

Do companies exploit accounting rules
for broad-based stock option plans?
A case study *

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Abstract

Several studies indicate that stock option plans are becoming more and more a substantial part of compensation schemes in U.S. companies. This paper argues that for an employer the attractiveness of stock options arises from the U.S. Generally Accepted Accounting Principles (US-GAAP) which require no charge to earnings for specifically designed stock option plans if a company opts for footnote disclosure. This poses a substantial problem for security analysis since a firm's earnings may be considerably upward biased.

Based on a case study of 20 companies out of the S&P 500 which rely heavily on employee stock options we arrive at the conclusion that the amount of hidden compensation cost can be significant. For some of the companies the misrepresentation of stated earnings exceeds usual immateriality limits by far. Therefore, we propose that the fair value method of Statement No. 123 Financial Accounting Standards Board should be made compulsory in order to restore the true and fair view which "income as stated" should provide.

1 Introduction

Traditionally, stock options were awarded exclusively to top-management in order to link their interests with those of shareholders. At a time when companies in the U.S. are confronted with the tightest labor market in more than a decade, stock options are the most popular instrument to attract and retain highly specialized personnel.¹ Economically speaking, employee stock option plans are just another wage component given as a substitute for cash payments. For an employer the attractiveness of options arises largely from the fact that the U.S. Generally Accepted Accounting Principles (US-GAAP) require no charge to earnings for specifically designed stock option plans. Although the Financial Accounting Standards Board "encourages" all entities in its Statement No. 123 (FAS 123) to recognize compensation cost of stock options, it is left at a firm's discretion whether it would charge the cost to earnings or just disclose it in the notes of an annual report. The technique of footnote disclosure without a charge to earnings may pose a substantial problem since it impairs the information content of earnings figures. For example, earnings per share and profit margins are at the center of securities analysis. These figures are derived from income as stated, and thus, exclude some part of compensation cost if a firm opts for footnote disclosure of stock-based compensation.

This paper asks whether some companies are actually hiding a part of their compensation cost and whether the avoided charge to earnings can be economically significant. Therefore, we conduct a case study for 20 companies out of the S&P 500 which rely heavily on employee stock options.² Interestingly, our study finds that none of these companies follows the fair value method suggested by FAS 123. Moreover, almost all companies issue at-the-money options exclusively. For a given number of authorized shares to be issued into stock option plans, granting at-the-money options maximizes the amount of compensation cost hidden from income as stated.³ If a part of the cost is omitted, earnings are overstated. Actually, for some

¹According to the National Center for Employee Ownership more and more companies offer broad-based stock option plans, i.e. plans for which more than 50 percent of employees are eligible. The NCEO (1999) estimates that seven to ten million employees receive stock options as of May 2000, up from around 1 million in 1991. Several other studies confirm the overboarding use of stock options. See for example, Liang and Sharpe (1999), Towers Perrin (2000) or Callies and Sareen (2000).

²These companies are selected on the bases of a current UBS Warburg study computing the ratio of total outstanding options to total outstanding shares for all of the S&P 500 companies (see Carson 2000).

³The potential to hide compensation cost is limited to the difference between fair value and

of the companies in our sample the misrepresentation of stated earnings exceeds immateriality by far.

When the exposure draft of Statement No. 123 "Accounting for Stock-Based Compensation" was issued in 1993 it required recognition of compensation cost. After a controversial debate the Financial Accounting Standards Board (FASB) modified its position. In the final version of FAS 123, it "encourages" all entities to measure the wage component provided by options applying the so-called "fair value method". Companies should measure compensation cost at the grant date using an option pricing model such as Black-Scholes and recognize this cost ratably over the service period. This is the period an employee has to stay with the company in order to benefit from the options. Nevertheless, FAS 123 allows companies to continue recognizing compensation cost by the "intrinsic value method" of Accounting Principal Board Opinion No. 25 (APB 25). Basically, this method requires to recognize only the amount by which the stock price at grant exceeds the exercise price. Since exercise prices are usually chosen at the current stock price the intrinsic value is zero, and thus, no compensation cost at all has to be recognized under this method. Therefore, the bottom line, i.e. "net income as stated", is not affected. However, additional disclosures are required if a company elects to follow APB 25. It has to disclose a so-called "pro forma net income" in the notes of annual statements. This is the net income that would have been shown under the fair value method.

In capital markets that process information efficiently one would expect that these FAS 123 compliant pro forma income figures capture the headlines anyway. On the contrary, the financial press discusses another pro forma income which companies disclose. This is the income adjusted for one-time charges such as merger related cost. Throughout this paper, pro forma income is defined as income adjusted for stock-based compensation cost according to FAS 123. These pro forma figures rarely show up at all in the financial press or in brokerage reports. For example, I/B/E/S forecasts are based on income from continuing operations. No adjustment is made for omitted compensation cost.⁴ Furthermore, while FAS 123 compliant pro forma figures have to be disclosed within the notes of annual reports (e.g., 10-K forms), such a disclosure is not required for quarterly reports (e.g., 10-Q forms).

In order to evaluate the impact of options on stated earnings some studies have looked at the gains managers as well as ordinary employees have received recently

intrinsic value. This difference is maximized by granting at-the-money options.

⁴See e.g. I/B/E/S (1999).

from exercising their options. For example, surveying 96 companies that grant options to more than half of their employees, the NCEO finds that employees usually obtain between 12% and 20% of their regular salaries from exercising their options.⁵ Looking at the S&P 500 companies, a recent study by UBS Warbug finds that for more than one fifth of the S&P 500 companies the ratio of total outstanding stock options to total outstanding shares exceeds 10%.⁶ As of June 30, 2000, the net exercise gain on all outstanding options amounts to \$570 billion, or 14.6% of total wages and salaries of these companies. Looking at the 50 technology firms within the S&P 500, exercise gains on options granted by these companies alone account for \$330 billion.

However, exercise gains do not correctly reflect the amount of compensation cost a company would have to charge following the fair value method of FAS 123. To see why options should be recognized at all, assume that there is a market for these options. Rather than giving an option to an employee a company could sell it to a third party and receive the option price. Since such a market does not exist, FAS 123 suggests to apply an appropriate option pricing model to arrive at a reasonable proxy for compensation cost. However, the purpose of this paper is not to discuss how to implement the fair value method. From a shareholder's point of view it would be preferable that companies recognize estimated fair option values rather than to recognize no compensation cost at all. Footnote disclosure is clearly no adequate substitute for recognition.

The structure of this paper is as follows. Section 2 briefly describes the properties of widely used stock option plans and asks whether accounting rules may help to explain their popularity. In particular, we describe how to measure and accrue compensation cost in order to illustrate the additional disclosure provisions of FAS 123. Section 3 asks whether this cost component may reach economically significant amounts by investigating recent annual reports of a sample of 20 S&P 500 companies that use stock option compensation extensively. Section 4 concludes.

⁵See NCEO (1999).

⁶See Carson (2000). These numbers include all stock options - whether they are fully vested or not - given to nonmanagers as well as to managers.

2 Accounting of stock option plans

Various types of options may be granted under executive and nonmanagement employee stock option plans, but the most popular type is a plain vanilla call option.⁷ These options typically expire seven to ten years after grant.⁸ Among other reasons, options are given in order to retain an employee for a certain period, the so-called service period. An option gets vested if an employee has to render no additional service in order to earn the right to benefit from the option (FAS 123.27). Usually, an employee option is immediately exercisable after it is vested. Most of the companies install cliff vesting, that is all options of a particular award vest after a fixed period, typically three to five years. Other companies grant options which vest in certain installments over the service period (graded vesting). For example, Yahoo!'s options "generally vest 25% after the first year of service and ratably each month over the remaining thirty-six month period".⁹

2.1 Measuring compensation cost of employee stock option plans

Statement No. 123 "Accounting for Stock-Based Compensation" (FAS 123) was issued in October 1995 by the Financial Accounting Standards Board. It governs reporting of a variety of stock-based employee compensation plans including stock purchase plans, stock options, restricted stock, and stock appreciation rights. While FAS 123 encourages companies to measure the cost of stock-based compensation by the "fair value method", they are also permitted to continue recognizing compensation cost by the "intrinsic value method" of the Accounting Principal Board Opinion No. 25 "Accounting for Stock Issued to Employees" (APB 25).

If a company would follow FAS 123, it would have to measure compensation cost applying an appropriate option pricing model, "for example, the Black-Scholes model

⁷See NCEO (1999) for a study of nonmanagement plans. For an overview of nontraditional types of executive stock options see e.g. Paulin (1992) or Johnson and Tian (2000).

⁸See e.g. NCEO (1999) for nonmanagement stock option plans and Murphy (1996) for executive plans.

⁹See Yahoo!'s 1999 10-K form filed with the SEC March 30, 2000. "As of December 31, 1999, [Yahoo!] had fourteen stock-based compensation plans." The above cited rule applies to annual option grants to employees of the company while "non-employee directors" receive a "First Option" upon nomination which vests in equal monthly installments over four years and an "Annual Option" which vests at the end of four years.

or a binomial model” (FAS 123.19). The parameters of the model have to be estimated at the grant date, especially the risk-free rate, the expected dividend rate, and the expected volatility. Instead of using the actual maturity of the option, it is recommended to use the expected life. This is the estimated time until exercise (FAS 123.19).¹⁰ These estimates introduce some arbitrariness into the recognition of compensation cost.¹¹ Nevertheless, an investor would clearly prefer that companies charge estimated fair option values rather than to recognize no compensation cost at all.

According to FAS 123.26, compensation cost has to be based on the expected number of options that eventually vest. No compensation cost is required for options that are forfeited either because an employee leaves the company or because a performance criterion is not met. However, if an already vested option expires worthless previously recognized compensation cost may not be reversed. Compensation cost has to be recognized ratably over the service period, i.e. between the grant date and the date the options get vested (FAS 123.27-30).¹²

All of the 20 companies we analyze in our case study avoid a charge to earnings by recognizing compensation cost according to APB 25 instead of FAS 123. Under APB 25 most employee stock option plans would be classified as compensatory plans. However, these plans do not necessarily require to recognize compensation cost, since compensation is measured by the intrinsic value of an instrument at the so-called measurement date (APB 25.10). For an option the intrinsic value is the amount by which the quoted market price of the stock at the measurement date exceeds the strike price. The measurement date varies with the type of option. According to APB 25.10.b, this is the first date for which both, the number of shares and the exercise price are known. For a so-called fixed plan this is known at grant. So, if the exercise price is set equal to the stock price at grant or higher (at- or out-of-the-money calls), then no compensation cost at all has to be recognized. In contrast, for plans with variable terms the measurement date can be considerably later than the grant date. By then the option may have a positive intrinsic value and thus requires

¹⁰See also appendix B of FAS 123

¹¹Investigating disclosures of executive stock option values in proxy statements, Yermack (1998) finds that companies tend to exploit the flexibility of regulations. For example, they shorten the expected lives of options and thus try to reduce the apparent value of manager compensation. Yermack suspects that companies might also try to curb displayed employee compensation.

¹²For stock option plans with cliff vesting the same amount has to be recognized for each year. Using a graded vesting schedule, compensation cost is calculated as if a series of cliff vesting awards was given rather than a single award (FAS 123.31 and FASB Interpretation 28). Thus, graded vesting implies that a higher cost figure is reported in earlier years than in later years.

a recognition of compensation cost. A performance-based plan in which the number of shares granted is contingent to performance thresholds may serve as an example. Measured compensation cost, if there is any, has to be recognized ratably over the service period (APB 25.12).

It should be noted that for at-the-money options the time-value of the option is highest. Hence, this maximizes the amount of hidden compensation cost per option granted. This may explain the heavy use of stock options granted at-the-money.¹³

Regardless whether APB 25 or FAS 123 is applied, entities have to include certain disclosures about stock options in their annual reports for fiscal years beginning after December 15, 1995 (FAS 123.45, 123.51). In particular, the number of options granted, the fair value of these options, and the assumptions underlying the computation of the fair value have to be disclosed (FAS 123.47). Moreover, entities that apply the intrinsic value approach of APB 25 have to display a "pro forma net income" as well as "pro forma earnings per share" in the notes. These figures have to be calculated as if the company had applied the fair value method (FAS 123.45). While these additional disclosures are required only for annual statements, they have not to be included in quarterly reports (e.g., 10-Q forms).

To sum up, companies may find stock option plans attractive because they do not have to recognize part of employee compensation cost if they follow APB 25. However, if investors pay attention to the additional disclosures required in annual statements nothing would be gained by following APB 25.¹⁴ Nevertheless, if a company follows FAS 123, compensation cost of stock options would also show up in quarterly reports. Thus, following APB 25 companies are able to veil this information during the year. This is certainly not appreciated by investors, especially if the hidden cost component reaches economically significant amounts. Therefore, we would expect companies to follow the fair value approach of FAS 123 in order to avoid being suspected of hiding part of compensation cost. However, this is not the case as we will see later.

¹³Only one of the 20 companies grants out-of-the-money options – in addition to at-the-money options. Other studies also find that at-the-money option grants are dominant (see e.g., NCEO 1999). Note, however, that Hall and Murphy (1999) show that for risk-averse undiversified executives at-the-money option may be optimal.

¹⁴Note, however, that the additional disclosures in annual statements before 1998 may not reflect all awards, since companies are not required to disclose the effects of awards granted in fiscal years that begin before December 16, 1994.

2.2 Accruals of compensation cost

Before we evaluate the magnitude of hidden compensation cost in the next section, we describe how compensation cost should be accrued under FAS 123. This depends on the vesting schedule. For simplicity we focus on cliff vesting. With a graded vesting scheme compensation cost accruals would be higher in earlier periods than in later periods.

Assume that 10,000 options were granted at the beginning of financial year 1992. If cliff vesting is prevalent, all of the options which are granted at a particular occasion vest at the same time, say at the end of financial year 1995. This implies a four-year service period. In order to calculate the fair value of the award, assume that the strike price was chosen to be equal to the stock price at grant, say \$100. Furthermore, let the expected volatility be 30% p.a., the appropriate interest rate 6%, and the dividend yield 0%. If we assume that all options are exercised, as soon as they are vested, we would estimate that the expected life of the option is 4 years. Note that these assumptions are rather modest. Some of the companies in our study assume annual volatilities above 60% or expected lives of 5 years and longer in order to compute pro forma net income.

Using the Black-Scholes model, the fair value of one call at the beginning of 1992 is \$26.38. If an employee leaves the company before the end of the service period he forfeits his part of the award. Assuming a forfeiture rate of 5% per annum, at the end of the four-year service period $(1 - .05)^4 = 81.5\%$ of the initially granted options are expected to get vested. Thus, .815 times the number of options granted (10,000) times the fair value of one option (\$26.38) gives the total value of the first period's award (\$214,867). Since compensation cost has to be distributed ratably over the service period of four years, \$53,716 would have to be accrued in each of the financial years 1992 through 1995.

One-time grants are the exception rather than the rule. The NCEO, for example, finds that most of the companies that use stock options provide ongoing awards.¹⁵ Therefore, table 1 provides an example how much compensation cost has to be shown with repeated annual grants. Note that we use quite modest assumptions. In particular, we assume that a company grants 10,000 options each year. This equals 1% of outstanding shares at the beginning of 1992 if 1 million shares are

¹⁵See for example NCEO (1999).

outstanding.¹⁶ In order to mimic the stock market behavior of recent years, we let stock prices appreciate annually by 12%. Everything else unchanged, this induces the Black-Scholes value for newly granted options to increase year-by-year by the same percentage figure making a grant of a fixed number of options each year more costly. Compensation cost is distributed ratably over the presumed vesting period of 4 years. Table 1 displays results for a cliff vesting schedule.

Fin. year	Stock price	Fair value	Options granted	Accrued compensation cost in financial year (in thousands US- $\$$)													
				1992	1993	1994	1995	1996	1997	1998	1999	2000	2001				
1992	100.00	26.38	10.0	53.7	53.7	53.7	53.7										
1993	112.00	29.54	10.0		60.2	60.2	60.2	60.2									
1994	125.44	33.09	10.0			67.4	67.4	67.4	67.4								
1995	140.49	37.06	10.0				75.5	75.5	75.5	75.5							
1996	157.35	41.51	10.0					84.5	84.5	84.5	84.5						
1997	176.23	46.49	10.0						94.7	94.7	94.7	94.7					
1998	197.38	52.07	10.0							106.0	106.0	106.0	106.0				
1999	221.07	58.31	10.0								118.7	118.7	118.7				
2000	247.60	65.31	10.0									133.0	133.0				
2001	277.31	73.15	10.0													149.0	
Total compensation cost over all awards:							256.8	287.6	322.1	360.7	403.9	452.4	506.7				
Required disclosure:							75.5	160.0	254.7	360.7	403.9	452.4	506.7				

Table 1: Accrued compensation cost with revolving options awards under a cliff vesting schedule. Each line displays the award of a particular financial year and the effects on earnings in other periods. Except for stock prices and option prices all amounts are given in thousands.

We assume that at the beginning of each year 10,000 options are granted (column 4). This equals 1% of outstanding shares at the beginning 1992. All options vest after 4 years and are exercised immediately afterwards. Furthermore, we assume that stock prices appreciate annually by 12% (second column). In order to calculate Black-Scholes values we assume that the strike prices are fixed at the stock price at grant. In addition, an expected volatility of 30% p.a., an interest rate of 6%, and a dividend yield of 0% is assumed. The resulting fair values are displayed in the third column. Columns 5 to 14 display compensation cost which should have been recognized in each financial year.

The last two lines sum up the compensation cost of all awards and the amounts companies are required to disclose. Note, that only awards granted in fiscal years that begin after December 15, 1994 have to be disclosed.

FAS 123 only requires the disclosure of the effects of awards granted in fiscal years

¹⁶Cisco Systems, for example, has got shareholder approval to provide annual grants of up to 4.75% of outstanding shares.

that begin after December 15, 1994. If a company provides options with a four-year vesting period, an investor can infer the effects of all awards for the first time from the 1998 annual statement. Since a company is not required to disclosure effects of options granted before fiscal 1995, the first three lines table 1 would not be visible for an investor. This explains the difference between the last two lines in table 1.

3 Case Study: The quality of reported earnings of selected S&P 500 companies

In order to investigate whether stock option compensation cost is negligible we analyze income statements of 20 S&P 500 companies. These companies are selected on the basis of a recent UBS-Warburg study¹⁷ which investigates the intrinsic value of currently outstanding options of all S&P 500 companies. We restrict our analysis to the 20 companies which have the highest ratio of total outstanding options to total outstanding shares. Rather than looking at the intrinsic value of options we analyze compensation cost disclosures in the most recently available 10-K forms filed with the SEC. Interestingly, none of the 20 companies in our study charges stock option cost to stated earnings as recommended by FAS 123. All of the companies adopt the disclosure-only provisions of FAS 123.

Table 2 displays a company's net income as stated, i.e. accounting for stock-based compensation according to APB 25, as well as pro forma income compliant with FAS 123. Let us have a closer look at Yahoo!. The total Black-Scholes value of all options granted during the financial year 1999 was \$1,563 million (last column). If all the company's stock option plans would follow the same vesting schedule, say cliff vesting with a service period of 4 years, then compensation cost of \$390 million should have been recognized. Unfortunately, Yahoo! has implemented different vesting schedules and it does not disclose how many options are granted under each schedule. Therefore, it is not possible for an investor to verify the income reduction from the disclosures made in the 10-K form. Note that the 1999 difference of pro forma income and income as stated (\$317 million including tax effects) is largely due to options grants given in 1999. The total Black-Scholes value of stock options granted in financial years 1999, 1998, and 1997 amounts to million \$1,563, \$643 and \$89, respectively.

¹⁷See Carson (2000)

Company Name	Ratio of total outst. options to shares	Net income as stated (mill. \$)	Pro forma net income (mill. \$)	Reduction of stated net income ^a	Options granted in fiscal 1999 No. of options (mill.)	Black Scholes value (\$)	Value of total award (mill. \$)
Siebel Systems	45%	122	95	22%	27	20.86	553
Young & Rubicam	34%	167	159	5%	4	12.30	54
Delta Air Lines	33%	1,101	935	15%	20	16.00	314
Maxim Integrated	30%	196	158	19%	8	19.21	149
Broadcom	28%	83	-106	227%	23	31.35	722
Cendant	25%	-55	-213	NM	30	18.10	543
Merrill Lynch	24%	2,618	2,326	11%	30	24.78	742
Yahoo!	23%	61	-256	519%	37	41.77	1,563
Citrix Systems	23%	117	64	45%	21	14.37	304
Sapient	22%	30	-10	132%	4	21.62	97
Paine Webber Group	21%	629	593	6%	4	13.64	49
PeopleSoft	20%	-178	-263	NM	30	6.61	196
T.R. Price	20%	239	219	8%	3	9.86	34
Qualcomm Inc.	19%	201	149	26%	5	28.56	135
Capital One Fin.	19%	363	326	10%	11	25.92	273
Lehman Bros.	18%	1,132	1,091	4%	11	13.98	148
America Online	18%	762	504	34%	55	22.93	1,256
Hasbro Inc.	18%	189	171	10%	7	12.13	87
Toys 'R' Us	18%	279	232	17%	40	6.26	249
J.P. Morgan	17%	2,055	1,962	5%	6	37.70	239

Table 2: Cost of stock-based compensation of 20 S&P 500 companies that rely heavily on stock option plans (see Carson 2000). The figures displayed are derived from 10-K forms of financial year 1999 filed with the SEC. The first column displays the ratio of total outstanding shares to total outstanding options, including non-vested options. Then, net income as stated and pro forma income compliant with FAS 123 (both in mill. US-\$) are given, followed by the reduction of net income if companies would have applied the fair value method of FAS 123. The last three columns exhibit stock options granted in financial year 1999. From left to right: the number of options granted (in mill.), the weighted average Black-Scholes value of one option (in US-\$), and the Black-Scholes value of the total award (in mill. US-\$).

^aNM: Not meaningful

A net income reduction below 5% is recorded only by three companies, Lehman Bros. (3.6%), J.P. Morgan (4.5%), and Young & Rubicam (4.97%). All other companies exceed the usual immateriality limit. While the next 9 companies face an earnings hit between 5 and 25%, the remaining 8 companies experience a reduction of net income by more than 25% if they apply the fair value method of FAS 123. Two companies,

i.e. Broadcom and Yahoo!, should have reported a net loss rather than a net income. Looking at how much value is handed over to employees by companies like Yahoo!, Cendant, or Broadcom, these amounts are clearly economically significant.

It should be noted that the first press releases which capture the attention of investors and analysts do provide considerably less detail than the 10-K forms filed with the SEC. It is rather unusual that a company includes the number of granted options or a pro forma net income according to FAS 123 into its press release. This is particularly irritating since after the initial press release investors may have to wait a month or two for the SEC filing of the 10-K form. Moreover, individual investors would have to estimate quarterly pro forma net income by themselves. Investors relying on I/B/E/S earnings forecasts are not better off since I/B/E/S does not provide forecasts of FAS 123 compliant pro forma income.

Since the cost of these stock option programs can be economically significant it is stunning that the financial press is so silent about these figures while forecasts of "earnings as stated" and related components get so much attention. If investors are able to make perfect forecasts of the earnings reduction induced by stock option plans, then this should be no subject at all. However, this is likely not to be true. Thus, the question remains why do analysts focus on net income as stated and not pro forma income. Why do we hear so little about the hit to earnings?

4 Conclusion

Our case study of 20 companies out of the S&P 500 index which rely heavily on stock options as a form of compensation finds that all of these companies opt for the disclosure-only provisions of FAS 123. This technique of footnote disclosure allows companies to avoid charges for stock-based compensation to stated earnings. As a consequence, for some of the companies the misrepresentation of "income as stated" exceeds the usual immateriality limits by far. Since the largest reduction of reported income is observed for some companies which represent the so-called New Economy we suspect that a similar analysis of NASDAQ companies would produce even more disturbing results.

This poses a substantial problem to academic as well as applied investment research. A meaningful comparison of companies on the basis of figures derived from stated earnings necessitates the tedious derivation of information about stock-based

compensation from the notes of financial statements. Since this increases the information cost substantially, it poses a threat to the efficiency of financial markets. Therefore, the fair value method of Statement No. 123 of the Financial Accounting Standards Board should be required rather than recommended in order to restore the informativeness of stated earnings.

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