

# To Expense or not to Expense Employee Stock Options: The Market Reaction

by

Fayez A. Elayan  
Brock University

Kuntara Pukthuanthong  
San Diego State University

Richard Roll  
Compensation Valuation, Inc. and UCLA

## Authors' Coordinates

	Elayan	Pukthuanthong	Roll
Address	Department of Accounting College of Business Administration Brock University St. Catherines, Ontario L2S 3A1, Canada	College of Business Administration San Diego State University 5500 Campanile Drive San Diego, CA 92182-8236, USA	The Anderson School at UCLA 110 Westwood Plaza Los Angeles, CA 90095-1481, USA
Voice	1-905-937-8543	1-619-594-5690	1-310-825-6118
E-Mail	felayan@brocku.ca	kpukthua@mail.sdsu.edu	rroll@Anderson.ucla.edu

Fifth draft: July 2004

# **To Expense or not to Expense Employee Stock Options: The Market Reaction**

## **Abstract**

During 2002 and 2003, 140 publicly traded U.S. firms announced their intention to recognize an accounting expense when stock options are granted to employees. Many similar firms elected not to expense options. We study the stock market's reaction. There is no evidence whatsoever that expensing options reduces the stock price. To the contrary, around announcement dates, we find significant price increases for firms electing to expense options and significant price declines for industry/size/performance-matched firms that did not announce expensing at the same moment. The average relative change in market values is 3.65% during a six-day window around the announcement. The magnitude of the market's reaction to expensing depends on agency costs, the magnitude of option expenses, and financial reporting costs. The market's reaction does not seem to be affected by contracting costs (e.g., induced by debt covenants), growth opportunities, or potential political repercussions. Moreover, the decision to expense and the magnitude of the market's reaction are not signals of future operating performance. The market seems to react favorably to transparent reporting while it penalizes firms that give the appearance of having something to hide.

## 1. Electing to Expense Employee Stock Options: The Issues

Employee stock options (ESOs) are similar to exchange traded options but they differ in some important respects. Their similarity includes the convention that the strike price is set close to the current market price at issuance. But ESOs are often longer-term than exchange traded options; ten years until expiration is not unusual for the former while more than two years is rare for the latter. Typically, ESOs are not immediately exercisable by the grantee; instead, there is a “vesting” schedule that specifies how many of the granted options can be exercised at various times subsequent to the grant. Sometimes, the grant specifies that shares acquired by exercising options cannot be sold for an additional term. Both of these features serve to bind the employee to the firm. If an employee leaves the firm before the options are vested, they are generally forfeited, while there is a forced early exercise of all in-the-money vested options. ESOs are subject to a variety of less common peculiar features.<sup>1</sup>

Accounting for the expense of stock option grants has been heatedly debated in the popular press, within industry groups, and among academicians and lately, even in Congress. In 1972, The Accounting Principles Board (APB) issued APB 25: *Accounting for Stock Issued to Employees*. It specified the “intrinsic value” method for calculating a firm’s cost of stock option grants. The intrinsic value is the difference between market price of the stock and the exercise price of the option. If the exercise price is equal to or greater than the current market price on the grant date, which is usually the case, no expense is recorded. The logic seems to have been two-fold: first, there is no cash outlay at the moment the option is granted, so the grant is unlike, say a wage payment. Second, there was thought to be no generally applicable method for valuing stock options.<sup>2</sup>

Unfortunately, this logic soon ran up against contradictory facts in the traded options markets. At-the-money options trade at significant positive prices, not at zero. Moreover, traders and investors obviously are able to come up with valuations acceptable to willing buyers and sellers,

---

<sup>1</sup> For example, some ESOs have “reload” provisions that grant employees additional at-the-money options upon exercising previously granted options that are in the money; see Dybvig and Loewenstein (2003.)

<sup>2</sup> The 1972 APB ruling appeared just prior to the 1973 publication by Black and Scholes, which brought a revolution to the traded options market.

and there seems to be a considerable degree of consistency in the results of valuation methods; e.g., option prices increase with term until expiration and with the volatility of the underlying stock's return and they are related in predictable ways to interest rates, stock prices, and dividends.

The debate on option expensing became ever more heated over the last decade. In 1991, Senator Carl Levin said the stock options were used to increase management compensation, implicitly at the expense and without the consent of shareholders. In 1993, the Financial Accounting Standards Board (FASB) required recognition of estimated option expense in an *Exposure Draft*. The (then) six major accounting firms and many industry associations and venture capitalists opposed the new *Exposure Draft*. FASB received more than 1,700 comment letters, of which about 1000 were against the *Exposure Draft* and FASB voted in December 1994 to rescind the requirement.

In October 1995, FASB issued Financial Accounting Standards 123 (SFAS 123), effective after December 15, 1995. This rule was essentially a compromise among those opposing and favoring mandatory expense recognition. It stipulates that options should be valued using option-pricing models (such as Black/Scholes.) However, firms can either include option grant costs in the income statement or simply disclose them in footnotes, at the firm's discretion. Under SFAS 123, only a few firms elected to expense options (Boeing, MacDermid, Winn Dixie.) Most high technology firms announced that they would not recognize options as an expense, (INTEL, Cisco.)

Opponents of mandatory ESO expense recognition argue that stock options are a key factor in the growth of prosperity in the United States, that mandatory expensing will reduce the use of ESOs and the incentives they bring, and thus do harm to successful and especially to high technology businesses. The tide running against this view was amplified during the past few years by accounting-related frauds and scandals. Anything that even smells like an accounting ruse to increase reported earnings has become anathema to a sizeable fraction of investors and to the public.

Accordingly, during 2002 and 2003, approximately 150 firms announced their intention to expense option grants upon issuance. A large number of such announcements occurred during July and August of 2002 and many were by financial firms. The number of announcing firms is still relatively small compared to the large number who could have made similar announcements and elected not to do so. It is apparent that there are few firms willing to voluntarily expense stock options even under considerable public pressure.<sup>3</sup>

At the end of March 2004, FASB tried once again. It issued a proposed ruling requiring firms to expense option grants on the grant date. At the same time, it encouraged firms to employ more sophisticated valuation methods, specifically a binomial “lattice” method, which would allow valuations to include such unique features as vesting, forfeiture, and early exercise. Comments from interested parties are undoubtedly pouring in as we write and bills have been introduced in Congress to overturn FASB’s new ruling. The continuing debate may or may not be resolved once and for all later this year.

In the meantime, our research is intended to help resolve the attendant debate about possibly disastrous effects on firms from option expense recognition. We investigate the impact of option expense recognition on the firm’s stock price using a sample of 140 firms who voluntarily announced their intention to expense options. We contrast the price behavior of such announcing firms with similar firms who could have made the same announcement on the same date but elected not to do so.

Our results will, perhaps, be somewhat surprising to those who believe expensing options will destroy America. We find that the announcing firms, those who decided to reduce reported income by expensing option grants, had significant positive abnormal price increases when they announced their intentions. In contrast, matching firms who could have made exactly the same announcement about expensing options but did not, had significant abnormal price decreases on dates when the previous firms made their expensing announcement. The difference in price changes between the two sets of firms is highly significant on the few days surrounding the

---

<sup>3</sup> In August 2003, apparently in an effort to relieve public pressure, Microsoft announced that it would no longer grant options to employees.

options expensing announcements. The market rewarded announcing firms and penalized firms that did not announce.

While there is no evidence at all that expensing option grants is deleterious to a firm's market value, and indeed the opposite appears to be true, we recognize there is a possible selection problem. Firms that voluntarily elect to expense option grants might be different in some important respects from the vast bulk of firms who choose not to do so. For example, perhaps firms who announce expensing do so when managers know that the immediate future will be characterized by abnormally good performance. They might feel that they can afford the expense recognition because the future is bright. If the market understands this and interprets it correctly, then the positive price increase on the expense recognition date might have little to do with options *per se*, but merely be a forecast of better times ahead. Similarly, firms that do not expense options might feel that tough times are ahead and the market correctly interprets the absence of option expense recognition announcement as a negative signal.

To investigate the possibility that expensing options is simply a signal, we trace the subsequent operating performance of announcing firms and their non-announcing comparables. We find no evidence that announcing firms subsequently experience abnormally favorable conditions. Hence, the simplest and most logical explanation is that the market rewards announcing firms for their honesty and their willingness to put an official expense number on option grants while it penalizes firms who are suspiciously less forthcoming.

Section 2 provides a brief literature review. Data description and empirical methods are contained in Sections 3 and 4 respectively. The empirical results are presented in Section 5 and Section 6 concludes.

## **2. The Theoretical and Empirical Literature about Option Expensing.**

The heated argument against expensing options has often pitted academics against operating managers. For example, Craig Barrett, CEO of Intel, is against expensing on the grounds that options are difficult to value. Collier and Higgs (1997) bolster this view by showing wide differences in valuations obtained with three alternative pricing models, all three acceptable under current FASB rules. Core, Guay, and Kothari (2002) offer implicit support because they find that options are undervalued using the existing treasury-stock method.

Managers express fears about significant reductions in reported earnings from expensing. Tirinnanzi (2003) quotes a Bear Stearns study showing that “the earning per share for the S&P 500 would’ve dropped 9% in 2000 had stock options been treated as an expense. A report by CS First Boston places the difference at 13%.”

Sahlman (2002) sides with most managers by arguing that deducting an option grant’s cost from income adds no information beyond the footnotes that are already in the financial statements. Moreover expensing options might lead to an even more distorted picture of a company’s economic condition.

But numerous authors have questioned the good intentions of managers and their supporters. For example, Dechow et al. (1996) study reasons why firms are reluctant to expense stock options using a sample of 347 companies that have declared their opposition. The authors conclude that firms are opposed because they seek to avoid public scrutiny of their compensation arrangements. Contrary to statements in the financial press, these authors also find that high-technology companies are not the main opponents to expensing. Rather it is companies whose top-managers receive a large fraction of their compensation from options. Because the remuneration of the managers is tied to the firms’ stock price, firms with poor governance quality are reluctant to expense (Fields, Lys, and Vincent 2001).

Like Sahlman (2002) and Huson, Scott, and Weir (2001) argue that rational investors will take the future earnings dilution of option grants into account when they value the firms. This

implies that expensing options on the grant date should have no impact on the stock price. Murphy (2002) argues that stock options are already disclosed in footnotes and should be valued appropriately in an efficient stock market whether or not they are expensed. Hence, the stock price should be unaffected by expensing.

Watts and Zimmerman (1986) go further to suggest that the recognition of stock option expense should reduce management's ability to increase its own compensation, so stock prices should actually increase when a firm announces its intention to expense. Rees and Stott (1998) argue that stock option expensing is a signal to investors of higher future growth and hence increases the stock price.

Miller and Crystal (2002) and Bodie, Kaplan, and Merton (2003) examine and dismiss the principal claims put forward by those who oppose expensing options. They argue that stock options grants have real cash-flow implications that need to be reported, that accurate valuation methods are available, and that footnote disclosure is not an acceptable substitute.

A behavioural rationale for expensing is provided by Hirshleifer and Teoh (2002), who believe that investors have limited attention. They conclude that recognizing option grant expense will help investors focus.

The existing empirical literature about the market's reaction to the announcement of expensing stock options contains conflicting results; some studies conclude that the announcement effect is positive and statistically significant while others find no effect. Some studies examine factors that distinguish between expensing and non-expensing firms and these studies also contain conflicting evidence.

Daniel, Kale, and Naveen (2003) provide an information signaling explanation of the expensing decision, which implies a positive stock price reaction. Using a sample of 121 firms that announced their intention to recognize option expenses, they find a significant positive market reaction. In addition, they uncover several other interesting facts: (1) the greater the decrease in the dispersion of analyst forecasts after the announcement, the more positive the announcement

return; (2) firms with greater stock return volatility are less likely to expense; (3) the probability of expensing is positively related to firm size, leverage, the proportion of independent directors, and whether the firm is in the financial sector.

Bastian, Rajgopal, and Venkatachalam (2003) examine the characteristics of companies that announced their intentions to recognize option expense. They hypothesize that three types of firms are likely to voluntarily expense options: (1) firms with smaller financial reporting costs with respect to options. These are firms with lower option usage, lower option expense relative to net income, and conservative accounting methods. (2) Firms with more incentive to improve investor confidence. These are firms with poor governance characteristics such as smaller boards and a smaller proportion of independent directors. (3) Firms with low leverage and non-binding retained-earnings constraints in their debt contracts.

Using a sample of 85 firms that announced their intention to expense options between January and September 2002, they report a positive and significant stock market reaction for non-financial firms (the overall market reaction is not significant.) Also, firms with low financial reporting costs and relatively poor governance characteristics are more likely to expense stock options voluntarily.

Aboody, Barth, and Kasznik (2003) find that voluntary expensers, on average, are rewarded by positive price reactions. The reaction is more favorable for firms that explicitly mention their desire to improve earnings quality and for those that expensed early. These authors report that the likelihood of expensing options is related to the magnitude of the expense, the existence of accounting-based compensation contracts, the firm's investor base and governance structure, the extent to which the firm is active in the capital market, and whether the firm is a leader in its industry. Voluntarily expensers are characterized by lower options usage and a smaller impact of option expensing on reported profits.

Seethamraju and Zach (2003) examine the market reaction to FASB's initial announcement (January 1, 2002) of a proposal to require expensing. They find that a firm's price reaction to FASB's proposal was positively associated with a voluntary decision to expense. Moreover,

expensing firms reduced the number of options granted in 2002.

Espahbodi, et al. (2002) investigated the share price reaction to a FASB 1993 proposal to require expensing. They report that stock prices generally had a negative reaction. After FASB revised the original proposal to require only disclosure of stock options in footnotes (while encouraging expense recognition), the stock market responded positively. The reaction was more significant for small, high-tech and high-growth companies.

Deshmukh, Howe, and Luft (2003) examine factors underlying the decision to voluntarily expense. They suggest that since managers in firms with fewer agency problems are more likely to act in the best interests of the shareholders, then expensing is more likely (if expensing serves to improve the quality of information available and help investors value shares more accurately) when agency problems are less severe.

Using a sample of 129 firms that announced expensing between July 2002 and December 2002, they find that the likelihood of expensing is positively related to firm size, share ownership by executives, and dividend yield, and is negatively related to firm growth. The magnitude of stock options grants has no impact on the expensing decision. They conclude that agency problems and asymmetric information play an important role in the decision to expense. Fewer agency problems increase the likelihood of expensing.

In addition, they find that the decision to expense has no significant impact on share prices, and variables that represent the quality of corporate governance do not appear to explain any of the cross-sectional variation in announcement period returns. They suggest that share prices already incorporate the quality of corporate governance.

Sarkar and Wood (2003) use discriminant analysis for 84 expensing and 84 randomly selected non-expensing firms during 2002. They report that firms with a high level of information asymmetry, as measured by dispersion of ownership, are more likely to adopt expensing in an effort to reduce information asymmetry. In addition, firms with lower option values in aggregate are more likely to adopt expensing.

Ferri, Markarian, and Sandino (2004) examine the determinants of shareholder voting in a sample of 67 firms where a proposal for option expensing was submitted to a vote at the annual meeting. They find that votes in favor of expensing (1) increase when option-based compensation is perceived to be too high and when there is a lower expected impact on earnings from option expensing, (2) decrease with inside ownership, (3) increase with long-term value oriented institutional investors, and (4) increase after poor stock performance.

Ericson and Grund (2002) (Tower Perrin study) examine 103 companies that announced in July and August 2002 that they plan to adopt FAS 123, expensing options in the income statement. They tracked the share price from 60 days before to 60 days after the announcement and found it to be roughly the same as that of the S&P 500. They conclude that the accounting change does not influence stock prices.

Other papers have provided **indirect evidence** about shareholders' perception of option expensing by observing stock prices response to the SFAS No. 123 footnote disclosure as well as to various FASB pronouncements related to expensing. Aboody (1996a), Li (2002) and Aboody, Barth and Kasznik (2004) find evidence consistent with stock options being reflected in stock prices, even when their cost is only disclosed in footnotes and not recognized in financial statements.

### 3. Data Description

#### 3.1 Data Selection Criteria

Our sample consists of 140 firms that announced expensing options between July 8, 2002 and May 15, 2003. We began constructing the sample by searching the *Factiva.com* website for stories about expensing stock options over the entire period from 1995 through May 2003 inclusive. Although 1477 articles were found, only 154 firms were listed as having adopted options expensing. Of these 154 companies, five<sup>4</sup> are excluded from our sample because we could not find an announcement date and nine are excluded because they lack complete information on CRSP.<sup>5</sup> The final sample of firms and their expensing option announcement dates are listed in Table 1.

All of these firms announced expensing in either calendar year 2002 or 2003.<sup>6</sup> Table 2 provides a frequency distribution by calendar month. There is some unavoidable clustering; for example, almost 36% of the firms in our sample announced expensing during August 2002.

Data related to financial statements are obtained from COMPUSTAT and Research Insight while stock returns are from CRSP. Executive compensation data were collected from the Execucomp database. If some variables were missing, they were hand-collected from the annual proxy statements, form DEF-14A, or from form 10-K.

#### 3.2 Measurement of Variables

This section describes our explanatory and control variables. Table 3 gives their acronyms and sources.

##### 3.2.1 Variables pertaining to agency costs

Two explanatory variables relate to possible agency costs. "BONUS" is the fraction of total compensation paid to the top five managers in the form of bonuses. If such bonuses are linked to accounting profits, they could possibly be affected by expensing options. "EQ" is the ratio of

---

<sup>4</sup>Boeing, Conoco, Contango Oil & Gas, Hawaiian Electric, and Winn Dixie Stores.

<sup>5</sup>Dole Food, Home Properties NY, Household International, Level 3 Communications, MacDermid, Sunoco, Tarragon Realty Investors, US Interactive, and Warnaco Group.

<sup>6</sup>Only four firms are listed on *Factiva.com* as having adopted expensing before 2002; these were Boeing, Hawaiian Electric, MacDermid, and Winn Dixie, and all four were excluded due to inadequate information.

equity-based compensation to total compensation for the top five managers. This variable relates to the compatibility of managers' and stockholders' interests.

### **3.2.2 Variables pertaining to contracting costs**

Expensing stock options decreases reported income so it is likely to increase the probability that a company will violate income-based debt covenants. Possibly for this reason, firms with high debt ratios are reluctant to expense options (Dechow et al. 1996). Two variables are used to measure the leverage: long-term debt to total asset (LEVE1) and long-term debt to the sum of long-term debt plus equity (LEVE2).

### **3.2.3 Variables pertaining to options expense and information asymmetry**

VOLATILITY is the standard deviation of an announcing firm's daily stock returns computed over a one-year period prior to the announcement. It might be related to the decision to expense options for two reasons: first, options are more valuable for more volatile firms, so the accounting impact of expensing is greater, *ceteris paribus*. Second, more volatility is perhaps associated with more information heterogeneity among agents. Information asymmetry could possibly influence the decision to expense. A second variable, OPTF, is a direct measure of option expense as a fraction of firm value.

### **3.2.4 A variable pertaining to political costs**

Watts and Zimmerman (1990) suggest that firms making large option grants to top management are vulnerable to public scrutiny and criticism. In an effort to deflect criticism, such firms may be more inclined to expense. Hence, we use POPT to proxy for political costs; it is the fraction of options granted to the CEO relative to options granted to all employees.

### **3.2.5 Variables pertaining to financial reporting costs**

Carter and Lynch (2003) define "financial reporting costs" as additional expenses incurred by firms when they announce lower earnings. Because expensing options will lower reported earnings, firms with high financial reporting cost might be reluctant to expense options. Carter and Lynch (2003) suggest that firms with earnings close to zero have higher financial reporting costs. Two variables are proxies for financial reporting costs; earnings per share (EPS) and the

ratio of pro-forma EPS to reported EPS (REPS).

### **3.2.6 A variable related to growth**

Tobin's q (TQ) is the ratio of the market value of assets to their replacement costs. We use the book value of assets to proxy for replacement costs, so our measure of TQ is really the market/book ratio for total assets.<sup>7</sup> Tobin's q is presumably higher for firms with high growth opportunities. Firms with higher growth opportunities are probably expected by the market to issue more options since this enables them to postpone wages until higher cash flows are actually obtained (after growth occurs.) Such firms seem to be more inclined to resist expensing, so the announcement impact of such a firm might be greater because it would be more of a surprise.

### **3.2.7 Other control variables**

As additional controls, we use the natural log of total assets (LASSET) and the natural log of the market value of equity (LMR) as alternative measures of firm size

## **4. Methods**

The event study technique<sup>8</sup> provides an estimate of the market's reaction to an expensing options announcement. Cumulative average abnormal returns over event windows are subsequently used as dependent variables in regressions against various possible determinants of the market's reaction.

### **4.1 The event date**

Our event date is the earliest date listed on *Factiva.com* on which a firm indicates it is likely to expense options. Sometimes a firm announces that it is seriously considering expensing, and after a few days, it announces expensing formally. For firms that actually expense options, the earlier date, when the firm announces serious consideration, is used here as the announcement date.

---

<sup>7</sup> Since we do not have the book value of debt, our measure of Tobin's q is more precisely the market value of equity plus the book value of debt divided by the book value of assets.

<sup>8</sup> See Fama, Fisher, Jensen and Roll (1969) and, for more recent techniques in event studies, see Aktas, de Bodt, and Roll (2001).

## 4.2 Abnormal returns

We construct abnormal returns around announcement dates by two different procedures. The first procedure employs a sample of non-announcing firms matched as closely as possible by size, industry, and prior performance to the announcing firms. The abnormal return is then simply the return difference on a given calendar date between the announcing firm and its matched counterpart. The second procedure is standard; it uses the simple market model with the CRSP value-weighted portfolio as an index. We also fit the market model to the matched sample and compute its abnormal return in the usual way.

The abnormal return based on the market model for firm  $j$  on event day  $t$  is:

$$AR_{j,t} = R_{j,t} - \hat{\alpha}_j - \hat{\beta}_j R_{M,t} \quad (1)$$

where  $R_{j,t}$  and  $R_{M,t}$  are the firm's and the index' continuously compounded returns, respectively and  $\hat{\alpha}_j, \hat{\beta}_j$  are the estimated intercept and slope, respectively, from a regression of firm returns on index returns over a 180 trading day period from trading day  $t = -271$  through trading day  $t = -91$  relative to the announcement date,  $t=0$ . Ninety trading days immediately preceding the announcement are excluded since they might be contaminated by information leakage. Twenty-one trading days centered on the announcement date constitute our event window.

Using either procedure, an average abnormal return for event date  $t$  is calculated as a simple cross-sectional average over  $N$  firms in the sample,

$$AAR_t = \frac{1}{N} \sum_{j=1}^N AR_{j,t}, \quad (2)$$

where  $AR_{j,t}$  is the abnormal return of firm  $j$  on day  $t$ . A  $t$ -statistic can be calculated for the average abnormal return by assuming cross-sectional independence.

Because of event clustering (see Table 2) and possible event-induced volatility, we also provide an alternative test of significance by computing a bootstrap  $p$ -value. The bootstrap procedure follows Boehmer, Musumeci, and Poulsen (1991) as modified by Aktas, DeBodt, and Roll (2004.) The basic idea is to re-sample from non-clustered observations to determine the sampling distribution of the average abnormal return in the absence of dependent observations. The  $p$ -value is then fixed by the location of the observed average abnormal return within the

bootstrapped distribution.

A cumulative average abnormal return ( $CAAR_{T_1, T_2}$ ) is computed as a sum over several event days; i.e., accumulating from days  $T_1$  to  $T_2$  inclusive, we have

$$CAAR_{T_1, T_2} = \frac{1}{N} \sum_{t=T_1}^{T_2} \sum_{j=1}^N AR_{j,t} . \quad (3)$$

We also compute a cumulative average raw return in the same way, except the total return instead of the abnormal return is used in (3).

### 4.3 Selecting Matched Firms

For each announcing firm in the sample, we find a matching firm that (1) granted employee stock options, (2) did not announce expensing options at all or else announced at least six months after the subject announcing firm, (3) is in the same industry, (4) had comparable sales and (5) has a similar EBITDA<sup>9</sup> profit margin (EBITDA/sales). Firms with these characteristics are likely to have similar operating risks, profitability, and growth. Matching firm by industry should control for growth since firms in the same industry typically have similar growth opportunities. Matching on EBITDA/Sales controls for profitability.<sup>10</sup> Sales represent an *ex ante* measure of size. We do not allow a matching firm to be used for more than one announcing firm but an announcing firm can be a matching firm as long as its announcement date is at least six months after that of its corresponding previously announcing firm.

To obtain a matching firm, we first classify all firms that grant employee stock option grants into industries based on their four-digit SIC codes. Then the firms in each industry are arranged into three groups based on average sales during the four full quarters before the announcement date.

---

<sup>9</sup>Earnings Before Interest, Taxes, Depreciation and Amortization.

<sup>10</sup>Kim and Ritter (1999) suggest controlling for growth and profitability.

The subject firm is assigned to the group with the closest sales.<sup>11</sup> Next, each sales group is partitioned into three sub-groups based on profit margin (EBITDA/Sales) during the four full quarters before the announcement date and the subject firm is assigned to the sub-group with the closest margin. If there are not enough firms in an industry to have at least one firm in each of the nine sales/profit margin groups, we use either three by two or two by two groupings. Finally, when there is only one firm in the assigned sales/profit margin sub-group, it becomes the matching firm by default. When there is more than one firm in the assigned sales/profit margin sub-group, we select a single matching firm that is closest in sales to the announcing firm.

## 5. Empirical Results

### 5.1 Returns and Abnormal Returns.

Table 4 reports the average returns of announcing firms, non-announcing matched firms, and abnormal returns computed as the difference between the two. The conspicuous pattern in the table occurs on the days just around the announcement by the first set of firms of their intention to expense employee stock options. These announcing firms have significant positive average returns each trading day from day  $-1$  through day  $+3$ . The matching non-announcing sample has significant negative average returns on days  $-2$  to  $+2$ . The average abnormal returns, announcing firms less matched non-announcing firms, are highly significant and positive from trading days  $-2$  through day  $+3$ . For each of these days, the bootstrap p-values for the difference are all considerably less than one percent.<sup>12</sup> Figure 1 plots the cumulative average returns over the 21-day event window.

Based on these results, it appears that the market reacts favorably to firms that announce their

---

<sup>11</sup>If the subject firm's sales are within the sales range of a group, it is assigned to that group. If it is outside the ranges of all groups, it is assigned to the group with the nearest sales extremum.

<sup>12</sup>We admit to some puzzlement about why the returns are significant for up to three days after the announcement. One day might be expected since the announcement could be made after the close of trading. Some firms are small, so trading might not occur every day. Prior to day zero, the returns could be significant because of leakage of privileged information.

intentions to expense options. Moreover, it responds negatively to firms that could have made the same announcement and did not do so. The value being created by announcing firms is somewhat larger than the value being destroyed in the non-announcing matching sample; (since the firms are roughly the same size, returns provides a reasonable estimate of value creations and destruction.) From day  $-2$  through  $+3$ , announcing firms gain 2.24% in value while non-announcing matched firms lose 1.42%. This is, perhaps, not all that surprising since we have matched only one firm with every announcing firm. There must be other non-announcing comparable firms who also lost value around these announcement dates.

There is no evidence whatsoever that announcing firms destroy market value by expensing options, even though their reported earnings will unambiguously fall, *ceteris paribus*. Our results should alleviate the often-expressed fears that expensing options will cause big problems for individual firms and even for the entire economy and will inexorably lessen the use of employee stock options as incentive devices. To the contrary, it appears that the market interprets the expensing decision as an indication of honest intentions and further interprets the failure to expense by a similarly situated firm as an indication that the firm has something to hide. The striking negative penalty imposed on non-announcing firms, even though they did absolutely nothing around these announcements dates, seems to us compelling evidence that their managers committed an error of omission, bypassing a good opportunity to impress the market with their veracity.

Although the matching method in Table 4 is intuitive and easy to understand, we cannot be absolutely sure that the matched firms are identical in all respects to the announcing firms. Hence, Table 5 takes an additional step by reporting average abnormal returns of both matching and announcing firms using the market model and the value-weighted CRSP index as a market proxy. The patterns are similar but the significance levels have dropped to some extent for the matching firms while actually increasing on most days around the announcement for the matching firms. This differential change in significance levels is explained by the fact that the market index' return was positive on these days. The differences in abnormal returns (right-most panel of Table 5) are virtually identical to the difference in raw returns between announcing and matching firms.

## **5.2 Proximate determinants of the market's reaction to option expensing.**

The previous section reported a statistically significant market reaction to the announcement of expensing options, a positive reaction to announcing firms and a negative reaction to firms that might have announced but elected not to do so. Of course the magnitude of the reaction might not be uniform across all firms. As we previously intimated, such firm-specific characteristics as agency costs, contracting costs, volatility, etc. might either attenuate or amplify the market's reaction. In this section, we provide some evidence about this issue.

To measure the market's reaction in a single number, we aggregate the average returns for firms across trading days  $-2$  to  $+3$  relative to the expensing announcement date, day 0. We choose these days because each one has a highly significant return difference between announcing firms and non-announcing matched firms; (see the right-most panel in Table 4.)

Table 6 uses the cumulative average abnormal return from  $-2$  to  $+3$  as the dependent variable in a series of exploratory regressions with various firm attributes as explanatory variables. As explained in Section 3.2 above, in some cases we have alternative proxy variables to choose from; for example, when measuring agency costs, we might use "BONUS" or "EQ"; (see Table 3 for precise definitions.) Since we don't know which proxy is best, we simply report two regressions with alternative proxies. This can also be regarded as a rough check on robustness. For two variables, "POPT" and "TQ," there is only a single available proxy so it is used in all regressions.

The results in Table 6 reveal that it does not usually make much difference which proxies are employed. For example, both "BONUS" and "EQ" are positive and statistically significant in alternative regressions for announcing firms, thereby indicating that firms with higher agency costs (which is what these two variables are intended to measure) have higher returns when they announce their intention to expense options. This seems to make some intuitive sense in that firms with higher agency costs could be more suspect to begin with, so investors react happily when such firms surprise them with an honest effort to be more transparent.

On the other hand, these same two variables are also positive and significant for non-announcing matched firms. The negative market reaction is attenuated for firms with greater agency costs. This could be interpreted as a lack of surprise. Investors were suspicious of these firms to begin with, so the fact that they made no announcement was more or less expected.

The same sort of argument could be made for all of the significant variables in Table 6. Notice that the signs and significance are very similar for the two samples of firms even though the market reaction is positive on average for announcing firms and negative on average for matching firms. When the coefficient is positive, announcing firms with the characteristic have larger positive returns than the average announcing firm while non-announcing matched firms have algebraically larger (less negative) returns than all non-announcing firms, and vice versa for negative coefficients in Table 6. The positive coefficients indicate a larger element of surprise for announcing firms and less of a surprise for matching firms and vice versa.

For example, “VOLATILITY” and its alternative “OPTF” are positive and significant in all regressions. High volatility firms will take a bigger accounting earnings hit when they expense options (because option values increase with volatility.) Consequently, market folklore holds that high volatility firms are more reluctant to expense. This implies that when a high volatility firm does expense, the announcement is quite a surprise. However, when a high volatility (matching) firm fails to announce expensing, no one is shocked. The same argument goes for OPTF, a direct measure of option expense as a fraction of total equity value. The only other systematically significant variable is financial reporting costs, proxied by EPS or its alternative REPS. Evidently, firms with high financial reporting costs (low values of EPS and high values of REPS) surprise the market more when they announce option expensing.

Some variables suggested in previous literature as possible determinants of the expensing decision are not significant in our Table 6 regressions. Contracting costs as proxied by leverage constructs (LEVE1 or LEVE2) are insignificant. So are political costs as proxied by “POPT,” the fraction of all options granted to the CEO. Growth opportunities (TQ) are not significant, perhaps reflecting the fact that growth influences the use of options but not the decision to expense. We admit, of course, that insignificance might also be attributable to poor proxies.

### 5.3 Endogeneity: Is the expensing decision merely a signal of good times ahead?

Firms decide if and when to expense options. It seems possible that management might choose to announce expensing options when they have privileged information that future earnings will be unusually high. They might reason that expensing is laudable, but why not change over when earnings from operations will offset the earnings reduction induced by expensing? In such cases, a positive market reaction to expensing might have nothing whatever to do with expensing *per se*, but simply be induced by a recognition that expensing is a management signal of favorable future earnings.

Such a story is a bit more strained for non-announcing matched firms. The market reacts negatively to not announcing, but the firm itself has done nothing. Could a failure to announce be a signal of less favorable future earnings? This would require management to reason that earnings are not going to be very good, so expensing options now will make them even worse; hence, it's better to postpone.

To test for the signaling quality of the expensing announcements, we tracked our sample of firms for a year afterward to ascertain whether announcing firms differed in any material way from non-announcing matched firms. Most importantly, we wanted to ascertain whether the announcing firms had better operating performance over the post-announcement year.

Table 7 reports various performance statistics for our two samples of firms in aggregate. For example, it shows that both announcing and matched firms had reductions in median operating income from the year prior to the announcement to the year afterward.<sup>13</sup> However, the reduction was actually larger for announcing firms. Median sales growth was slightly higher for announcing firms, but the difference is not significant. Asset turnover was virtually the same for the two groups of firms. The only statistic seeming to favor announcing over matched firms was their increase in investments (Capital expenditures and acquisitions/EBITDA.)

---

<sup>13</sup>Mean operating incomes also decreased from year -1 to +1, from 23.27% to 20.03% for announcing firms and from 22.65 to 21.74 for matching firms. The reduction is larger for announcing firms but the difference is not statistically significant.

In our view, more compelling evidence is in Table 8, which uses data for individual firms, both announcing and matching. The cumulative average abnormal return for days  $-2$  to  $+3$  around the announcement is the explanatory variable and the log ratio of operating income from the prior year to the subsequent year is the dependent variable. If the market's reaction around the option-expensing announcement is a signal of good times ahead, there should be a strong positive cross-sectional relation between the size of the market's announcement window return and the actual improvement in operating results. As Table 8 reports, there is little evidence of such a relation. The t-statistic on the cross-sectional slope for announcing (matching) firms is only 1.12 (1.01) and the adjusted R-square is minimal, 0.11% (0.06%). If there is a signal involved, it is very noisy indeed.

## 6. Conclusions

The announcement by a firm that it intends to expense employee stock options has a significant positive impact on its share price and a significant negative impact on the price of an industry/sales/performance-matched firm, even though the latter makes no announcement whatsoever. In a few days around the announcement, the gain in market value of announcing firms less the loss in market value of non-announcing matched firms is on average 3.65%.

The magnitude of the market's reaction to expensing depends on several firm characteristics, most of which relate to the element of surprise in the announcement (or the lack of announcement.) For example, higher volatility firms have larger positive market price increases when they announce their intention to expense options. We interpret this as evidence that such firms are less likely to adopt expensing because the expense would be greater (since options are more valuable the higher the firm's volatility.) Hence, if a high-volatility firm does elect to expense, it is quite a surprise to the market. Similarly, a high volatility firm that does not make an expensing announcement has a less negative price reaction because there is not much of a surprise. Similar effects are revealed in the data for agency costs and financial reporting costs.

Some variables mentioned in previous literature as possible determinants of the expensing decision do not seem to have a significant relation to the market's price reaction. These include

contracting costs (such as those implicit in bond covenants), growth opportunities, and political repercussions of seemingly excessive grants to the CEO.

We also find that option expensing is not a signal of abnormally good times ahead. Neither the decision to expense nor the magnitude of the market's reaction is related to future operating performance. Hence, we are left with the simplest and most obvious explanation: the market regards option expensing as an earnest effort toward better transparency and it rewards expensing firms with higher valuations. Similarly, the market punishes firms who could have expensed options and did not, presumably because these firms give the appearance that they have something to hide.

## References

- Aboody, D., 1996, Market valuation of employee stock options, *Journal of Accounting and Economics* 22,357-391
- Aboody, D., Barth M. E., and Kasznik R., 2003, 'Factors Associated with Firm's Decision to improve Earnings quality: The Voluntary Recognition of Stock-Based Compensation Expense *Journal of Accounting Research*, Forthcoming.
- Aboody, D., Barth M. E., and Kasznik R., 2004, SFAS No.123 Stock based Compensation Expense and Equity Market Values, *The Accounting Review*, Forthcoming.
- Aktas, N., DeBodt E., and Roll R., 2004, Market response to European regulation of business combinations, *Journal of Financial and Quantitative Analysis*, forthcoming.
- Bastian, N., Rajgopal, S., and Venkatachalam, M., 2003, Recognition versus Disclosure: Evidence from Voluntary Recognition of Stock Option Compensation Working paper, Stanford University and Duke University.
- Bodie, Z., Kaplan, R., and Merton, R., 2003, For the last Time: Stock Options Are an Expense, *Harvard Business Review*, 81, 62-71.
- Boehmer, E., Musumeci, J., and Poulsen, A., 1991, Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics*, 30, 253-272.
- Carter, M. and Lynch, L., 2003, The consequences of FASB's 1998 proposal on accounting for stock option repricing, *Journal of Accounting and Economics*, 35, 51-72
- Coller, M., and Higgs, J., 1997, Firm valuation and accounting for employee stock options, *Financial Analysts Journal*, 53, 1, 26-35
- Core, J., Guay, W. and Kothari, S., 2002, The economic dilution of employee stock options: Diluted EPS for valuation and financial reporting, *Accounting Review*, 77, 627-652
- Daniel, N., Kale, J., and Naveen, L., 2003, Do Option Expensing Announcements Convey Information to the Stock Market, Working Paper, Georgia State University.
- Dechow, P., Hutton, A., and Sloan, R., 1996, Economic consequences of accounting for stock-based compensation. *Journal of Accounting Research* 34, Supplement, 1-20
- Deshmukh, S., Howe K., and Luft, C., 2003, Executive Stock Options: To Expense or Not? Working Paper, DePaul University.
- Dybvig, P., and Loewenstein, M., 2003, Employee Reload Options: Pricing, Hedging, and Optimal Exercise, *Review of Financial Studies* 16, (1), 145-171.
- Ericson, R. and Grund, M., 2002, Company Announcements to Expense Stock Options Don't Impact Share Performance, *Human Resource Paper*, Towers Perrin
- Espahbodi, H., Espahbodi, P., Rezaee, Z., and Tehranian, H., 2002, Stock price reaction and value relevance of recognition versus disclosure: the case of stock-based compensation, *Journal of Accounting and Economics*, 33, 3, 343-373

- Fama, E., Fisher, L., Jensen, M., and Roll, R., 1969, The Adjustment of Stock Prices to New Information, *International Economic Review*, 10, 1-21
- Ferri, F., Markarian, G., and Sandino, T., 2004, Stock Options Expensing: Evidence from Shareholder's Votes, Working Paper, New York University.
- Fields, T., Lys, T., and Vincent, L., 2001, Empirical research on accounting choice, *Journal of Accounting and Economics*, 31, 255-307
- Hirshleifer, D. and Teoh, S., 2002, Limited attention, information disclosure, and financial reporting, *Working paper*, Ohio State University
- Huson, M., Scott, T. and Wier, H., 2001, Earnings dilution and the explanatory power of earnings fro returns, *Accounting Review*, 76, 4, 589-612
- Kim, M., and Ritter, J., 1999, Valuing IPOs, *Journal of Financial Economics*, 53, 409-437
- Li, H., 2003, Employee Stock Options, Residual Income Valuation and Stock Price Reaction to SFAS footnote Disclosures, Working paper, University of Iowa.
- Miller, M. and Crystal, G., 2002, The Case for Expensing Stock Options Against Earnings, *Journal of Applied Corporate Finance*, 88-90
- Murphy, K., 2002, Explaining executive compensation: Managerial power vs. the perceived cost of stock options, *University of Chicago Law Review*, 69, 3, 847-869
- Rees, L., and Stott, D., 1998, The value-relevance of stock-based employee compensation disclosures, *Journal of Applied Business Research*, 17, 2, 105-117
- Sahlman, W., 2002, Expensing Options Solve Nothing, *Harvard Business Review*, 80, 90-96.
- Sarkar, S., and Wood, B., 2003, Employee Stock Options: To Expense or Not to Expense, Working paper, The University of Texas at Arlington.
- Seethamraju, C., and Zach, T., 2003, Expensing Stock Options: The Role of Publicity, Working paper, Washington University in St. Louis.
- Tirinnanzi, M., 2003, Expensing stock options, *Financial Accounting & reporting*, 23, 4, 66-69
- Watts, R., and Zimmerman, J., 1986, *Positive Accounting Theory*. (Prentice-Hall, Englewood Cliffs, NJ)
- Watts, R., and Zimmerman, J., 1990, Positive Accounting Theory: A Ten Year Perspective. *Accounting Review*, 65, 1, 131-156
- Yermack, D., 1997, Good timing: CEO stock option awards and company news announcements, *Journal of Finance*, 52, 2, 449-476

**Table 1. Companies in the Sample Who Announced the Expensing of Employee Stock Options and Their Announcement Dates**

A M B PROPERTY	July 8, 2002	GABELLI ASSET MANAGEMENT	July 26, 2002	PREDICTIVE SYSTEMS	September 19, 2002
A T & T	October 22, 2002	GENERAL ELECTRIC	July 31, 2002	PRICESMART	August 2, 2002
ALLSTATE	August 13, 2002	GENERAL MOTORS	August 6, 2002	PROCTER & GAMBLE	August 5, 2002
AMAZON.COM	July 23, 2002	GOLDCORP	October 23, 2002	PRUDENTIAL FINANCIAL.	August 13, 2002
AMERICAN EXPRESS	August 12, 2002	GOLDMAN SACHS GROUP	August 13, 2002	PULTE HOME	March 17, 2003
AIG	August 11, 2002	GREY GLOBAL GROUP	August 14, 2002	RAVEN INDUSTRIES	August 20, 2002
ARIBA	January 15, 2003	GUARANTY BANCSHARES	September 6, 2002	RAYMOND JAMES FINANCIAL	February 10, 2003
B R E PROPERTIES	October 14, 2002	HANDLEMAN	September 10, 2002	REALTY INCOME	July 25, 2002
BANK OF AMERICA	August 12, 2002	HARTFORD FINANCIAL SVCS	September 24, 2002	REINSURANCE GROUP OF AMERICA	January 30, 2003
BANK OF NEW YORK	August 13, 2002	HOME DEPOT	August 23, 2002	RENAISSANCERE HOLDINGS LTD	October 14, 2002
BANK ONE	July 16, 2002	INCO LTD	February 4, 2003	ROHM & HAAS	March 18, 2003
BAYCORP HOLDINGS LTD	August 14, 2002	IOMEGA	July 24, 2002	SAFECO	October 25, 2002
BLACK & DECKER	April 29, 2003	ISTAR FINANCIAL	July 24, 2002	SAKS	August 20, 2002
BLOCK H & R	September 11, 2002	J P MORGAN CHASE	August 2, 2002	SBC COMMUNICATIONS INC	January 28, 2003
CALPINE	August 27, 2002	JEFFERIES GROUP	July 16, 2002	SCHLOTZSKYS	August 14, 2002
CAMDEN NATIONAL	August 27, 2002	JOHNSON CONTROLS	October 9, 2002	SCOTTS COMPANY	July 24, 2002
CAMECO	May 8, 2003	KELLWOOD COMPANY	August 28, 2002	SERVICEMASTER	July 30, 2002
CANADA LIFE FINANCIAL	December 9, 2002	KEYCORP	October 17, 2002	SMITHFIELD FOODS	August 22, 2002
CBL & ASSOCIATES PROPERTIES	October 29, 2002	KEYSPAN	September 26, 2002	SOVEREIGN BANCORP	July 19, 2002
CELANESE A G	October 23, 2002	LEAR	October 18, 2002	SOUTHWEST WATER	March 31, 2003
CELLTECH GROUP PLC ADR	September 25, 2002	LEE ENTERPRISES	July 23, 2002	SPRINT	March 8, 2003
CENDANT	August 28, 2002	LEGGETT & PLATT	November 20, 2002	STANCORP FINANCIAL GROUP	January 30, 2003
CENTEX	September 12, 2002	LINCOLN ELECTRIC HOLDINGS	October 16, 2002	STATE STREET	August 13, 2002
CHARTER COMMUNICATIONS	August 6, 2002	LINCOLN NATIONAL	August 8, 2002	STEELCASE	September 23, 2002
CHOICE HOTELS INTERNATIONAL	September 25, 2002	LOWES COMPANIES	August 19, 2002	SUN LIFE FINANCIAL SERVICES	July 31, 2002
CHOICE ONE COMMUNICATIONS	November 21, 2002	LUMENIS LTD	March 28, 2003	SUNTRUST BANKS	August 13, 2002
CHUBB	August 13, 2002	LYONDELL CHEMICAL	September 14, 2002	T B WOODS	July 30, 2002
CINERGY	July 24, 2002	M & T BANK	September 19, 2002	TARGET	February 20, 2003
CITIGROUP	August 7, 2002	M B I A	January 16, 2003	TECHNITROL	October 21, 2002
COCA COLA	July 14, 2002	MARATHON OIL	August 6, 2002	TEMPLE INLAND	August 5, 2002
COMERICA	August 6, 2002	MAY DEPARTMENT STORES	August 16, 2002	TENET HEALTHCARE	March 18, 2003
COMMERCE BANCSHARES	February 3, 2003	MEADOWBROOK INSURANCE GRP	May 8, 2003	TRAVELERS PROPERTY CASUALTY	October 16, 2002
COMPUTER ASSOCIATES INTL	July 29, 2002	MELLON FINANCIAL	August 13, 2002	TUPPERWARE	August 6, 2002
COOPER INDUSTRIES	August 6, 2002	MERRILL LYNCH	August 1, 2002	UNITED PARCEL SERVICE	August 14, 2002
DORAL FINANCIAL	February 4, 2003	METLIFE	August 12, 2002	UNITRIN	April 10, 2003
DOW CHEMICAL	August 26, 2002	MOODYS	December 13, 2002	VALLEY NATIONAL BANCORP	July 17, 2002
DUKE REALTY	July 31, 2002	MORGAN STANLEY DEAN WITTER	August 13, 2002	VERIZON COMMUNICATIONS	December 5, 2002
DU PONT	November 5, 2002	NATIONAL CITY	October 29, 2002	VORNADO REALTY TRUST	July 8, 2002
EASTMAN KODAK	May 7, 2003	NEUBERGER BERMAN	July 24, 2002	WACHOVIA	August 13, 2002
EMERSON ELECTRIC	August 6, 2002	NEW JERSEY RES	October 30, 2002	WAL MART STORES	August 14, 2002
EVEREST RE GROUP LTD	October 21, 2002	ONEOK	February 21, 2003	WASHINGTON MUTUAL	January 29, 2003
F B L FINANCIAL GROUP	August 29, 2002	P P L	October 4, 2002	WASHINGTON POST	July 15, 2002
FIRST INDUSTRIAL REALTY TR	February 12, 2003	P S BUSINESS PARKS	September 9, 2002	WEBSTER FINANCIAL	July 24, 2002
FLEETBOSTON FINANCIAL	August 13, 2002	PACCAR	September 24, 2002	WEINGARTEN REALTY INVESTORS	April 30, 2003
FLEMING COMPANIES	August 8, 2002	PAPA JOHNS INTL	July 30, 2002	WORLD FUEL SERVICES	August 1, 2002
FLUOR	May 9, 2003	PLUM CREEK TIMBER	August 2, 2002	X L CAPITAL LTD	February 11, 2003
FORD MOTOR	July 17, 2002	POGO PRODUCING	August 9, 2002		

**Table 2**

**Frequency Distribution by Announcement Month of Sample Firms Expensing Options**

<b>Announcement Month</b>	<b>Number of Firms</b>	<b>Percentage of Firms</b>
July-02	26	18.57%
August-02	50	35.71%
September-02	14	10.00%
October-02	17	12.14%
November-02	3	2.14%
December-02	3	2.14%
January-03	6	4.29%
February-03	8	5.71%
March-03	6	4.29%
April-03	3	2.14%
May-03	4	2.86%
Total	140	100.00%

**Table 3**  
**Explanatory and Control Variables and Their Sources**

Variable Description	Acronym	Data source
<b>Agency cost variables</b>		
Short term bonuses as a fraction of total compensation for the top five managers	BONUS	Execucomp Database SEC Proxy statement & form 10-K
The ratio of equity compensation to total compensation for the top five managers	EQ	Execucomp Database SEC Proxy statement & form 10-K
<b>Contracting cost variables</b>		
Long-term debt to total assets	LEVE1	Research Insight
Long-term debt to the sum of long-term debt plus equity	LEVE2	Research Insight
<b>Option expense variables</b>		
Standard deviation of daily stock returns over one year prior to the announcement	VOLATILITY	CRSP
Implied option expense as a fraction of the market value of equity <sup>14</sup>	OPTF	Execucomp Database SEC Proxy statement & CRSP
<b>Political cost variable</b>		
Options granted to the CEO as a fraction of options granted to all employees	POPT	Execucomp Database SEC Proxy statement & form 10-K
<b>Financial reporting costs variables</b>		
Earnings per Share	EPS	SEC form 10-k
The ratio of Proforma EPS to Reported EPS	REPS	Execucomp Database SEC form 10-k
<b>Growth variable</b>		
Proxy for Tobin's q; The ratio of the market value of assets to the book value of assets. <sup>15</sup>	TQ	Market value of equity from CRSP Accounting data from Compustat
<b>Control Variables</b>		
Natural log of total assets	LASSET	Research Insight
Natural log of the market value of equity	LMR	Research Insight

<sup>14</sup>This is an estimate of the expense the firm would have to recognize if it were to expense stock options. The Execucomp database provides the value reported by the firm in its DEF 14 filing with the SEC. Firms calculate this figure using either the "Present" or the "5% Method." They are free to choose the method but usually apply it consistently from year to year (see Yermack 1998).

<sup>15</sup>More precisely,  $TQ = (\text{book value of assets} + \text{market value of equity} - \text{book value of equity}) / \text{book value of assets}$ .

**Table 4**  
**Stock Market Reaction to the Announcement of Expensing Options:**  
**Total Returns and Returns of Announcing Firms Compared to Matching Firms**

This table shows the mean returns of announcing firms, the mean returns of industry/size/performance matching firms, and their difference for a period ten trading days prior to the announcement to ten trading days afterward. For each announcing firm, the matching firm is a non-expensing firm that uses executive stock options, is in the same industry, and had comparable sales and EBITDA profit margin (EBITDA/sales) as the announcing firm in the year prior to the expensing announcement. The 140 announcing firms in the sample declared their intention to expense employee stock options between July 8, 2002 and May 9, 2003. T-statistics are computed using White's heteroskedasticity adjustment. P-values are from a percentile t bootstrap, which accounts for event clustering and event-induced volatility.

Relative Trading Day	Announcing Firms			Industry/size/performance Matching Firms			Announcing Firms Less Matching Firms		
	Mean Return (%/day)	t-statistic	bootstrap p-value	Mean Return (%/day)	t-statistic	bootstrap p-value	Mean Return (%/day)	t-statistic	bootstrap p-value
-10	-0.08	-0.77	0.445	0.03	0.29	0.773	-0.11	-1.06	0.283
-9	0.05	0.48	0.647	0.19	1.83	0.068	-0.14	-1.35	0.181
-8	0.15	1.45	0.148	0.08	0.77	0.446	0.07	0.68	0.504
-7	0.10	0.96	0.335	0.02	0.19	0.852	0.08	0.77	0.446
-6	-0.02	-0.19	0.852	-0.10	-0.96	0.334	0.08	0.77	0.445
-5	0.13	1.25	0.217	-0.04	-0.39	0.697	0.17	1.64	0.112
-4	0.14	1.35	0.183	-0.02	-0.19	0.853	0.16	1.54	0.124
-3	-0.08	-0.77	0.445	-0.10	-0.96	0.332	0.02	0.19	0.852
-2	0.16	1.54	0.123	-0.21	-2.03**	0.046	0.37	3.57***	0.0050
-1	0.39	3.76***	0.007	-0.25	-2.41**	0.024	0.64	6.17***	0.0005
0	0.61	5.88***	0.0007	-0.31	-2.99***	0.006	0.92	8.88***	0.0003
1	0.42	4.05***	0.003	-0.27	-2.60**	0.014	0.69	6.66***	0.0004
2	0.37	3.57***	0.005	-0.23	-2.22**	0.033	0.60	5.79***	0.0009
3	0.29	2.80***	0.010	-0.15	-1.45	0.148	0.44	4.24***	0.0035
4	0.14	1.35	0.184	-0.05	-0.48	0.648	0.19	1.83*	0.068
5	0.07	0.68	0.503	-0.01	-0.10	0.924	0.08	0.77	0.446
6	0.02	0.19	0.852	-0.03	-0.29	0.773	0.05	0.48	0.647
7	0.16	1.54	0.121	0.02	0.19	0.853	0.14	1.35	0.181
8	0.17	1.64	0.112	0.04	0.39	0.697	0.13	1.25	0.217
9	0.03	0.29	0.773	0.07	0.68	0.504	-0.04	-0.39	0.697
10	0.07	0.68	0.504	0.11	1.06	0.286	-0.04	-0.39	0.696

\*\*\*Signed-rank test statistic is significant at the 0.01 level

\*\*Signed-rank test statistic is significant at the 0.05 level

\*Signed-rank test statistic is significant at the 0.10 level

**Table 5**

**Stock Market Reaction to the Announcement of Expensing Options: Abnormal Returns**

This table reports the average abnormal returns of announcing firms, the average abnormal returns of industry/size/performance matching firms, and the difference in abnormal returns for a period ten trading days prior to the announcement to ten trading days afterward. Abnormal returns are computed from the market model fitted with daily data over a period from 271 days to 91 trading days prior to the announcement, using the CRSP value-weighted index as market proxy. For each announcing firm, the matching firm is a non-expensing firm that uses executive stock options, is in the same industry, and had comparable sales and EBITDA profit margin (EBITDA/sales) as the announcing firm in the year prior to the expensing announcement. The 140 announcing firms in the sample declared their intention to expense employee stock options between July 8, 2002 and May 9, 2003. T-statistics are computed using White's heteroskedasticity adjustment. P-values are from a percentile t bootstrap, which accounts for event clustering and event-induced volatility.

Relative Trading Day	Announcing Firms			Matching Firms			Announcing Firms Less Matching Firms		
	Average Abnormal Return (%/Day)	t statistic	p-value	Average Abnormal Return (%/Day)	t statistic	p-value	Average Abnormal Return (%/Day)	t statistic	p-value
-10	-0.03	-0.27	0.794	0.08	0.48	0.647	-0.11	-1.03	0.3005
-9	0.00	0.02	0.974	0.16	0.94	0.340	-0.15	-1.48	0.1286
-8	0.01	0.12	0.913	-0.01	-0.04	0.990	0.02	0.18	0.8668
-7	-0.03	-0.31	0.751	-0.16	-0.96	0.334	0.13	1.22	0.229
-6	-0.09	-0.86	0.359	-0.14	-0.87	0.359	0.06	0.53	0.6008
-5	-0.07	-0.72	0.493	-0.23	-1.42	0.165	0.16	1.55	0.1187
-4	0.11	1.06	0.295	-0.07	-0.42	0.673	0.18	1.73	0.1048
-3	-0.01	-0.09	0.935	-0.03	-0.16	0.880	0.02	0.16	0.8804
-2	0.14	1.36	0.194	-0.24	-1.43	0.162	0.38	3.65***	0.0048
-1	0.28	2.66**	0.015	-0.29	-2.21**	0.031	0.57	6.19***	0.0005
0	0.41	4.00***	0.0035	-0.49	-2.97***	0.006	0.91	8.75***	0.0003
1	0.20	2.15**	0.038	-0.51	-3.08***	0.006	0.71	7.39***	0.0004
2	0.19	2.06**	0.050	-0.36	-2.19**	0.035	0.55	5.36***	0.0018
3	0.25	2.46**	0.025	-0.20	-1.22	0.231	0.46	4.41***	0.0021
4	0.13	1.21	0.233	-0.07	-0.41	0.678	0.19	1.86*	0.0683
5	-0.07	-0.69	0.504	-0.15	-0.93	0.333	0.08	0.79	0.4348
6	-0.10	-0.99	0.325	-0.15	-0.93	0.332	0.05	0.50	0.6252
7	-0.12	-1.12	0.274	-0.29	-1.75*	0.100	0.17	1.68	0.1061
8	-0.09	-0.87	0.368	-0.14	-0.83	0.372	0.05	0.46	0.6568
9	-0.08	-0.80	0.394	-0.06	-0.36	0.723	-0.02	-0.22	0.8386
10	0.08	0.75	0.462	0.12	0.74	0.465	-0.05	-0.44	0.6624

\*\*\* Signed-rank test statistic is significant at the 0.01 level  
 \*\* Signed-rank test statistic is significant at the 0.05 level  
 \* Signed-rank test statistic is significant at the 0.10 level

**Table 6**

Regressions with Cumulative Announcement Window Returns (-2 to +3 days) as Dependent Variable

The sample includes 140 firms that announced their intention to expense employee stock options between July 8, 2002 and May 9, 2003. For each announcing firm in the sample, the non-expensing matching firm uses employee stock options, is in the same industry, and had comparable sales and profit margin (EBITDA/sales) as the announcing firms during the year prior to the announcement. Cumulative total and abnormal returns are measured from two days before to three days after the announcement. Abnormal returns are computed from the market model fitted with daily data over a period from 281 days to 90 days prior to the announcement, using the CRSP value-weighted index as market proxy. Independent variables are BONUS (Short term bonuses as a proportion of total compensation for the top five managers), EQ (The ratio of equity compensation to total compensation for the top five managers), LEVE1 (Long-term debt to total assets), LEVE2 (Long-term debt to the sum of long-term debt plus equity), VOLATILITY (the standard deviation of daily returns over one year prior to the announcement), OPTF (implied option expense as a fraction of the market value of equity), POPT (Options granted to the CEO as a fraction of options granted to all employees), EPS (earning per share), REPS (The ratio of pro-forma EPS to reported EPS), TQ (Tobin's q), LASSET (the natural log of total assets), and LMR (the natural log of the market value of equity). The t-statistic, below each coefficient, is computed using White's heteroskedasticity adjustment.

Independent Variables	Dependent Variable							
	Announcing Firm Returns (-2 to +3)		Matching Firm Returns (-2 to +3)		Announcing Firm Abnormal Returns (-2 to +3)		Matching Firm Abnormal Returns (-2 to +3)	
Intercept	-0.069	-0.097	0.040	0.043	-0.079	-0.116	0.030	0.054
	-0.777	-0.405	0.095	0.068	-0.950	-0.281	0.107	0.065
BONUS	0.055		0.122		0.071		0.081	
	2.357***		1.772*		2.072**		1.795*	
EQ		0.132		0.172		0.139		0.143
		2.161**		2.241**		2.478**		2.858***
LEVE1	0.119		0.028		0.160		0.018	
	0.448		1.314		0.416		0.980	
LEVE2		0.105		0.044		0.078		0.037
		0.862		0.927		1.110		0.894
VOLATILITY	2.452		1.067		2.451		0.951	
	2.644**		2.693**		2.163**		2.319**	
OPTF		0.005		0.003		0.006		0.004
		2.263**		2.439**		2.513**		2.003**
POPT	0.011	0.011	0.004	0.003	0.015	0.009	0.004	0.002
	0.389	0.253	1.423	1.337	0.338	0.195	0.988	0.987
EPS	-0.034		-0.053		-0.041		-0.040	
	-2.073**		-2.091**		-2.217**		-2.735**	
REPS		0.369		0.123		0.333		0.137
		2.01**		1.787*		1.833*		1.920*
TQ	3.518	4.777	3.338	4.342	3.432	3.269	4.121	3.412
	1.282	1.049	0.984	0.900	1.232	1.262	0.901	1.145
LMR	-0.059		-0.093		-0.060		-0.071	
	-1.784*		-1.645		-1.839		-2.207**	
LASSETS		-0.007		-0.141		-0.007		-0.128
		-0.368		-0.953		-0.299		-0.817
Adjusted R-Square	0.329	0.325	0.263	0.265	0.314	0.305	0.275	0.305

\*\*\* Significant at the 0.01 level  
 \*\* Significant at the 0.05 level  
 \* Significant at the 0.10 level

**Table 7**

**Measures of Operating Performances for Firms Announcing Their Intention to Expense Options and for Industry/size/performance Matching Firms One Year before and One Year after the Announcement Date**

Operating performance before and after the announcement is reported below for our sample of 140 firms that announced their intention to expense employee stock options between July 8, 2002 and May 9, 2003 and for a matching sample of non-expensing firms. For each announcing firm in the sample, the non-expensing matching firm uses employee stock options, is in the same industry, and had comparable sales and profit margin (EBITDA/sales) as the announcing firms during the year prior to the announcement. Operating income is EBITDA. Asset turnover is sales divided by total assets. Compustat annual data item numbers are sales (12), EBITDA (13), total assets (6), capital expenditures (128) acquisition (129), and total debt (9). Year -1 is one year before the announcement date and year 1 is one year after the announcement date, using the four full quarters before and afterward. The Z-statistic tests the equality of distributions for matched pairs of observations using the Wilcoxon matched-pairs signed-ranks test.

Portfolios	Yr -1	Yr 1
	Median Operating Income Divided by Assets	
Announcing Firm	26.41%	15.22%
Matching Firm	24.42%	20.46%
Announcing Firm-Matching Firm	1.99%	-5.24%
Z-statistic	0.41	-1.11
	Median Operating Income Divided by Sales	
Announcing Firm	11.76%	7.45%
Matching Firm	14.51%	13.17%
Announcing Firm-Matching Firm	-2.75%	-5.72%
Z-statistic	-0.32	0.75
	Median Sales Growth	
Announcing Firm	-	32.41%
Matching Firm	-	29.67%
Announcing Firm-Matching Firm	-	2.74%
Z-statistic		1.23
	Asset Turnover Ratio	
Announcing Firm	1.67	1.31
Matching Firm	1.64	1.35
Announcing Firm-Matching Firm	0.03	-0.04
Z-statistic	0.25	-0.37
	Capital Expenditure and Acquisition/EBITDA	
Announcing Firm	44.12%	80.16%
Matching Firm	43.07%	56.83%
Announcing Firm-Matching Firm	1.05%	23.33%
Z-statistic	0.29	2.13**

\*\*\* Signed-rank test statistic is significant at the 0.01 level

\*\*Signed-rank test statistic is significant at the 0.05 level

\*Signed-rank test statistic is significant at the 0.10 level

**Table 8**

**Change in Operating Performance and Cumulative Return During the Significant Announcement Window for Option Expense Announcing Firms and Industry/size/performance Matching Firms.**

The sample includes 140 firms that announced their intention to expense employee stock options between July 8, 2002 and May 9, 2003. For each announcing firm in the sample, we find a non-expensing matching firm that uses employee stock options, is in the same industry, and had comparable sales and profit margin (EBITDA/sales) as the announcing firms during the year prior to the announcement. Cumulative returns are measured from two days before to three days after the option-expensing announcement. T-statistics (below each coefficient) are computed using White’s heteroskedasticity adjustment. Operating performance is EBITDA, (income before interest, taxes, depreciation and extraordinary items), divided by end-of-year book assets in the year before the announcement (-1) and the year after the announcement (+1).

$$\ln \left[ \frac{\text{OperatingPerformance}_{+1}}{\text{OperatingPerformance}_{-1}} \right] = \alpha_0 + \alpha_1 [\text{Cumulative Return}(-2,+3)] + e_i$$

	Expensing Firms	Matching Firms	All Firms
$\alpha_0$	-0.18	-0.05	-0.11
	-0.53	-0.17	-0.28
$\alpha_1$	0.35	0.26	0.29
	1.12	1.01	1.07
Adjusted R-square	0.11%	0.06%	0.08%

\*\*\* Significant at the 0.01 level  
 \*\* Significant at the 0.05 level  
 \* Significant at the 0.10 level

**Figure 1. Cumulative Average Returns**  
**Option Expense Announcing and Matched Non-Announcing Firms**

