

# INTERNAL CORPORATE GOVERNANCE MECHANISMS: EVIDENCE FROM TAIWAN ELECTRONIC COMPANIES

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## ABSTRACT

*This study's focuses on the effects of directors and employee stock bonus plans on electronic companies listed on the Taiwan Stock Exchange Corporation. In addition, the paper examines the appropriate internal corporate governance mechanisms for firms. The evidence shows firms with different scale measured by paid-in capital, need different corporate governance mechanisms. That is, raising directors' ownership may enhance corporate governance mechanisms for small firms. Appointing independent directors voluntarily may enhance corporate governance mechanisms for middle size firms. Furthermore, large firms may enhance corporate governance mechanisms by raising all directors' ownership, appointing independent directors voluntarily, or decreasing the proportion of managers serving concurrently as directors. Independent directors appear to have more effects on middle size and large firms.*

**JEL:** G 34, G35,M48

**KEYWORDS:** corporate governance, independent directors, independent supervisors

## INTRODUCTION

Issues of corporate governance have received heightened emphasis in recent years, following the event of Enron in the U.S.A. and the scandals of Rocomp Informatics Ltd. and Infodisc Technology Co. Ltd. in Taiwan. To strengthen corporate governance in Taiwan, the government has implemented a series of reforms. One reform is the introduction a system of independent directors and supervisors. Investors hope that independent directors and supervisors are more focused on shareholder rights and interests. On the contrary, many companies doubt the benefits of independent directors and supervisors. Such a situation triggered our motivation to explore the appropriate corporate governance mechanisms for different firms in the perspective of employee bonus plans.

In the USA and UK, the primary duty of a firm's directors is to monitor the managers on behalf of shareholders, thereby reducing agency problems (Fama, 1980; Fama and Jensen, 1983; Williamson, 1983). Agency problems will be more severe when the function of directors and supervisors is ineffective and firm performance and stock price will be affected accordingly (Core et al., 1999). The independent director mechanism is one of the most important determinants of corporate governance, and has been discussed by scholars and enterprisers extensively (Weisbach, 1988; Rosenstein and Wyatt, 1990; Brickley et al., 1994; Core et al., 1999). The results regarding whether inside or independent directors and supervisors bring more benefits to a company are mixed. Many researchers argued that independent directors perform their duty of monitoring, thereby bringing benefits to a company (Weisbach, 1988; Rosenstein and Wyatt, 1990). However, some studies do not find a significant correlation between the proportion of independent directors and firm performance (Baysinger and Butler, 1985; Hermalin and Weisbach, 1991; Yermack, 1996; Bhagat and Black, 1997). Nevertheless, this does not imply there is no need to maintain inside directors. Some suggest that inside directors' expert knowledge is necessary for a company (Rosenstein and Wyatt, 1997), and the inclusion of inside directors on the board can lead to a more effective decision-making process (Fama and Jensen, 1983). Furthermore, inside directors are often concurrently shareholders. Higher the director stock

ownership of the firm, implies greater alignment of firm performance and directors' benefits, hence the greater incentive for such inside directors to monitor firm operations.

Many executives credit employee stock bonus plans with recruiting innovative employees thereby helping Taiwan's high-tech companies become globally competitive. In Taiwan, firms have applied employee stock bonus plans extensively with the goal of improving firm performance and increasing firm value. Because firms were not allowed to purchase their own stock in the open market until 2000, for the past two decades employee stock bonus plans have been the primary tool used to provide equity-based compensation and incentives by Taiwan firms, especially among high-tech firms. A high level of employee bonus grants benefit employees at the expense of stockholders' wealth, since distribution of employee stock bonuses result in the dilution of firm EPS. Prior to the amendment of May 24, 2006, Taiwan's Business Accounting Law stipulated that distribution of earnings of a business, such as dividend and bonus, shall not be recorded as an expenses or loss. In 1989, Taiwan's Financial Accounting Standards Board explained that employee stock bonuses are similar to earnings distribution. In practice, the firm treated employee stock bonus grants as earnings distribution and credited "Common Stock/ Preferred Stock" by multiplying par value (\$10, NT dollars, hereafter) by the number of shares, accordingly. Hence, net income is overestimated when computing EPS. On the other hand, the denominator becomes larger after employee stock bonuses grants when calculating EPS.

Furthermore, qualification requirements of employees who are entitled to receive dividend bonuses, including the employees of subsidiaries of the company meeting certain specific requirements, may be specified in the articles of incorporation. The arguments regarding distribution and the amounts of paid dividend bonuses include the transparency of the decision making process, the independence of related decision makers, and the rationality of the amount distributed. Because the plans of surplus earning distributions are proposed by boards of directors, this study explores the appropriate corporate governance mechanisms for firms in view of the effects of the Securities and Exchange Act regarding ownership and systems of (independent) directors and (independent) supervisors on employees stock bonus plans (ESBP) of Taiwan Stock Exchange listed electronic companies (TSEC).

This study differs from previous studies except for that of Kuo et al. (2006), in that not only directors' ownership and supervisors' ownership but also the number of directors and number of supervisors are taken as separate independent variables. Previous studies combine these variables as one. The main contribution of this study is that the evidence shows firms with different scale, measured by paid-in capital, need different corporate governance mechanisms. That is, to raise all directors' ownership may enhance corporate governance mechanisms for small firms. To appoint independent directors voluntarily may enhance corporate governance mechanisms for middle size firms. Furthermore, large firms may enhance corporate governance mechanisms by raising all directors' ownership, appointing independent directors voluntarily, or decreasing the proportion of managers serving concurrently as directors to total directors. The system of independent directors seems to have more effects on both middle size and large firms.

The remainder of this paper is organized into 6 sections. Section 2 briefly describes the independent directors system and independent supervisors system in Taiwan. Section 3 discusses relevant literature and develops the hypotheses. Section 4 describes the sample selection and empirical design. Section 5 shows the empirical results mainly surrounding the association between the percentage of employee stock bonuses granted and the board and ownership structure variables. Section 6 explores the appropriate corporate governance mechanisms for firms in view of the effects of the Securities and Exchange Act regarding ownership and systems of (independent) directors and (independent) supervisors on ESBP of TSEC-Listed electronic companies. A summary and conclusion is provided in Section 7.

## **INDEPENDENT DIRECTORS/SUPERVISORS SYSTEMS IN TAIWAN**

Mechanisms for corporate governance can be divided into two parts, internal and external mechanisms.

Structural conflicts inherent inside large-scale corporations may result in many different problems with respect to corporate governance. TSEC began requiring that IPO firms listed from February 2002 on should have two independent directors and one independent supervisor.

Article 14-2 of the Securities and Exchange Act states : A company that has issued stock in accordance with this Act may appoint independent directors in accordance with its articles of incorporation. The Competent Authority, however, shall as necessary in view of the company's scale, shareholder structure, type of operations, and other essential factors, require it to appoint independent directors, not less than two in number and not less than one-fifth of the total number of directors. Independent directors shall possess professional knowledge and there shall be restrictions on their shareholdings and the positions they may concurrently hold. They shall maintain independence within the scope of their directorial duties, and may not have any direct or indirect interest in the company. Regulations governing the professional qualifications, restrictions on shareholdings and concurrent positions held, assessment of independence, method of nomination, and other matters for compliance with respect to independent directors shall be prescribed by the Competent Authority. There has been no system of independent supervisors since the amendment of the Securities and Exchange Act on January 11, 2006.

Article 14-4 of Securities and Exchange Act states: A company that has issued stock in accordance with this Act shall establish either an audit committee or a supervisor. The Competent Authority may, however, in view of the company's scale, type of operations, or other essential considerations, order it to establish an audit committee in lieu of a supervisor; the relevant regulations shall be prescribed by the Competent Authority. The audit committee shall be composed of the entire number of independent directors. It shall not be fewer than three persons in number, one of whom shall be convener, and at least one of whom shall have accounting or financial expertise.

## **LITERATURE REVIEW AND RESEARCH HYPOTHESES**

Agency theory argues that under conditions of incomplete information and uncertainty, two agency problems arise: adverse selection and moral hazard. The problems of adverse selection and moral hazard imply that fixed wage contracts are not always the optimal way to organize relationships between principals and agents (Jensen and Meckling, 1976). The provision of ownership rights reduces the incentive for agents' adverse selection and moral hazard because it makes their compensation dependent on their performance (Jensen and Ruback, 1983). Equity-based compensation is one of the mechanisms to align the interests of employees and shareholders. However, managers have an economic incentive to manipulate earnings in order to increase their compensation resulting in another agency problem (Healy, 1985; Watts and Zimmerman, 1986).

Corporate governance structure specifies the distribution of rights and responsibilities among different participants in the corporation, such as, the Board, managers, shareholders and other stakeholders, and spells out rules and procedures for making decisions on corporate affairs. Corporate governance may lower agency costs or prevent agency problems. The core of the internal mechanism is the board of directors and supervisors in Taiwan. Fama (1980), Fama and Jensen (1983) argued that the function of the board may solve agency problems. Therefore, board characteristics are an issue worth exploring. Furthermore, many executives credit employee stock bonus plans with recruiting innovative employees and thus helping Taiwan's high-tech companies become globally competitive.

While a number of studies have examined the relationships between board characteristics and variables such as firm performance and corporate value, relatively few studies have investigated the correlation between board characteristics and ESBP. Hypotheses tested here are focused on the effects of Taiwan's Securities and Exchange Act regarding ownership and systems of (independent) directors and (independent) supervisors on ESBP.

### Ownership of the Entire Body of Either Directors or Supervisors

Jensen and Meckling (1976) put forward the convergence-of-interest hypothesis. They argued that from an agency theoretic perspective, the need to monitor management stems from divergence of interests between managers and stockholders. The higher the managers' ownership stakes in the company, the greater the alignment of managers' and stockholders' incentives. Due to a reduction of agency costs, this hypothesis predicts that firm value and performance increases as management ownership rises.

While a number of studies have examined the relationships between board characteristics and variables such as firm performance and corporate value, relatively few studies have investigated the correlation between board characteristics and employee stock bonus plans. Empirical results in Taiwan regarding ownership structure and firm performance/value are generally consistent with the convergence-of-interest hypothesis or self-interest hypothesis.

Some prior studies (Chen et al., 2004; Hsu and Cheng, 2004) showed that the ownership of directors and supervisors are negatively correlated to employee (stock) bonuses granted. The results are consistent with the convergence-of-interest hypothesis or self-interest hypothesis. On one hand, directors' ownership is commonly much higher than that of supervisors in Taiwan. Prior results can therefore be contributed mainly to directors' ownership. On the other hand, most directors also serve as employees. That is, when the directors hold a substantial amount of a firm's stock, they will not propose an earnings distribution with high percentage of employee stock bonus grants since the dilution effects of employee stock bonus grants may be larger than the motivation effects. However, owing to the different characteristics, it may be inappropriate to combine directors' ownership with supervisors' ownership as an explanatory variable. The study of Kuo et al. (2006) was the first to use ownership of directors and ownership of supervisors separately as independent variables. Their results indicate that the ownership of general directors is negatively correlated to employee stock bonuses grants. The evidence is consistent with the convergence-of-interest hypothesis or self-interest hypothesis. Based on the self-interest hypothesis, the author infer that the higher the directors' ownership, the less likely they will do harm to stockholders' equity. Therefore, the following hypothesis is developed :

*H1 : Ceteris paribus, the greater all the board of directors' ownership of the firm, the lower the percentage of employee stock bonuses granted.*

No prior research except that of Kuo et al. (2006) has examined correlation between employee stock bonuses granted and the supervisors' ownership of the firm. Their study indicated a positive relationship between general supervisors' ownership of the firm and percentage of employee stock bonuses granted. This finding is consist with the evidence of Mork et al. (1988) who find the entrenchment effect is dominant within the 5%-25% ownership range. The average ownership of general directors for 146 firms in the study of Kuo et al. (2006) is 6.70%. The evidence is also consistent with the self-interest hypothesis. Because supervisor ownership is low, the dilution effects may be less than the motivation effects resulting from employee stock bonuses grants. Based on the above inference, the following hypothesis is developed :

*H2 : Ceteris paribus, the greater all the supervisors' ownership of the firm, the higher the percentage of employee stock bonuses granted.*

### The Number of the Entire Body of Either Directors or Supervisors

As aforementioned, Chen et al. (2004) argued that participation of board members in employees' profit sharing reinforces the approval of employee stock bonuses. This is consistent with the arguments of Lipton and Lorsch (1992), Jensen (1993), and Yermack (1996) that the board's decision-making quality decreases with board size because more people in the group lower the group's coordination and processing skills. The results of Kuo et al. (2006) support the argument that board decision-making quality decreases with board size, just as proposed by Lipton and Lorsch (1992), Jensen (1993), and

Yermack (1996). Based on the above inference, the following hypothesis is developed:

*H3 : Ceteris paribus, the larger the number of all the directors of the firm, the higher the percentage of employee stock bonuses granted.*

In Taiwan, for a company whose shares are issued to the public two or more supervisors must be elected. The role of supervisors in Taiwan is similar to that of independent directors in the U.S. One may argue that if the minimum number of supervisors regulated by Taiwan's Company Law is adequate to perform the duties.

Large U.S. listed companies generally maintain various functional committees such as a nomination committee, finance committee, public issues committee, audit committee, compensation committee, and executive committee. Audit committee, nomination committee and compensation committee exercise different kinds of monitoring functions. In December 1999, the NYSE and NASDAQ modified their requirements by mandating that listed companies maintain audit committees with at least three directors all of whom have no relationship to the company that may interfere with the exercise of their independence from management and the company. Compared to the U.S., this study argues that one supervisor regulated by Taiwan's Company Law (two for public issued companies) is inadequate to carry on the monitoring functions.

A positive correlation between the number of supervisors and the monitoring functions can therefore be hypothesized:

*H4 : Ceteris paribus, the larger the number of all the supervisors of the firm, the lower the percentage of employee stock bonuses granted.*

Corporate governance is considered a comprehensive system to promote integrity of securities markets. The ultimate goal of this system is to protect shareholders' rights and interests. Enhancing the board of director's function is one of the most important ways to achieve this goal. Two principles a TSEC /GTSM (Gretai Securities Market) listed company shall follow when setting up the corporate governance system, in addition to complying with relevant laws and regulations are (1) to strengthen the powers of the board of directors, and (2) to fulfill the function of supervisors (Article 2 of Corporate Governance Best-Practice Principles for TSEC/GTSM Listed Companies). Furthermore, independent directors system and independent supervisors system are mechanisms to strengthen board of director powers and to empower the function of supervisors as stated in the aforementioned Corporate Governance Best-Practice Principles. The author infers that both independent directors and independent supervisors protect shareholders' rights and interests.

Owing to the lack of research with regard to correlation between independent directors/supervisors and employee stock bonus plans, the author apply related studies in developing hypotheses regarding independent directors/supervisors. Pincus et al. (1989) found that the portion of board seats held by outside (nonmanager) directors was associated with audit committee formation. They explained this relationship as stemming from the liability exposure of outside directors. An alternative explanation comes from the management literature, where the portion of insiders on the board has been used to measure of management's influence in several studies (Kesner et al., 1986; Kosnik, 1987; Siggh and Harianto, 1989). A high proportion of insiders on the board is a strong signal that the company is dominated by its officers. As manager incentives can conflict with those of shareholders, the board's effectiveness in the execution of its duties depends in large part on its independent directors (Jemison and Oakley, 1983). Several papers present evidence suggesting that effective governance and firm performance increase with board independence (Brickley et al., 1994; Byrd and Hickman, 1992; Weisbach, 1988). With regard to the empirical results of board composition and firm performance in Taiwan, most studies find a positive correlation between firm performance and number of independent directors, proportion of independent directors, or independent directors' ownership of the firm (Lin,

2002; Chen, 2003; Chen, 2006; Lin, 2006). That is, independent directors may enhance the function of corporate governance.

Effective governance includes preventing excessive dilution effects that result from large amounts of employee stock bonuses grants. That is, the better the corporate governance the lower level the employee stock bonuses grants, holding all else equal. From the above discussions, it is therefore reasonable to assume that both the independent directors act rationally in proposing the level of stock bonuses grants and the independent supervisors act rationally in auditing the level of stock bonuses grants. Based on the above inference, the following hypotheses are developed :

*H5 : Ceteris paribus, the greater the number of independent directors appointed by the firms voluntarily, the lower the percentage of employee stock bonuses granted.*

*H6 : Ceteris paribus, the greater the number of independent supervisors appointed by the firms voluntarily, the lower the percentage of employee stock bonuses granted.*

#### Other Determinants of ESBP

(1) *CEO Duality*: The empirical results of Core et al. (1999) suggested that CEO compensation was higher when the CEO also serves as chairman of the board. According to Taiwan's Company Act, in the case of a company limited by shares, remuneration of managerial personnel shall be decided by a resolution to be adopted by a majority vote of the directors at a meeting attended by at least a majority of the entire directors of the company. Thus, when a CEO is also the chairman of the board, he or she will have significant influence in determining his or her own compensation package. As pointed out by Finkelstein and Hambrick (1989), a CEO may set his or her own compensation. Most employee stock bonuses are distributed to high-level management teams in Taiwan. The directive function of the board of directors to managers will be more ineffective when a CEO also serves as chairman of the board, and the problem of agency will be more serious. Boyd (1994) suggested that if the role of the CEO and chairman of the board are separated, he would expect less influence over executive pay setting institutions. Empirical results of Hsu and Cheng (2004) showed that the employee (stock) bonuses were higher when the chairperson of board of directors is also the CEO which supports the management self-interest hypothesis. However, Chen et al. (2004) and Kuo et al. (2006) did not find a significant correlation between employee stock bonus grants and CEO duality.

(2) *Firm Size*: Since employee stock bonuses grants are a part of the employees' compensation, firm size may effect employee stock bonuses grants. Owing to the fact that the larger the firm's size the more complicated the management and hence the more efforts managers shall make, as large firms offer better compensation to attract outstanding managers. Prior research indicates that firm size is positively correlated to managers' compensation (Backer et al., 1988). Empirical evidence of Lin (2002), Yiin (2004) and Chi (2005) showed that the ratio of employee stock bonuses grants is negatively correlated to firm size. On the contrary, Chang (2003) found that larger firms tend to grant more employee stocks than smaller firms. The results of Tsui (2003), Hsu (2004), and Huang (2005) were similar to Chang's (2003) findings. However, Hsu and Cheng (2004) did not find a significant correlation between employee stock bonuses grants and firm size in their research.

(3) *Firm Performance*: Chi (2005) collected pooled time-series data which included 44 companies (176 observations) of listed & OTC information software firms during 1998~2003 in Taiwan. He used firm size, prior ROE, growth opportunity, the importance of human resources and cash salary ratio as the effecting factors and identified the influence of percentage of employee dividends sharing, the weights of stock bonuses, and the weights of cash bonuses. He found prior ROE had a positive influence on the percentage of employee dividends sharing, the weights of stock bonuses, and the weights of cash bonuses. Meanwhile, Huang (2005) also found the same results—prior ROE had a positive influence on

the percentage of employee dividends sharing, the weights of stock bonuses, and the weights of cash bonuses. Contrary to the prediction, Lin's (2002) research showed that lower prior ROE implies higher dividends sharing in middle and high levels.

(4) *Growth Opportunities*: Chang (2003) found that firms with higher growth opportunities tend to apply the policy of employee stock bonuses. Lin (2002), Tsui (2003) and Yiin (2004) argued that employee stock bonus grants were positively related to firms' growth opportunities. Huang (2005) stated that growth opportunities were positively related to both employee bonus grants and the size of employee stock bonus grants. On the other hand, Hsu and Cheng (2004) found no significant correlation between employee stock bonus grants and growth opportunities. In addition, Chi (2005) indicated that there was no significant correlation between employee stock bonus grants and the percentage of employee dividend sharing, the weights of stocks bonuses, or the weights of cash bonuses.

(5) *Financial Conditions*: Lin (2002) argued that cash flow constraints are correlated with employee stock ownership plans. The results of Hsu and Cheng (2004) indicated that the relationship between the ratio of employee stock bonuses grants and free cash flows was consistent with economic expectations. They followed the model of Dechow et al. (1996) that the ratio of free cash flows equals cash flows from operations plus cash flows from investments divided by total assets. However, Tsui (2003) did not find a significant correlation between employee stock bonus grants and cash flow shortfalls in her study. Yiin (2004) found that higher financial leverage ratios imply more employee stock bonus grants on a book value basis. Chen et al. (2004) and Hsu and Cheng (2004) showed that the relationship between the ratio of employee stock bonus grants and liability ratio was consistent with economic expectations, as well.

(6) *R&D Expenses*: Antti Kauhanen (2002) suggested that firms with higher R&D expenses are more likely to use employee ownership plans. Tsui (2003) found R&D expenses had positive effects on employee stock bonuses grants. Furthermore, Chen et al. (2004) and Hsu and Cheng (2004) showed the ratio of employee stock bonuses grants was higher when R&D expenses were larger.

## DATA AND METHODOLOGY

The authors apply OLS regression to test the hypotheses in this study. The regression models are as follows:

$$\begin{aligned}
 MBP_{it} = & \alpha_0 + \alpha_1 DIRH_{it} + \alpha_2 SUVH_{it} + \alpha_3 ALLDIRN_{it} + \alpha_4 ALLSUPN_{it} \\
 & + \alpha_5 INDDIRN_{it} + \alpha_6 INDSUVN_{it} + \alpha_7 INDDIRN_{it} * COMPL_{it} \\
 & + \alpha_8 INDSUVN_{it} * COMPL_{it} + \alpha_9 DUAL_{it} + \alpha_{10} MADIR_{it} \\
 & + \alpha_{11} LOGSALE_{it-1} + \alpha_{12} ROE_{it-1} + \alpha_{13} PBR_{it-1} + \alpha_{14} FCF_{it-1} \\
 & + \alpha_{15} DEBT_{it-1} + \alpha_{16} R\&D_{it-1} + \varepsilon_{it}
 \end{aligned} \tag{1}$$

$$\begin{aligned}
 TMBP_{it} = & \alpha_0 + \alpha_1 DIRH_{it} + \alpha_2 SUVH_{it} + \alpha_3 ALLDIRN_{it} + \alpha_4 ALLSUPN_{it} \\
 & + \alpha_5 INDDIRN_{it} + \alpha_6 INDSUVN_{it} + \alpha_7 INDDIRN_{it} * COMPL_{it} \\
 & + \alpha_8 INDSUVN_{it} * COMPL_{it} + \alpha_9 DUAL_{it} + \alpha_{10} MADIR_{it} \\
 & + \alpha_{11} LOGSALE_{it-1} + \alpha_{12} ROE_{it-1} + \alpha_{13} PBR_{it-1} + \alpha_{14} FCF_{it-1} \\
 & + \alpha_{15} DEBT_{it-1} + \alpha_{16} R\&D_{it-1} + \varepsilon_{it}
 \end{aligned} \tag{2}$$

### (1) Dependent Variables

MBP: market value of the level of employee stock bonuses granted (%), i.e., market value of employee stock bonuses granted measured at the end of year  $t-1 \div$  paid-in capital.

TMBP: market value of the level of total employee bonuses granted (%), i.e., market value of total employee bonuses granted measured  $\div$  paid-in capital.

### (2) Independent Variables

DIRH: all directors' ownership of the firm at the end of the month prior to the date the shareholders' meeting convened (%). Board of directors makes the proposal for earnings distributions and then shareholders ratify the proposal in the shareholders' meeting in Taiwan. According to Article 172 of Taiwan's Company Act, for a publicly issued company, a notice to convene a regular meeting of shareholders shall be given to each shareholder no later than 30 days prior to the scheduled meeting date. Hence, we use related data at the end of the month prior to the date the shareholders' meeting convened as the proxy for the circumstance while the board proposes the proposal of earnings distribution.

SUVH: all supervisors' ownership of the firm at the end of the month prior to the date the shareholders' meeting convened (%).

ALLDIRN: the number of all directors of the firm at the end of the month prior to the date the shareholders' meeting convened (%).

ALLSUPN: the number of all supervisors of the firm at the end of the month prior to the date the shareholders' meeting convened (%).

INDDIRN: number of independent directors at the end of the month prior to the date the shareholders' meeting convened.

INDSUVN: number of independent supervisors at the end of the month prior to the date the shareholders' meeting convened.

COMPL: a dummy variable ; COMPL=1 denotes firms listing from February 2002 on after the announcement of related regulations, COMPL=0, otherwise. The TSEC began requiring that IPO firms listing from February 2002 on should have two independent directors and one independent supervisor, the appointment of the independent director and independent supervisor for firms listing from February 2002 on after are forced by regulations, whereas those appointments for firms listing before February 2002 are voluntary.

### (3) Control Variables

DUAL: CEO duality at the end of the month prior to the date the shareholders' meeting convened ; used as an indicator variable, 1 = CEO is concurrently the chairman of the board.

MADIR: proportion of managers concurrently as directors to total directors.

LOGSALE: natural log of net sales (expressed in thousands of New Taiwan dollars), used as a proxy for firm size.

ROE: return on equity (%), used as a proxy for firm performance.

PBR: ratio of market price to book value per share, used as a proxy for growth.

FCF: ratio of free cash flows, i.e., (cash flows from operations + cash flows from investments)  $\div$  total assets (expressed in thousands of New Taiwan dollars); a proxy for financial position.

DEBT: debt ratio (%), i.e., total debt  $\div$  total assets; used as a proxy for financial position.

R&D: R&D ratio (%), i.e., R&D expenses  $\div$  net sales; used as a proxy for innovation.

Directors in Taiwan do not have the same role as directors in the U.S. To examine the correlation between ownership and the system of (independent) directors/ supervisors, and percentage of employee stock bonuses granted in corporate governance and regulatory perspectives, this study used data from 2002 through 2004. This data period was selected because the TSEC began requiring IPO firms to list



starting from February 2002. Starting at that time, Taiwanese firms were required to have two independent directors and one independent supervisor.

Data related to research on board characteristics in Taiwan has been generally drawn from the data base of the Taiwan Economic Journal (TEJ) and has been a summary of data composed of both directors and supervisors as of December 31. Since board holdings may change significantly from December 31 of the previous year to the date that the surplus earning distribution proposal is proposed by a board of directors, it may be misleading or incorrect to use year-end data. In this research, we used related data at the end of the month prior to the date the shareholders' meeting convened. Data observations are annually.

In summary, the research subjects are those TSEC-listed electronic companies, whose regular meetings of shareholders were convened from 2003 to 2005 and with employee's stock bonuses granted in those years. Firms distributed their retained earnings of 2002 in 2003 according to the Company Act. This empirical research differs from previous studies in the following way: (1) the different roles played by directors and supervisors are more clearly identified. That is, not only directors' ownership and supervisors' ownership but also number of independent directors and number of independent supervisors are taken as separate independent variables, instead of combined as one, respectively, and (2) more precise data with regard to board characteristics are applied.

Financial data (employee's stock bonuses, net sales, percentage of returns on equity, book value per share, cash flows from operations, cash flows from investments, the paid-in capital, debt ratio, R&D ratio, and total assets) and Market data (market price) were collected from the TEJ. Dates of shareholders' meeting were collected from the Market Observation Post System of the TSEC. Data regarding independent directors and independent supervisors were collected from the Market Observation Post System of the TSEC. Data regarding directors and supervisors {the number of (independent) directors, the number of (independent) supervisors directors' ownership of the firm, and supervisors' ownership of the firm} were collected from the Taiwan Securities & Futures Information Center of Securities & Futures Institute. Directors' and supervisors' ownership of the firm were footed by this study ; CEO duality and managers concurrently as directors were judged by the authors after examining files of each sample company.

This study focused on TSEC-listed electronic companies. To be selected for inclusion in the sample, a firm must have disclosed the aforementioned financial and market data, convened a shareholders' meeting with employee stock bonuses granted in the following year, and filed in data regarding inside directors' ownership one month prior to the date of shareholders' meeting. Any firm with omission of data was eliminated from the sample. As a result, the final sample of this study includes 478 TSEC-listed electronic companies.

## **EMPIRICAL RESULTS**

Descriptive statistics of the sample companies are presented in Table 1. As shown, on average, the ratios of stock bonuses and total bonuses granted measured by market value, MBP and TMBP, are 5.482% and 6.242%, respectively. As for all directors' ownership (DIRH) and all supervisors' ownership (SUVH), the maxima are 63.10% and 53.34%, respectively. The number of all directors (ALLDIRN) and the number of all supervisors (ALLSUPN) ranged from 4 to 13 and 1 to 6, respectively. The number of independent directors (INDDIRN) and the number of independent supervisors (INDSUVN) ranged from 0 to 4 and 0 to 2, respectively.

Table 1: Descriptive Statistics (n=478)

<i>Variables</i>	<i>Mean</i>	<i>Min.</i>	<i>Max.</i>	<i>Std. Dev.</i>
MBP	5.482	0.112	58.630	7.071
TMBP	6.242	0.174	58.630	7.987
BBP	1.633	0.079	9.589	1.162
TBBP	2.393	0.132	14.213	2.135
DIRH	20.643	1.480	63.100	10.800
SUVH	6.561	0.000	53.340	9.214
ALLDIRN	6.540	4.000	13.000	1.606
ALLSUPN	2.841	1.000	6.000	0.542
INDDIRN	0.862	0.000	4.000	0.981
INDSUVN	0.544	0.000	2.000	0.645
COMPL	0.418	0.000	1.000	0.494
DUAL	0.356	0.000	1.000	0.479
MADIR	0.279	0.000	1.000	0.195
LOGSALE	6.760	5.669	8.625	0.604
ROE	16.881	-4.070	66.100	10.074
PBR	1.544	0.522	5.131	0.671
FCF	-0.004	-0.410	0.395	0.119
DEBT	37.750	5.760	67.630	13.795
R&D	3.708	0.000	23.301	3.662

*This table shows descriptive statistics of related variables. MBP: market value of the level of employee stock bonuses granted measured at year end, t-1(%). TMBP: market value of the level of total employee bonuses granted measured at year end, t-1 (%) BBP: book value of the level of employee stock bonuses granted (%). TBBP: book value of the level of total employee bonuses granted (%). DIRH: all directors' ownership of the firm at the end of the month prior to the date the shareholders' meeting convened (%). SUVH: all supervisors' ownership of the firm at the end of the month prior to the date the shareholders' meeting convened (%). ALLDIRN: number of all directors at the end of the month prior to the date the shareholders' meeting convened. ALLSUPN: number of all supervisors at the end of the month prior to the date the shareholders' meeting convened. INDDIRN: number of independent directors at the end of the month prior to the date the shareholders' meeting convened. INDSUVN: number of independent supervisors at the end of the month prior to the date the shareholders' meeting convened. COMPL: a dummy variable ; COMPL=1 denotes firms listing from February 2002 on after the announcement of related regulations, COMPL=0, otherwise. DUAL: CEO duality at the end of the month prior to the date the shareholders' meeting convened, 1 = CEO is concurrently the chairman of the board. MADIR: proportion of managers concurrently serving as directors to total directors. LOGSALE: natural log of net sales(expressed in thousands of New Taiwan dollars). ROE: return on equity (%). PBR: ratio of market price to book value per share. FCF: ratio of free cash flows, i.e., (cash flows from operations + cash flows from investments) ÷ total assets (expressed in thousands of New Taiwan dollars); used as a proxy for financial position. DEBT: debt ratio (%), i.e., total debt ÷ total assets; used as a proxy for financial position. R&D: R&D ratio (%), i.e., R&D expenses ÷ net sales; used as a proxy for innovation.*

A preliminary examination of the Pearson correlation matrix of the model indicates that correlations among explanatory variables are generally low. The variance inflationary factor (VIF) for the explanatory variables are calculated to identify any multicollinearity issues. The VIF of the explanatory variables of the model are under 10 indicating no significant multicollinearity problem.

The regression models test H1 to H6, and the results are presented in Table 2. Some observations are worth pointing out when the dependent variable is the market value of the level of employee stock bonuses granted (MBP). First, the coefficients on ownership of board of directors (DIRH) and the number of independent directors (INDDIRN) are both negative as predicted and are statistically significant at the 0.01 and 0.05 levels, respectively. The coefficient on the number of all supervisors

(ALLSUPN) is negative as predicted but is statistically insignificant.

Furthermore, as expected, the coefficients on supervisors' ownership of (SUVH) and the number of all supervisors (ALLDIRN) are positive and statistically significant at the 0.05 and 0.10 levels, respectively. Contrary to the prediction, the coefficient on number of independent supervisors (INDSUVN) is positive and statistically significant at the 0.05 level. These results indicate that the market value of employee stock bonuses granted (MBP) increase as SUVH, ALLDIRN or INDSUVN increases, and decrease as DIRH or INDDIRN increases. In other words, the evidence provides support for H1, H2, H3 and H5 but does not provide support for H4 and H6.

Secondly the results indicate that the market value of the level of employee stock bonuses granted (MBP) increase as proportion of the managers concurrently serving as directors to total directors (MADIR) or return on equity (ROE) or ratio of market price to book value per share (PBR) increases. It is worth noting that the proportion of managers concurrently serving as directors to total directors (MADIR) has the second highest positive influence on market value of the level of employee stock bonuses granted (MBP). Higher levels of MADIR imply higher BBP. From the perspective of corporate governance, the results support the maintenance of independent directors because According Article 17 of "Supplementary Provisions to the Taiwan Stock Exchange Corporation Criteria for Review of Securities Listings" issued by the TSEC, the board of directors, being an employee of the company applying, cannot independently perform their functions. Finally, the coefficient on INDDIRN\*COMPL is statistically significant at the 0.05 level when the dependent variable is market value of the level of employee stock bonuses granted (MBP). The results indicate that firms appointing independent directors compulsorily by regulations result in worse effects than those of firms appointing independent directors voluntarily

The results of equation (2) with regard to independent variables are similar to those of equation (1). The results of equation (2) with regard to other control variables are similar to those of equation (1) except that the coefficients on natural log of net sales (LOGSALE) and the coefficients on R&D ratio (R&D) become statistically significant at the 0.05 and 0.10 levels, respectively whereas the coefficient on the proportion of managers serving concurrently as directors to total directors (MADIR) turns out to be statistically insignificant at the 0.10 level

In summary, the results show support for H1, H2, H3 and H5 but do not support H4 and H6. The level of employee stock bonuses granted is negatively correlated to DIRH or INDDIRN, whereas it is positively correlated to SUVH, ALLDIRN or INDSUVN. The evidence provides support for our argument that it may be inappropriate to combine directors' ownership with supervisors' ownership as one explanatory variable, as has been done in previous studies. In addition, the results provide support for Article 2 of the Rules and Review Procedures for Director and Supervisor Share Ownership Ratios at Public Companies, which regulates indicates the minimum total registered shares that shall be owned by the directors. From the perspective of corporate governance consideration of employee stock bonuses grants, the empirical results indicate that the greater the board of directors' ownership of the firm, implying lower percentage of employee stock bonuses granted. It is therefore necessary to set a minimum threshold for directors' share holdings. On the contrary, as the results indicate, the greater the supervisors' ownership of the firm, the higher percentage of employee stock bonuses granted. This evidence is not in contradiction to the Article, because the minimal total registered shares that shall be owned by the supervisors, as regulated by the Article, range from 0.5% to 1.5%, which are quite low.

Table 2: Results of the Regressions

Independent variables	Hypotheses	Panel A		Panel B	
		Equ. (1)		Equ. (2)	
		Coefficient	t-value	Coefficient	t-value
Constant		-10.130	-3.27***	-12.041	-3.55***
DIRH	H1	-0.078	-3.54***	-0.100	-4.12***
SUVH	H2	0.075	2.96***	0.082	2.98***
ALLDIRN	H3	0.249	1.92*	0.279	1.96*
ALLSUPN	H4	-0.564	-1.45	-0.577	-1.35
INDDIRN	H5	-1.076	-2.46**	-1.317	-2.75***
INDSUVN	H6	1.400	2.32**	1.639	2.47**
INDDIRN*COMPL		1.211	2.08**	1.615	2.53**
INDSUVN*COMPL		-1.046	-1.21	-1.491	-1.57
DUAL		-0.131	-0.29	0.067	0.14
MADIR		2.209	1.97**	1.742	1.42
LOGSALE		0.629	1.58	0.866	1.99**
ROE		0.285	9.17***	0.370	10.84***
PBR		4.129	8.68***	4.019	7.71***
FCF		-0.877	-0.47	-0.197	-0.10
DEBT		0.003	0.18	0.003	0.13
R&D		0.105	1.58	0.141*	1.94
N		478		478	
Adjusted R <sup>2</sup>		61.6%		63.8%	
F value		48.819***		53.640***	

This table shows the regression estimates of the equations (1) and (2). Panel A Shows the results for equation (1),  $MBP_{it} = \alpha_0 + \alpha_1 DIRH_{it} + \alpha_2 SUVH_{it} + \alpha_3 ALLDIRN_{it} + \alpha_4 ALLSUPN_{it} + \alpha_5 INDDIRN_{it} + \alpha_6 INDSUVN_{it} + \alpha_7 INDDIRN_{it} * COMPL_{it} + \alpha_8 INDSUVN_{it} * COMPL_{it} + \alpha_9 DUAL_{it} + \alpha_{10} MADIR_{it} + \alpha_{11} LOGSALE_{it-1} + \alpha_{12} ROE_{it-1} + \alpha_{13} PBR_{it-1} + \alpha_{14} FCF_{it-1} + \alpha_{15} DEBT_{it-1} + \alpha_{16} R\&D_{it-1} + \epsilon_{it}$ . Panel B Shows the results for equation (2),  $TMBP_{it} = \alpha_0 + \alpha_1 DIRH_{it} + \alpha_2 SUVH_{it} + \alpha_3 ALLDIRN_{it} + \alpha_4 ALLSUPN_{it} + \alpha_5 INDDIRN_{it} + \alpha_6 INDSUVN_{it} + \alpha_7 INDDIRN_{it} * COMPL_{it} + \alpha_8 INDSUVN_{it} * COMPL_{it} + \alpha_9 DUAL_{it} + \alpha_{10} MADIR_{it} + \alpha_{11} LOGSALE_{it-1} + \alpha_{12} ROE_{it-1} + \alpha_{13} PBR_{it-1} + \alpha_{14} FCF_{it-1} + \alpha_{15} DEBT_{it-1} + \alpha_{16} R\&D_{it-1} + \epsilon_{it}$ .

MBP=market value of the level of employee stock bonuses granted (%), i.e., market value of employee stock bonuses granted measured at the end of year t-1 ÷ paid-in capital. MBP: market value of the level of employee stock bonuses granted measured at year end, t-1 (%). TMBP: market value of the level of total employee bonuses granted measured at year end, t-1 (%). DIRH: all directors' ownership of the firm at the end of the month prior to the date the shareholders' meeting convened (%). SUVH: all supervisors' ownership of the firm at the end of the month prior to the date the shareholders' meeting convened (%). ALLDIRN: number of all directors at the end of the month prior to the date the shareholders' meeting convened. ALLSUPN: number of all supervisors at the end of the month prior to the date the shareholders' meeting convened. INDDIRN: number of independent directors at the end of the month prior to the date the shareholders' meeting convened. INDSUVN: number of independent supervisors at the end of the month prior to the date the shareholders' meeting convened. COMPL: a dummy variable; COMPL=1 denotes firms listing from February 2002 on after the announcement of related regulations, COMPL=0, otherwise. DUAL: CEO duality at the end of the month prior to the date the shareholders' meeting convened, 1= CEO is concurrently the chairman of the board. MADIR: proportion of managers concurrently serving as directors to total directors. LOGSALE: natural log of net sales (expressed in thousands of New Taiwan dollars). ROE: return on equity (%). PBR: ratio of market price to book value per share. FCF=: ratio of free cash flows, i.e., (cash flows from operations + cash flows from investments) ÷ total assets (expressed in thousands of New Taiwan dollars); used as a proxy for financial position. DEBT: debt ratio (%), i.e., total debt ÷ total assets; used as a proxy for financial position. R&D: R&D ratio (%), i.e., R&D expenses ÷ net sales; used as a proxy for innovation. \*\*\*, \*\*, and \* indicate significance at the 1, 5 and 10 percent levels respectively.

Although the evidence does not provide support H4, the empirical results show that the coefficients on SUVH and INDSUVN are positive. In general, larger numbers of independent supervisors (INDSUVN), imply higher ownership percentages by supervisors (SUVH). The results give support for the Securities and Exchange Act that states there shall be no system of independent supervisors since enactment of the amendment on January 11, 2006. Besides, Article 14-4 of the Securities and Exchange Act states that a company that has issued stock in accordance with this Act shall establish either an audit committee or a supervisor. The competent authority may, however, in view of the company's scale, type of operations, or other essential considerations, order it to establish an audit committee in lieu of a supervisor. The relevant regulations are prescribed by the competent authority. The audit committee shall be composed of all independent directors. Because the audit committee shall be composed of all independent directors, the results suggest the TSEC/GTSM listed companies establish an audit committee in lieu of a supervisor.

As with previous studies, the authors combine: (1) all directors' and all supervisors' stock ownership, and (2) the number of independent directors and the number of independent supervisors, respectively, and rerun equations (1) and (2). The regression models are specified as follows where, D&SH is the total ownership of all directors and all supervisors ALLD&SN is the total number of directors and supervisors and INDD&INDSN is the total number of independent directors and independent supervisors.

$$\begin{aligned} MBP_{it} = & \alpha_0 + \alpha_1 D\&SH_{it} + \alpha_2 ALLD\&SN_{it} + \alpha_3 INDD\&INDSN_{it} \\ & + \alpha_4 INDD\&INDSN*COMPL_{it} + \alpha_5 DUAL_{it} + \alpha_6 MADIR_{it} \\ & + \alpha_7 LOGSALE_{it-1} + \alpha_8 ROE_{it-1} + \alpha_9 PBR_{it-1} + \alpha_{10} FCF_{it-1} \\ & + \alpha_{11} DEBT_{it-1} + \alpha_{12} R\&D_{it-1} + \varepsilon_{it} \end{aligned} \quad (3)$$

$$\begin{aligned} TMBP_{it} = & \alpha_0 + \alpha_1 D\&SH_{it} + \alpha_2 ALLD\&SN_{it} + \alpha_3 INDD\&INDSN_{it} \\ & + \alpha_4 INDD\&INDSN*COMPL_{it} + \alpha_5 DUAL_{it} + \alpha_6 MADIR_{it} \\ & + \alpha_7 LOGSALE_{it-1} + \alpha_8 ROE_{it-1} + \alpha_9 PBR_{it-1} + \alpha_{10} FCF_{it-1} \\ & + \alpha_{11} DEBT_{it-1} + \alpha_{12} R\&D_{it-1} + \varepsilon_{it} \end{aligned} \quad (4)$$

The results are shown in Table 3. All coefficients on independent variables become statistically insignificant. Furthermore, the adjusted R-squares of equations (3) and (4) are smaller than those of equations (1) and (2) in Table 3, respectively. The evidence provides support for the contention that it is inappropriate to combine directors' data with supervisors' data as has been done in many previous studies. We do not run equations (3) and (4) in the following analysis. As we can see, the coefficients on both LOGSALE and R&D turn to be positive and significant when the independent variable is MBP.

### THE APPROPRIATE CORPORATE GOVERNANCE MECHANISMS FOR FIRMS

First, by dividing the sample into three groups according to paid-in capital of the companies, the authors rerun equations (1) and (2). The classification criterion is based on the related regulation of Article 2 of Rules and Review Procedures for Director and Supervisor Share Ownership Ratios at Public Companies announced by Securities and Futures Bureau, Financial Supervisory Commission, Executive Yuan, R.O.C. Because there is no company whose paid-in capital is NT\$300 million or less in our sample, the author divides the sample into three groups: 1) Those companies whose paid-in capital is more than NT\$300 million but NT\$1 billion or less (expressed as Group 1 hereafter), which counts for 126 companies in the sample 2) Those companies whose paid-in capital is more than NT\$1 billion but NT\$2 billion or less (expressed as Group 2 hereafter), which counts for 150 companies in the sample, and 3). Those companies whose paid-in capital is more than NT\$2 billion (expressed as Group 3 hereafter), which counts for 202 companies in the sample.

Table 3: Results of the Regressions

Independent variables	Panel A		Panel B	
	Equ. (3)		Equ. (4)	
	Coefficient	t-value	Coefficient	t-value
Constant	-14.990	-5.22***	-17.570	-5.56***
D&SH	-0.013	-1.02	-0.022	-1.58
ALLD&SN	0.130	1.11	0.153	1.19
INDD&INDSN	-0.038	-0.17	-0.090	-0.37
INDD&INDSN*COMPL	0.147	0.62	0.203	0.78
DUAL	-0.226	-0.49	-0.053	-0.10
MADIR	2.203	1.92*	1.756	1.39
LOGSALE	1.020	2.63***	1.313	3.07***
ROE	0.292	9.18***	0.377	10.78***
PBR	3.906	8.09***	3.775	7.11***
FCF	-0.599	-0.31	0.144	0.07
DEBT	0.014	0.74	0.016	0.76
R&D	0.160	2.43**	0.207	2.84***
N	478		478	
Adjusted R <sup>2</sup>	59.8%		61.9%	
F value	60.126***		65.477***	

This table shows the regression estimates of the equations (3) and (4). Panel A Shows the results for equation (3),  $MBP_{it} = \alpha_0 + \alpha_1 D\&SH_{it} + \alpha_2 ALLD\&SN_{it} + \alpha_3 INDD\&INDSN_{it} + \alpha_4 INDD\&INDSN*COMPL_{it} + \alpha_5 DUAL_{it} + \alpha_6 MADIR_{it} + \alpha_7 LOGSALE_{it-1} + \alpha_8 ROE_{it-1} + \alpha_9 PBR_{it-1} + \alpha_{10} FCF_{it-1} + \alpha_{11} DEBT_{it-1} + \alpha_{12} R\&D_{it-1} + \mathcal{E}_{it}$  Panel B Shows the results for equation (4),  $TMBP_{it} = \alpha_0 + \alpha_1 D\&SH_{it} + \alpha_2 ALLD\&SN_{it} + \alpha_3 INDD\&INDSN_{it} + \alpha_4 INDD\&INDSN*COMPL_{it} + \alpha_5 DUAL_{it} + \alpha_6 MADIR_{it} + \alpha_7 LOGSALE_{it-1} + \alpha_8 ROE_{it-1} + \alpha_9 PBR_{it-1} + \alpha_{10} FCF_{it-1} + \alpha_{11} DEBT_{it-1} + \alpha_{12} R\&D_{it-1} + \mathcal{E}_{it}$

*MBP*: market value of the level of employee stock bonuses granted measured at year end, *t-1* (%). *TMBP*: market value of the level of total employee bonuses granted measured at year end, *t-1* (%). *D&SH*: total ownership of all directors and all supervisors. *ALLD&SN*: total number of directors and supervisors. *INDD&INDSN*: total number of independent directors and independent supervisors. *DUAL*: CEO duality at the end of the month prior to the date the shareholders' meeting convened, 1 = CEO is concurrently the chairman of the board. *MADIR*: proportion of managers concurrently serving as directors to total directors. *LOGSALE*: natural log of net sales (expressed in thousands of New Taiwan dollars). *ROE*: return on equity (%). *PBR*: ratio of market price to book value per share. *FCF*: ratio of free cash flows, i.e., (cash flows from operations + cash flows from investments) ÷ total assets (expressed in thousands of New Taiwan dollars); used as a proxy for financial position. *DEBT*: debt ratio (%), i.e., total debt ÷ total assets; used as a proxy for financial position. *R&D*: R&D ratio (%), i.e., R&D expenses ÷ net sales; used as a proxy for innovation. \*\*\*, \*\*, and \* indicate significance at the 1, 5 and 10 percent levels respectively.

Second, equations (1) and (2) are rerun by substituting book values for market values, respectively. The results of Group 1 show that the dependent variables are negatively correlated to DIRH, whereas they are positively correlated to SUVH. The evidence strongly provides support for the argument that owing to different characteristics, it may be inappropriate to combine related data of directors with related data of supervisors as one explanatory variable, as has been done in previous studies. Employee (stock) bonuses are positively correlated to LOGSALE, ROE, PBR or R&D, and are generally negatively correlated to FCF.

The evidence from Group 2 indicates the dependent variables are negatively correlated to INDDIRN, and are positively correlated to INDSUVN. In addition, the results indicate that employee (stock) bonuses are positively correlated to INDDIRN\*COMPL, whereas they are generally negatively correlated to INDSUVN\*COMPL. Furthermore, the dependent variables increase as LOGSALE or ROE increases. Two of the four coefficients on PBR and R&D are statistically positive.

The results of Group 3 indicate that the dependent variables are generally negatively correlated to DIRH or INDDIRN, whereas they are generally positively correlated to INDSUVN. The dependent variables are positively correlated to ROE or R&D. In additions, employee stock bonuses generally increase as MADIR, LOGSALE, or PBR increases.

## SUMMARY AND CONCLUSIONS

This study focuses on the effects of the Securities and Exchange Act regarding ownership and structure of (independent) directors/supervisors on employee stock bonus plans of TSEC-Listed electronic companies. Furthermore, appropriate corporate governance systems as related to directors and supervisors are explored. This research differs from previous research except for that of Kuo et al. (2006) in two ways: (1) the roles of directors and supervisors are more clearly identified. Not only directors' ownership and supervisors' ownership but also the number of directors and the number of supervisors are taken as separate independent variables, respectively, instead of combined as one; and (2) more precise data with regard to board characteristics are employed.

Empirical results generally support the expectations of this study. The level of employee stock bonuses granted increase in accordance with the increase of all supervisors' ownership or the number of all directors, whereas they decrease in accordance with the increase of all directors' ownership or number of independent directors. The evidence provides support for our argument that, owing to different characteristics, it may be inappropriate to combine director and supervisor data as one explanatory variable.

Contrary to prediction, the level of employee stock bonuses granted increases when number of independent supervisor increases. The evidence gives support to Article 14-2 of the amended Securities and Exchange Act that mandates that a company that has issued stock in accordance with this Act may appoint independent directors in accordance with its articles of incorporation. There has been no system of independent supervisors since the amendment in January 11, 2006.

Finally, firms with different scale need different corporate governance mechanisms. Raising all directors' ownership may enhance corporate governance mechanisms for small firms (Group 1). Appointing independent directors voluntarily may enhance corporate governance mechanisms for middle-size firms (Group 2). Furthermore, large firms (Group 3) may enhance corporate governance mechanisms by raising all directors' ownership, appointing independent directors voluntarily, or decreasing the proportion of managers serving concurrently as directors to total directors. The system of independent directors seems to have more effect on large firms.

Research limitations are stated as follows. First, the sample in the study is restricted to TSEC-listed electronics companies; the results cannot be generalized. Further studies to examine the effects of directors and supervisors on employee stock bonus grants on other industries are suggested. Second, though in the view point of regulatory that supervisors carry the duty of supervision whereas boards of directors are responsible for business execution in Taiwan. This is different from the system in the USA or in the UK where boards of directors not only carry the duty of supervision but also execute business. The study may not capture the effects of supervisors on employee stock bonuses granted since both directors and supervisors are not only hired by the same group but also attend the meeting of the board of directors at the same time. Third, the study may have omitted variables. Scholars could try to detect the external governance mechanisms effect or the cross-culture research in further research.

## REFERENCES

- Antti Kauhanen - Hannu Piekkola. 2002. Profit Sharing in Finland: Earnings and Productivity Effects. ETLA Discussion Papers 817. Helsinki.
- Backer, G., Jenson, M., and Murphy, K. J. (1988), Compensation and incentives : practice vs. theory. *Journal of Finance*, 43, 593-616.
- Baysinger, R. D., and Butler, H. N. (1985), Corporate governance and the board of directors: Performance effects of changes in board composition. *Journal of Law Economics and Organization*, 1, 101-124.
- Bhagat, S., and Black, B. (1997), Do independent directors matter? Working Paper, University of Colorado, Boulder.
- Brickley, J. A., Coles, J. L., and Terry, R. L. (1994), Outside directors and the adoption of poison pills. *Journal of Financial Economics*, 35, 371-390.
- Byrd, J. W., and Hickman, K. A. (1992), Do outside directors monitor managers? Evidence from tender offer bids. *Journal of Financial Economics*, 32,195-222.
- Chang, P. C. (2003), Determinants of employee stock grants and their impact on firm's performances, Unpublished Thesis, National Taiwan University.
- Chen, C. H, Tsai, Y. C., and Lin, C. J. (2004), Ownership structure, board compensation and employee bonus. working paper. 2004 Accounting Theory and Practice Conference. Taipei.
- Chen, C. J. (2003). A research on listed companies' corporate governance, diversified strategies, and firm performance, Unpublished Thesis, National Chengchi University (in Mandarin).
- Chen, J. Y. (2003), The relationship among CEO compensation, diversification and firm performance of Taiwanese Public Firm, Unpublished Thesis, National Yunlin University of Science and Technology (in Mandarin).
- Chen, K. T. (2006), The Relationship between the Board Composition and the Ownership Structure on the Corporate Performance, Unpublished Thesis, Lin Tung University (in Mandarin).
- Chen, S. Y. (2003), A research of the ownership structure, employees' bonus and corporate governance for TSE-listed electronic companies, Unpublished Thesis, National Yunlin University of Science and Technology (in Mandarin).
- Chen, W. C. (2006), The Effects of Board Composition and Earnings Management on Firm Value: The Cases on SEC and OTC Companies in Taiwan, Unpublished Thesis, Aletheia University(in Mandarin).
- Chi, A. S. (2005), The influence factor considered in employee dividend sharing system- the example of Taiwan information software industry, Unpublished Thesis, Ju Jen Catholic University (in Mandarin).
- Core, J. E., Holthausen, R. W.,and Larcker, D. F. (1999), Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51, 371-406.
- Fama, E. F. (1980), Agency problems and the informativeness of earnings. *Journal of Political Economy*, 88, 288-307.



Dechow, P., Hutton, A., and Sloan, R. (1996), Economic consequences of accounting for stock-based compensation. *Journal of Accounting Research*, 34(Supplement), 1-20.

Fama, F. F. and Jensen, M. C. (1983), Separation of ownership and control. *Journal of Law and Economics*, 26, 301-325.

Finkelstein, S. and Hambrick, D. C. (1989), Chief Executive Compensation: A Study of the Intersection of Markets and Political Process. *Strategic Management Journal*, 10, 121-134.

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

Hermalin, B., and Weisbach, M. (1991), The effects of board composition and direct incentives on firm performance. *Financial Management*, 20, 101-112.

Hsu, C. Y. and Cheng, L. J. (2004), A study on the determinants of employee bonus. working paper. 2004 Accounting Theory and Practice Conference. Taipei.

Jemison, D. and Oakley, P. (1983). Corporate governance in mutual insurance companies, *Journal of Business Research*, 11(4), 501-522.

Huang, Ryan. (2005), Determinants of employee ownership plans, Unpublished Thesis, Ju Jen Catholic University (in Mandarin).

Jensen, M. C. and Meckling, W. H. (1976), Theory of the firm: management behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.

Jensen, M. C., and Ruback R. (1983), The market for corporate control : the scientific evidence. *Journal of Financial Economics*, 11, 5-50.

Kesner, I. F., Victor, B., and Lamont, B. T. (1986), Board composition and the commission of illegal acts : An investigation of Fortune 500 companies. *Academy of Management Journal*, 29(4),789-799.

Kosnik, R. D. (1987), Greenmail : A study of board performance in corporate governance. *Administrative Science Quarterly*, 32(2), 163-185.

Kuo C., Fu, C. J., and Lai, Y. Y. (2006), Board control and employee stock bonus plans : an empirical study on TSEC-listed electronic companies in Taiwan. *The Journal of American Academy of Business, Cambridge*, 10(1), 248-255.

Lin, Linda. (2006), A Study of the Relationship between the Independent Directorship System and the Operating Performance—the Case of the Listed Electronics Firms in Taiwan, Unpublished Thesis, National Taipei University(in Mandarin).

Lin, T. C. (2002), The analysis of affecting factors of employee dividend-sharing system, Unpublished Thesis, National Sun Yat-Sen University(in Mandarin).

Lipton, M. and Lorsch, J. (1992), A modest proposal for improved corporate governance. *Business Lawyer*, 48, 59-77.

Morck, R., Shleifer, A., and Vishny, R. W. (1988) Management ownership and market valuation: An empirical analysis. *Journal of Financial Economics*, 20, 239-315.

Pincus, K., Rusbarsky, M., and Wong, J. (1989), Voluntary formation of corporate audit committees

among NASDAQ firms, *Journal of Accounting and Public Policy*, 8(4), 239-265.

Rosenstein, S., and Waytt, J. G. (1990), Outside directors, board independence, and shareholder wealth. *Journal of Financial Economics*, 26, 175-191.

Rosenstein, S., and Waytt, J. G. (1997), Insider directors, board effectiveness, and shareholder wealth. *Journal of Financial Economics*, 44, 229-250.

Singh, H. and Harianto, F. (1989), Management-board relationships, takeover risk, and the adoption of golden parachutes. *Academy of Management Journal*, 32(1), 7-24.

Tsui, C. C. (2003), The Effects of The Importance of Human Resources on the Stock-based Compensation Decision, Unpublished Thesis, National Cheng Kung University (in Mandarin).

Watts, R. L., and Zimmerman, J. L. (1986), *Positive Accounting Theory* Englewood Cliffs, NJ: Prentice Hall.

Weisbach, M. S. (1988), Outsider directors and CEO turnover. *Journal of Financial Economics*, 20, 431-460.

Williamson, O. E. (1983), Organization form, residual claimants and corporate control. *Journal of Law and Economics*, 26, 351-366.

Yermack, D. (1996), Higher market valuation for firms with a small board of directors. *Journal of Financial Economics*, 40, 185-211.

Yiin, B. L. (2004), The analysis of employee stock ownership plan in Taiwan, Unpublished Thesis, National Sun Yat-Sen University (in Mandarin).

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