

**MARKET REACTION TO ANNOUNCEMENTS OF SHARE-BASED
PAYMENT¹²**

Grace M. LIAO

Lecturer

Department of Industrial Engineering and Management,
Chung Jung Christian University, TAIWAN

Chilin LU

Associate Professor

Department of Business Administration, National Formosa University

Y.W. CHEN

Certified Public Accountant, USA

ABSTRACT

Taiwan's Financial Accounting Standard does not align regulations with International Accounting Standards (IAS) in treatment of stock bonus paid to employees before 2008. IAS treats stock compensation as expense but Taiwan-listed companies recognized share-based compensation awards as allocation of retained earnings before 2008. To align with IAS, Taiwan's SFAS No. 39 provides an accounting standard for employee stock bonuses by recognizing expenses to reflect the real value of the income statement and firm's earnings. SFAS no. 39 will affect accounting earnings, and supposedly, the stock prices for listed firms in Taiwan. This paper examines market reactions to the announcement of SFAS no. 39. Our empirical results show that stock prices reacted significantly and negatively to announcement of SFAS No. 39 during the announcement period.

Key words: Share-based Payment, Taiwan's SFAS no. 39, Abnormal Returns

JEL Classification: G28; M48

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1. Introduction

In the history of Taiwan's Statement of Financial Accounting Standards (SFAS), no standard has caused such extreme concern in the market and financial press as SFAS no. 39 (2007), *Share-based Payment*. The US Financial Accounting Standards Board (FASB) issued FASB statement no. 123 *Stock-Based Compensation* for employee compensation arrangements in 2003. This statement requires that companies recognize an expense equal to the option's grant-date fair value. In November 2002, the International Accounting Standards Board (IASB) Exposure Draft, *Share-based Payment*, addressed accounting and disclosure requirements for share-based payments. Later in 2003, the International Accounting Standards Board (IASB/IFRS no.2) released International Accounting Statement no. 2, *Share-Based Payment*, for the accounting of employee compensation arrangements.

Taiwan's Generally Accepted Accounting Principles did not align SFAS with US SFAS on treatment of employee stock bonus before the announcement of SFAS 39 in 2007. This is because Taiwan's electronic firms made breakthroughs in the nation's economic development and innovations in employee compensation (Sheu and Yang, 2005). To finance continuous growth, electronics firms are unable to award cash bonuses as other industries do. Instead, they pioneer in adopting stock bonus plans. Most electronics firms have chosen stock bonuses instead of cash bonuses since the Employee Stock Option Plan (ESOP) was first introduced in August 2000. The incentive compensation is designed to improve a firm's performance by aligning the interests of employees with the firm's values, leading to better productivity. However, unlike the equity-based compensation awarded in US firms, the incentive compensation in Taiwan is not recognized as a company expense. The accounting profit reported in financial statements does not reflect the expense of employee bonuses and thus may be upwardly biased. As a result, investors will be misled by financial statements.

In 2002, most foreign investment institutions were concerned by the dilutive effects of stock bonus compensation on financial reports, especially in hi-tech companies which used to have high incentive compensation of stock bonuses. According to IASB no. 19 and FASB no. 123, the conceptual underpinning of share-based payment is that an entity should record all share-based payments in its financial statements, regardless of the ultimate form of settlement (i.e., shares or cash) and regardless of the counterparty involved (i.e., employees or others). The overarching measurement goal is to capture the value of the goods or services received in exchange for the options granted.

United Microelectronics Corporation (UMC), one of Taiwan's leading companies in the semi-conductor industry, was requested to make adjustments to its 2004 financial statements by the US Securities and Exchange Commission (SEC) in 2005 due to regulation bias of the employee bonus arrangement between US and Taiwan. To align with FASB statement no. 123 and International Financial Reporting Standard (IFRS) statement no. 2, Taiwan's SFAS no. 39 was issued on August 23, 2007 and came into effect for financial statements ending on and after December 31, 2007. Undoubtedly, the new accounting treatment of employees' stock bonuses as expenses will affect firms' earnings and cause a market reaction to this new regulation.

In this study, we intend to investigate market reactions to the announcement of share-based payment. In the next section, we review the studies of employee compensation. The third section demonstrates the methodology and data selection. Empirical evidence is discussed in section four and section five concludes the study.

2. Literature Review

Before the US SFAS no. 123 was issued in 2003, there was no mandatory accounting requirement for share-based payment. In addition, the US GAAP allowed managers considerable discretion in deciding how to recognize stock bonuses. Consequently, share-based payment became a matter of managers' discretion. After the issuance of SFAS no. 123, stock-based compensation expense is measured as the fair value of the options granted, recognized over the vesting period. Taiwan's SFAS no. 39 was issued on August 23, 2007 and came into effect for financial statements ending on and after December 31, 2007. Firms in Taiwan face mandatory adoption of the new SFAS no. 39 in the first quarter of 2008 and managers no longer have discretion on arrangement of stock-bonus compensation to employees. Basically, expensing is a way for firms to signal something to capital markets, and the cost-benefit trade-off associated with the signal had changed.

Recognition of SFAS no. 123 expense is a conservative accounting choice consistent with that modeled in Hughes and Levine (2003) because it unambiguously lowers net income relative to the disclosure-only alternative. Also, the SFAS no. 123 expense-recognition choice is irreversible; because SFAS no. 123 states that the FASB regards recognition as preferable, future prospects can use SFAS 123 expense recognition to differentiate themselves from firms with less favorable prospects.

In 2002, the use of employee and executive stock options as compensation increased. Thus, firms may also have used SFAS no. 123 expense recognition as a signal that they planned to

focus on the cost effectiveness of their stock-based compensation plans and they believed the benefits associated with their stock-based compensation exceeded the costs.

In an efficient market, the decision to recognize a disclosed amount conveys no new information. In such markets, the recognition decision should not have equity valuation effects. However, in the presence of information asymmetry, even in an informationally efficient market, recognizing SFAS 123 expense can be an information signal with valuation effects. Hirst et al. (2003) provide evidence that individual investors use such information in assessing earnings quality and deriving security price estimates.

The dilutive effects of share-based payments are significant to investors because the presentation of diluted EPS is intended to communicate the exposure existing common shareholders face while stock options are outstanding. Huson et al. (2001) examine whether stock returns are influenced by the extent to which a company has potentially dilutive securities outstanding. Some researches suggest that current EPS measures do not fully capture the dilutive effect of employee stock options and that the market corrects for this to some extent (Huson et al., 2001; Core et al., 2002; Kirschenheiter et al., 2004). Aboody et al. (2004) find that stock prices are negatively associated with SFAS no. 123 compensation expense. Li (2002) finds that share prices are associated with both outstanding employee stock options and expected future option expense.

In Taiwan, there was no accounting standard for share-based payment before Taiwan's SFAS no. 39 was issued in 2007. Due to expected severe impacts of Taiwan's SFAS no. 39 on financial statements and stock prices, we investigate the market reactions to the share-based payment announcement.

3. Methodology

We assume that the announcement of SFAS no. 39 will have an impact on capital markets. Therefore, we investigated whether firms have significant abnormal returns after SFAS no. 39 was announced by applying the event study method.

3.1 Data and Sample Selection

We first survey the employee bonus plan for firms listed on Taiwan Market Exchange (TSE) and OTC market from January 2007 to April 2008. Bonus data are collected from the Taiwan Economic Journal (TEJ), which is like the Compustat of Taiwan, and from the Market Observation Post System (MOPS). We further classify samples into two categories: electronic group and non-electronic group. Table 1 shows the distribution of employee compensation in

2007. Within the 1,477 observations, 39% of them issued stock bonuses. The electronics industry had a high ratio of adopting stock bonuses (55%), while less than 16% of the non-electronic industry awarded employee stock bonuses. Most non-electronic industries preferred to compensate employees with different methods rather than stock bonuses.

Table 1 Employee Bonus Distribution in 2007

Industry	Total firms	Stock bonus	Firms without bonus	Stock bonus %
Category: Electronic				
Electric	863	474	328	55%
Category: Non-electronic				
Banking & Insurance	86	15	48	17%
Textiles	79	3	56	4%
Construction	73	4	46	17%
Glass & Ceramics	10	1	8	10%
Steel & Iron	42	6	19	14%
Food	32	2	15	6%
Others	292	69	118	24%
Sub-total Non-electric	614	100	312	16%
Total	1,477	574	640	39%

3.2 Relationship between Share-based Payment and Stock Returns

We examine market reactions to share-based payment in an event study. We applied Binder's (1985) model to investigate impacts of the SFAS no. 39 announcement in different industries. There are four important dates for Taiwan SFAS no. 39 from discussion to implementation (see Table 2). To conduct our tests, we estimate abnormal returns due to the announcement by estimating the following equation separately for each industry.

$$R_{it} = \alpha_{it} + \beta_{i1}RM_{t-2} + \beta_{i2}RM_{t-1} + \beta_{i3}RM_t + \beta_{i4}RM_{t+1} + \beta_{i5}RM_{t+2} + \sum_{k=1}^3 \gamma_{ik}D_{kt} + \varepsilon_{it} \quad (1)$$

Where R_{it} is the average value-weighted daily market return for industries ($i = 1$ denotes electric industry; 2 food; 3 textiles; 4 glass & ceramics; 5 paper; 6 steel & iron; 7 construction; 8 banking & insurance; 9 others); RM_t is market t 's daily stock return; D_{kt} is an indicator variable equal to 1 for event date (there are four major event days), and 0 otherwise.

Table 2 Important dates of SFAS no. 39

Event	Date	Description
1	2004/4/30	Explanation stock bonus expense from Treasury Department
2	2007/1/25	Process SFAS no. 39 lawmaking
3	2007/8/23	Announcement SFAS no. 39
4	2008/1/1	Implement SFAS no. 39

We further use a market-adjusted model to estimate abnormal returns. Both De Bond and Thaler (1985) and Cox and Peterson (1994) find no differences between different methods of calculating abnormal returns. In event studies, the objective is to examine the market’s response through the observation of security prices around such events. To apply the event study methodology, the date of announcement of SFAS no. 39 is treated as the event date. This quantity is defined as time zero ($t = 0$). The analysis of each firm’s stock performance around the announcement date is based on the daily total returns obtained from the TEJ databank. The estimation period is from day -120 to -3 relative to the announcement date ($t = 0$); 2 days pre-event to 2 days post-event is defined as examination period (see Figure 1).

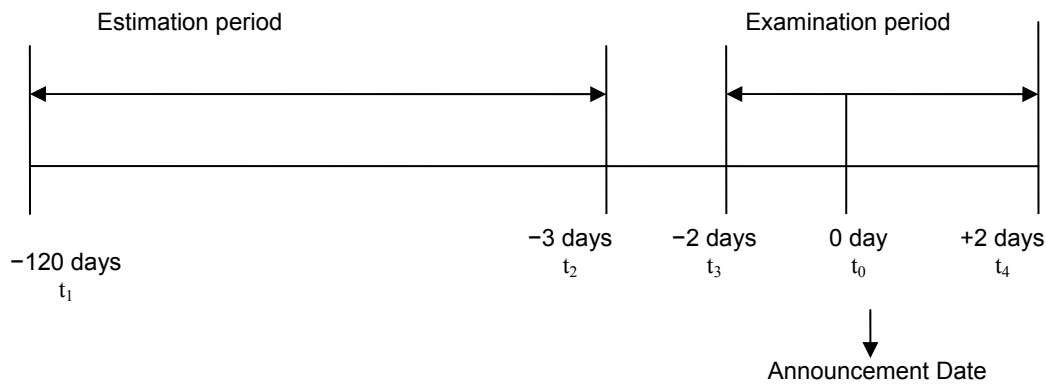


Figure 1: Research Period

The abnormal returns are calculated as in (2), where AR_{iE} is the abnormal return for stock i in E , R_{iE} is the actual return for stock i in period E , and R_{mE} is the market return for stock i in period E .

$$AR_{iE} = R_{iE} - R_{mE}, \quad E \in W = [t_3, t_4] \tag{2}$$

To implement our test, we calculate cumulative abnormal returns as the sum of abnormal daily firm returns. To test for changes in stock price response around the SFAS no. 39 announcement, we then run the following equation:

$$\begin{aligned}
 CAR(\tau_1, \tau_2) &= \sum_{E=\tau_1}^{\tau_2} AR_E \\
 &= \frac{1}{N} \sum_{i=1}^N \sum_{E=\tau_1}^{\tau_2} (AR_{iE}) , \quad [\tau_1, \tau_2] \subseteq [t_3, t_4]
 \end{aligned} \tag{3}$$

where $CAR(\tau_1, \tau_2)$ is sum of average cumulative abnormal returns from time τ_1 to τ_2 in the examination period.

4. Empirical Results

4.1 Impact of Share-Based Payment on Industry

Most industries in Taiwan prefer profit-sharing bonuses rather than employee stock options, especially in the electronics industry. We found the SFAS no. 39 announcement had a negative impact on stock price (see Table 3). Table 3 shows that Event 1 ($F = 6.30$) and Event 3 ($F = 7.6$) have positive significance. Event 1 is the first time that the Treasury Department officially gave an explanation of the accounting standard for stock bonuses. Electronics firms have significance at 1% level because they did not need to treat stock bonuses as expenses before the SFAS no. 39 announcement. However, they are forced to adopt new regulation – SFAS no. 39 – and treat stock bonuses as expenses after January 2008. This new change will impact earnings and financial statements. In contrast to electronics firms, most non-electronics firms compensate employees with different methods; therefore, the implement of SFAS no. 39 will not have a significant impact on these firms. Event 3 is the announcement date of SFAS no. 39 which has a significant impact on many industries other than the construction and steel & iron industries. We observe no significant reaction to SFAS no. 39 on implementation date (Event 4). This result indicates that investors have a positive reaction to SFAS no. 39. Investors can align the evaluation of listed firms in Taiwan based on financial reports after SFAS no. 39 implementation in 2008. Further, the association between earnings in annual reports and stock price is reduced.

Table 3 Stock Price Reaction to SFAS no. 39 Announcement

$$R_{it} = \alpha_{it} + \beta_{i1}RM_{t-2} + \beta_{i2}RM_{t-1} + \beta_{i3}RM_t + \beta_{i4}RM_{t+1} + \beta_{i5}RM_{t+2} + \sum_{k=1}^3 \gamma_{ik}D_{kt} + \varepsilon_{it}$$

Event	Industry							F-test
	Electric	Banking & Insurance	Textiles	Construction	Glass & Ceramics	Steel & Iron	Food	
1	-4.1947 (-5.57)***	-0.8927 (-1.16)	1.2425 (1.53)	1.7057 (1.65)*	1.2594 (1.17)	-0.0218 (-0.02)	0.9408 (1.29)	6.30***
2	0.0197 (0.03)	-0.2169 (-0.28)	-0.1437 (-0.18)	0.8852 (0.88)	-0.2616 (-0.25)	0.4386 (0.50)	0.1039 (0.15)	0.25
3	-1.6466 (-2.24)**	3.3580 (4.36)***	2.7520 (3.46)***	1.1062 (1.09)	3.1144 (2.96)***	1.1019 (1.25)	1.4669 (2.06)**	7.6***
4	0.2252 (0.31)	-0.1924 (-0.25)	-0.9911 (-1.25)	-2.1531 (-2.12)**	-0.7575 (-0.72)	-0.1632 (-0.19)	-0.2025 (-0.29)	0.97

Note: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

4.2 Abnormal Returns of Share-Based Announcement

Table 4 presents the statistical significance of the abnormal returns (AR) and cumulative abnormal returns (CAR) for 2 days pre-event to 2 days post event. We find that stock prices react significantly negatively to the SFAS no. 39 announcement at 2 days pre-event ($t = -3.38$). This result reflects investors' expectation that SFAS no. 39 expensing will impact firms' earnings. On the other hand, stock price reaction is significantly positive to the SFAS no. 39 announcement at 1 day post-event ($t = 5.53$) and 2 days post-event ($t = 3.94$). This indicates that investors support the implementation of SFAS no. 39 because firms have to expense stock bonuses and reflect real earnings in financial reports which are aligned with IAS's, and thus, investors evaluate firms' performance based on the same standards.

We also use CAR in examining market reactions to the share-based payment. Table 4 presents negatively significant continuous CARs pre- and post-event day, but the negative significant CARs gradually decrease from 2 days pre-event to 2 days post event. This result indicates investors deem that earnings are diluted by stock bonus expenses. However, the CARs gradually decrease, which implies stock price will be impacted decreasingly by stock bonus expensing as time extends.

Table 4 Statistical Significance of Abnormal Returns

Date	AR	t(AR)	CAR	t(CAR)
-2	-0.98%	(-3.38)***	-10.70%	(-7.55)***
-1	-0.48%	(-1.59)	-11.18%	(-7.53)***
0	0.56%	(1.79)*	-10.62%	(-7.12)***
+1	1.81%	(5.53)***	-8.81%	(-5.89)***
+2	1.26%	(3.94)***	-7.55%	(-5.16)***

Note: * significant at 10% level; ** significant at 5% level; *** significant at 1% level.

T statistic adopts ordinary cross-sectional method

4.3 The Link between Market Reaction and Incentive Compensation

Table 5 presents estimates for the Ordinary Least Square (OLS) and PROBIT models that relate market reaction to incentive compensation to directors. In the OLS models, the dependent variable is the five-day cumulative abnormal return (CAR) surrounding the announcement that a firm is adopting incentive pay for management. The PROBIT model uses the dummy variable POSCAR as the dependent variable. POSCAR equals 1 if the CAR is positive; it is zero otherwise. By using a dummy variable as the dependent variable, the PROBIT results are less likely to be affected by the outlier problem. We use the dummy variable INF to capture the effects of information on bonuses released by firms. INF equals 1 if there is released information on bonuses. We control for prior market-based firm performance using the variable PAST_RETURN, defined as the difference between the buy-and-hold returns of the company's stock and the TEJ equally weighted portfolio during the two-year period prior to the year of adoption.

In both Models OLS and PROBIT, estimates of the intercept term are relatively large in magnitude and statistically significant. These results indicate that the stock market responds significantly to the adoption of SFAS no. 39. The coefficients of INF are positive and statistically significant, indicating that the stock market reacts more positively to the information released by firms with stock bonuses. In examining the influence of firm performance, the OLS model's coefficient of PAST_RETURN is positive and significant. Also the comparable estimate is positive in the PROBIT regression. Therefore, there is strong support that under-performing firms are more likely to benefit from the adoption of management incentive compensation. It should also be noted that the adjusted R^2 is 0.72 indicating that the model is a good fit for this data.

Table 5 Regression Results

This table provides estimated coefficients (*t*-value in parenthesis) from OLS and PROBIT models of samples.

	OLS^a	PROBIT
Intercept	0.0045 (2.09 ^{**})	0.0095 (2.04 ^{**})
INF	0.99 (15.04 ^{****})	1.03 (19.17 ^{****})
PAST_RETURN	1.04 (2.03 ^{**})	1.31 (2.09 ^{**})
Adj. R^2	0.072	

^aWe use White's (1980) heteroskedastic-consistent standard errors in these models.

T statistics are in parentheses, *, **, **** show statistical significance from zero at the 10, 5 and 1 percent levels respectively.

5. Conclusions

This paper has explored share-based payment of SFAS no. 39 for listed firms in Taiwan. Taiwan-listed companies used to apply profit sharing to compensate employees with stock bonuses before the announcement of SFAS no. 39. We investigated whether the expense-recognition announcements are associated with positive or negative market reactions.

We found that recognizing SFAS no. 39 expense is significantly related to firms' stock prices. The stock market reacted negatively to share-based payment before the SFAS no. 39 announcement but positively to share-based payment after the announcement. Further analyzing CARs, we found investors responded decreasingly negatively to share-based payment. This result implies that investors expect firms to reflect real earnings on financial reports because not expensing employee bonuses may lead to an upwardly biased estimation of firm's earnings, and thus may further lead to a biased interpretation of the relation between stock bonuses and firm performance.

Based on international accounting standards, Taiwanese companies will reveal actual earnings on financial reports. This change may impact firms' performance and result in stock price decrease over the short term. However, in the long-term, financial reports of Taiwan's companies will reflect actual earnings and no biases will exist due to inconsistent standards. Investors estimate a company's value based upon its real performance without considering regulation differences between countries.

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