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Economic Implications of Proposed Accounting for Stock-Based Compensation

by

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ECONOMIC IMPLICATIONS OF PROPOSED ACCOUNTING FOR STOCK-BASED COMPENSATION

by

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I. Introduction

This paper examines the market expectations of the proposed accounting changes for stock-based compensation (hereafter, SBC). On June 30, 1993, the Financial Accounting Standards Board (FASB) issued an exposure draft for proposed accounting for SBC. The exposure draft recommendations differ from current practice in several dimensions: i) recognition of compensation costs for both fixed and performance based stock options, ii) compensation cost based on the fair value of stock options granted, and iii) date of grant as the recognition and measurement date.

The business community expressed grave concern about the economic effects of the proposed accounting for SBC. The FASB, on the other hand, contends that the proposed accounting would improve the quality of financial reporting of SBC granted to employees for their services.

Regardless of the claims by each side, the stock market should be able to determine the anticipated economic effects of the proposed accounting. Ex-ante, there are two views regarding the economic expectations of the proposed accounting for SBC. The first is that there are no direct cash flow consequences of the proposed accounting change, and thus, no stock price effects are anticipated. The other view argues that the proposed change may cause some firms to depart from using SBC as the main remunerative medium to attract talented managers and entrepreneurs. Therefore, compliance with the proposed accounting may alter realization of a firm's growth opportunities and cash flows.

This paper examines the market response to major events in the FASB's due process that led to the issuance of the proposed accounting for SBC. The findings of such examination contain vital input for the FASB and the business community in assessing the economic impact and related implications of the proposed accounting for SBC. This study also responds to a recent policy advocated by the chairman of the FASB, Dennis Beresford, which requests that pre-mandate studies clarify proclaimed issues.

We use a sample of firms that were identified by prior research (Bear, Stearns & Co.; R.G. Associates of Baltimore 1993) in calculating the expected effect on fiscal 1992 earnings, had the FASB's proposal then been in effect. For sound inferences from the tests, we included a control sample that was randomly drawn from the total population of firms on the COMPUSTAT tape.

The results show that the test sample, in comparison with the control sample, exhibited a decline in market price contemporaneous with the issuance of the exposure draft. The results were stronger when the sample was partitioned into material/immaterial earnings reduction.

These results indicate that the market expected some negative economic consequences for firms that are highly dependent on SBC for attracting and retaining talented managers.

II. Analysis and Hypothesis

On June 30, 1993, the FASB issued its Proposed Statement of Financial Accounting Standards, *Accounting for Stock-based Compensation*, culminating almost ten years of Board discussions on the issue. The exposure draft recommends significant changes in the way companies will account for stock options and similar stock-based compensation in the future (no retroactive treatment is proposed). During the Board's deliberations, as well as after issuance of the exposure draft, the FASB received numerous comment letters, most of which were critical of the proposal.

Several articles appearing in *The Wall Street Journal* and other publications (discussed in later sections) have attempted to quantify the consequences of the proposal on reported net income were it already in effect. The results of these preliminary studies and others, not made public, indicate varying degrees of reduced net income, with the most serious implications occurring in "emerging" businesses and high-technology firms. They speculate that the proposed accounting rules will reduce the effectiveness of stock options as a means of attracting executives in higher risk businesses. They also argue that the proposed accounting treatment will significantly reduce net income, thereby making the firm less attractive to capital providers. To forestall a drop in earnings, firms will eliminate using stock options, which in turn will eliminate one of the major inducements for executives to take risks while being employed by emerging businesses.

There are presently a number of different stock option plans in use. The most common are incentive stock options and non-qualified stock options. The former usually meet certain income tax rules which allow employees to defer recognition of taxable income until after shares acquired through exercise of options are sold. The gain is measured by the difference between the sale price and the option price. The firm receives no tax benefit nor accounting write-off upon issuance, exercise, or, usually, sale of the qualified option shares.

Non-qualified options, however, do give rise to compensation expense measured by the difference between the market price at the measurement date and the option price, and is usually reflected in the accounting records at the vesting or exercise date.

From an accounting point of view, stock options are usually categorized as either fixed (number of shares and exercise price known at grant date) or variable (number of shares and/or option price unknown at grant date). Current accounting does not require valuing either type of option.

Financial Statement Effects

The FASB proposal will significantly affect the accounting treatment of subsequently issued stock options by requiring firms to value the options upon the date of the grant and to record such value as compensation to be deducted from income over the related service period, usually the vesting period. The value of the options will initially be charged to prepaid compensation with a corresponding credit to equity (thus both assets and equity will initially increase). Consequently, compliance with the proposed accounting may affect existing debt covenants through dividends and leverage restrictions. Assuming the tax laws remain unchanged, firms will not obtain any tax deduction for qualified options as described in previous paragraphs. Thus, the proposed new accounting rules will not result in any change in the firm's cash flow.

Prior Research

During the FASB deliberation period, Foster, Koogler and Vickery (1991) undertook a study to determine whether the FASB proposal would have a material impact on reported income. Using a sample of firms reporting stock options in 1985 they constructed hypothetical values for these options using both the Black Scholes model and the proposed Minimum Value Model.[1] In addition, they tested for the difference between using the grant date instead of the vesting date. They concluded that, irrespective of which model was used, the FASB proposal would significantly affect reported income of non-dividend paying firms whether the vesting date or grant date was used. Using 3 percent to determine materiality, the valuation of options granted would materially affect 30 percent of non-dividend paying and 8 percent of dividend paying firms.[2]

Several field studies conducted after issuance of the ED have provided useful information. The FASB and KPMG Peat Marwick (1994) conducted a study to estimate the effects on financial statements of 25 unidentified firms for the years 1990-1992 if the proposed accounting were applied to previously issued stock options. The results indicate that a proportion of 24 percent, 44 percent, and 52 percent of sample firms would have experienced material reduction in reported income for the years 1990-1992, respectively. They also show that use of fair value models produced considerably greater compensation than did the minimum value model. In addition, increases in estimates of volatility and in the term of the option resulted in increases in the option fair values and, therefore, related compensation expense. Generally, smaller

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[1] At the time of their study, the FASB was deliberating use of the vesting date rather than the grant date for valuation and recording purposes.

[2] At 5 percent, the valuation would have materially affected 18 percent of non-dividend paying and 6 percent of dividend paying firms.

companies that used higher volatilities were less sensitive to changes in volatility than larger firms that used lower volatilities to value their options.

A similar study was conducted by Coopers & Lybrand (1993) of 27 firm clients. They divided the sample between mature and emerging industries based upon whether their stock was publicly traded for more or less than ten years. Mature companies experienced an average reduction in net income of 1 perecnt in the initial year and 3.4 percent after the "phase in period" contemplated by the ED. In contrast, emerging firms experienced an average 8.6 percent reduction in net income in the initial year and 26.5 percent after the "phase in period." Their findings also confirmed the sensitivity of option values to both the stock price volatility and expected exercise term. In both cases, increase in volatility (term) results in increases in option value, more so for emerging firms than mature ones. Comparisons were made between the Black Scholes model and other fair value models and a minimum value model. On average, the minimum value model resulted in 12.5 percent lower value for mature firms and 14 percent lower value for emerging firms than did the Black Scholes model.

Hypotheses

The above analysis leads to the inference that the mandating of the proposed accounting would affect firms' financial statements, where the main effect is a reduction of reported earnings and where the effect is more profound for emerging and less mature firms. The analysis also implies that mandating of the proposed accounting may be accompanied by indirect cash flow effects. These anticipated cash flow effects are based on the premise that reduced earnings would: i) make firms less attractive to capital providers, and ii) force firms to eliminate using stock options as a major inducement for attracting and retaining executives of emerging and high risk businesses. The following hypotheses are tested in this paper:

H01: there is a negative market reaction to the FASB's deliberations indicating eventual change in the accounting for stock-based compensation for firms using SBC as their major inducement to executives.

H02: the market reaction to the proposed accounting for SBC is stronger for higher risk and emerging firms than for those mature and large firms.

Information Refinement

Current accounting practice requires note disclosures about stock options outstanding including number of options, type, and other characteristics. In addition, the SEC requires that proxy statements disclose estimates of the value of options granted to the five highest paid

executives, using the Black Scholes option pricing model.[3] Therefore, one may question the above hypotheses on the ground that the market has already impounded that information in prior prices.

This conclusion is not straightforward for several reasons. First, even though the market knew about outstanding options through note disclosures, the assessment of the impact on financial statements was not clear. Accordingly, the presentation of the calculated effect of the proposed accounting is considered as an information refinement about SBC effects on earnings. Second, the FASB states that disclosure is not a substitute for recognition. This may be true since disclosure requires further analysis and pro-forma calculations that are influenced by subjective interpretations.

III. Research Design

Sample

The hypotheses stated above indicate that the effect of the proposed accounting changes for SBC would be more observable for industries (and/or firms) that are using stock options as the major compensation component to attract key executives and entrepreneurs. Thus, it is important to use a test sample of firms that utilize SBC packages in compensating their executives and employees.

In the current paper we use a random sample of firms that have been identified by prior research as being potentially affected by the proposed standard (Bear, Stearns and Co.; R.G. Associates of Baltimore 1993). They selected and calculated the income effects of the FASB's proposal on SBC for 34 firms. Appendix A includes the names and the calculated percentage effect on fiscal 1992 earnings had the FASB's proposal been in effect. To empower the inferences from potential results, a control sample was randomly selected from the total population of firms on the COMPUSTAT tape. Thus, the total sample consists of 68 firms, 34 experimental and 34 control samples.

Events of Market Tests

The Financial Accounting Standards Board (FASB) added the project of accounting for stock-based compensation to the agenda in 1984. Since then, the FASB has engaged in many

[3] This may also be calculated using an assumed 5 percent and 10 percent annual stock appreciation.

due process activities that finally led to the issuance of the exposure draft on June 30, 1993. The FASB deliberations about the exposure draft have provided signals on the ultimate proposed accounting change.

We examined all the FASB deliberations and meetings on the issue of accounting for SBC and identified 11 events that we believe provided some signals about the FASB's contention on the issue. In making these selections, we applied the following criteria: i) the event reports the FASB's preference on a specific dimension(s) of accounting for SBC; and ii) the event is reported as a news item in the FASB's Alert Action and/or *The Wall Street Journal*. We identify the date of the event by the FASB meeting date and/or the WSJ article date. In most cases, the WSJ lags the FASB's meeting date by one to three days. In such cases, the test window is expanded to include both dates since the FASB meetings are open to the public. Table 1 provides summaries of the events examined in this paper.

Model

The return generating process used in this paper conditions security returns on both the market index and the information content of the events (Schipper and Thompson 1983; Hughes and Ricks 1984; and El-Gazzar 1993). This results in less residual variation to be explained exogenously than in the traditional model (Schipper et al. 1987).

In particular, the market effect of the events on security returns is measured by modifying the market model to include a dummy variable. The dummy variable is designed to capture the content of the event on the firms realized market return. The dummy variable takes the value of one on the date of the Kth event and zero otherwise.

$$R_{jt} = A_j + B_j(R_{mt}) + \sum_{k=1}^{k} C_{jk}(P_{kt}) + U_{jt} \tag{1}$$

$t = 1,2,..,T;\ j = 1,2,...N;\ K = 1,2,...K$

where:

R_{jt} = return on stock j during day t,

R_{mt} = return on the value or equally weighted market index during day t on CRSP tape,

A_j = intercept of firm j,

B_j = slope parameter of firm j,

C_{jk} = the return effect of the Kth event on the return of firm j,

P_{kt} = a dummy variable taking the value of one on the event dates [(0), (-1,0), (-1,0,+1)] and zero otherwise, where day 0 is the public announcement date (WSJ and/or the FASB's Action Alert). Thus, P_{kt} is a vector consisting of zeros in all but the one, two, or three day window.

U_{jt} = a disturbance term for firm j on day t, and is assumed NID (0, 1).

From Equation (1), the return on the equally weighted portfolio of sample firms can be generated as follows:

$$\frac{1}{N}\sum_{j=1}^{j}(R_{jt}) = \overline{A} + \overline{B}(R_{mt}) + \sum_{k=1}^{k}\overline{C_k}(P_{kt}) + \overline{U_t} \qquad (2)$$

The above model has several advantages over the traditional residual (excess return) model. First, it allows efficient utilization of available data for estimating the model parameters A_j and B_j. Second, the t-values of the regression coefficients provide a direct test of the significance of the abnormal returns, C_k. Third, forming a portfolio of sample firms avoids bias in the standard error due to cross-sectional dependence and heteroscedasticity.

IV. Analysis of Results

Magnitude of Anticipated Financial Statement Effects

Table 2 presents summary statistics of the effect of the proposed accounting for SBC on earnings of sample firms, had the exposure draft rules been in effect for fiscal 1992. As stated earlier, the calculation of these effects was made by Bear, Stearns, and Co. et al. (1993) in their assessment of potential effects on financial statements.

From Table 2, the mean (median) decline in earnings per share for the total sample is 7.8 (4.7) percent. The magnitude of the decline in earnings is pervasive for the sub-sample of small and emerging firms, where the mean (median) decline in earnings per share is 13.9 (12.1)

percent. The effect, however, seems immaterial for large and mature firms; only 1.6 and 1.7 percent for the mean and median, respectively.

It should be noted that the anticipated effect on earnings is spread over a wide range. The maximum calculated effect is 49.6 while the minimum is 0.5 percent. This gives rise to the proclaimed argument of differential cross-sectional effect based on firm specific attributes. We extend this analysis between small-emerging firms and large-mature firms in the market test.

Results on Market Reactions Test

The FASB deliberations on accounting for SBC provided the market with some signals about the FASB's intention and the ultimate outcomes. Accordingly, stock market behavior on the dates of those deliberations, in the absence of other intervening variables, can be interpreted as market assessment of anticipated economic effects of the proposed accounting for SBC.

Table 3 presents the stock market effects of the FASB's deliberations on accounting for SBC for 11 events, for both the experimental and control samples. The results do not show any significant market reaction to the events except for issuance of the exposure draft, event number 11. In event number 11, the experimental sample exhibited negative and significant market reaction. The difference, of the return effect of event number 11, between the two samples indicates a 0.8 percent stock price decline for the experimental sample.

The results also indicate that the market did not respond to most of the events preceding the exposure draft. This is not necessarily surprising given the considerable opposition and lobbying activities conducted by firms during the deliberations. It is likely this might have given the market the impression that the FASB might make concessions in the final exposure draft. Another explanation could be the aggregation effect since the experimental sample includes firms that have higher earnings' decline while others have immaterial effect. This latter issue is investigated in the next section.

Differential Market Reaction

Table 4 presents estimates of the stock market reactions to the events of the study with the experimental sample partitioned into small-emerging firms and large-mature firms. The results indicate that the market was actually sensitive to the FASB's deliberations and signals. For instance, in event number 3, when the FASB concluded that the measurement date should be the vesting date, the market reacted positively, expressing appreciation for the delay of recognition from grant to vesting date. It is interesting to note that the market reacted negatively when the FASB reversed its position to the date of grant as the measurement date. Finally, the

results show that the market effects on the exposure draft date are stronger for the small-emerging portfolio than the large-mature portfolio.

The overall results in this paper indicate that mandating the proposed accounting for SBC would produce significant decline in reported earnings per share. If the claim by firms is true that mandating the proposed accounting would constrain them from using stock options as the major inducement for talented executives, especially for higher risk businesses, and make the firm less attractive to capital providers, then we may anticipate negative economic consequences. The stock returns tests indicate that the market anticipated some negative economic implications for the proposed accounting. The implications are profound for small-emerging firms.

IV. Conclusions and Recommendations

The proposed accounting for stock-based compensation requires firms to recognize compensation cost for the options they grant employees for their services. The compensation cost is to be measured on date of grant and based on the fair value of the options given. The business community believes that the proposed accounting would significantly reduce reported earnings, which in turn may produce some economic consequences.

This paper examines the stock market anticipation of the economic effects of the proposed accounting for SBC. We use a sample of firms that was identified in prior research (Bear, Stearns, and Co. et al. (1993) as potentially affected by the rules in the proposed accounting change, along with a control sample that was randomly selected from COMPUSTAT tape. We tested for market assessment of anticipated economic effects of the proposed accounting as perceived from the FASB's deliberations on the issue.

The results indicate that the market anticipated some negative economic effects of the proposed accounting on the exposure draft date, where the effect is pervasive for small-emerging firms. These results are important in supporting the claim by the business community that the proposed accounting would constrain firms from using stock options as inducement for executives' attainment, especially for higher risk and emerging firms.

One extension of studying the economic consequences of the proposed accounting for SBC is to examine whether firms refrained from using stock options in compensating employees in recent years compared to earlier years. A change in firms' compensation packages, after it became apparent that a compensation cost would be recognized on the date of grant at the fair value of options granted, would bear also on the economic implications of the proposed accounting change.

Table 1
List of Significant Events That Led to Issuance of the Exposure Draft on Accounting for Stock-Based Compensation*

Event	Date	Content
1	1/09/1985	The FASB agreed to recognize compensation costs for all plans at date of grant.
2	6/13/1986	The FASB changed decision from minimum value to fair value. Final measurement date is the later vesting date where measurement factors are known.
3	7/25/1986	The FASB concludes that the measurement date should be the vesting date.
4	8/14/1987	The FASB reaches tentative agreement that is at vesting date for fair value.
5	9/07/1988	The board is to meet on 9/14/1988 to the status of the project as part of a broader project on differences between equity and debt securities.
6	6/11/1992	The board is leaning towards measurement on date of grant.
7	10/07/1992	The board tentatively prefers use of fair value.
8	11/04/1992	The board discussion reinforces recognition based on fair value on date of grant.
9	04/07/1993	The WSJ reports that the FASB voted for recognition of compensation costs, thus eliminating the possibility of note disclosure only.
10	06/03/1993	The WSJ reports on the calculated effect the earnings of sample firms, had the Board recommendations been in effect for fiscal 1992.
11	06/30/1993	The FASB's exposure draft is issued and distributed to public for feedback.

* events and dates are identified in the *FASB's Action Alert* and/or the *WSJ Index*.

Table 2

Summary Statistics of the Effect of the Proposed Accounting Change for Stock-Based Compensation on Earnings Per Share of Sample Firms, Had the Change Been in Effect for Fiscal 1992.

Sample	Mean (%)	Median (%)	St. Deviation (%)	Maximum Value (%)	Minimum Value (%)
Panel A: Sample All Firms					
	-7.8	-4.7	-4.1	-49.6	-0.5
Panel B: Small and Emerging Firms					
	-13.9	-12.1	-9.0	-49.6	-3.2
Panel C: Large and Mature Firms					
	-1.6	-1.7	-1.1	-3.0	-0.5

Table 3

Regression Estimates of the Stock Market Reaction to the FASB's Deliberations That Led to the Issuance of the Exposure Draft on Accounting for Stock-Based Compensation.

$$1/N \quad (R_{jt}) \quad = \quad A + B(R_{mt}) \quad + \quad C_k(P_{kt}) + U_t$$

Event	Experimental Sample N=34 S1	Control Sample N=34 S2	Differences (S1 - S2)
1	0.0003 (0.09)	0.0027 (0.84)	-0.0024 (-0.68)
2	0.0019 (0.51)	-0.0013 (-0.39)	-0.0032 (-0.91)
3	0.0036 (0.98)	0.0020 (0.62)	0.0016 (0.46)
4	0.0011 (0.31)	0.0007 (0.20)	0.0004 (0.11)
5	0.0012 (0.29)	0.0031 (0.930	-0.0019 (-0.54)
6	-0.0004 (-0.11)	-0.0024 (-0.74)	0.0020 (0.57)
7	-0.0006 (-0.17)	-0.0003 (-0.09)	-0.0003 (-0.05)
8	-0.0026 (-0.71)	-0.0029 (-0.89)	-0.0003 (-0.04)
9	0.0051 (1.38)[c]	0.0008 (0.25)	0.0043 (1.23)
10	-0.0011 (-0.29)	-0.0027 (-0.83)	0.0016 (0.45)
11	-0.0071 (-1.88)[b]	0.0008 (0.21)	-0.0079 (-2.32)[a]

a = significant at .01 or less one-tailed test;
b = significant at .05 or less one-tailed test;
c = significant at .10 or less one-tailed test.

Table 4

Regression Estimates of the Market Reaction to the FASB's Deliberations That Led to Issuance of the Exposure Draft on Accounting for Stock-Based Compensation, With the Experimental Sample Partitioned into Emerging -- Less Mature Firms and Large -- Mature Firms.

$$1/N \quad (R_{jt}) \quad = \quad A + B(R_{mt}) \quad + \quad C_k(P_{kt}) + U_t$$

Event	Emerging -- Less Mature Firms	Large -- Mature Firms
1	-0.0009 (-0.24)	0.0011 (0.28)
2	0.0026 (0.63)	0.0016 (0.38)
3	0.0073 (1.75)[b]	0.0015 (0.35)
4	0.0006 (0.13)	0.0016 (0.36)
5	0.0027 (0.65)	0.0003 (0.07)
6	-0.0055 (-1.33)[c]	0.0028 (0.66)
7	0.0041 (1.08)	-0.0034 (-0.85)
8	-0.0027 (-0.65)	-0.0025 (-0.61)
9	0.0064 (1.53)[c]	0.0044 (1.04)
10	0.0016 (0.31)	-0.0025 (-0.61)
11	-0.0077 (-1.85)[b]	-0.0064 (-1.53)[c]

b = significant at .05 or less for a one-tailed test,
c = significant at .10 or less for a one-tailed test.

Appendix A

List of Firms Included in the Sample and the Calculated Effect on Earnings Had the Exposure Draft Been in Effect for Fiscal 1992.

Company	1992 EPS Reported ($)	%Decline
Allied Signal	3.91	-6.3
Alcoa	0.89	-10.0
American Express	0.83	-7.0
Amgen	2.42	-8.7
AT&T	2.86	-0.9
Boeing	4.57	-2.5
Chevron	6.32	-0.4
Coca-Cola	1.73	-1.7
Disney	2.55	-4.7
DuPont	1.82	-0.9
Exxon	3.85	-0.6
Fluor	1.65	-5.0
General Electric	5.52	-2.2
Goodyear	5.35	-3.8
Hewlett-Packard	3.49	-2.4
Int'l Paper	1.17	-2.7
Lotus Development	1.33	-49.6
McDonald's	2.60	-5.4
Merck	3.12	-1.6
Microsoft	2.41	-18.9
Minn. Min. & Mfg.	5.65	-2.0
Morgan, J.P.	6.93	-3.2
Novell	0.81	-15.0
Paramount Commun.	2.27	-6.9
Philip Morris	5.45	-1.4
Pogo Producing	0.66	-3.3
Procter & Gamble	3.22	-2.2
Rockwell Int'l	2.14	-2.5
Software Publishing	0.93	-40.9
Texaco	3.58	-0.5
3Com	0.47	-44.7
Union Carbide	1.39	-4.3
Westinghouse	0.93	-1.8
Woolworth	2.14	-1.4

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