of comprehensive disclosure of director (88.82% and 19.64%) or executive (88.49% and 17.66%) compensation.

<Table 8 is inserted about here>

The coefficient of the OLS regression of *Q* on *CP* in the model *I* of Table 9 is significant (-0.169), thereby providing inconclusive for our anticipation of *Hypothesis 1*. It could be inferred that for the companies with compensation contract in which the large number of bonus is taken as reserves, the higher transparency of the compensation information does not help for outsiders to identify the potential agency conflict and the firm value is not affected by the disclosure information either. However, the coefficient of *Q* on *MD* (*MN*) in the model *I* of Table 9 is negative (-0.17 and -0.348 respectively), supporting the *Hypothesis 2*. The empirical results in the *Model II* and *III* of Table 9 provide the same effect. The evidence could be inferred that the incomplete compensation information for electronic firms which is highly expected to be well-governed providing would even damage the market value.

<Table 9 is inserted about here>

The coefficients of comprehensive disclosure in *Model IV*, *V* and *VI* of Table 9 are significantly positive (0.133, 0.288 and 0.28 respectively), supporting *Hypothesis 1*. However, the results from the medium (0.088, 0.251 and 0.235 respectively) and minimal (0.108, 0.268 and 0.223 respectively) compensation disclosure provide the

same effect, leading inconsistent results for *Hypothesis 2*. It could be suggested that non-electronics firms that are more likely to be burdened with highly concentrated ownership, family shareholdings, and relatively poor governance could be evaluated with higher market value if the compensation information are disclosed for outsiders' and professionals' needs to identify the agency conflict. Therefore, under this setting of non-electronics firms, the disclosure information on director and/or executive compensation regardless of any level of disclosure helps improve the transparency.

It could be inferred in accordance with the evidence from *Model* (1) to (9) that the outsiders and professionals concern the compensation disclosure, particularly preferring the detailed disclosure. The comprehensive disclosure of compensation not only reduces the information asymmetry of conflicts of interest, but also provides signals of better governance mechanism of higher transparency. Those channels lead to the positive effect of comprehensive disclosure of compensation on firm's market value. Although the medium disclosure also provides information in excess of mandatory requirement, it provides the signal that the information on compensation arrangements that might not be benefit to shareholders is camouflaged by directors and/or executive. Therefore, only comprehensive information is helpful for the creation of the firm's market value.

(iv) Endogeneity Problem

Since firms voluntarily disclosing comprehensive information on compensation are not random, there would be correlation between other information in the error term (ε_i) and the comprehensive disclosure (CP_i); therefore, the least squares estimates will be inconsistent. We adopt a two-stage least squares model (11) with the same set of control variables and other exogenous instrumental variables.

$$\begin{cases} Q_i = \alpha_{11} + \delta_{11} \cdot CP_i + \underset{\sim}{\mathbf{X}}_i \tilde{\boldsymbol{\beta}}_{\mathbf{11}} + \varepsilon_{11,i} \\ CP_i = \alpha_{12} + \underset{\sim}{\mathbf{Z}}_i \underset{\sim}{\Upsilon}_{12} + \underset{\sim}{\mathbf{X}}_i \tilde{\boldsymbol{\beta}}_{\mathbf{12}} + \eta_{12,i} \end{cases} \tag{11}$$

The determinants of compensation disclosure could be attributable to the board independence (Core, et al., 1999; Ryan Jr. and Wiggins, 2004; Gordon, 2005; Laksmana, 2008). Khanna et al. (2004) find that Taiwan has relatively lower governance index, particularly addressing higher family shareholder, pyramidal ownership, lower transparency and lower disclosure scores. Makhija and Patton (2004) and Core (2001) argue that board meeting discussions in firms with better ownership structures will tend to be more independent and board independence could possibly explain disclosure choices. We therefore use the internal mechanism of ownership structure and board composition as instrumental variables.

(a) Ownership Structure

Outside shareholders require higher accounting standard for firms to meet higher disclosure regulations in their annual financial reporting. Bushee and Noe (2000) and Barako et al. (2006) suggest that transparent disclosure has a positive

association with outside ownership. Therefore, the percentage of shares owned by domestic trust funds (*%DTF*) and the percentage of shares owned by the outside funds that are not controlled by major shareholders[5] (*%OF*) are taken as instrumental variables. The association between the outside ownership (*%DTF* and *%OF*) and *CP* is anticipated to be positive.

Firms with higher transparency will tend to create greater share benefits by increasing the market value of the firm; therefore, managers will tend to maximize their share interests so as to enhance the willingness of disclosing information on compensation, thereby further reducing information asymmetry and improving transparency signals (Core, 2001; Nagar et al., 2003; Makhija and Patton, 2004). However, Nagar et al. (2003) demonstrate that managers focusing on personal interests may be reluctant to disclose private information, particularly in those circumstances where there are no real incentives; and indeed, without information disclosure, managers could not be subject to external monitoring or discipline. Huddart et al. (1999), Hossain et al. (2005) and Bannister and Newman (2006) also suggest that disclosure may reduce the information advantages of insiders. Thus, the percentage of shares owned by executives (*%MNG*) is taken as an instrumental variable. However, the anticipated association between *%MNG* and *CP* remains controversial.

[5] The major shareholder is defined as investor owning a significant percentage of shares (10 percent). For newly listed companies, it is defined as an investor who is ranked top 10 in total holding stake or a investor with more than 5% holding stake of the companies.

Blockholders play an important role in determining the equity control rights in board meetings, particularly in the Taiwanese capital market. Concentrated ownership could lead to fraudulent activities and lower transparency level, particularly in firms with poor board independence (Makhija and Patton, 2004; McKinnon and Dalimunthe, 1993; Leung and Horwitz, 2004). Therefore, controlling director (*%CD*) measured by percentage of shares owned by major shareholders who are also on the boards and critical controlling (*%CC*) calculated by the percentage of shares that major directors need to hold for the absolute voting power of control rights[6] are considered as instrumental variables. The anticipated association between the concentrated shareholdings and *CP* are anticipated to be negative.

Another property of Taiwan data is the highly concentrated shareholding of family control that exists in many Asian and European capital markets. Setia-Atmaja et al. (2007) find that family firms will reduce the number of independent directorship. Chen et al. (2008) also indicate that firms with higher family equity ownership provide fewer voluntary disclosure practices. Therefore, family shares includes family funds (*%FF*) measured by the percentage of shares owned by funds that are controlled by family directorship and family unlisted corporations (*%FU*) measured by the percentage of shares owned by unlisted companies that are controlled by family

[6] Please refer to the *Taiwan Economic Journal* database and Cubbin, J. and D. Leech (1983), 'The Effect of Shareholding Dispersion on the Degree of Control in British Companies: Theory and Measurement', *Economic Journal*, Vol. 93, No. 370, pp. 351-369.

directorship are considered as instrumental variables. It is anticipated that the concentrated shareholdings and family ownership worsening the board independence tend not to disclose comprehensive information on compensation.

(b) Board Composition

It is the concerns of external stakeholders which lead to voluntary disclosure by the compensation committee (Byrd et al., 1998). Soffer (1998) also suggests that the greater concerns of shareholders provide a mechanism by which poor firm-level compensation practices can lead to disclosure. Ho and Wang (2001) and Hossain et al. (2005) find the positive association between voluntary disclosure and proportion of independent directors on the board. Therefore, the percentage of directorship held by outside listed corporations (*OCD*), the percentage of supervisors held by outside listed corporations (*OCS*), and the percentage of supervisors held by outside funds (*OFS*) are considered as instrumental variables. It is anticipated that firms with a higher proportion of outsiders[7] on the board provide a higher level of board independence and further disclose transparent information on compensation.

On the contrary, the higher proportion of family director on the board tends to harm the board independence. Anderson and Reeb (2004) find that the larger proportion of family director presence on the nominating committee, the lower

[7] The outsiders are individuals, institutional investors, corporations, or investment funds that not controlled by major shareholders

proportion of independent director is on the board. Chen et al. (2008) also find that family firms, with the existence of family blockholder, prefer less public voluntary disclosure. Therefore, the percentage of directorship held by unlisted corporations that are controlled by family directorships (*FCD*) is taken as proxy for lower board independence. It is anticipated that the higher proportion of outside (family) director or supervisor, the higher (lower) chances that the firm has higher independence of board and further discloses comprehensive information on compensation.

The positive association between board size and firm performance can be further increased by greater monitoring power (Dalton et al., 1999; Certo et al., 2001; Hyytinen and Pajarinen, 2005). Therefore, firms with larger monitoring power provided by larger board size tend to voluntarily disclose comprehensive information on compensation and such mechanism also leads to higher firm value.

However, Vafeas (2000) and Gordon et al. (2002) argue that smaller board size enhances the informative nature of disclosure. Jensen (1993) notes that as boards become smaller, they may be more capable of holding frank discussions and engaging in more effective monitoring. In this study, the association between *CP* and board size (*BSIZE*) measured by the ratio of the total number of board directors to natural log of total assets remains controversial. The correlation coefficients among the instrumental variables are shown in Table 10.

<Table 10 is inserted about here>

(c) Instrumental Variables Model

The ownership structure and board composition determining the independence of board is anticipated to affect the voluntary disclosure of comprehensive information on compensation that further positively influences firm value. The results in *Model I* of Table 11 support our anticipation and suggest that firms with higher independence of board such as higher percentage of shares owned by domestic trust funds (*%DTF*) and outside funds (*%OF*) tend to voluntarily disclose comprehensive information on director and executive compensation (0.005 and 0.003 respectively). Furthermore, such comprehensive disclosure provides a governance mechanism to increase the firm value (2.637). It also shows that the percentage of shares owned by management *%MNG* has a positive effect on *CP* (0.004). Therefore, the managerial shareholding proportion provides the incentives for them to maximize their share interests by increasing the market value through the disclosure of the comprehensive information on director and executive compensation.

<Table 11 is inserted about here>

A highly-concentrated ownership structure within which nominating and voting rights can be used to control board meetings tends to result in severe agency conflict, benefiting the personal interests of owners. Our results indicate that firms with lower

percentage of shares owned by controlling directors (*%CD*) and directors with critical control (*%CC*) would improve the level of transparency of compensation information (-0.001 and -0.001 respectively). The results reported in *Model III* of Table 11 are consistent with those reported in *Model I* of Table 11, showing that *CP* and *Q* have a significantly positive association (2.181). It further indicates that the effects of concentrated ownership are dominated by the effects of family shareholdings (*%FF* and *%FU*). The evidence (-0.004 and -0.001 respectively) could be inferred that, in Taiwan capital market, the family shareholdings could substitute the role of major controlling shareholdings.

The determinants of voluntary disclosure of comprehensive information on director and executive compensation could also refer to the board composition that directly affects the board independence either. The evidence in *Model I* of Table 12 supports the intension that the higher (lower) proportion of outside (family) director and supervisor on the board, the higher independence of the board is and the firm would voluntarily disclose comprehensive information on compensation (0.002, 0.003, 0.004 and -0.001 respectively). It also find a significantly inverse association between board size and *CP* (-0.001), indicating that smaller board size leads to higher transparency of compensation information. Also, such comprehensive disclosure also leads to market value creation (1.047).

<Table 12 is inserted about here>

(v) Self-selection Effect

The choice of disclosure transparency level is dependent on its benefits and costs. In accordance with political cost hypothesis (Wagenhofer, 1990), if the comparative advantages of information disclosure are larger than their costs, the firm will choose to signal high quality of transparency (Christensen and Feltham, 2000; Hyytinen and Pajarinen, 2005). Such deliberate choices are not random by managers or firms to self-select into their preferred choices. Therefore, the error in the OLS regression with such non-random choices is likely to be correlated with whether a firm discloses comprehensive information or not (Leuz and Verrecchia, 2000). We follow this proposition that firms will assess the costs vis-à-vis the benefits and suggest that if the utility concerning the comprehensive disclosure of compensation for firm i ($U_{i,CD=1}$) is larger than the one concerning incomplete information ($U_{i,CD=0}$), the firm will voluntarily disclose the comprehensive information on director and executive compensation: $CP_i=\mathbf{I}(U_{i,CD=1}>U_{i,CD=0})=\mathbf{I}(CP_i^*>0)$, where CP_i^* is an unobservable benefits of comprehensive disclosure measured by another observable discrete variable CP_i and $\mathbf{I}(\bullet)$ is an identity mapping.

With two-stage self-selection model, the parameters are estimated using the Heckit procedure (Heckman, 1979). In the first stage, the inverse Mills ratio capturing

the self-selection effect is obtained from the probit model in the disclosure equation:

$$CP_i^* = \alpha_{13} + \mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}} + \eta_{13,i} \tag{12}$$

where $\mathbf{Z}_i$ is a vector of determinants including instrumental variables, α_{13} and $\boldsymbol{\gamma}_{13}$ are parameters to be estimated. The conditional expectations of firm value with and without comprehensive disclosure are as following.

$$\begin{aligned} &E\left(Q_i \left| \mathbf{X}, CP_i = 1\right.\right) = \alpha_{14} + \mathbf{X}_i \boldsymbol{\beta}_{\mathbf{14}} + \delta_{14} \cdot CP_i + \rho_{\varepsilon,\eta}\sigma_\varepsilon \ \lambda_{i,CP=1}\left(\mathbf{Z}_i \boldsymbol{\gamma}_{13}\right) \text{ and} \\ &E\left(Q_i \left| \mathbf{X}, CP_i = 0\right.\right) = \alpha_{14} + \mathbf{X}_i \boldsymbol{\beta}_{\mathbf{14}} + \rho_{\varepsilon,\eta}\sigma_\varepsilon \ \lambda_{i,CP=0}\left(\mathbf{Z}_i \boldsymbol{\gamma}_{13}\right) \end{aligned} \tag{13}$$

where $\lambda_{i,CP=1}(\bullet)$ is the inverse Mills ratio used to adjust the self-selection effect caused by the choice of disclosure transparency level, $\lambda_{i,CP=1}\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right) = \varphi\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right) \Big/ \Phi\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right)$ and $\lambda_{i,CP=0}\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right) = \left[-\varphi\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right)\right] \Big/ \left[1 - \Phi\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right)\right]$. $\varphi(\bullet)$ is the standard normal distribution and $\Phi(\bullet)$ is its corresponding cumulative function. OLS is then used in valuation equation:

$$Q_i = \alpha_{14} + \mathbf{X}_i \boldsymbol{\beta}_{\mathbf{14}} + \delta_{14} \cdot CP_i + \sigma_{\varepsilon,\eta}\lambda_i + \varepsilon_{14,i}, \tag{14}$$

where $\lambda_i = \lambda_{i,CP=1}\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right) CP_i + \lambda_{i,CP=0}\left(\mathbf{Z}_i \boldsymbol{\gamma}_{\mathbf{13}}\right)\left(1 - CP_i\right)$, Q_i is the Tobin's Q of firm i, $\mathbf{X}_i$ is a vector of control variables, α_{14} and δ_{14} are parameters to be estimated.

The results in the *Model II* and *IV* of Table 11 and *Model II* of Table 12 show that the inverse Mills ratios (-1.282, -1.055 and -0.348 respectively) are significant, indicating that the choice of disclosure transparency level is not random and the self-selection effect is prevalent in our setting. In the *Model II* and *IV* of Table 11 and *Model II* of Table 12, the coefficients of *CP* on *Q* are still significantly positive (2.247,

1.864 and 0.681 respectively).

In the robustness, the question of whether the comprehensive disclosure of director and executive compensation determined by the board independence lead to higher market value of a firm is examined after controlling for both endogeneity problem and self-selection effect. Particularly, the board independence enhanced by the incentives for aligning interests provided the pressures provided by more outsiders and fewer insiders, higher managerial shareholdings, smaller board size, lower proportions of family directorship and concentrated ownership provides the willingness to voluntarily disclose comprehensive information on director and executive compensation. The evidence suggest that in emerging capital markets like Taiwan and other Asian and European countries under compensation disclosure policy reforms, firms with higher independence of the board tend to provide comprehensive information on compensation, leading to market value creation.

6. CONCLUSIONS

This study examines the association between voluntary disclosure of comprehensive information on director and executive compensation and firm value using hand-collected data of Taiwanese firms from 1996 to 2006 under the compensation disclosure policy reforms during which the authorities adopted gradual enforcement. We find that firms voluntarily disclosing comprehensive information on compensation

are evaluated with higher market value. However, the medium or minimal transparency of compensation disclosure helps fewer for the market value creation. Moreover, the comprehensive disclosure by firms using large proportion of reserved bonus does not lead to significantly positive market value. Besides, firms with higher proportion of concentrated ownership and family control would have higher market value through the compensation disclosure regardless of the level of transparency. Furthermore, we use the instrumental variables and the Heckman model to control the endogeneity problem and self-selection effect. Particularly, firms with higher (lower) proportion of outside (family) directors, supervisors and shareholdings, the higher incentives of managerial shareholding and the smaller board size would tend to enhance board independence for providing transparent compensation disclosure and such information leads to significant higher market value.

Our empirical results provide the positive market value creation of compensation disclosure and some ways for firms, particularly those in emerging markets, to improve the board independence and further increase their level of compensation transparency. The application of our results could enhance the motivation of the authorities in emerging countries not only to develop more effective compensation disclosure policy reforms, but to adopt gradual enforcement approach and provide discretions for firms voluntarily disclosing different transparency level of compensation information.

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APPENDIX A
Compensation Disclosure Policy Reforms around the World

Country	*Code of Disclosure*	*Items of Disclosure*
· US · Canada	1. Release No. 33-6962, 57 FR 48126, Ch.17, CFR Parts 228 and 229, *The Executive Compensation Disclosure* (1992) 2. *Compensation Discussion & Analysis* (*CD&A*) (2006)	Comprehensive information on director and executive compensation (Mandatory)
· Taiwan	*Criteria Governing Information to be published in the Annual Reports of Public Companies* (2007)	Comprehensive information on director and executive compensation (Suggested)
· Malaysia	1. Principle B-3 of *the Malaysian Code on Corporate Governance* (2000) Part 1 2. Item (11) of Appendix 9C, Section 9.25 of *the Listing Requirements of Bursa Malaysia Securities Berhad* (2007)	
· Hong Kong	*The Accounting and Auditing Provisions* (2007)	
· India · Australia	*Corporate Governance* (2004) *Clause 49* (*Revised*)	
· UK	1. The Cadbury Code of Best Practice (1993) 2. The Code of Best Practice from the Greenbury Report (1995) 3. *The Directors Remuneration Report Regulations* (2002) 4. *Combined Code on Corporate Governance* (2008)	Levels and structure of executive compensation Policies, performance measures and remuneration of each director
· New Zealand	1. *The Companies Act* (1993) 2. *Finance Act* (1993) 3. *Financial Reporting Standards*	Aggregate compensation (since 1993) and other benefits (since 1997)
· South Korea	*The Code of Best Practice for Corporate Governance* (1999)	Remuneration system
· Russia	1. *The Federal Law on Joint Stock Companies*, No. 208-FZ (1995) 2. *The Federal Law on the Securities Market*, No. 39-FZ (1996)	Aggregate compensation and their policies
· China	Item 21-(5) in Chapter III *Periodical Reports of the Regulations on Information Disclosure of Listed Companies* (2007)	Aggregate compensation
· Philippines	*The Code of Corporate Governance* (2002)	

APPENDIX B

Disclosure of Director Compensation

Panel A: Detailed Information on Directors' Compensation

Positions and Names	Directors' remuneration								Employed directors' remuneration										Total (a + b + c + d + e) divided by net income		Remuneration from other invested and subsidiaries companies
	Remuneration (a)		Appropriation of earnings (b)		Business entitlement (c)		Subtotal		Remuneration, bonuses and allowances (d)		Appropriation of earnings (e)				Share warrants						
	PC	CS	PC	CS	PC	CS	PC	CS	PC	CS	PC		CS		PC	CS	PC	CS			
											C	S	C	S							
Director A	Dollar																				
Director B																					
Director C																					
Director D																					
Director E																					

Panel B: Levels of Directors' Compensation

Level of compensation	Subtotal (a + b + c)		Total (a + b + c + d + e)	
	PC	CS	PC	CS
Below NT$ 2,000,000	Names			
NTD 2,000,000 ~ 5,000,000				
NTD 5,000,000 ~ 10,000,000				
NTD 10,000,000 ~ 15,000,000				
NTD 15,000,000 ~ 30,000,000				
NTD 30,000,000 ~ 50,000,000				
NTD 50,000,000 ~ 100,000,000				
Above NTD 100,000,000				
Total				

Notes: *PC*: Remuneration from positioned (stand-alone) company; *CS*: Total remuneration from consolidated statements of all companies; *C*: Cash dividends; *S*: Stock dividends; *NTD*: New Taiwanese Dollars.

APPENDIX C
Disclosure of Executive Compensation
Panel A: Detailed Information on Executives' Compensation

Positions and Names		*Remuneration* (*a*)		*Bonus, and allowance* (*b*)		Appropriation of earnings (c)				*Total* (*a*+*b*+*c*) *divided by net income*		*Shares of warrant*		Remuneration from other invested and subsidiaries companies
		PC	*CS*	*PC*	*CS*	*PC*		*CS*		*PC*	*CS*	*PC*	*CS*	
						C	S	C	S					
Chief Executive Officer		Dollar												
Executive Vice Presidents	*A*													
	B													
Division Managers	*A*													
	B													
	C													

Panel B: Levels of Executives' Compensation

Level of compensation	*PC*	*CS*
Below NTD 2,000,000	Names	
NTD 2,000,000 ~ 5,000,000		
NTD 5,000,000 ~ 10,000,000		
NTD 10,000,000 ~ 15,000,000		
NTD 15,000,000 ~ 30,000,000		
NTD 30,000,000 ~ 50,000,000		
NTD 50,000,000 ~ 100,000,000		
Above NTD 100,000,000		
Total		

Notes: *PC*: Remuneration from positioned (stand-alone) company; *CS*: Total remuneration from consolidated statements of all companies; *C*: Cash dividends; *S*: Stock dividends; *NTD*: New Taiwanese Dollars.

Table 1 Gradual Enforcement of Compensation Disclosure Policy Reforms in Taiwan

Date	*Regulation / Order Reference of Amendment / Incremental Requirement*
Nov. 11, 1995	*Regulations Governing the Preparation of Financial Reports by Securities Issuers* (No. (89)-*T-F-S* (6)-02576 by the *SEC*, *MF*) 1. The discretionary disclosure of the remuneration and transportation allowance paid to each director 2. The discretionary disclosure of total salaries, cash awards, special allowance, and bonus paid to the executives 3. The discretionary disclosure of other personal expenditures
Oct. 3, 2002	*Regulations Governing the Preparation of Financial Reports by Securities Issuers* (No. *T-F-S* (6)-0910005124 of the *SFC*, *MF*) The name, position held, and period during the position of any chairman, chief executive officer, or manager in charge of finance or accounting who also held positions at the accounting firm of a certified public accountant or any of its affiliated enterprises
Mar. 13, 2003	*Regulations Governing Information to be Published in Annual Reports of Public Companies* (No. *T-F-S*-I-0920005337 of the *SFC*, *MF*) 1. Information on distribution proposal adopted at the shareholders' meeting (1) Compensation for directors; (2) The effect upon imputed earnings per share of any proposed director compensation 2. Use of earnings for distribution of director compensation (1) Actual distributions of director compensation; (2) The amount of such distributions in the proposal adopted at the board meeting; (3) The degree of discrepancy between the two
Sep. 27, 2005	(No. *F-S-S*-VI-0940004294 of the *FSC*, *EY*) All of the requirements in different regulations and codes concerning the disclosure of director and executive compensation are integrated and reorganized in the *Regulations Governing Information to be Published in Annual Reports of Public Companies*
Jan. 16, 2006	*Regulations Governing Information to be Published in Annual Reports of Public Companies* (No. *F-S-S*-I-0950000274 of the *FSC*, *EY*) 1. The mandatory disclosure of number of directors in the table of 'Levels of Director and Executive Compensation' 2. Compare and describe total remuneration as a percentage of net income as paid by this company, and by each other company included in the consolidated financial statements, to its directors, the general manager, and assistant general managers 3. Analyze and describe remuneration policies, standards, and packages, the procedure for setting remuneration, and linkage to performance 4. The discretionary disclosure of the table of 'Detailed Information on Director and Executive Compensation'
Jan. 4, 2007	*Regulations Governing Information to be Published in Annual Reports of Public Companies* (No. *F-S-S*-I-0950005990 of the *FSC*, *EY*) 1. The discretionary disclosure of the remuneration from other invested companies and subsidiaries paid to directors, the general manager, and assistant general managers in the table of 'Detailed Information on Director and Executive Compensation' 2. To expand from 5 to 8 levels of compensation in the table of 'Levels of Director and Executive Compensation' 3. The discretionary disclosure of the table of 'Detailed Information on Director and Executive Compensation'

Dec. 27, 2007	*Regulations Governing Information to be Published in Annual Reports of Public Companies* (No. *F-S-S*-I-0960070693 of the *FSC*, *EY*) The second stage requirement regarding compensation disclosure 1. The mandatory disclosure of names in the table of 'Levels of Director and Executive Compensation' 2. The compensation paid to independent directors is also included 3. The discretionary disclosure of the table of 'Detailed Information on Director and Executive Compensation'

Notations:
EY: Executive Yuan
FSC: Financial Supervisory Commission
F-S-S: Finance-Supervisory-Securities
MF: Ministry of Finance
SEC: Securities and Exchange Commission
SFC: Securities and Futures Commission
T-F-S: Taiwan-Finance-Securities.

Table 2 Definitions of Different Level of Disclosure Transparency

Forms of compensation information	*Tables in the Annual Report*	*MN*	*MD*	*CP*
The Compensation Policies and Their Association with Performance	Additional Disclosure Notes	X	X	X
Lump Sum of all Directors' (Executives) Compensation	Statements of Changes in Stockholders' Equity Appropriations of Prior Year's Earnings Bonus to Directors and Supervisors	X	X	X
	Cash Flow Statement Cash Flows from Financing Activities Cash Bonus Paid to Directors and Supervisors	X	X	X
Numbers of Director and Executive in the Tables of Levels of Directors' (Executives') Compensation	Additional Disclosure Notes Compensation Paid during the Most Recent Fiscal Year to Directors, Supervisors, the General Manager, and Vice General Managers Levels of Directors' Compensation Levels of Executives' Compensation	X (*Since 2006*)	X	X
Names of Director and Executive in the Tables of Levels of Directors' (Executives') Compensation	Additional Disclosure Notes Compensation Paid during the Most Recent Fiscal Year to Directors, Supervisors, the General Manager, and Vice General Managers Levels of Directors' Compensation Levels of Executives' Compensation	—	—	X
The Elements in the Table of Detailed Information on Directors' (Executives') Compensation	Additional disclosure notes Compensation Paid during the Most Recent Fiscal Year to Directors, Supervisors, the General Manager, and Vice General Managers Detailed Information on Directors' Compensation Detailed Information on Executives' Compensation	—	—	X

Notations: X: Mandatory disclosure; —: Voluntary disclosure; *CP*: Comprehensive disclosure; *MD*: Medium disclosure; *MN*: Minimal disclosure

Table 3 The Tendency of Firms Disclosing Compensation Information according Different Criteria of Completeness

The hand-collected compensation disclosure data is recorded from the available annual financial report of companies listed in Taiwan Securities Exchange. The 'Minimal' is the criteria in which firms disclose the mandatory information on director and executive compensation; the 'Medium' is the criteria in which firms disclose compensation information in excess of the mandated disclosure; the 'Comprehensive' is the criteria in which firms voluntarily disclose comprehensive information on director and executive compensation. The proportion is the ratio of number of listed companies disclosing compensation information according to different criteria of completeness divided by total number of firms listed in Taiwan Securities Exchange.

Year	*Number of Listed Firms*	*Compensation Disclosure* (%)		
		Minimal	*Medium*	*Comprehensive*
1996	262	11.83	28.63	59.54
1997	268	11.57	29.48	58.96
1998	301	8.97	34.55	56.48
1999	339	5.90	41.00	53.10
2000	421	2.61	52.49	44.89
2001	516	2.71	62.21	35.08
2002	577	3.12	66.20	30.68
2003	623	3.53	69.82	26.65
2004	642	3.43	71.50	25.08
2005	651	3.69	72.35	23.96
2006	661	1.97	82.45	15.58

Table 4 Descriptive Summaries

The sample yields of 5,259 firm-year observations. Firm value (*Q*) is the Tobin's *Q*. *DCP* (*ECP*) is the comprehensive disclosure of director (executive) compensation; *DMD* (*EMD*) is the medium disclosure of director (executive) compensation; *DMN* (*EMN*) is the minimal disclosure of director (executive) compensation. *CP* is the integration of comprehensive disclosure of director and executive compensation; *MD* is the integration of medium disclosure of director and executive compensation; *MN* is the integration of minimal disclosure of director and executive compensation. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Profitability includes return on assets (*ROA*) and earnings per share (*EPS*).

Variable	Mean	Standard Deviation	Minimum	Maximum
Q	1.370	0.889	0.019	18.877
DCP	0.382	0.419	0.000	1.000
DMD	0.583	0.362	0.000	1.000
DMN	0.035	0.229	0.000	1.000
ECP	0.367	0.442	0.000	1.000
EMD	0.582	0.362	0.000	1.000
EMN	0.051	0.292	0.000	1.000
CP	0.367	0.442	0.000	1.000
MD	0.598	0.362	0.000	1.000
MN	0.035	0.228	0.000	1.000
SIZE	15.635	1.186	12.293	20.167
DEBT	39.829	16.172	1.545	98.715
INVST	22.629	17.529	0.000	99.540
FCF	6.232	10.284	-69.087	312.151
ROA	5.615	9.048	-100.720	50.640
EPS	1.480	2.902	-18.240	57.850

Table 5 Correlation Coefficients

Firm value (*Q*) is the Tobin's *Q*. *DCP* (*ECP*) is the comprehensive disclosure of director (executive) compensation; *DMD* (*EMD*) is the medium disclosure of director (executive) compensation; *DMN* (*EMN*) is the minimal disclosure of director (executive) compensation. *CP* is the integration of comprehensive disclosure of director and executive compensation; *MD* is the integration of medium disclosure of director and executive compensation; *MN* is the integration of minimal disclosure of director and executive compensation. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Profitability includes return on assets (*ROA*) and earnings per share (*EPS*).

	Q	*DCP*	*DMD*	*DMN*	*ECP*	*EMD*	*EMN*	*CP*	*MD*	*MN*	*SIZE*	*DEBT*	*INVST*	*FCF*	*ROA*	*EPS*
Q	1.00															
DCP	0.05 †	1.00														
DMD	-0.05 †	-0.79 †	1.00													
DMN	-0.02	-0.45 †	-0.10 †	1.00												
ECP	0.07 †	0.90 †	-0.71 †	-0.40 †	1.00											
EMD	-0.05 †	-0.79 †	1.00 †	-0.10 †	-0.71 †	1.00										
EMN	-0.04 †	-0.28 †	-0.13 †	0.74 †	-0.54 †	-0.14 †	1.00									
CP	0.07 †	0.90 †	-0.71 †	-0.40 †	1.00 †	-0.71 †	-0.54 †	1.00								
MD	-0.05 †	-0.79 †	1.00 †	-0.10 †	-0.71 †	1.00	-0.14 †	-0.71 †	1.00							
MN	-0.01	-0.44 †	-0.10 †	0.99 †	-0.40 †	-0.10 †	0.75 †	-0.40 †	-0.10 †	1.00						
SIZE	0.05 †	0.01	-0.03 †	0.04 †	0.0039	-0.03 †	0.04 †	0.005	-0.03 †	0.04 †	1.00					
DEBT	-0.20 †	-0.04 †	0.02	0.03	-0.04 †	0.02	0.03 †	-0.04 †	0.02	0.03 †	0.14 †	1.00				
INVST	0.01	0.01	-0.03 †	0.02	0.01	-0.03 †	0.01	0.01	-0.03 †	0.02	0.22 †	-0.23 †	1.00			
FCF	0.23 †	0.0002	0.01	-0.02	0.01	0.01	-0.03 †	0.01	0.01	-0.02	0.0027	-0.29 †	-0.04 †	1.00		
ROA	0.49 †	0.03 †	-0.04 †	0.0045	0.04 †	-0.05 †	-0.01	0.04†	-0.05 †	0.01	0.05 †	-0.37 †	0.04 †	0.33 †	1.00	
EPS	0.48 †	0.02	-0.03 †	0.0031	0.03	-0.03 †	-0.02	0.03	-0.03 †	0.0035	0.11	-0.27 †	0.02	0.29	0.87 †	1.00

Note: Significant at the 5% (†) level.

Table 6 the Effect of Compensation Disclosure on Firm Value

The coefficients estimated in regression models of firm value on different transparency level of compensation disclosure are given in the table. The corresponding t-value is also given in the parentheses below each coefficient. The dependent is firm value (*Q*) measured by Tobin's *Q*. *DCP* (*ECP*) is the comprehensive disclosure of director (executive) compensation; *DMD* (*EMD*) is the medium disclosure of director (executive) compensation; *DMN* (*EMN*) is the minimal disclosure of director (executive) compensation. *CP* is the integration of comprehensive disclosure of director and executive compensation; *MD* is the integration of medium disclosure of director and executive compensation; *MN* is the integration of minimal disclosure of director and executive compensation. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Profitability includes return on assets (*ROA*) and earnings per share (*EPS*).

	Dependent Variable: *Tobin's Q* (*Q*)								
Models	*I*	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*
CP	0.107 ‡			0.127 ‡			0.168 ‡		
	(4.47)			(3.74)			(3.65)		
MD				0.034			0.076		
				(0.83)			(1.46)		
MN							0.084		
							(1.33)		
DCP		0.084 ‡			0.087 †			0.123	
		(3.33)			(2.1)			(1.46)	
DMD					0.004			0.041	
					(0.08)			(0.46)	
DMN								0.047	
								(0.5)	
ECP			0.106 ‡			0.126 ‡			0.134
			(4.45)			(3.71)			(1.6)
EMD						0.034			0.041
						(0.82)			(0.48)
EMN									0.009
									(0.1)
SIZE	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
	(1.4)	(1.38)	(1.4)	(1.42)	(1.38)	(1.43)	(1.4)	(1.35)	(1.42)
DEBT	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *	-0.001 *
	(-1.67)	(-1.69)	(-1.67)	(-1.66)	(-1.69)	(-1.66)	(-1.68)	(-1.68)	(-1.66)
INVST	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(-1.09)	(-1.08)	(-1.09)	(-1.07)	(-1.08)	(-1.07)	(-1.08)	(-1.07)	(-1.07)
FCF	0.006 ‡	0.006 ‡	0.006 ‡	0.006 ‡	0.006 ‡	0.006 ‡	0.006 ‡	0.006 ‡	0.006 ‡
	(5.25)	(5.26)	(5.25)	(5.22)	(5.26)	(5.22)	(5.21)	(5.25)	(5.22)
ROA	0.029 ‡	0.029 ‡	0.029 ‡	0.029 ‡	0.029 ‡	0.029 ‡	0.029 ‡	0.029 ‡	0.029 ‡
	(11.63)	(11.64)	(11.63)	(11.65)	(11.64)	(11.65)	(11.63)	(11.63)	(11.65)
EPS	0.060 ‡	0.061 ‡	0.060 ‡	0.060 ‡	0.061 ‡	0.060 ‡	0.06 ‡	0.061 ‡	0.060 ‡
	(8.2)	(8.19)	(8.19)	(8.18)	(8.19)	(8.18)	(8.19)	(8.2)	(8.17)
cons.	0.866 ‡	0.882 ‡	0.865 ‡	0.841 ‡	0.880 ‡	0.841 ‡	0.805 ‡	0.846 ‡	0.834 ‡
	(6.04)	(6.15)	(6.04)	(5.75)	(5.94)	(5.75)	(5.41)	(5.2)	(5.14)
adj. R^2	0.262	0.260	0.262	0.262	0.260	0.262	0.262	0.260	0.261
MSE	0.584	0.585	0.584	0.584	0.585	0.584	0.584	0.585	0.584

Note: Significant at the 1% (‡), 5% (†), and 10% (*) levels.

Table 7 the Accounting-based Valuation Model

The coefficients estimated in regression models of firm value on different transparency level of compensation disclosure are given in the table. The corresponding t-value is also given in the parentheses below each coefficient. The dependent variable is $MV_{i,t}$, the stock market value of firm i at time t. $BV_{i,t}$ is the book value per share, $EPS_{i,t}$ is earnings per share. *DCP* (*ECP*) is the comprehensive disclosure of director (executive) compensation; *DMD* (*EMD*) is the medium disclosure of director (executive) compensation; *DMN* (*EMN*) is the minimal disclosure of director (executive) compensation. *CP* is the integration of comprehensive disclosure of director and executive compensation; *MD* is the integration of medium disclosure of director and executive compensation; *MN* is the integration of minimal disclosure of director and executive compensation.

	I	*II*	*III*	*IV*	*V*	*VI*	*VII*	*VIII*	*IX*
BV	1.330 ‡ (37.93)	1.332 ‡ (37.31)	1.417 ‡ (37.03)	1.077 ‡ (34.51)	1.080 ‡ (33.92)	1.417 ‡ (37.03)	1.065 ‡ (30.89)	1.068 ‡ (30.22)	1.452 ‡ (32.09) ‡
EPS	756.358 ‡ (40.66)	755.085 ‡ (40.54)	736.425 ‡ (39.02)	877.938 ‡ (53.47)	878.004 ‡ (53.47)	736.425 ‡ (39.02)	817.359 ‡ (45.10)	817.258 ‡ (45.09)	734.631 ‡ (38.64) ‡
CP	702.089 ‡ (14.84)	700.044 ‡ (14.68)	721.832 ‡ (15.09)						
MD		-149.763 (-1.08)	-189.168 (-1.36)						
MN			-665.071 ‡ (-6.14)						
DCP				448.826 ‡ (5.16)	473.936 ‡ (4.42)	665.071 ‡ (6.14)			
DMD					67.989 (0.4)	-245.929 (-1.42)			
DMN						-721.832 ‡ (-15.09)			
ECP							424.850 ‡ (4.82) ‡	452.965 ‡ (4.14) ‡	701.382 ‡ (6.31) ‡
EMD								74.411 (0.43)	-265.027 (-1.53)
EMN									-780.034 ‡ (-14.34) ‡
const.	-1145.915 ‡ (-18.92)	-1144.772 ‡ (-18.53)	-1222.936 ‡ (-19.39)	-983.313 ‡ (-9.59)	-1011.389 ‡ (-8.14)	-1166.175 ‡ (-9.18)	--968.489 ‡ (-9.03)	-1000.64 ‡ (-7.68)	-1196.95 ‡ (-9.06) ‡
Adj. R^2	0.712	0.712	0.712	0.712	0.712	0.712	0.712	0.712	0.712
Root MSE	39507	39497	39499	39508	39503	39502	39507	39496	39495

Note: Significant at the 1% (‡), 5% (†), and 10% (*) levels.

Table 8 Proportions of Compensation Disclosure in Electronics and Non-electronics Industry

The proportions (%) of firms disclosing different transparency level of information on director and/or executive compensation in the subsample of electronics and non-electronics industries. The listed companies in electronics industry are coded as 23XX, 24XX and 3XXX. The Elec. is the electronics companies, whilst the Non-elec. is the non-electronics companies.

	Director and Executive Compensation		*Director Compensation*		*Executives Compensation*	
	Elec.	*Non-elec.*	*Elec.*	*Non-elec.*	*Elec.*	*Non-elec.*
Comprehensive	88.78	17.64	88.82	19.64	88.49	17.66
Medium	6.91	79.21	6.89	77.20	6.89	77.11
Minimal	4.31	3.15	4.29	3.15	4.62	5.23

Table 9 Effect of Compensation Disclosure on Firm Value with Subsample

The coefficients estimated in each regression model of the level of disclosure on firm value are given in the table. The corresponding t-value is also given in the parentheses below each coefficient. The dependent is firm value (*Q*) measured by Tobin's *Q*. *DCP* (*ECP*) is the comprehensive disclosure of director (executive) compensation; *DMD* (*EMD*) is the medium disclosure of director (executive) compensation; *DMN* (*EMN*) is the minimal disclosure of director (executive) compensation. *CP* is the integration of comprehensive disclosure of director and executive compensation; *MD* is the integration of medium disclosure of director and executive compensation; *MN* is the integration of minimal disclosure of director and executive compensation. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Profitability includes return on assets (*ROA*) and earnings per share (*EPS*).

	Dependent Variable: *Tobin's Q* (*Q*)					
Industry	*Electronics*			*Non-electronics*		
Models	*I*	*II*	*III*	*IV*	*V*	*VI*
CP	-0.169			0.133 ‡		
	(-1.09)			(2.98)		
MD	-0.170			0.088 *		
	(-0.97)			(1.77)		
MN	-0.348 *			0.108 *		
	(-1.84)			(1.72)		
DCP		-0.252			0.288 ‡	
		(-1.5)			(3.08)	
DMD		-0.252			0.251 ‡	
		(-1.34)			(2.61)	
DMN		-0.430 †			0.268 ‡	
		(-2.15)			(2.59)	
ECP			-0.251			0.280 ‡
			(-1.49)			(3.05)
EMD			-0.252			0.235 †
			(-1.35)			(2.49)
EMN			-0.438 †			0.223 †
			(-2.2)			(2.3)
SIZE	0.061 ‡	0.062 ‡	0.062 ‡	-0.031 ‡	-0.033 ‡	-0.033 ‡
	(3.48)	(3.51)	(3.53)	(-2.83)	(-3)	(-2.96)
DEBT	-0.002	-0.002	-0.002	-0.0002	-0.0001	0.0001
	(-1.01)	(-0.97)	(-0.94)	(-0.24)	(-0.1)	(-0.1)
INVST	0.003 †	0.003 †	0.003 †	-0.001 †	-0.001 *	-0.001 *
	(2.07)	(2.09)	(2.1)	(-2.04)	(-1.88)	(-1.89)
FCF	0.005 †	0.005 †	0.005 †	0.005 ‡	0.005 ‡	0.005 ‡
	(1.97)	(1.98)	(1.97)	(4.31)	(4.32)	(4.3)
ROA	0.024 ‡	0.025 ‡	0.025 ‡	0.040 ‡	0.040 ‡	0.040 ‡
	(6.06)	(6.08)	(6.1)	(12.17)	(12.23)	(12.2)
EPS	0.074 ‡	0.074 ‡	0.074 ‡	0.013	0.013	0.014
	(6.7)	(6.69)	(6.68)	(1.19)	(1.23)	(1.27)
const.	0.484	0.554 *	0.546 *	1.425 ‡	1.285 ‡	1.292 ‡
	(1.56)	(1.77)	(1.74)	(8.37)	(6.91)	(6.96)
Adj. R^2	0.3	0.3	0.3	0.229	0.230	0.230
MSE	0.722	0.722	0.722	0.476	0.476	0.475

Note: Significant at the 1% (‡), 5% (†), and 10% (*) levels.

Table 10 Correlation Coefficients of Instrumental Variables

CP is the integration of comprehensive disclosure of compensation, *%DTF* is the domestic trust funds shareholding, *%OF* is the outside funds shareholding, *%MNG* is the managerial shareholding, *%CD* is the controlling director shareholding, *%CC* is the critical controlling shareholding, *%FF* is the family funds shareholding, *%FU* is the family unlisted corporate shareholding, *OCD* is the outside listed corporate director, *OCS* is the outside listed corporate supervisor, *OFS* is the outside funds shareholding, *FCD* is the family unlisted corporate director and *BSIZE* is the board size.

	CP	*%DTF*	*%OF*	*%MNG*	*%CD*	*%CC*	*%FF*	*%FU*	*OCD*	*OCS*	*OFS*	*FCD*	*BSIZE*
CP	1.00												
%DTF	0.05 †	1.00											
%OF	0.04 †	0.19 †	1.00										
%MNG	0.03 †	0.07	-0.0001	1.00									
%CD	-0.03 †	-0.06 †	-0.05 †	-0.02	1.00								
%CC	-0.03 †	-0.06 †	-0.10	-0.01	-0.07 †	1.00							
%FF	-0.04 †	-0.04 †	0.003	-0.05 †	0.08 †	0.07 †	1.00						
%FU	-0.04 †	-0.10 †	-0.07 †	-0.16 †	0.17 †	0.22 †	-0.06 †	1.00					
OCD	0.05 †	0.06 †	0.02	0.01	-0.23 †	0.06 †	-0.03 †	-0.07 †	1.00				
OCS	0.06 †	0.01	0.01	0.003	-0.10 †	0.004	0.01	-0.07 †	0.35 †	1.00			
OFS	0.04 †	-0.02	0.16 †	0.004	-0.04 †	-0.04 †	-0.01	-0.01	0.01	-0.01	1.00		
FCD	-0.06 †	-0.11 †	-0.02	-0.22 †	0.41†	-0.002	-0.03 †	0.54 †	-0.08 †	-0.05 †	0.02 †	1.00	
BSIZE	-0.02	-0.06 †	-0.03 †	-0.03 †	-0.21 †	-0.07 †	0.11 †	-0.06 †	0.11 †	0.09 †	0.04 †	-0.02	1.00

Note: Significant at the 5% (†) level.

Table 11 Effect of Comprehensive Disclosure of Compensation on Firm Value with Ownership Structure as Instruments

The coefficients estimated in each regression model of the level of disclosure on firm value are given in the table. The corresponding t-value and z-value are also given in the parentheses below the coefficients in instrumental variables model and Heckman self-selection model correspondingly. The dependent is firm value (*Q*) measured by Tobin's *Q*. *CP* is the comprehensive disclosure of director and executive compensation. λ is evidence of self-selection effect. *%DTF* is the domestic trust funds shareholding, *%OF* is the outside funds shareholding, *%MNG* is the managerial shareholding, *%CD* is the controlling director shareholding, *%CC* is the critical controlling shareholding, *%FF* is the family funds shareholding, *%FU* is the family unlisted corporate shareholding. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Profitability includes return on assets (*ROA*) and earnings per share (*EPS*). ρ is the correlation of the error terms in observation and selection equation. σ is the standard deviation of the error term in observation equation.

Models	*I*		*II*		*III*		*IV*	
	Instrumental Variable		*Heckman Self-selection*		*Instrumental Variable*		*Heckman Self-selection*	
dependent variables	*CP*	*Q*	*CP*	*Q*	*CP*	*Q*	*CP*	*Q*
CP		2.637 ‡		2.247 ‡		2.181 ‡		1.864 ‡
		(4.31)		(5.89)		(4.81)		(4.93)
λ				-1.282 ‡				-1.055 ‡
				(-5.62)				(-4.71)
%DTF	0.005 ‡		0.017 ‡		0.005 †		0.016 ‡	
	(2.66)		(2.78)		(2.46)		(2.62)	
%OF	0.003 *		0.008 *		0.003 *		0.008 *	
	(1.71)		(1.75)		(1.67)		(1.7)	
%MNG	0.004 *		0.013		0.003		0.010	
	(1.69)		(1.64)		(1.32)		(1.3)	
%CD	-0.001 *		-0.002 *		-0.0005		-0.001	
	(-1.96)		(-1.87)		(-1.45)		(-1.36)	
%CC	-0.001 *		-0.004		-0.001		-0.002	
	(-1.69)		(-1.62)		(-0.9)		(-0.84)	
%FF					-0.004 ‡		-0.010 ‡	
					(-2.71)		(-2.62)	
%FU					-0.001 *		-0.003 *	
					(-1.89)		(-1.87)	
SIZE	0.002	-0.016	0.005	-0.014	0.005	-0.014	0.015	-0.013
	(0.3)	(-0.93)	(0.27)	(-1.43)	(0.79)	(-0.95)	(0.75)	(-1.3)
DEBT	-0.001 *	0.001	-0.002 *	0.0005	-0.001 *	0.0004	-0.002 *	0.0002
	(-1.76)	(0.54)	(-1.8)	(0.61)	(-1.73)	(0.33)	(-1.76)	(0.2)
INVST	0.00006	-0.002	0.0001	-0.002 †	-0.00001	-0.002	-0.00007	-0.002 †
	(0.15)	(-1.44)	(0.12)	(-2.53)	(-0.05)	(-1.62)	(-0.06)	(-2.5)
FCF	-0.0005	0.007 ‡	-0.002	0.007 ‡	-0.0005	0.007 ‡	-0.002	0.007 ‡
	(0.75)	(3.48)	(-0.78)	(4.86)	(-0.75)	(3.88)	(-0.77)	(4.72)
ROA	0.002	0.022 ‡	0.007	0.023 ‡	0.002	0.024 ‡	0.007	0.024 ‡
	(1.57)	(4.78)	(1.57)	(3.97)	(1.54)	(5.83)	(1.54)	(4.14)
EPS	-0.007	0.079 ‡	-0.020	0.077 ‡	-0.006	0.077 ‡	-0.020	0.075 ‡
	(-1.49)	(5.85)	(-1.53)	(4.21)	(-1.46)	(6.53)	(-1.49)	(4.07)
const.	0.779 ‡	-0.573	0.766	-0.299	0.724 ‡	-0.253	0.602 *	-0.030
	(7.73)	(-1.15)	(2.51)	(-0.89)	(7.08)	(-0.65)	(1.94)	(-0.09)
ρ				-1.763				-1.451
σ				0.727				0.727
p-value	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Note: Significant at the 1% (‡), 5% (†), and 10% (*) levels.

Table 12 Effect of Comprehensive Disclosure of Compensation on Firm Value with Board Composition as Instruments

The coefficients estimated in each regression model of the level of disclosure on firm value are given in the table. The corresponding t-value and z-value are also given in the parentheses below the coefficients in instrumental variables model and Heckman self-selection model correspondingly. The dependent is firm value (*Q*) measured by Tobin's *Q*. *CP* is the comprehensive disclosure of director and executive compensation. λ is evidence of self-selection effect. *OCD* is the outside listed corporate director, *OCS* is the outside listed corporate supervisor, *OFS* is the outside funds shareholding, *FCD* is the family unlisted corporate director and *BSIZE* is the board size. Firm characteristics include firm size (*SIZE*) measured by the natural log of total assets, the debt ratio (*DEBT*) measured by the ratio of total liabilities to total assets, the proprietary ratio (*INVST*) measured by the ratio of total investment to total assets and free cash flow (*FCF*) measured by the ratio of operating cash flow to total assets. Profitability includes return on assets (*ROA*) and earnings per share (*EPS*). ρ is the correlation of the error terms in observation and selection equation. σ is the standard deviation of the error term in observation equation.

Models	*I*		*II*	
dependent	*Instrumental Variables*		*Heckman Self-selection*	
variables	*CP*	*Q*	*CP*	*Q*
CP		1.047 (3.78) ‡		0.681 (2.75) ‡
λ				-0.348 (-2.38) †
OCD	0.002 (2.03) †		0.008 (2.05) †	
OCS	0.003 (3.22) ‡		0.011 (3.43) ‡	
OFS	0.004 (2.82) ‡		0.018 (2.8) ‡	
FCD	-0.001 (-3.77) ‡		-0.002 (-3.68) ‡	
BSIZE	-0.001 (-2.3) †		-0.002 (-2.37) †	
SIZE	0.008 (1.37)	-0.010 (-0.93)	0.023 (1.32)	-0.009 (-0.83)
DEBT	-0.001 (-1.85) *	-0.001 (-0.57)	-0.003 (-1.91) *	-0.001 (-1.06)
INVST	0.0002 (0.72)	-0.002 (-2.19) †	0.001 (0.71)	-0.002 (-2.39) †
FCF	-0.0004 (-0.6)	0.006 (5.11) ‡	-0.001 (-0.59)	0.006 (4.35) ‡
ROA	0.002 (1.52)	0.027 (9.28) ‡	0.007 (1.53)	0.028 (4.7) ‡
EPS	-0.006 (-1.3)	0.072 (8.54) ‡	-0.017 (-1.29)	0.070 (3.68) ‡
const.	0.681 (0.084) ‡	0.543 (2.15) ‡	0.480 (1.87) *	0.799 (3.41) ‡
ρ				-0.477
σ				0.73
p-value	<0. 01	<0.01	<0.01	<0.01

Note: Significant at the 1% (‡), 5% (†), and 10% (*) levels.