

強制揭露員工紅利對盈餘影響資訊之政策效果評估

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摘要

證期會發佈台財政六字第 0920000457 號令，要求自 2002 會計年度起，公開發行公司須揭露董事會通過之考慮擬議配發員工紅利及董監酬勞後設算每股盈餘資訊，企求藉此規範權宜地解決有關員工紅利會計處理的爭議。此種以「揭露」取代正式「認列」的權宜政策可否達到政策目的？投資者是否會認知到員工紅利的本質是費用，而在規範實施後自動調整其對股票的評價？此為本研究欲探討的主題。本研究以 1999 至 2004 年間有發放員工紅利之上市（櫃）公司為樣本，發現在證期會強制要求揭露考慮擬議配發員工紅利及董監酬勞後之設算每股盈餘及相關資訊之後，員工紅利資訊（特別是股票紅利）對股價之稀釋效果顯著增強，顯示投資者意識到員工紅利是盈餘的減項，會自動調整其對發放員工紅利之公司的股票評價。另外，觀察員工紅利宣告日前後 5 日之異常報酬發現，在強制揭露員工紅利資訊的規範實施後，宣布發放員工紅利的公司其股價呈現負異常報酬反應，此亦顯示投資人似乎對於員工紅利係費用性質以及公司價值稀釋效果作出反應，且此效果甚至大過員工紅利之誘因效果。因此，不論就年度之長觀察期或 5 日之短觀察期，均發現證期會強制揭露政策之實施使得員工紅利稀釋效果顯著增強，故就強制揭露之目的而言，證期會的權宜性規範似乎可以促成投資者對公司價值重作評估，達到政策目的。

關鍵詞：員工紅利、稀釋效果、誘因效果、擬議配發員工紅利及董監酬勞後之設算每股盈餘

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Evaluating the Mandatory Disclosure Effect of Pro Forma EPS Deducted by Employee Bonus in Taiwan

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Abstract

Based on Taiwan's regulation, employee bonus is treated as an item of after-tax-earnings distribution rather than an expense of a firm. The Taiwan Securities and Futures Commission promulgated a new order on January 30, 2003 which required public companies to "disclose pro forma EPS deducted by employee bonus and director/supervisor compensation" rather than to "recognize employee bonus and director/supervisor compensation as a firm expense" in 2002 (and later) annual reports. Could such an expedient regulation make investors realize that the employee bonus is an expense that should be formally recognized in firm's financial statements? This study is motivated to examine the mandatory disclosure effect of employee bonus as a firm expense after this new order is enforced. The empirical results indicate that the interactive variable of employee stock bonus and the dummy for the years of carrying out the new order is significantly negatively related to stock price. It evidences that the dilution effect of employee bonus (particularly stock bonus) becomes stronger than before. The results of the event study on 5-days around the employee bonus announcement date also indicate that investors reverse their stock valuation after the new order, and suggest that the dilution effect of employee stock bonus becomes stronger and even dominates its incentive effect. That is, the mandatory disclosure policy of pro forma EPS deducted by employee bonus and director/supervisor compensation achieves its objective.

Keywords: *Employee bonus, Dilution effect, Incentive effect, Pro forma EPS deducted by employee bonus.*

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1. INTRODUCTION

Employee bonus is an important incentive mechanism, especially in high-tech industries in Taiwan. According to U.S. GAAP, employee bonus is a component of employee compensation and should be included in a company's cost structure. In contrast, based on Taiwan's regulation regarding Company Law §232 and Commercial Accounting Law §64, the employee bonus is treated as an item of after-tax-earnings distribution. The issue of whether the employee bonus is an expense has been debated for a long time in Taiwan. Under the tremendous pressures from the industrial and commercial world, the Taiwan Securities and Futures Commission (hereafter, the SFC) promulgated a new order (Order No.(92)-Taiwan-Securities-Finance-(6)- 0920000457; hereafter, Order No. 457) on January 30, 2003, which requires public companies to "disclose pro forma EPS deducted by employee bonus and director/supervisor compensation" rather than to "recognize employee bonus and director/supervisor compensation as an expense." Could such an expedient regulation make investors realize that the employee bonus is an expense that should be formally recognized in firm's financial statements? Is such incremental information reflected in investor equity valuation assessment? We are motivated to examine the valuation implication of mandatory disclosure of incremental employee bonus related information after this new regulation.

There are a few studies, such as Chang (1999), Chang (2000), Yeh (2003), Chen (2003), and Chen (2003)¹, who investigate the relation between the employee bonus and stock price in Taiwan. The findings show that the results of these studies did not reach a unanimous conclusion and were all conducted under the environment before the SFC's new order. To the best of our knowledge, the present study is the first to examine whether mandatory disclosure of pro forma EPS deducted by employee bonus and director/supervisor compensation following Order No.457 can make investors change their perceptions and valuation assessments about the employee bonus. Using the incentive of aligning employee motivation with a bonus (Bell et al. 2002; Chen 2003), we predict that the employee bonus incentive effect is prevailing even after the SFC's new regulation. However, because this new regulation resolves the uncertainty in measuring and reporting employee bonus, we conjecture that mandatory incremental information disclosed on pro forma EPS will induce investors to change their perceptions. This will enhance the dilution effect arising from the employee bonus. Because the empirical data is dictated before the new order was promulgated, Chen's study examined only

¹ We cite two Chen (2003) studies: the first was published in Journal of Business Finance & Accounting and the second is to date unpublished. Except for the discussion in the literature review touching on the latter study, any citation of Chen (2003) in this paper is referred to the former published paper.

whether the bonus components (particularly stock bonus) provided the “incentive effect” and did not provide evidence on the mandatory disclosure effect of regulation under Order No. 457. This study extends Chen’s study and investigates the valuation implication of the employee bonus by examining the required incremental mandatory disclosure information under Order No. 457 to enrich the employee bonus research and evaluate the policy effect.

Aboody et al. (2004) investigate the relation between share price and stock-based compensation expense that is disclosed but not recognized in net income under SFAS No.123 (FASB 1995). They find that investors viewed SFAS No.123 as an expense of the firm, and sufficiently reliable to be reflected in their valuation assessments, namely, the dilution effect on employee stock options existed. The employee stock bonus compensation scheme adopted by Taiwan’s high-tech firms is similar to the stock-based compensation scheme regulated by SFAS No.123. Consequently, the SFC’s new regulation on employee bonus as an “expense” in Taiwan is somewhat similar to Aboody et al. (2004) study. The implementation of Order No. 457, offers us with a good opportunity to examine whether the findings of Aboody et al. (2004) also hold in Non-U.S. capital markets, particularly in Taiwan.

Except for using Non-U.S capital market data, there are some characteristics in our study is different from Aboody et al. (2004) in several ways. The first characteristic is the sample period. Aboody et al. (2004) use 1996, 1997, 1998 as sample years that were all regulated by SFAS No.123. Our study uses 1999, 2000, 2001 as sample years before Order No.457 and 2002, 2003, 2004 as sample years after Order No. 457. Using samples before and after Order No. 457, we can examine whether this regulation causes investors to change their perceptions about the nature of employee bonus expense. By comparing the 1996, 1997, 1998 sample years which were all regulated by SFAS No.123, Aboody et al. (2004) simply test the “current” perception about the disclosed stock-based compensation expense. The second characteristic is the empirical approach. To provide supplementary evidence to support the long window test, used in Aboody et al. (2004), our study also adopts an event study to examine the short-term market reaction to the employee bonus announcement. The final characteristic is that we can get around the mechanical relation problem between option values and stock price described in Aboody et al. (2004). In Taiwan, we know that employees of a listed company gain stock bonus with no payment (i.e., employee stock bonus is the same as stock options with zero exercise price). Moreover, the company is required to use the face amount to compute pro forma EPS deducted by employee bonus and director/supervisor compensation. Thus, the mechanical relation problem between

the option values and stock price is unlikely in the interference factor in our empirical study and that model specification in price-earning relation are less problematic than that in Aboody et al. (2004).

This study enriches the employee bonus related research from three angles. First, we extend Chen's "incentive effect" study and further investigate the effect of the mandatory pro forma EPS disclosure by examining the incremental dilution effect of the employee bonus compensation under Order No. 457. Second, we provide evidence on whether investors view Order No. 457 employee bonus as an expense of the firm, and sufficiently reliable to be reflected in their valuation assessments to evaluate the effectiveness of this expediency disclosure regulation. Finally, no published papers evidenced that the dilution effect arising from the employee bonus exists in Taiwan. Using Taiwan's employee bonus data, we examine whether the dilution effect of Aboody et al. (2004) can also be found in Non-U.S. capital markets, particularly in Taiwan.

The empirical procedure is summarized as follows: First, we use the Ohlson (1995) valuation model to examine whether the mandatory pro forma EPS disclosure deducted by employee bonus and director/supervisor compensation can enhance the dilution effect of employee bonus. Secondly, to grasp the investor reaction to employee bonus information, we compute the abnormal returns around the employee bonus announcement date. The empirical results of this study support our prediction. We find that the interactive variable of employee stock bonus and the dummy variable for the years after Order No. 457 was promulgated are significantly negatively related to the stock price. This provides evidence that this new order makes the dilution effect on the employee stock bonus stronger than before. We find that the abnormal returns around the employee bonus announcement date before Order No. 457 were significantly positive. The results are reversed after this new order. The event study's findings also suggest that the new order makes the dilution effect on employee stock bonus stronger than before and also dominates the incentive effect. From these findings, we can conclude that Order No. 457 makes investors change their valuation assessments about employee bonus expense and enhances the dilution effect on employee stock bonus. In other words, the mandatory disclosure policy of pro forma EPS deducted by employee bonus and director/supervisor compensation achieves its objective. This study implements some diagnostic checks and demonstrates that our empirical results are robust to the various specifications.

The remainder of this paper is organized in the following way. Section II describes the background and reviews related prior researches and develops our

hypothesis. Section III outlines our research design and describes the empirical data. Section IV presents and discusses our findings. Section V provides the robustness test. Finally, Section VI presents our conclusions.

2. BACKGROUND, RELATED RESEARCH, AND HYPOTHESIS

2.1 BACKGROUND

According to U.S. GAAP, employee bonus is a component of employee compensation and an expense of a firm specified in APB No.25 and SFAS No.123. Under APB No.25, stock-based compensation expense is the difference at the measurement date between the share price and option exercise price, times the number of options. In addition, based on SFAS No.123, the stock-based compensation expense is measured by the option fair value at the measurement date. Option values are calculated using an option pricing model that takes into account the option exercise price, the share price, the option's expected life, expected dividend yield, expected risk-free rate, and expected stock price volatility. SFAS No.123 expense is recognized over the vesting period and a firm can choose to either recognize the stock-based compensation expense based on the difference between the stock price at the grant date and the option exercise price (which typically equal zero), or to disclose pro forma net income, i.e., net income under the grant date fair value alternative. The FASB believes that stock-based compensation is an expense that should be recognized in net income. It argues that issuing stock options transfers claim on equity from existing stockholders to employees, diluting existing stockholders' interests. Since employees provide services to the firm, the value of the transferred ownership claims represents a cost of generating earnings.

For Taiwanese listed firms, employee compensation package contains three components: a basic salary, a year-end bonus, and employee's bonus. Taiwan's Company Law §240 requires firms to distribute some percentage of their current net income as employee's bonus, which can be in cash, in stock, or in both cash and stock. The bonus rate must be specified in the firm's articles of incorporation. Firms also pay some percentages of their net incomes as director compensation, which must be in cash. Thus, grounding on Company Law §232 and Commercial Accounting Law §64, in essence, the employees' bonus and director compensation are regarded as earnings distribution items in Taiwan. In addition, owing to regulatory constraints, firms in Taiwan cannot grant stock options to employees. Therefore, employee bonus is the only component of compensation that can be directly linked to the firm's performance (Chen 2003). In order to encourage employees to work harder, high-tech industries usually distribute shares to their

employees as employee bonus. We call this type of employee bonus “employee stock bonus scheme”.

Employee stock bonus scheme, a hybrid of profit sharing and employee stock ownership, to some extent is equivalent to the U.S. stock-based compensation scheme. By nature, an employee stock bonus scheme in Taiwan is the same as the employee stock option compensation scheme with zero exercise prices (Ma and Goo 2005). Following SFAS No.123, employee bonus in Taiwan is also a firm expense and should be recognized in net income based on the same reasoning as the FASB’s stock-based compensation. The employee bonus is directly taken as an after-tax-earnings distribution item under the current law. However, after the event in which the U.S. ITC judged Taiwan SRAM firms as violating the U.S. Anti-dumping Law, when the said firms exported SRAM to the U.S in 1998, this employee bonus treatment had been a controversial issue that generated heated debate among CEOs, CPAs, the capital market regulator and the accounting standard setter in Taiwan. Under the tremendous pressure from the industrial and commercial world, the SFC in Taiwan promulgated Order No. 457 on January 30, 2003. The new order requires public companies to disclose pro forma EPS deducted by employee bonus and director/supervisor compensation (rather than to “recognize employee bonus and director/supervisor compensation as a firm expense) and to release employee bonus related information² in the Market Observation Post System (hereafter, MOPS) of the Taiwan Stock Exchange (hereafter, TSE) and to disclosure relevant information in 2002 (and later) annual reports. The requirement of Order No. 457 is similar to the disclosure requirement of SFAS No.123 except that Order No. 457 just asks a listed company to compute the employee bonus (including cash bonus and stock bonus) based on the face amount (i.e., using par value per share to compute stock bonus). Because Order No. 457 changes the previous treatment with employee bonus in financial reporting and resolves the uncertainty in measuring and reporting employee bonus “expense”, we expect the dilution effect on the employee bonus in Aboody et al. (2004) to become stronger in the Taiwan capital market after this new regulation.

² Order No. 457 requires companies to disclose information about employee bonus including (1) the percentage or range with respect to employee bonus and director/supervisor compensation, as set forth in the company's articles of incorporation.(2) information on any employee bonus proposals adopted at shareholders' meetings: (i) distribution of cash bonus or stock bonus to employees, and compensation for directors and supervisors; (ii) the number of shares in any proposed distribution of employee stock bonus, and the size of such a distribution as a percentage of capital increase paid out of earnings; (iii) The annual report shall assess the effect upon imputed earnings per share of any proposed distribution of employee bonus and director/supervisor compensation. (3) use of earnings in the preceding fiscal year for distribution of employee bonus and director/supervisor compensation: The annual report shall disclose: (i) actual distributions of employee bonus and director/supervisor compensation at the time of the preceding fiscal year's earnings distributions; (ii) the amount of such distributions as set forth in the proposal adopted at the director's meeting; and (iii) the degree of discrepancy between the two.

2.2 RELATED RESEARCH

Kruse (1996) finds that the incentive effect arising from employee bonus in small firms is greater than the effect in large firms, and more employee bonus induces high productivity. There are a fair number of studies examined the incentive effect arising from employee bonus in Taiwan; yet, most of them are unpublished. For example, Chau (2002) uses OLS regression to explore the effect of employee bonus on the productivity and profitability of a firm. She (2003) finds that the employee bonus affects the firm's profit and that employee stock bonus exerts greater influences on the firm's profit than employee cash bonus does. Chang (2003) finds that the employee bonus is positively related to stock price, ROA, ROE and Tobin's Q. Chen (2003) uses the lag distribution model to test the relation between employee bonus and firm's performance during 1986-2002. The author finds that current and prior-period employee cash bonus may increase firm's performance, but employee stock bonus may have negative impacts on the firm's long-term performance and stock return. From above empirical studies, it implies that employee bonus can motivate employees to boost productivity, profit, and especially share price, at least in short term, which is consistent with the view employee bonus aligns the interests of employees and shareholders (Bell et al. 2002). Although these researches use samples before Order No. 457, we expect that the "inherent" incentive effect arising from employee bonus is still prevailing even after the new regulation is enforced. Order No. 457 provides us with a good opportunity to examine whether such an expedient policy makes investors realize that the employee bonus is a firm expense and makes the dilution effect arising from employee bonus (particularly stock bonus) stronger after the new order is promulgated.

There are several research testing whether investors view employee bonus as an expense of a firm, namely, whether there is a dilution effect arising from employee bonus in U.S. capital market. Aboody (1996) investigates whether investors incorporate the value of a firm's outstanding employee stock options into evaluating its stock price. The author estimates the outstanding options' value for a sample of firms for which outstanding fixed options exceed 5% of outstanding common shares in 1988 and finds a negative association between the value of outstanding options and a firm's stock price. Bell et al. (2002) use the Ohlson (1995) and Feltham and Ohlson (1995) valuation models to investigate the market's perception on the economic effect of employee stock options (ESOs) on firm value for a sample of 85 profitable computer companies. Bell et al. (2002) find that the market appears to value these ESOs not as an expense but as an intangible asset (even after controlling the endogeneity bias arising from the mechanic relation

between ESOs and the share price). Aboody et al. (2004) further adopt the Ohlson (1995) valuation model to investigate the relation between share price and the stock-based compensation expense that is disclosed but not recognized under SFAS No.123, after controlling for net income, equity book value, and expected earnings growth (i.e., controlling for the incentive effect of employees' stock option). They find that share price (stock returns) is negatively related to the stock-based compensation expense (the change of stock-based compensation expense). Based on these findings, they conclude that investors view SFAS No.123 as an expense of the firm, and sufficiently reliable to be reflected in their valuation assessments.

In Taiwan, Chang (1999) finds that the current and prior-period unexpected bonuses are negatively associated with cumulated abnormal returns in the current period. Nevertheless, the highest R^2 of valuation model is less than 3% and sample years (1991~1996) are before Order No. 457. Moreover, the author excludes some important listed companies, such as TSMC and UMC, so his findings may not be representative. Chang (2000) finds that the unadjusted EPS can explain the stock price better than the EPS deducted by the employee bonus. Yeh (2003) uses the Ohlson (1995) model and Easton and Harris (1991) model to examine the influence of cash bonus for investors during 1992 to 2001. The author evidences that the diluting effect of cash employee bonus is little, thus, negligible. The above mentioned studies share a common shortcoming: sample years are all before Order No. 457. It is also found that the computation of employee stock bonus either based on face amount or fair value is inconsistent with each other among above studies. Order No. 457 resolves this problem by requiring listed companies to use face amount of employee bonus to compute pro forma EPS. Chen (2003), possibly the only published paper in Taiwan, uses employees' bonus data to examine empirically whether the bonus components (particularly stock bonus) generate "incentive effect" and whether the incentive effect is conditioned on the firm's future investment opportunities and the level of the bonus. The author finds that firm's equity value is positively related to the amount of earnings distributed as stock bonus. Since the empirical data is before the new regulation, Chen's study cannot provide evidences about the mandatory disclosure effect when No. 457 becomes effective.

2.3 HYPOTHESIS DEVELOPMENT

Prior studies discussed above indicate that employee stock bonus scheme is expected to have both a positive effect on the firm's equity value (the "incentive effect") and a negative effect on the value of outstanding shares (the "dilution effect"). Based on the findings of the employee bonus studies, such as Kruse (1996),

Bell et al. (2002), and Chen (2003) which demonstrate that there is an incentive effect (particularly stock bonus), we conjecture that the incentive effect of employee stock bonus is still prevailing even after the new order enforced. In other words, after requiring the formal disclosing EPS deducted by the employee bonus and director/supervisor compensation in the firms' financial statements, we conjecture the "inherent" incentive effect of employee stock bonus, resulting in benefits that boost firm's current and future earnings, consistently exists.³

In essence, issuing employee stock bonus will transfer claims on equity from existing shareholders to employees, in spite of before or after Order No.457, hence dilute existing shareholders' interests. Nevertheless, following reasoning similar to that by Aboody (1996), we infer that this "dilution of existing shareholder interests" effect can be reflected into the stock price only if the following conditions are met: First, investors must be sophisticated enough and able to see through the dilution nature of the employee bonus. Second, investors can measure the amount of employee bonus with certainty. Third, the perceived nature and amount of employee bonus are actually used in investors' valuation assessments. Before Order No.457, the employee bonus was taken as an after-tax-earnings distribution item, which was also advocated by many influential chairmen of high-tech companies such as Acer and UMC.⁴ Investors surely perceived this rule as working under regulation. We doubt whether investors can figure out the dilution nature of the employee stock bonus from the earnings distribution. Moreover, without definite guidance and an uncontroversial measurement method, it is extremely difficult, if not impossible, for the investors to measure the true value of the employee stock bonus in such an uncertain environment. We therefore conjecture that investors will underestimate, even ignore, the dilution effect of the employee stock bonus.

After Order No.457, the SFC regards the employee bonus as a contingent expense explanation in the ambit of current laws and expects to signal incremental information to investors and make them perceive the essential expense and dilution nature of the employee stock bonus. Importantly, Order No. 457 provides an expedient but clear measurement for calculating the employee bonus expense and requires pro forma EPS disclosure deducted by employee bonus and director/supervisor compensation in annual financial reports. Because the

³ Based on the random walk model for estimating the expected employee bonus, Chang (1999) shows a negative association between unexpected employee bonus and stock price for Taiwanese firms and suggest that the dilution effect dominates the incentive effect in his observation periods. Because the explanation power of his valuation model is extremely low and the sample years are far before our study, we follow another study, i.e., Chen (2003) whose observation period partially covers the same period as our study and finds that the incentive effect exists in his observation periods, to develop our hypothesis.

⁴ They are reported in *Economic Daily News* on August 1, 2002 (Shih, Chairman of Acer Corporation) and on January 1, 2003 (Tsao, Chairman of UMC), respectively.

uncertainty in measuring and reporting the employee bonus is removed after the promulgation of Order No.457, we conjecture that this new regulation signals a stronger dilution effect of employee bonus to investors than before. From the above discussions, we therefore establish our hypothesis as follows:

Hypothesis: Order No.457, which requires listed firms to disclose pro forma EPS deducted by the employee bonus, will make the dilution effect of the employee stock bonus stronger than before despite its continuous presence.

3. RESEARCH DESIGN AND SAMPLE

3.1 EMPIRICAL MODEL

This research design focuses on the investor reaction to the mandatory disclosed pro forma EPS deducted by employee bonus after Order No. 457. It is composed of the long window test (Test 1) and supplementary short window test (Test 2). The empirical tests are as follows:

Test 1: Following the studies of Aboody (1996), Chen (2003) and Aboody et al. (2004), we adopt the Ohlson (1995) model and use employee stock bonus based on the equity par value to structure the relationship between stock price and employee bonus measured by the face amount (especially stock bonus). We use a dummy variable to capture the incremental dilution effect of this new order. In the robustness check, we adopt the instrumental variable approach to examine the relation between stock price and fair value of the employee stock bonus.

Test 2: To grasp investor reaction to employee bonus information and the enhanced dilution effect of the employee bonus after the new regulation, we compute 5-days abnormal returns (ARs) and cumulative abnormal returns (CARs) around the employee bonus announcement date during 1999-2004. Because the impact of the employee stock bonus scheme on the firms' stock price is a combination of the "incentive effect" and "dilution effect", using ARs and CARs, we can examine whether the stock price reaction patterns before and after the new regulation are different to test if the dilution effect of employee bonus is enhanced. This procedure is expected to capture the instant reaction of the investors with regard to the employee bonus announcement and complements the above long-term research design. The empirical model details are described as follows:

3.2 STOCK PRICE AND EMPLOYEE BONUS---OHLSON (1995) MODEL

Ohlson (1995) indicates that market equity value equals the equity book value plus the present value of the expected future abnormal earnings. Since the expected future abnormal earnings are unobservable, the present study follows prior studies

(e.g., Aboody 1996; Chen 2003; and Aboody et al. 2004) and uses current-year net income instead of the preferably expected future abnormal earnings in the empirical estimation. In addition, prior Taiwan employee bonus studies (Chen 2003; She 2003; Chen 2003) indicate that the employee stock bonus and employee cash bonus have different impacts on the stock performance. Therefore, we separate the employee bonus into two types, namely, stock bonus and cash bonus, to examine their respective influences. Furthermore, it is expected that the issuance of the new regulation would not lead to a disappearance of the incentive effect, thus, including these two exclusive bonus schemes in the empirical equation allows the present study to disentangle possible incentive and dilution effects arising from the employee bonus before/after the new regulation.⁵ Because our hypothesis is, after the new order is enforced, the dilution effect from the employee stock bonus will be enhanced and stronger than before, we use a dummy variable for the year Order No.457 is promulgated to capture this “incremental” dilution effect from the employee bonus (i.e., the policy effect of the new regulation). Based on above discussions, our empirical model is specified accordingly as follows:

$$P_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \beta_3 CASHB_{it} + \beta_4 STOCKB_{it} + \beta_5 D_ORDER_t + \beta_6 CASHB_{it} \times D_ORDER_t + \beta_7 STOCKB_{it} \times D_ORDER_t + \varepsilon_{it} \quad (1)$$

where

P_{it}	=	Fair value per share of equity of firm i at period t ;
EPS_{it}	=	Earnings per share of firm i during period t ;
$BVPS_{it}$	=	Book value of equity per share of firm i at period t ;
$CASHB_{it}$	=	Employee cash bonus per share of firm i during period t ; ⁶
$STOCKB_{it}$	=	Employee stock bonus per share of firm i during period t ;
D_ORDER_t	=	Dummy variable for Order No.457, years/after 2002 are denoted as 1, otherwise 0.

Just like Aboody (1996), we assume that the net value of the employee bonus incentive and dilution effect is incorporated into the firm's share price. The sum of the coefficients $\beta_4 + \beta_7$ reflects the employee stock bonus effect on share price after Order No.457. The coefficient β_4 captures a similar effect before Order No.457. According to the conjecture that after Order No.457, the employee stock bonus incentive effect remains in force and the employee stock bonus dilution effect becomes stronger than before, we use the coefficient β_7 of the pivotal interactive variable $STOCKB \times D_ORDER$ to capture this “incremental” dilution effect and predict that β_7 would be negative after Order No.457 is enforced. Following the finding of Chen (2003) that the employee stock bonus' incentive effect dominated

⁵ The authors thank one anonymous Referee who suggested a possible impact of the employee bonus after the new regulation on a previous version of this paper.

⁶ Based on the finding of Chen (2003), we combine the employee cash bonus and director/supervisor compensation into one variable, CASHB, to simplify the empirical model used in this study.

the dilution effect before Order No.457, we predict that the coefficient β_4 of STOCKB is positive. If investors underestimate or even ignore the employee stock bonus dilution effect before the new regulation, this coefficient reflects the major/all incentive effect of the employee stock bonus. If the dilution effect of the cash bonus dominates its incentive effect after the promulgation of Order No.457, we predict that the coefficient β_3 would be positive and the coefficient β_6 negative.

Investors could acquire information on the employee bonus from MOPS after the firm's board of directors determined the amount/content of the employee bonus. However, because listed firms must input annual reports to MOPS before April 30 of next calendar year under the Taiwan Securities Exchange Law §36 regulation, there is a time lag between the calendar year-end and firms inputting the employee bonus details. Thus, except for the traditional 12 months ending at December 31, we extend the observation period to 16 months, to capture the possible market underreaction problem and to alleviate bias in our empirical estimations.

3.3 EVENT STUDY

The employee bonus decision is made by the firm's board of directors and passed by its shareholders meeting. Although the shareholders meeting is the final authoritative institution to approve the amount and content (stock or cash) of the employee bonus, investors can get information on the employee bonus from MOPS after the firm's board of directors has made its decision. If investors' perceptions and valuation assessments of the employee bonus are changed by the enhanced dilution effect after listed companies disclose pro forma EPS deducted by employee bonus as ruled by Order No. 457, we can observe different market reactions to the employee bonus information announced by the firm's board of directors before 2001 vs. after 2002. This study adopts the date the firm's board of directors post the employee bonus details into the MOPS as the event day for conducting our short window event study.

The observation period is five days around the event day (i.e., from two days before event day till two days after event day). We use 300 trading days⁷ before the observation period and adopt the market model to estimate the expected daily stock returns for the observation period. Subtracting the actual daily stock returns during the observation period by the expected daily stock returns yields the abnormal returns. Averaging the abnormal returns for the sample firms on the same day in the observation period yields the average abnormal returns (AR). Accumulating the

⁷ The length of the estimation period cannot be objectively determined. Too short a period may damage the prediction ability of the market model; too long a period may include a structural change into the model and cause the model to become unstable. The estimation period is between 100 trading days and 300 trading days depending on the data availability.

average abnormal returns in the observation period yields the accumulated abnormal returns (CAR). We use AR and CAR to observe the market reactions to the employee bonus announcement before 2001 and after 2002. According to Chen's (2003) findings and our conjecture, it is predicted that significantly positive ARs and CARs would be observed before 2001 to reflect the prevailing incentive effect. Whereas it is expected that insignificantly positive or significantly negative ARs, CARs would be found after 2002 to reflect presumably the dominating dilution effect in the presence of still prevailing incentive effect.

3.4 SAMPLE

To examine the policy effect of Order No. 457, the symmetrical and consistently sample years of this study are three years before the new regulation (i.e., 1999, 2000, 2001) and three years after the new regulation (i.e., 2002, 2003, and 2004). The employee bonus announcement dates are retrieved from Taiwan Economic Journal Database (before 2001) and the MOPS (after 2002). Other empirical data are retrieved from the Taiwan Economic Journal Database.

The sample firms used in this study are composed of publicly traded companies that are listed on TSE and OTC. The sampling criteria are as follows: 1. the listed company announces an employee bonus; 2. finance-related institutes are excluded because of their special regulations and requirements; 3. we delete firms with zero stock returns to prevent biased estimates. These selection procedures yield a final sample of 3,365 and 2,503, respectively, firm-year observations in the Ohlson model and the event study respectively.

4. EMPIRICAL ANALYSIS

4.1 THE EMPLOYEE BONUS PLAN IN TAIWAN

Table 1 presents the general picture of employee bonus practices in Taiwan for our study period partitioned into years and dichotomous electronic/non-electronic industries. It is found that more than 20% of the TSE and OTC listed firms in Taiwan had an employee cash bonus plan during 1999-2004. As a breakdown of dichotomous industry classification, the magnitude of employee cash bonus in non-electronic industry is approximately two-to-four times larger than the electronic industries during 1999~2002. The ratio has trended toward about equal for the last two years in the sample. Table 1 also indicates an increasing trend in employee stock bonus plan in Taiwan. Furthermore, there are more than 20% firms (particularly more than 55% during 2003~2004) in the electronic industry with employee stock bonus plans, which is substantially higher than the ratios of non-electronic industries.

TABLE 1 Employee Bonus Plan in Taiwan Listed Firms

Year	Industry	Listed Firms	Employee Cash Bonus		Employee Stock Bonus	
			Number	Ratio	Number	Ratio
1999	All	883	191	21.63%	150	17.00%
	Electronics	427	35	8.20%	100	23.42%
	Non-electronics	456	156	34.21%	50	10.96%
2000	All	991	208	20.99%	182	18.37%
	Electronics	507	60	11.83%	140	27.61%
	Non-electronics	484	148	30.58%	42	8.68%
2001	All	1,058	225	21.27%	193	18.24%
	Electronics	536	62	11.57%	149	27.80%
	Non-electronics	522	163	31.23%	44	8.43%
2002	All	1,115	330	29.60%	222	19.91%
	Electronics	572	98	17.13%	154	26.92%
	Non-electronics	543	232	42.73%	68	12.52%
2003	All	1,543	651	42.19%	635	41.15%
	Electronics	645	274	42.48%	419	64.96%
	Non-electronics	898	378	42.09%	216	24.05%
2004	All	1,486	773	52.02%	542	36.47%
	Electronics	644	343	53.26%	357	55.43%
	Non-electronics	842	430	51.07%	185	21.97%

Treating the employee bonus as an item of earnings distribution or disclosing rather than recognizing employee bonus expense overestimating the truly after tax earnings during 1999-2004 is presented in Table 2. It indicates that, treated as an expense, the expense effect of the employee bonus reduces the after tax earnings by approximately 5.30%~7.36% and 14.54%~27.08% in our research period based on the par value and the fair value per share of equity, respectively. Apparently, the employee bonus dilution effect, to some extent, reduces the TSE/OTC listed firms' after tax earnings.

TABLE 2 The Impacts of Employee Bonus Expense Effect on after Tax Earnings during 1999-2004 Unit: one hundred million

Year	Non-adjusted after Tax Earnings	After Tax Earnings Adjusted by Par Value	After Tax Earnings Decrease (\$)	After Tax Earnings Decrease (%)	After Tax Earnings Adjusted by Market Price*	After Tax Earnings Decrease (\$)	After Tax Earnings Decrease (%)
1999	2,725.91	2,878.42	15.25	5.30%	2,216.09	662.32	23.01%
2000	4,302.75	4,571.91	26.92	5.89%	3,708.29	863.62	18.89%
2001	2,408.94	2,231.74	17.72	7.36%	1,756.64	652.30	27.08%
2002	3,796.66	3,580.30	21.64	5.70%	3,244.60	552.06	14.54%
2003	6,216.87	5,822.53	394.33	6.34%	5,274.33	942.54	15.16%
2004	9,724.08	9,171.51	552.57	5.68%	8,195.01	1,529.07	15.72%

* : Based on the stock price at April 30 of the employee stock bonus granting year.

4.2 DESCRIPTIVE STATISTICS OF THE VARIABLES AND CORRELATION ANALYSIS

Table 3 provides descriptive statistics of related variables for equation (1). The means of fair value of equity at the end of December (P_D) of the current calendar year and at the end of April (P_A) of the next calendar year are \$32.03

(median \$21.8) and \$34.62 (median \$22.9), respectively. The mean of earnings and book value of equity per share are \$2.34 (median \$1.71) and \$16.49 (median \$15.06), respectively. The mean of the employee cash bonus and stock bonus per share are \$0.0853 (median \$0.0435) and \$0.0915 (median \$0.0333), respectively. Comparing the mean and median of employee bonus per share suggests that some firms issuing enormous employee bonus per share result in such patterns.

TABLE 3 Descriptive Statistics of the Variables in the Empirical Model (N=3,365)

Variables	Mean	Standard deviation	Min	1st Quarter	Median	3rd Quarter	Max
P _D	32.03	34.51	0.85	13.2	21.8	37.8	588
P _A	34.62	39.07	0.46	13.75	22.9	39.6	653
EPS	2.34	2.23	-3.31	0.92	1.71	3.09	31.31
BVPS	16.49	5.23	0.79	13.10	15.06	18.20	61.10
CASHB	0.0853	0.1256	0	0.0195	0.0435	0.0997	1.3490
STOCKB	0.0915	0.1497	0	0	0.0333	0.1398	3.4545
D_ORDER	0.6339	0.4818	0	0	1	1	1

P _D	=	Fair value per share of equity at December 31;
P _A	=	Fair value per share of equity at April 30 of next calendar year;
EPS	=	Earnings per share during period t;
BVPS	=	Book value of equity per share at period t;
CASHB	=	Employee cash bonus per share during period t;
STOCKB	=	Employee stock bonus per share during period t;
D_ORDER	=	Dummy variable for Order No.457, year after 2002 denoted as 1, otherwise 0.

Table 4 provides the Pearson/Spearman correlation matrix of the related variables for equation (1). From Table 4, all the explanatory variables (EPS, BVPS, CASHB, and STOCKB) are significantly positive-correlated with the fair value of equity measured at the end of December of the current calendar year (P_D). It suggests that the explanatory variables such as EPS, BVPS, CASHB, and STOCKB all have played an important role in explaining the end market value of equity of current calendar year. In addition, EPS is significantly positively correlated with CASHB and STOCKB, which is consistent with our conjecture that good performance induces more employee bonus. While most of the independent variables are highly correlated with others, the variance inflation factors (VIF) of the explanatory variables in the regressions are less than 10 and do not suggest there is a severe multi-collinearity problem (Neter et al., 1989).

4.3 EMPIRICAL RESULTS

4.3.1 Empirical Findings from Ohlson (1995) Model

At this juncture, our study focuses on whether Order No. 457 brings about investors changing their stock valuation about employee bonus or not. Table 5 presents regression results from equation (1). We first present the findings of

regressions from the original EPS and BVPS, and use the adjusted numbers to re-examine the association between share prices and employee bonus level variables. Table 5 also presents an alternative measure of the market equity value (P_A) to proxy the dependent variable to provide corroborative evidence.

TABLE 4 Correlation Coefficient of the Variables Related Model (N=3,365)

	P_D	EPS	BVPS	CASHB	STOCKB	D_ORDER
P_D		0.742 ^a	0.618 ^a	0.454 ^a	0.490 ^a	-0.079 ^a
EPS	0.801 ^a		0.703 ^a	0.672 ^a	0.606 ^a	0.099 ^a
BVPS	0.653 ^a	0.641 ^a		0.458 ^a	0.425 ^a	-0.017
CASHB	0.427 ^a	0.602 ^a	0.349 ^a		0.291 ^a	0.185 ^a
STOCKB	0.616 ^a	0.589 ^a	0.443 ^a	0.229 ^a		0.005
D_ORDER	0.026	0.110 ^a	-0.018	0.219 ^a	0.014	

1. P_D = Fair value per share of equity at December 31;
 EPS = Earnings per share during period t;
 BVPS = Book value of equity per share at period t;
 CASHB = Employee cash bonus per share during period t;
 STOCKB = Employee stock bonus per share during period t;
 D_ORDER = Dummy variable for the Order No.457, year after 2002 denoted as 1, otherwise 0.
2. Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.
3. Numbers in the upper-right triangle are the Pearson correlation coefficients, and in the lower-left triangle are the Spearman rank-correlation coefficients.

From Table 5, the EPS and BVPS coefficients, as expected, are both positive and statistically significant at the 1% level in all empirical models. These findings are consistent with those of previous studies that there is a strong relationship between share price and earnings vs. book equity value. The coefficients of the explanatory variable STOCKB are 49.4792 ($t=2.51$), 84.8881($t=3.82$), 60.1285 ($t=3.06$), and 95.9153 ($t=4.33$) in the models⁸, as predicted, both positive and statistically significant at the 5% and 1% levels. Therefore, there is indeed an incentive effect of the employee stock bonus, which is consistent with the findings of Chen (2003).

The coefficients of the explanatory variable CASHB are positive but statistically insignificant.⁹ Most importantly, the coefficients of the pivotal explanatory variable $STOCKB \times D_ORDER$ are -57.0169 ($t=-2.69$), -95.8110 ($t=-4.23$), -56.9014 ($t=-2.68$), and -95.6592 ($t=-4.23$), both negative and statistically significant at 1% level. This suggests that the greater the employee stock bonus the lower the market value after Order No.457 was promulgated. To a great degree, this reflects the mandatory disclosure effect and the stronger dilution effect originating

TABLE 5 Relation between Market Value of Equity and Employee Bonus

$$P_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \beta_3 CASHB_{it} + \beta_4 STOCKB_{it} + \beta_5 D_ORDER_t +$$

⁸ We adopt White's (1980) heteroskedastity consistent covariance matrix estimator to correct estimates of the coefficient covariances in the possible presence of heteroskedasticity in all empirical regressions.

⁹ This study separates the CASHB variable into two independent variables, pure employee cash bonus and director/supervisor compensation, and reexamines the alternative empirical equations. The empirical results of this additional check are the same as the initial analysis.

$$\beta_6 \text{CASHB}_{it} D_ORDER_t + \beta_7 \text{STOCKB}_{it} D_ORDER_t + \varepsilon_{i,t}$$

Variables	Dependent Variable (P _D and P _A)			
	EPS and Book Value not Deducted by Bonus Components		EPS and Book Value Deducted by Bonus Components	
	Market Value Measured at December 31	Market Value Measured at April 30 of Next Calendar Year	Market Value Measured at December 31	Market Value Measured at April 30 of Next Calendar Year
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Intercept	-6.5109 ^b (-2.13)	-3.7775 (-1.14)	-6.8296 ^b (-2.23)	-4.0493 (-1.22)
EPS	9.7320 ^a (11.71)	10.3903 ^a (12.90)	9.6779 ^a (11.63)	10.3846 ^a (12.89)
BVPS	0.9746 ^a (4.13)	0.9291 ^a (3.60)	1.0000 ^a (4.26)	0.9485 ^a (3.69)
CASHB	27.8956 (0.80)	50.3814 (1.49)	38.6622 (1.10)	61.3940 ^c (1.80)
STOCKB	49.4792 ^b (2.51)	84.8881 ^a (3.82)	60.1285 ^a (3.06)	95.9153 ^a (4.33)
D_ORDER	-2.0112 (-0.91)	-6.3578 ^a (-2.65)	-1.9043 (-0.87)	-6.2552 ^a (-2.61)
CASHB*D_ORDER	-39.7946 (-1.07)	-56.1567 (-1.50)	-39.2979 (-1.06)	-55.5779 (-1.49)
STOCKB*D_ORDER	-57.0169 ^a (-2.69)	-95.8110 ^a (-4.23)	-56.9014 ^a (-2.68)	-95.6592 ^a (-4.23)
N	3,365	3,365	3,365	3,365
Adjusted R ²	60.96%	63.55%	60.84%	63.54%
F value	751.45 ^a	838.87 ^a	747.52 ^a	838.33 ^a

1. PD = Fair value per share of equity at December 31;
PA = Fair value per share of equity at April 30 of next calendar year;
EPS = Earnings per share during period t;
BVPS = Book value of equity per share at period t;
CASHB = Employee cash bonus per share during period t;
STOCKB = Employee stock bonus per share during period t;
D_ORDER = Dummy variable for Order No.457, year after 2002 denoted as 1, otherwise 0.
2. Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.

from Order No.457. Nevertheless, the coefficients on $\text{CASHB} \times \text{D_ORDER}$ are negative as expected but statistically insignificant. This result, to some extent, is attributed to the relatively small magnitude of the cash bonus in the employee bonus schemes which fail to attract investor attention and confirms the studies of Yeh (2002) and Chen (2003, p.952). A comprehensive review of the empirical results from the Ohlson model demonstrate that, Order No.457 indeed exerts influences on the valuation behaviors of investors which, in turn, affects share prices. However, the result for the relation between equity value and the interactive variable of employee cash bonus level with dummy variable for Order No.457 ($\text{CASHB} \times \text{D_ORDER}$), is unobvious.

In summary, these empirical findings lend support to the view that Order No. 457 is systematically associated with investors changing their valuation assessments about the employee bonus expense.¹⁰ First, with reference to the incentive aligning

¹⁰In view of the function fixation phenomenon in Taiwan capital market, this evidence suggests that investor can not see through the bottom line accounting number before Order No.457, and mandatory disclosing an

motivation of employee bonus, as predicted, the association between employee stock bonus and stock price is significantly positive among alternative empirical models. However, after Order No. 457 was promulgated, the employee stock bonus dilution effect becomes stronger than it is before because investors perceive a negative impact arising from the employee bonus as a firm expense in pro forma EPS disclosure deducted by the employee bonus. Second, it is also found that the investors are more sensitive and tactful in responding to the employee stock bonus than against employee cash bonus.

4.3.2 Empirical Findings from Event Study Method

In this subsection, we further compute the abnormal returns surrounding the employee bonus announcement date to examine whether different investor behaviors reported in the preceding paragraphs before and after Order No.457 is also present in the short-term event study test. This further examination provides us supplementary evidence on investor behavior. It deserves mentioning that we find the announcement date of some sample firms are behind April 30, which is the officially permissible deadline in Taiwan. In order to prevent wrongly capturing another information contents on such lag announcement, we delete observations whose announcement date fell after April 30. We inevitably delete some observations without posting the employee bonus details into the MOPS. This elimination procedures yield a final sample of 2,326 firm-year observations. There are 259, 277, 316, 418, 473, and 583 observations, respectively, from 1999 to 2004. Table 6 provides these short window empirical results by calculating ARs and CARs of employee bonus announcement in five-day observation periods.

From Table 6, observing the pooling data during 2002~2004, all negative and statistically significant CARs in period (-2~+2) evidence that the mandatory disclosure of employee bonus-related information (especially pro forma EPS deducted by employee bonus and director/supervisor compensation) not only makes the dilution effect larger but dominates the incentive effect, and, effectively, reduces the returns of the stocks. It seems that there is an informational leakage in anticipation of the employee bonus announcement. At any rate, the obviously and continuously negative abnormal returns of firms around the open market employee bonus announcement supports the hypothesis that Order No.457 signals

alternative bottom line accounting number (i.e., pro forma EPS deducted by employee bonus and director/supervisor compensation) effectively makes them realize the expense nature of employee bonus and change their valuation behaviors after this new order. The authors thank one anonymous Referee who provides this explanation.

TABLE 6 Average Abnormal Returns (ARs) and Cumulated Average Abnormal Returns (CARs) of Employee Bonus Announcement (N=2,326)

Year	Date	AR (%)	t (AR)	CAR (%)	t (CAR)
2004 (N=583)	-2	-0.1563	-1.6293	-0.1563	-1.6293
	-1	-0.1326	-1.3456	-0.2889	-1.9511 ^c
	0	-0.0769	-0.7255	-0.3658	-1.8779 ^c
	1	0.0916	0.8429	-0.2742	-1.2141
	2	-0.0243	-0.2169	-0.2985	-1.1657
2003 (N=473)	-2	-0.2167	-2.0697 ^b	-0.2167	-2.0697 ^b
	-1	-0.1890	-1.9789 ^b	-0.4057	-2.8192 ^a
	0	-0.1077	-1.1540	-0.5134	-2.9729 ^a
	1	0.1726	1.4936	-0.3407	-1.6173
	2	-0.0036	-0.0328	-0.3444	-1.3853
2002 (N=418)	-2	-0.0664	-1.5943	-0.0664	-1.5943
	-1	-0.0785	-2.1703 ^b	-0.1448	-2.5670 ^a
	0	-0.0014	-0.0339	-0.1462	-2.1260 ^a
	1	0.0501	1.1306	-0.0961	-1.1876
	2	-0.0431	-1.0223	-0.1392	-1.4531
2004-2002 (N=1,474)	-2	-0.1502	-2.8867 ^a	-0.1502	-2.8867 ^a
	-1	-0.1354	-2.6741 ^a	-0.2855	-3.7433 ^a
	0	-0.0654	-1.2389	-0.3509	-3.6207 ^a
	1	0.1059	1.8208 ^c	-0.2450	-2.1437 ^b
	2	-0.0230	-0.3963	-0.2681	-2.0353 ^b
2001 (N=316)	-2	0.1828	1.1039	0.1828	1.1039
	-1	-0.1936	-1.2087	-0.0108	-0.045
	0	0.1086	0.6538	0.0933	0.3131
	1	0.5487	3.1011 ^a	0.6639	1.8069 ^c
	2	0.1545	0.8461	0.8187	1.9223 ^c
2000 (N=277)	-2	0.1583	0.9437	0.1583	0.9437
	-1	0.4512	2.5971 ^a	0.6003	2.3182 ^b
	0	0.1497	0.8365	0.75	2.4754 ^a
	1	0.169	0.6021	0.9167	2.561 ^a
	2	-0.0654	-0.3623	0.8552	2.0966 ^b
1999 (N=259)	-2	-0.0461	-0.2449	-0.0461	-0.2449
	-1	0.4756	2.4041 ^a	0.4295	1.3862
	0	0.5504	2.5530 ^a	0.9799	2.5304 ^a
	1	0.2972	1.3683	1.2771	2.8217 ^a
	2	-0.0034	-0.017	1.2719	2.5571 ^a
1999-2001 (N=852)	-2	0.0427	1.1541	0.0427	1.1541
	-1	0.0777	2.0890 ^b	0.1191	2.1017 ^b
	0	0.1077	2.7305 ^a	0.2261	3.2357 ^a
	1	0.1412	3.3783 ^a	0.3698	4.3605 ^a
	2	0.0100	0.2472	0.3799	3.9480 ^a

* Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.

overvaluation of firm's share price to the market and therefore decreases stock returns for existing shareholders.

On the other hand, based on the pooling data in the period 1999~2001, we find ARs are all positive and statistically significant on day -1, day 0 and day +1. The CARs are also positive and statistically significant on days -1~+2. The obvious and continuously positive abnormal returns for firms surrounding the announcement date suggest that investors perceive the interests-aligning effect of the employee bonus which, in turn, increases wealth for existing shareholders. It also reveals that ARs on the announcement date are 0.5504 ($t=2.553$), 0.1497 ($t=0.8365$), and 0.1086 ($t=0.6538$), all positive from 1999 to 2001.

In addition, CARs are both positive and statistically significant at 1% on the announcement date in 1999 and 2000. Overall, it is reasonable to infer investors perceive the interests-aligning effect of employee bonus of the firms and lead to an increase in the firm's stock price. Nevertheless, the confounding effect from simultaneously announcing the employee bonus and dividends of a listed company calls for us to incorporate the dividend payment variable into the event study to sift out the investors' reaction to employee bonus announcement. This issue will be addressed in the following robustness check.¹¹

The above discussions show that stock prices are asymmetrically associated with the investors' stock valuation about the employee bonus announcement before/after the SFC promulgates such new order. The prices around the employee bonus announcement date significantly go up before the SFC's new order and significantly decline after the SFC's new order. This indicates that the supplementary short window event study findings provide corroborative evidence to our hypothesis.

Based on the reinforcing empirical findings of the Ohlson model and short window event study, it is reasonable to conclude that Order No. 457 of the SFC for mandatory disclosing employee bonus-related information (particularly disclosing pro forma EPS deducted by employee bonus and director/supervisor compensation) successfully changes the perceptions of the investors regarding the nature associated with employee bonus compensation. The research hypothesis of our study has gained empirical support.

¹¹ We examined the contents of disclosure that the listed firms disclose to the MOPS after 2002. We found that, except for the disclosure items and financial data that required by the SFC, there were rarely contemporaneous announcements relating firm's investment alternative or financial planning at the disclosure dates. Thus, the confounding effect problem from the simultaneously announcing important investments/financial planning unlikely affects the empirical results.

5. ADDITIONAL ANALYSES

5.1 A ROBUSTNESS CHECK ON OHLSON (1995) MODEL : USING MARKET VALUE TO MEASURE EMPLOYEE STOCK BONUS

In equation (1), the variable STOCKB is the earnings distributed to employees as stock bonus which is measured by par value per stock share (i.e., \$10). An alternative specification is to replace STOCKB by the fair value of employee stock bonus (denoted as FSTOCKB). Since FSTOCKB depends on current stock price, Chen (2003) points out that FSTOCKB variable may be correlated with the error term, ε , in equation (1) when using market value to measure employee stock bonus, thus, causes the problems of correlated omitted variables and implies that the coefficient estimate for FSTOCKB is biased and inconsistent. Therefore, following the similar approach of Aboody (1996) and Chen (2003), we use both the two-stage least-squares (2SLS) method and an instrumental variable approach for FSTOCKB which is calculated by current year's bonus shares multiplies prior year-end stock price, to implement the robustness check. The fitted values for current year's FSTOCKB are obtained from the first stage of the 2SLS and denoted by $\hat{FSTOCKB}$. In the second stage, $\hat{FSTOCKB}$ replaces STOCKB and equation (1) is re-estimated. It deserves to be mentioned, because of lost data in some observations in calculating the instrumental variable, there are 2,894 samples left in checking the robustness of the empirical results. These additional empirical findings are summarized in Table 7.

From Table 7, the EPS and BVPS coefficients, as expected, again are both positive and statistically significant at 1%. The coefficients of the explanatory variable $\hat{FSTOCKB}$ are both positive and statistically significant at 1% level in two year-end models, but statistically insignificant in the April-end model. The coefficients of the explanatory variable CASHB are positive but, except for the bonus-adjusted April-end model, statistically insignificant. Most importantly, the coefficients of the pivotal explanatory variable $\hat{FSTOCKB} \times D_ORDER$ are -4.1968 (t=-1.96), -4.0235 (t=-1.97), -3.8793 (t=-1.79), and -3.4546 (t=-1.68), respectively, both negative and statistically significant at 5% and 10% level. In addition, the CASHB \times D_ORDER coefficients are negative as expected and statistically significant at 10% level in two April-end models. An overall review of the empirical results from using fair value of equity to measure employee stock bonus in the robustness test, Order No. 457 indeed influences the perceptions of investors, which, in turn, affects share prices. Specifically, main regression results reported in Table 5 remain intact when STOCKB is replaced by the fair value of employee stock bonus.

TABLE 7 Market Value of Equity and Employee Bonus Relation : Fair Value Test

$$P_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 BVPS_{it} + \beta_3 CASHB_{it} + \beta_4 FSTOCKB_{it} + \beta_5 D_ORDER_t + \beta_6 CASHB_{it} \times D_ORDER_t + \beta_7 FSTOCKB_{it} \times D_ORDER_t + \varepsilon_{it}$$

Variables	Dependent Variable (P _D or P _A)			
	EPS and Book Value not deducted by Bonus Components		EPS and Book Value deducted by Bonus Components	
	Market Value Measured at December 31	Market Value Measured at April 30 of Next Calendar Year	Market Value Measured at December 31	Market Value Measured at April 30 of Next Calendar Year
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Intercept	-0.9543 (-0.28)	-3.0017 (-0.77)	-0.9587 (-0.29)	-2.9718 (-0.76)
EPS	8.4859 ^a (9.94)	10.9596 ^a (14.71)	8.5438 ^a (10.33)	10.7779 ^a (14.35)
BVPS	0.7996 ^a (3.10)	1.1842 ^a (3.90)	0.8171 ^a (3.21)	1.2273 ^a (4.00)
CASHB	20.8320 (0.59)	47.9393 (1.59)	30.3884 (0.86)	61.9096 ^b (2.06)
$\hat{FSTOCKB}$	7.2383 ^a (3.21)	1.4963 (0.70)	7.7290 ^a (3.48)	2.0668 (0.96)
D_ORDER	-4.1001 ^b (-2.31)	-11.9196 ^a (-6.12)	-3.9284 ^b (-2.23)	-11.6777 ^a (-5.97)
CASHB × D_ORDER	-29.5003 (-0.80)	-60.0886 ^c (-1.85)	-30.5955 (-0.84)	-61.8637 ^c (-1.90)
$\hat{FSTOCKB} \times D_ORDER$	-4.1968 ^c (-1.96)	-4.0235 ^b (-1.97)	-3.8793 ^c (-1.79)	-3.4546 ^c (-1.68)
N	2,894	2,894	2,894	2,894
Adjusted R ²	62.09%	57.69%	62.02%	57.03%
F value	677.84 ^a	564.62 ^a	675.77 ^a	549.59 ^a

- PD = Fair value per share of equity at December 31 of the current calendar year;

PA = Fair value per share of equity at April 30 of next calendar year;

EPS = Earnings per share during period t;

BVPS = Book value of equity per share at period t;

CASHB = Employee cash bonus per share during period t;

$\hat{FSTOCKB}$ = The fitted value of FSTOCKB obtained from the first stage of 2SLS regressions for the stock bonus-firms. The instrumental variable for FSTOCKB equals current year's bonus shares multiplies prior year-end stock price;

D_ORDER = Dummy variable for Order No.457, year after 2002 denoted as 1, otherwise 0.
- Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.

5.2 STOCK RETURNS AND EMPLOYEE BONUS CHANGES

Since a stock returns specification is less sensitive to the omitted variable problems, the present study further examines the relation between stock returns and changes in the employee bonus variables. We also examined two observation periods (i.e., 12-months vs. 16-months observation periods) to capture the possible underreaction of market to the release of earnings information and denote the 12 months (from January 1 to December 31 of the current calendar year) vs. 16 months (from January 1 of current calendar year to April 30 of next calendar year) stock return as R₁₂, R₁₆, respectively. Inspired by the prior studies (e.g., Aboody, 1996; Chen, 2003; and Aboody et al., 2004), we use equation (2) (that can be derived from

equation (1)) to investigate the association between stock returns and changes in the annual employee bonus:

$$R_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 \Delta EPS_{it} + \beta_3 \Delta CASHB_{it} + \beta_4 \Delta STOCKB_{it} + \beta_5 D_ORDER_t + \beta_6 \Delta CASHB_{it} \times D_ORDER_t + \beta_7 \Delta STOCKB_{it} \times D_ORDER_t + \varepsilon_{it} \quad (2)$$

where

- R_{it} = Stock return of firm i during period t (beginning at Jan. 1);
- ΔEPS_{it} = Changes of earnings per share of firm i during period t , divided by the fair value per share at time $t-1$;
- $\Delta CASHB_{it}$ = Changes of employee cash bonus per share of firm i during period t , divided by the fair value per share at time $t-1$;
- $\Delta STOCK_{it}$ = Changes of employee stock bonus per share of firm i during period t , divided by the fair value per share at time $t-1$;

The definitions of the other variables are the same as equation (1).

Along the same lines of reasoning, the present study predicts that the coefficients of $\Delta CASHB$ and $\Delta STOCKB$ are all positive and reflect the incentive effect of the employee bonus components. The $\Delta CASHB \times D_ORDER$ and $\Delta STOCKB \times D_ORDER$ coefficients will be negative, reflecting that Order No.457 makes the dilution effect stronger than it is before. Table 8 presents regression results from equation (2). We also present the findings from regressions of original EPS vs. adjusted EPS variable to assess the effect of employee bonus components change on stock returns. Again, Table 8 also reports stock returns in alternative periods (R_{12} and R_{16}).

From Table 8, the coefficients on EPS and ΔEPS , as expected, are both positive and statistically significant at 1% level in all empirical models. These findings are consistent with findings reported in previous studies that there is the strong association between shares return and account earnings. The coefficients of the explanatory variable $\Delta STOCKB$ are 99.2410 ($t=6.29$), 121.8705 ($t=6.57$), 102.0557 ($t=6.48$), and 124.5972 ($t=6.73$), as predicted, both positive and statistically significant at 1% level to reflect the employee stock bonus' incentive effect. The coefficients of the explanatory variable $\Delta CASHB$ are positive but statistically insignificant. Most importantly, the coefficients of the pivotal explanatory variable $\Delta STOCKB \times D_ORDER$ are -100.1120 ($t=-5.99$), -119.4898 ($t=-6.13$), -100.1405 ($t=-5.99$), and -119.4878 ($t=-6.13$), both negative and statistically significant at 1% level. This again suggests the greater the employee stock bonus, the lower the stock returns after Order No.457 which reflects the mandatory disclosure effect of the new regulation. The coefficients on $\Delta CASHB \times D_ORDER$ are also negative as expected but statistically insignificant.

All reported empirical findings all together lend support to the view that the issue of the Order No.457 systematically bringing about a change in the perceptions of investors regarding the nature of employee bonus expense (particularly stock bonus) in their valuation of the common shares. The incentive effect of employee

TABLE 8 Stock Returns and Employee Bonus Relation : Return Model Test

$$R_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 \Delta EPS_{it} + \beta_3 \Delta CASHB_{it} + \beta_4 \Delta STOCKB_{it} + \beta_5 D_ORDER_t + \beta_6 \Delta CASHB_{it} \times D_ORDER_t + \beta_7 \Delta STOCKB_{it} \times D_ORDER_t + \varepsilon_{it}$$

Variables	Dependent Variable (R ₁₂ or R ₁₆)			
	EPS not deducted by Bonus Components		EPS deducted by Bonus Components	
	R ₁₂	R ₁₆	R ₁₂	R ₁₆
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Intercept	-0.2020 ^a (-5.53)	0.0307 (0.75)	-0.1987 ^a (-5.47)	0.0341 (0.84)
EPS	1.8081 ^a (4.11)	1.4702 ^a (3.49)	1.8084 ^a (4.02)	1.4562 ^a (3.40)
ΔEPS	0.9889 ^a (3.50)	1.1918 ^a (4.41)	0.9841 (3.47)	1.1925 ^a (4.44)
ΔCASHB	21.5843 (1.06)	23.5106 (1.10)	23.6531 (1.17)	25.6172 (1.20)
ΔSTOCKB	99.2410 ^a (6.29)	121.8705 ^a (6.57)	102.0557 ^a (6.48)	124.5972 ^a (6.73)
D_ORDER	0.1775 ^a (5.53)	-0.0584 (-1.50)	0.1792 ^a (5.59)	-0.0568 (-1.46)
ΔCASHB × D_ORDER	-15.6166 (-0.75)	-15.5610 (-0.70)	-15.1216 (-0.73)	-15.0812 (-0.68)
ΔSTOCKB × D_ORDER	-100.1120 ^a (-5.99)	-119.4898 ^a (-6.13)	-100.1405 ^a (-5.99)	-119.4878 ^a (-6.13)
N	2,568	2,564	2,568	2,564
Adjusted R ²	30.51%	26.73%	30.43%	26.65%
F value	162.03 ^a	134.55 ^a	161.37 ^a	134.02 ^a

1. R₁₂ = 12-months stock return of firm during period t (from Jan. 1 to Dec. 31);
R₁₆ = 16-months stock return of firm during period t (from Jan. 1 to next year's April 30);
EPS = Earnings per share during period t;
ΔEPS = Changes of EPS deflated by beginning-of-period stock price;
ΔCASHB = Changes of CASHB per share deflated by beginning-of-period stock price;
ΔSTOCKB = Changes of STOCKB per share deflated by beginning-of-period stock price.
D_ORDER = Dummy variable for Order No.457, year after 2002 denoted as 1, otherwise 0.
2. Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.

stock bonus still prevails even after disclosing pro forma EPS. But the dilution effect of employee bonus (especially stock bonus) becomes stronger after the issuance of Order No.457 and, even, dominates the incentive effect. The results confirm the incentive effect of Chang (2000) and Chen (2003) that adopt empirical data before the SFC promulgates Order No. 457 and provide confirmatory evidences to support non-U.S. capital market data findings of Aboody et al. (2004)

5.3 STOCK RETURN AND EMPLOYEE BONUS LEVEL RELATION

Easton and Harris (1991) express the idea that price and book value are both measures of the “stock” value of the shareholders’ equity. Taking first differences of the variables, rearranging the equation and dividing by beginning-of-period stock price, we can obtain the earnings level model to explain stock returns. That is, if stock price and book value are related, then earnings level variables are appropriate to explain stock returns. Since Easton and Harris (1991) suggest that earnings level variables explain stock returns better than earnings change do, therefore, we use the

Easton and Harris (1991) earnings level model to further examine the relationship between stock returns and employee bonus level. We adopt equation (3) to investigate the association between stock returns and the annual employee bonus level:

$$R_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 CASHB_{it} + \beta_3 STOCKB_{it} + \beta_4 \times D_ORDER_t + \beta_5 CASHB_{it} \times D_ORDER_t + \beta_6 STOCKB_{it} \times D_ORDER_t \varepsilon_{it} \quad (3)$$

The definitions of the variables are the same as equation (1) and equation (2).

This additional examination also covers two observation windows, i.e., R_{12} and R_{16} . The results are presented in the first and the second columns of Table 9. From the first and the second columns of Table 9, it evidences that the results by using employee bonus level are similar to what reported in the employee bonus changes model (Table 8). Without surprise, the coefficients on EPS are both positive and statistically significant at 1% level in the empirical models. Again, the coefficients on STOCKB, as expected, are both positive and statistically significant at 1% level that evidences the existence of the incentive effect of employee stock bonus. Nevertheless, it is interesting to note that the CASHB coefficients are also positive and statistically significant at the 1% level. Combining the impacts of employee bonus changes and employee bonus level on stock returns, it seems fair to conclude that the investors perceived cash bonus as an incentive mechanism, but only if the magnitude of cash bonus is large enough. Most importantly, the coefficients of the pivotal explanatory variables, $STOCKB \times D_ORDER$ and $CASHB \times D_ORDER$, are both negative and statistically significant at 1% level that demonstrates once again the stronger dilution effect of bonus components after Order No.457. The empirical results from this robustness test in this subsection, again, provide some corroborative evidence to our research hypothesis.

5.4 STOCK RETURN AND EMPLOYEE BONUS RELATION : ALTERNATIVE RETURN PERIOD TEST

Taiwan Securities Exchange Law §36 requires listed firms to issue an annual financial report during four months after the end of the calendar year. As a consequence, there is an alternative observation window: May 1 of the current calendar year to April 30 of the next calendar year. This study further adopts this alternative observation window to examine the association between stock returns and employee bonus (includes level and change measure) and provides additional evidence. The results are presented in the third and the fourth columns of Table 9.

From the third and the fourth columns of Table 9, it evidences that, except for the dramatically decreased explanatory power (Adjusted R^2) of such models, the

TABLE 9 Stock Returns vs. Employee Bonus Level Relation and Alternative Return Period Test

$$R_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 CASHB_{it} + \beta_3 STOCKB_{it} + \beta_4 \times D_ORDER_t + \beta_5 CASHB_{it} \times D_ORDER_t + \beta_6 STOCKB_{it} \times D_ORDER_t + \varepsilon_{it}$$

$$R_{it} = \alpha_0 + \beta_1 EPS_{it} + \beta_2 \Delta EPS_{it} + \beta_3 \Delta CASHB_{it} + \beta_4 \Delta STOCKB_{it} + \beta_5 D_ORDER_t + \beta_6 \Delta CASHB_{it} \times D_ORDER_t + \beta_7 \Delta STOCKB_{it} \times D_ORDER_t + \varepsilon_{it}$$

Variables	Dependent Variable (R ₁₂ or R ₁₆)			
	Employee Bonus Level Model		Alternative Return Period (May 1 ~April 30)	
	R ₁₂	R ₁₆	Level Model (R ₁₂)	Change Model (R ₁₂)
	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)	Coefficient (t-value)
Intercept	-0.3280 ^a (-6.65)	-0.1195 ^b (-2.23)	-0.0653 ^c (-1.96)	-0.0117 (-0.38)
EPS	2.3065 ^a (4.63)	2.0065 ^a (4.16)	0.6552 ^a (2.56)	0.1960 (0.86)
ΔEPS				0.8658 ^a (4.63)
CASHB	51.7697 ^a (3.07)	63.4814 ^a (3.47)	13.4566 (1.21)	
ΔCASHB				11.8315 (0.85)
STOCKB	99.5152 ^a (6.26)	122.3706 ^a (6.50)	44.0153 ^a (2.59)	
ΔSTOCKB				43.0775 ^b (2.51)
D_ORDER	0.2692 ^a (4.75)	0.0044 (0.72)	0.0791 ^c (1.96)	0.0570 ^c (1.71)
CASHB × D_ORDER	-44.2339 ^a (-2.63)	-50.9048 ^a (-2.77)	-8.1104 (-0.71)	
ΔCASHB × D_ORDER				-11.2947 (-0.79)
STOCKB × D_ORDER	-101.9637 ^a (-5.64)	-121.7309 ^a (-5.80)	-35.2507 ^c (-1.95)	
ΔSTOCKB × D_ORDER				-32.0842 ^c (-1.79)
N	2568	2564	2564	2568
Adjusted R ²	29.32%	25.64%	4.04%	5.50%
F value	178.45 ^a	148.32 ^a	18.99 ^a	22.33 ^a

- R₁₂ = 12-months stock return of firm during period t (from Jan. 1 to Dec. 31);
 R₁₆ = 16-months stock return of firm during period t (from Jan. 1 to next year's April 30);
 EPS = Earnings per share during period t;
 CASHB = Employee cash bonus per share during period t;
 STOCKB = Employee stock bonus per share during period t;
 D_ORDER = Dummy variable for Order No.457, year after 2002 denoted as 1, otherwise 0.
 ΔEPS = Changes of EPS deflated by beginning-of-period stock price;
 ΔCASHB = Changes of CASHB per share deflated by beginning-of-period stock price;
 ΔSTOCKB = Changes of STOCKB per share deflated by beginning-of-period stock price.

2. Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.

results are basically similar to what reported in the previous models. The coefficients of the pivotal explanatory variables, STOCKB × D_ORDER and ΔSTOCKB × D_ORDER, are again both negative and statistically significant at 10% level. It seems that an alternative observation window does not alter empirical results.

5.5 A ROBUSTNESS CHECK ON SHORT WINDOW EVENT STUDY : DIVIDEND CHANGE PATTERNS TEST

Due to the possibility of dividend-change patterns confounding our empirical results, the entire employee bonus sample firms are divided into two mutually exclusive sub-samples: dividend-increasing sub-sample and dividend-decreasing sub-sample to re-examine the abnormal returns surrounding the announcement date before/after the SFC's new regulation. If the stock price movement can be attributed to the firm's dividend announcement, it is expected that the negative abnormal return will disappear, at least, becomes smaller, in the dividend-increasing sub-sample during 2002~2004 and the positive abnormal return will also disappear in the dividend-decreasing sub-sample during 1999-2001. After controlling for dividend-change patterns, we can obtain confirmatory evidence. The empirical findings of the additional examination are presented in Table 10.

From Table 10, we find that the CARs of both the dividend-increasing and dividend-decreasing sub-samples surrounding the announcement date are all negative during 2002~2004. When observing the 3-year pooling observations before Order No.457, it is found that the CARs of both the dividend-increasing and dividend-decreasing sub-samples surrounding the announcement date are all positive, similar to what reported by using the entire sample. It is reasonable to infer our initial short window empirical results were not affected in any substantial way by the dividend-change patterns.

In summary, the above additional diagnostic checks have demonstrated that our empirical results are robust to the various specifications. These additional examinations include adopting market value to measure employee stock bonus, replacing the employee bonus change variable by the employee bonus level variable, alternative periods of measuring market's reaction to earnings information, and controlling confounding effect of different dividend patterns. Nonetheless, the major findings as reported in Section IV are not in any substantial way affected.

6. CONCLUSION

This study examines the policy effect of Order No. 457, promulgated by Taiwan SFC on January 30, 2003, which requires public companies to "disclose pro forma EPS deducted by employee bonus and director/supervisor compensation" rather than "recognize the employee bonus and director/supervisor compensation as an expense of firms" in 2002(and later) annual reports. Because the uncertainty of

TABLE 10 Cumulated Average Abnormal Returns (CARs) of Employee Bonus Announcement ---Dividend Increase vs. Dividend Decrease Sub-samples

Year	Date	Dividend Increases Sub-sample (N1)		Dividend Decreases Sub-sample (N2)	
		CAR (%)	t (CAR)	CAR(%)	t(CAR)
2004 (N1=387 vs. N2=196)	-2	-0.1713	-1.4150	-0.1266	-0.8108
	-1	-0.2477	-1.3196	-0.3703	-1.5524
	0	-0.3117	-1.2710	-0.4726	-1.4820
	1	-0.2397	-0.8529	-0.3423	-0.9019
	2	-0.2846	-0.8969	-0.3260	-0.7506
2003 (N1=352 vs. N2=121)	-2	-0.3100	-2.5336 ^a	0.0547	0.2726
	-1	-0.4836	-2.9065 ^a	-0.1793	-0.6249
	0	-0.5715	-2.7594 ^a	-0.3443	-1.1260
	1	-0.5081	-2.0289 ^b	0.1461	0.3822
	2	-0.5207	-1.7328 ^c	0.1685	0.3983
2002 (N1=279 vs. N2=139)	-2	-0.0131	-0.2590	-0.1733	-2.3805 ^b
	-1	-0.1291	-1.9219 ^c	-0.1764	-1.7077 ^c
	0	-0.1053	-1.2243	-0.2282	-2.0038 ^b
	1	-0.0375	-0.3891	-0.2135	-1.4510
	2	-0.0973	-0.8775	-0.2232	-1.2186
2004-2002 (N1=1,018 vs. N2=456)	-2	-0.1759	-2.2752 ^b	-0.0297	-1.0483
	-1	-0.2967	-3.1732 ^a	-0.2605	-1.9836 ^b
	0	-0.3450	-2.8763 ^a	-0.3641	-2.2365 ^b
	1	-0.2771	-1.9787 ^b	-0.1734	-0.8799
	2	-0.3149	-1.9435 ^c	-0.1635	-0.7275
2001 (N1=87 vs. N2=229)	-2	0.2078	0.6941	0.1733	0.8724
	-1	0.4891	0.9797	-0.2015	-0.7459
	0	0.2670	0.4699	0.0267	0.0762
	1	1.1084	1.6234	0.4928	1.1299
	2	0.7444	0.9924	0.8471	1.6445 ^c
2000 (N1=84 vs. N2=193)	-2	-0.1158	-0.3599	0.2782	1.4213
	-1	-0.1659	-0.3318	0.9391	3.1454 ^a
	0	0.1741	0.3207	1.0046	2.7560 ^a
	1	0.6246	1.0702	1.0445	2.3347 ^a
	2	0.8393	1.3236	0.8621	1.6665 ^c
1999 (N1=99 vs. N2=160)	-2	0.1282	0.4091	-0.1540	-0.6541
	-1	0.6199	1.1810	0.3117	0.8133
	0	1.1580	1.7680 ^c	0.8696	1.8130 ^c
	1	1.3421	1.8425 ^c	1.2369	2.1843 ^b
	2	0.9288	1.1869	1.4855	2.3040 ^b
1999-2001 (N1=270 vs. N2=582)	-2	0.0779	0.4332	0.1173	0.9773
	-1	0.3333	1.1304	0.4341	1.5537
	0	0.5648	1.6330	1.0174	2.1449 ^b
	1	1.0436	2.6774 ^a	1.8876	2.6572 ^a
	2	0.8416	1.9925 ^b	2.9025	2.9495 ^a

* Symbols a, b, and c indicate statistically significant at the 1%, 5%, and 10% levels, respectively.

measuring and reporting employee bonus expense is removed after Order No.457, we expect that the mandatory disclosure of pro forma EPS deducted by employee bonus will enhance the dilution effect of employee bonus, to a greater extent, and dilute its incentive effect and reverses the signs of observed ARs and CARs during event period after Order No.457.

The empirical results of this study support our predictions. In the Ohlson model, we find that the coefficients of employee stock bonus variable are significantly positive, which is consistent with the finding of Chen (2003), and the interactive variables of employee stock bonus and the dummy for the year of carrying out Order No. 457 are significantly negative-related to stock price. The results are further confirmed by the stock return model findings. On the whole, the empirical results from the Ohlson and stock return models support the argument that after Order No.457, the new regulation influences investors' valuation and share price behaviors, and also suggest that the dilution effect of the employee stock bonus is stronger than before. We also find that investors are sensitive and tactful in responding to the employee stock bonus in opposition to an employee cash bonus. In the event study examination, we find that before 2001, the abnormal returns around the employee bonus announcement date are significantly positive. After 2002 the results are reversed, proving an increasing dilution effect of the employee stock bonus. From these findings, we can conclude that Order No. 457 makes investors change their perceptions and valuation assessments about employee bonus expense, that is, the mandatory disclosure policy of pro forma EPS deducted by employee bonus and director/supervisor compensation works. Based on the confirmatory empirical findings of the Ohlson, stock return model, and short window event study, it is safe to conclude that the empirical tests provide strong support for our argument linking the SFC's new regulation with the employee bonus as sufficiently reflected in investor stock pricing decisions. Put differently, it seems fair to conclude that the mandatory disclosure effect of the employee bonus as an expense can greatly change investor valuation behaviors, then, decline the stock valuation. The hypothesis of this study has gained empirical support.

The findings of this study are subject to some limitations and should be interpreted with caution. Our analysis is primary based on using the par value of stock as opposed to market price of the stock to measure the magnitude of the employee stock bonus, which is stipulated by the SFC in Order No. 457. Although we have examined the fair value of stock in the robustness check, the measurement error of employee stock bonus may be nontrivial. In addition, although we have divided entire employee bonus sample into mutually exclusive dividend-increasing and dividend-decreasing sub-samples to further examine the abnormal returns

surrounding the announcement date before/after the new order and gain confirmatory evidences support our hypothesis, we can not rule out the potential confounding effects of other simultaneously unaccounted events.

REFERENCES

- Aboody, D. 1996. Market valuation of employee stock options. *Journal of Accounting and Economics* 22: 357-391.
- Aboody, D., M. E. Barth, and R. Kasznik. 2004. SFAS No.123 stock-based compensation expense and equity market value. *Accounting Review* 79: 251-275.
- Accounting Principles Board (APB). 1973. Accounting for stock issued to employees. APB Opinion No.25 New York, NY: APB.
- Bell, T. B., W. R. Landsman, B. L. Miller, and S. Yeh. 2002. The valuation implications of employee stock option accounting for profitable computer software firms. *Accounting Review* 77: 971-996.
- Chang, C. C. 1999. The effect of employee bonus and direct compensation on price. Presented at 1999 Contemporary Accounting Theory and Practice Conference. Department of Accounting, National Taipei University, Taiwan.
- Chang, P. C. 2003. Determinants of employee stock grants and their impact on firm's performances. Unpublished Thesis, Graduate Institute of Accounting, National Taiwan University, Taiwan.
- Chang, S. W. 2000. The impact of disclosure of employees' bonus information on stock values. Unpublished Thesis, Graduate Institute of Accounting, Soochow University, Taiwan.
- Chau, H. L. 2002. Profit sharing and firm performance. Unpublished Thesis, Graduate Institute of Labor Resources, National Central University, Taiwan.
- Chen, C. Y. 2003. Investment opportunities and the relation between equity value and employees' bonus. *Journal of Business Finance & Accounting* 30 (7): 941-973.
- Chen, Y. J. 2003. The study for the effects of employee bonus and director compensation on firm performance and stock returns. Unpublished Thesis, Graduate Institute of Accounting, National Taipei University, Taiwan.
- Financial Accounting Standard Board (FASB). 1995. Accounting for stock-based

- compensation. FASB Statement No.123. Norwalk, CT: FASB.
- Easton, P. D., and T. S. Harris. 1991. Earnings as explanatory variables for returns. *Journal of Accounting Research* 29: 19-36.
- Feltham, G. A., and J. A. Ohlson. 1995. Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research* 11 (2): 689-732.
- Kruse, D. 1996. Why do firms adopt profit-sharing and employee ownership plans? *British Journal of Industrial Relations* 34 (4): 515-539.
- Ma, Y. F., and Y. J. Goo. 2005. A study of employee profit sharing and stock ownership plans in Taiwan. *International Journal of Management* 22 (1): 127-141.
- Neter, J., W. Wasserman, and M. H. Kutner 1989. *Applied Linear Regression Models*. Homewood, IL: Irwin.
- Ohlson, J. 1995. Earnings, book values and dividends in security valuation. *Contemporary Accounting Research* 11: 661-668.
- She, J. J . 2003. The effects of profit-sharing on profitability of Taiwan's high-tech firms :a simultaneous equation model analysis. Unpublished Thesis, Graduate Institute of Finance, National Taipei University, Taiwan.
- White, H. 1980. A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity. *Econometrica* 48: 817-838.
- Yeh, C. J. 2003. The relationship between stock bonus schemes and stock price. Unpublished Thesis, Graduate Institute of Accounting, National Taipei University, Taiwan.