

# **The Role of Accounting in the Design of CEO Equity Compensation**

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## **Abstract**

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We examine the role of accounting in firms' equity compensation choices for CEOs. Studying ExecuComp firms in 1995-2001, we find that financial reporting concerns are positively associated with the use of options and negatively associated with the use of restricted stock. We also find that financial reporting concerns are positively associated with total CEO compensation. These results are consistent with the previously available favorable accounting treatment for stock options influencing firms' choices related to equity compensation. To corroborate our findings, we examine changes in CEO compensation in firms that begin to expense options in 2002 and 2003. We find that these firms reduce the use of options and increase the use of restricted stock after they start expensing options. We find, however, that these firms do not reduce overall CEO compensation. Results suggest that favorable accounting treatment for stock options led to a higher use of options and lower use of restricted stock than would have been the case absent accounting considerations. That we detect no decrease in total CEO compensation upon expensing options suggests that firms find it difficult to downsize hefty executive pay packages that may have resulted from the favorable accounting treatment for options. The results confirm that financial reporting costs play a role in determining CEO compensation.

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## 1. Introduction

In this paper, we examine the role of accounting in CEO equity compensation. We examine whether favorable accounting treatment for stock options that was available until very recently affected their use and the use of restricted stock. We further substantiate the role of accounting in equity compensation by examining whether firms that start expensing stock options shift CEOs' equity-based compensation away from options and into restricted stock.

Prior work models the choice of stock options and restricted stock (e.g., Lambert and Larcker, 2004; Oyer and Schaefer, 2005a; Hall and Murphy, 2002; Feltham and Wu, 2001). These models lead to different predictions about the preferable form of equity compensation based on the assumptions embedded in the models and type of analysis employed. However, despite the prediction of some models that restricted stock is preferred over stock options, empirical evidence suggests that it is rarely used in practice. Only approximately 20% of ExecuComp firms were granting restricted stock to their CEOs between 1995 and 2001, while approximately 80% of those firms were granting options during that period.

Hall and Murphy (2002) suggest that one missing, but important, parameter in existing models of the choice between stock options and restricted stock is the previously available favorable accounting treatment for options that might have influenced their use. Under the previous accounting for stock options, *SFAS 123: Accounting for stock-based compensation* (Financial Accounting Standards Board, 1995) allowed firms to account for stock options using either the fair-value based method or the intrinsic value method prescribed by APB 25. Firms that used the intrinsic value method generally did not record compensation expense for options but were required to disclose the amount of expense that would have been recorded if they had been using the fair value method of accounting for options.<sup>1, 2</sup> Few firms expensed options under

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<sup>1</sup> Under the intrinsic value method, firms could escape recording an expense associated with options if they granted a fixed number of options with a fixed exercise price set at or above the market price of the underlying stock on the grant date.

SFAS 123, consistent with their being concerned that doing so would affect share prices. Indeed, Oyer and Schaefer (2005b) report that the median firm may have been willing to incur real costs of up to between \$0.50 and \$1 to issue options and save \$1 in compensation expense.

However, prior literature is inconclusive on whether the favorable accounting for stock options motivated their use. Dechow, Hutton, and Sloan (1996) find no systematic evidence that opposition in response to FASB's 1993 Exposure Draft proposing the expensing of stock options resulted from concerns about the effect on earnings of recording the expense. Likewise, Aboody, Barth, and Kasznik (2004a) find that firms voluntarily recognizing stock-based compensation expense under SFAS 123 have significantly lower SFAS 123 expense than other firms, but they find no significant relation between the decision to recognize an expense and the magnitude of that expense after controlling for other factors. Core and Guay (1999) and Matsunaga (1995) detect some evidence of a relation between financial reporting costs and the use of options, but Yermack (1995) and Bryan, Hwang, and Lilien (2000) find no reliable relation. Other work in more specific settings suggests that firms may be motivated by accounting considerations to alter the terms of stock option contracts (e.g., Carter and Lynch, 2003, 2004). This mixed evidence has led to a call for research directly examining the effect that accounting standards have on the use of stock options (Core, Guay, and Larcker, 2003); specifically, they indicate that "It is important for future research to examine the role of accounting in motivating firms to either increase or decrease their use of stock options.....the role of financial accounting for employee stock options is of considerable importance to firms, but is not well understood by economists."

The infrequent use of restricted stock despite some theoretical predictions to the contrary, the lack of consensus in the literature and resulting call for research on whether accounting

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<sup>2</sup> On March 31, 2004, the Financial Accounting Standards Board (FASB) issued an exposure draft that outlined the new accounting for stock options. For fiscal years beginning after June 15, 2005, firms are required to account for options using the fair-value based method as defined in SFAS 123(R) (Financial Accounting Standards Board, 2004).

influences the use of options, and the new accounting for options under SFAS 123(R) all make it important to ascertain the role that accounting carries in executive compensation plan design.

Using a sample of ExecuComp firms and data from 1995 to 2001, we provide evidence that financial reporting concerns affect firms' choices regarding equity compensation in CEO pay packages. We find that our proxy for financial reporting concerns, which is more comprehensive than those of prior studies, is positively related to the use of stock options and negatively related to the use of restricted stock during a period when very few firms were expensing stock options. This result suggests that the favorable accounting treatment for stock options available under the old regime has influenced equity compensation. In addition, we find that our proxy for financial reporting concerns is positively related to total compensation, suggesting that the once favorable accounting treatment for stock options may have led to higher overall CEO pay.

We corroborate our findings above by examining changes in CEO compensation in firms upon their decision to expense options. This setting allows us to examine the role of accounting without having to rely on a proxy for those financial reporting concerns. A decrease in the use of options upon expensing them would be consistent with the favorable accounting treatment having encouraged their use. Further, it could help explain the puzzling empirical observations regarding the infrequent use of restricted stock during times of favorable accounting treatment for options, and would support the assertion that accounting affects the design of executive compensation. Using a sample of ExecuComp firms that begin to expense stock options in 2002 and 2003, we find that firms that expense options decrease the use of options in CEO compensation concurrent with the decision to expense them. In addition, we find that they award more compensation in restricted stock relative to what they had granted in prior years. The declining use of stock options and the shift into restricted stock following these firms' decisions to expense options is consistent with the favorable accounting treatment in a pre-expensing regime having led to an overweighting of options and an underweighting of restricted stock in executive pay packages. We detect no decrease in total compensation upon expensing. In combination with the positive

association between financial reporting concerns and total CEO compensation in the pre-expensing period, this result suggests that firms find it difficult to downsize the large executive pay packages that may have resulted from the favorable accounting treatment for stock options.

In response to the call for research into the impact of accounting in stock option use, our results suggest that the method of accounting for options *has* affected decisions regarding their use. We find that firms that are more concerned about the earnings they report used more stock options in their equity compensation due to the favorable accounting treatment for options, and that once firms start expensing stock options, they shift into restricted stock. Our analysis provides insight into what changes are likely to occur in CEO equity compensation now that the FASB has made stock option expensing mandatory: while we may not see an overall decrease in CEO compensation, we anticipate a decline in stock option use and an increase in the use of restricted stock. Our results also help to reconcile the theoretical predictions regarding the use of restricted stock with the empirical observation that restricted stock is infrequently used. Consistent with Hall and Murphy (2002), our results suggest that the accounting considerations an important factor to include when modeling firms' choice of equity compensation method.

Section 2 discusses related literature. Section 3 presents the hypotheses. Section 4 examines the relation between financial reporting costs and the use of stock options before many firms began to expense stock options. Section 5 examines changes in CEO compensation upon firms expensing options. Finally, Section 6 concludes.

## **2. Background and prior literature**

### Research related to the choice of equity compensation method

Prior research models the choice of stock options and restricted stock (e.g., Lambert and Larcker, 2004; Oyer and Schaefer, 2005a; Hall and Murphy, 2002; Feltham and Wu, 2001). These models lead to different predictions about the preferable form of equity compensation based on the assumptions embedded in the models and type of analysis employed. Specifically,

Oyer and Schaefer show that options work better than restricted stock in attracting employees that are optimistic about the outlook of the company (since optimistic employees value the options more highly than the restricted stock), and in retaining employees (since the value of the options vary more with the labor market conditions than restricted stock). They also argue that the risk aversion of the employee plays a role in compensation design. The higher the risk aversion of the employee, the larger the discount in the value of options, hence the greater the “risk cost”. Consistent with this, Lambert and Larcker (2004) show that stock options generally dominate restricted stock in the optimal compensation contract. The advantage of stock options (equity with a non-zero exercise price) is that the principal has to “give away” less of the firm to the agent, thereby decreasing the compensation cost. However, they find that for employees with high risk aversion and in high volatility firms, the optimal compensation contract includes restricted stock as the only equity component. Hall and Murphy (2002) find that restricted stock is preferred when it is substituted for cash, and at-the-money options maximize incentives when they are granted in addition to existing pay packages. Feltham and Wu (2001) show that restricted stock is optimal when the agent can influence only the mean of the outcome, and options are optimal when the agent can influence both the mean and the variance of the outcome.

Despite some of the predictions above that restricted stock is the preferred form of equity compensation under certain conditions, empirical evidence suggests that it is rarely used in practice. This is potentially due to two reasons. First, it is possible that the conditions under which restricted stock becomes the preferred method of equity compensation are rarely met. Alternatively, these models may be ignoring another factor that supports the dominance of stock options over restricted stock. Hall and Murphy (2002) suggest that one such missing, but important, factor in existing models of the choice between stock options and restricted stock is the then favorable accounting treatment for stock options that might have influenced their use. The accounting for stock options was substantially different than that for restricted stock. Firms granting restricted stock are required to record an expense associated with the restricted stock

granted.<sup>3</sup> However, prior to SFAS 123(R), firms that granted stock options were not required to record an expense if they granted a fixed number of stock options with a fixed exercise price equal to or greater than the market price on the grant date. In fact, Botosan and Plumlee (2001) report that for their sample of Fortune's September 1999 listing of 100 fastest-growing companies, recognizing stock option expense would have decreased the EPS by 14% and the ROA by 13.6%; in other words, if firms recorded an expense for options, it would be substantial.

Many studies have examined the use of stock options in compensation contracts for CEOs, executives, and non-executive employees (e.g., Core and Guay, 2001; Ryan and Wiggins, 2001; Bryan et al., 2000; Core and Guay, 1999; Kole, 1997; Yermack, 1995; Gaver and Gaver, 1993; Smith and Watts, 1992). In general, there is mixed evidence on the role of accounting in firms' use of stock options. Unlike stock options, prior research related to the use of restricted stock is limited, perhaps because of the low proportion of firms that incorporate restricted stock into the compensation plan. Kole (1997) and Gaver and Gaver (1993) examine the presence of plans to authorize the issuance of restricted stock, but are unable to examine actual grants of restricted stock due to data availability constraints during the time period they examine.<sup>4</sup> Bryan et al. (2000) and Ryan and Wiggins (2001) examine actual restricted stock grants to CEOs during 1992-1997 and 1997, respectively. Ryan and Wiggins (2001) examine the use of cash bonuses, stock options, and restricted stock, but do not consider the impact of financial reporting costs on compensation plan design. Bryan et al. (2000) examine various determinants of equity grants but find no evidence that financial reporting costs are related to either options or restricted stock.

#### Research related to the impact of accounting on equity compensation

Prior literature provides inconclusive evidence on whether the accounting for stock options motivates their use. Dechow, Hutton, and Sloan (1996) find that opposition in response

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<sup>3</sup> The expense is equal to the value of the shares granted, amortized over the vesting period of the shares.

<sup>4</sup> Kole (1997) examines compensation plans in 1980; Gaver and Gaver (1993) examine compensation plans in 1985. Both studies examined time periods prior to the required disclosure of restricted stock grants.

to FASB's 1993 Exposure Draft proposing the expensing of stock options resulted from concerns about reporting higher levels of executive compensation, but find no systematic evidence that the opposition resulted from concerns about the effect on earnings of recording the expense. Aboody, Barth, and Kasznik (2004a) examine firms' decisions to voluntarily recognize stock-based compensation expense under SFAS 123 and find that they are related to the extent of participation in the capital markets, the private incentives of executives and the board of directors, the level of information asymmetry, and political costs. Despite finding that firms voluntarily recognizing an expense have significantly lower SFAS 123 expense than other firms, they find no significant relation between the decision to recognize an expense and the magnitude of that expense after controlling for other factors. They do find significant positive announcement returns for firms announcing their decision earlier, consistent with the announcement serving as a signal about reporting transparency and favorable future prospects.

Core and Guay (1999) find their proxy for financial reporting costs positively related to the use of options for CEOs. Matsunaga (1995) finds some evidence of a weak relation between the use of options and financial reporting costs, although he points out that inconsistencies in his results across methods of estimation and time suggest the need for additional research. Kimbrough and Louis (2004) find that firms alter the proportion of compensation from options to meet certain earnings benchmarks, particularly when they expect to issue shares the following year. Other literature related to options suggests that firms may be motivated by accounting considerations to alter the terms of option contracts (see, e.g., Carter and Lynch, 2003, 2004). However, Yermack (1995) and Bryan, Hwang, and Lilien (2000) do not find a reliable relation between options and financial reporting costs. This mixed evidence has led to a call for research on the effect that accounting standards have on the use of stock options (Core et al., 2003).

Based on the results of prior work, the role that accounting plays in equity compensation is still an open debate. The lack of consensus in prior literature on whether the accounting for stock options promoted their use might be due to the proxies for financial reporting concerns used

in these studies. Most proxies either (1) focus on potential debt covenant violations as the financial reporting costs of concern, or (2) focus on the extent to which earnings do or do not meet prior year earnings as an earnings target.<sup>5</sup>

We develop a more comprehensive measure of firms' concerns about the effect of an expense on earnings that incorporates multiple reasons why a company could incur financial reporting costs due to expensing stock options. Our proxy captures all of these measures used in prior research. In addition, our proxy recognizes there exists some stability in compensation over time – empirically, firms typically do not experience wide swings in compensation from year to year. Most of these prior studies mentioned above assume firms adjust compensation packages substantially each year in response to the need to meet that year's earnings targets. Our proxy requires only that firms that are concerned about earnings patterns in general tend towards the form of compensation that least likely lowers earnings in any given year.

In addition to using a more comprehensive proxy than in prior work, we further substantiate our conclusions by using the natural setting provided by firms' recent decisions to begin expensing options. This setting allows us to investigate the impact of accounting on equity compensation but eliminates the need to rely solely on a proxy for financial reporting concerns.

### **3. Hypothesis development**

The role that accounting plays in equity compensation is still an open debate. Some would argue that firms' decisions to use stock options are not impacted by the favorable accounting treatment for options. In other words, firms provide details regarding their options

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<sup>5</sup> Yermack (1995) uses interest coverage as a proxy for financial reporting costs, since firms with low interest coverage may be closer to violating debt covenants. Matsunaga (1995) uses a measure of (1) the extent to which “as if stock options were expensed” income is below a target level (a random walk with drift), because the firm enters into agreements that are either implicitly or explicitly based on reported income, and (2) the extent to which the firm uses income increasing accounting methods. Bryan et al. (2000) use several measures similar to the first measure in Matsunaga (1995) and an interest coverage measure. Core and Guay (1999) use, as a proxy for financial reporting costs, whether retained earnings limit the firm's ability to pay dividends and repurchase stock. Specifically, they call a firm constrained if  $[(\text{year-end retained earnings} + \text{cash dividends and stock repurchases during the year}) / \text{prior year's cash dividends and stock repurchases}]$  is less than two.

use in the financial statement footnotes (SFAS 123), and financial statement users may be able to incorporate those details into their assessment of the firm (e.g., Aboody, Barth, and Kasznik, 2004b). If so, then we expect no association between perceived financial reporting costs from recognizing compensation expense and the design of CEO equity compensation prior to firms expensing options. In addition, we expect no change in CEO equity compensation design upon the decision to expense options. On the other hand, financial statement users may be unable to incorporate footnote details into their assessment of the firm, perhaps because they are fixated on reported accounting earnings (Hand, 1990) or because it is costly to adjust contracts for details in the footnotes (see, e.g., Espahbodi, Espahbodi, Rezaee, and Tehranian, 2002). If managers believe that this is the case, then we expect firms that perceive higher financial costs to reporting compensation expense to rely more on options prior to expensing them. Further, we expect a decrease in the use of options upon the decision to expense them if another form of equity compensation would have otherwise been preferable.

Theory provides mixed predictions on the role of restricted stock in equity compensation depending on the assumptions in the underlying models. Despite restricted stock being optimal in certain settings, empirically we see little use of restricted stock in executive equity compensation. It is possible that restricted stock is optimal, but as suggested by Hall and Murphy (2002), accounting considerations not modeled actually overshadowed their use. If the use of restricted stock was limited because of differences in the accounting for options and restricted stock under SFAS 123, we expect firms that perceived higher financial costs to reporting compensation expense to have relied less on restricted stock as a form of equity compensation for CEOs. In addition, we expect an increase in the use of restricted stock upon the decision to expense options.

Finally, some have alleged that an increased use of stock options in response to favorable accounting treatment led to higher overall levels of executive compensation (see, e.g., Anderson, Cavanagh, Hartman, Klinger, and Sklar, 2002). If so, we expect a positive association between perceived financial reporting costs and total CEO compensation. In addition, a decrease in total

compensation upon firms' expensing options would suggest that the favorable accounting treatment for options resulted in higher levels of compensation. Alternatively, no decrease in total compensation upon firms' expensing options may also be consistent with such allegations. If the favorable accounting led to an increase in executive compensation in a pre-expensing regime but firms find it difficult to decrease hefty executive pay levels after, they may substitute other forms of compensation for options rather than decreasing the overall level of compensation.

#### **4. The relation between financial reporting concerns and equity compensation prior to expensing options**

In this section, we examine whether financial reporting concerns are associated with the equity compensation in 1995 to 2001, before a large number of firms began expensing stock options. Specifically, we are interested in the extent to which the favorable accounting treatment for stock options may have (1) motivated the use of options, (2) deterred the use of restricted stock, and (3) led to higher overall executive compensation. We estimate separate regressions of stock options, restricted stock, and total compensation on proxies for firms' financial reporting concerns and control variables that have been documented to explain compensation design.

##### 4.1 Proxies for financial reporting concerns

Our proxies for financial reporting concerns expand on variables used in prior research by encompassing several capital markets effects of earnings characteristics documented in the literature. First, the literature has identified circumstances under which particular earnings patterns or characteristics have positive effects on stock price (or negative effects when those patterns or characteristics no longer exist). Two important circumstances are (1) the need to maintain increasing earnings patterns (Barth, Elliot, and Finn, 1999; Burgstahler and Dichev, 1997; Degeorge, Patel, and Zeckhauser, 1999) and (2) pressure to meet analyst expectations (Burgstahler and Eames, 1999; Degeorge et al., 1999; Abarbanell and Lehavy, 2003; Bartov,

Givoly, and Hayn, 2002). In these circumstances, managers may act as if meeting these characteristics will prevent negative capital markets effects.

In addition, the literature has identified capital-raising and contracting circumstances that may focus managers' attention on maintaining higher levels of earnings. Indeed, Espahbodi et al. (2002) find that the need for additional capital and the possibility of debt covenant violations are related to concerns about expensing of stock options during the SFAS 123 debate. Accordingly, we consider three additional circumstances that may lead to concerns about reported earnings: (1) the need to meet debt covenants (Dichev and Skinner, 2002; Watts and Zimmerman, 1986, 1990; Sweeney, 1994; DeFond and Jambalvo, 1994), (2) the need to access the equity markets (Teoh and Wong, 1998; Teoh, Welch, and Wong, 1998; Richardson, Teoh, and Wysocki, 2004), and (3) the need to issue debt (Anthony, Bettinghaus, and Farber, 2004).

Since the use of stock options did not require the recording of compensation expense in our sample period, firms concerned about these capital markets effects of lower earnings discussed above may be more likely to use options in executive compensation. That is, lower earnings may make it more difficult for firms to continue a pattern of earnings increases, to meet analyst expectations, to meet debt covenants, or to access the equity or debt markets. As a result, we expect firms with pressure to fulfill these expectations to be more likely to use stock options.

Based on prior literature discussed above, our proxies for concerns about financial reporting costs of compensation are (1) the proportion of quarters (of all quarters that the firm appears on IBES) that the firm's EPS increased over the prior year same quarter (EPS\_INCR), (2) the proportion of quarters (of all quarters that the firm appears on IBES) that the firm beat analysts' EPS forecasts (BEAT\_FCST), (3) the firm's ratio of debt to assets (LEVERAGE),<sup>6</sup> (4) extent to which the firm accesses the equity markets in the upcoming year (ISSUE\_EQ),<sup>7</sup> and (5)

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<sup>6</sup> We calculate this as  $[(\text{Compustat Item 34} + \text{Compustat Item 9}) / \text{Compustat Item 6}]$  in year  $t-1$ .

<sup>7</sup> We calculate this as  $[(\text{the increase from year } t \text{ to year } t+1 \text{ in Compustat Item 85} + \text{Compustat Item 210} + \text{Compustat Item 130} - \text{Compustat Item 88}) / \text{Compustat Item 6}]$ . If this calculation results in a negative number, we replace the value with 0.

extent to which the firm accesses the debt markets in the upcoming year (ISSUE\_DEBT).<sup>8,9</sup> We obtain financial statement data from Compustat and analyst forecasts from IBES.

Since each proxy measures a firm's overall concern about financial reporting costs with error and because we are interested in a firm's general concern about financial reporting costs rather than in any one particular source of that concern, we aggregate these five characteristics using principal components analysis. This helps reduce the measurement error inherent in each individual component and allows us to incorporate multiple measures in a comprehensive yet parsimonious way. The analysis results in two factors with eigenvalues greater than one, and for each factor we equally weight standardized factors that load with a value of greater than 0.45.<sup>10</sup> Our two factors are: (1) FINRPT\_1, based on EPS\_INCR, BEAT\_FCST, and LEVERAGE, which captures financial reporting concerns associated with participating in the capital markets, and (2) FINRPT\_2, based on ISSUE\_EQ and ISSUE\_DEBT, which captures financial reporting concerns associated with plans to access the capital markets.<sup>11</sup> If the favorable accounting treatment for options increased the use of options, deterred the use of restricted stock, and increased overall executive compensation, we expect a positive (negative) relation between these variables and stock options and total compensation (restricted stock).

We validate our proxies for a firm's overall financial reporting concerns using an out-of-sample analysis of firms that have taken actions that demonstrate a concern about financial

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<sup>8</sup> We calculate this as [(the increase from year t to year t+1 in Compustat Item 34 + Compustat Item 9) / Compustat Item 6]. If this calculation results in a negative number, we replace the value with 0.

<sup>9</sup> We use the balance sheet information from Compustat to proxy for equity and debt issuances. Even though the statement of cash flows would have given a more direct measure of equity and debt issuance, using the statement of cash flows would result in losing a significant portion of our sample of firms, as many are missing this data. The correlation between ISSUE\_EQ (ISSUE\_DEBT) using the balance sheet information and ISSUE\_EQ (ISSUE\_DEBT) using statement of cash flow information for firms for which we have both balance sheet and statement of cash flow data is 0.66 (0.76).

<sup>10</sup> Interestingly, LEVERAGE has a negative loading. This is not consistent with these firms being concerned about violating debt covenants. Rather, it is consistent with these firms relying heavily on equity financing and thus being concerned about meeting the expectations of the equity markets. Because LEVERAGE loads negatively, we convert that variable to the proportion of assets that are equity financed.

<sup>11</sup> For the first factor, the loadings for EPS\_INCR, BEAT\_FCST, and LEVERAGE are 0.80, 0.81, and 0.51, respectively. For the second factor, the loadings for ISSUE\_EQ and ISSUE\_DEBT are 0.79 and 0.81, respectively.

reporting costs. Since under SFAS 123(R) option expensing is required only for unvested options over the vesting period, firms can accelerated the vesting of unvested options and avoid an expense under the new standard. Thus, we examine whether FINRPT\_1 and FINRPT\_2 are greater for firms that have accelerated the vesting of unvested options, as these firms appear to have done so for the purposes of avoiding an expense under SFAS 123(R).<sup>12</sup> Using a list of companies accelerating vesting from Bear Stearns Equity Research dated January 6, 2006 (McConnell, Pegg, Senyck, Mott, and Calingasan, 2006), we obtain a sample of firms that accelerated the vesting of options. We calculate FINRPT\_1 and FINRPT\_2 for 2003 (latest possible data) for 2,192 firms on Compustat, of which 389 accelerated the vesting of options. The mean (median) of FINRPT\_1 is significantly greater for those firms accelerating vesting than those firms who are not at  $p=0.00$  ( $p=0.00$ ). The mean (median) of FINRPT\_2 is greater for firms accelerating vesting than those firms who are not, though the differences are not significant ( $p=0.14$  and  $p=0.75$ ). Since firms began accelerating in 2004 and we measure future access to capital markets (FINRPT\_2) in 2003, the lack of significance may result from our inability to measure this variable in 2005. Overall, this analysis provides some support that FINRPT\_1 and FINRPT\_2 are capturing firms' overall concerns about financial reporting costs.

#### 4.2 Sample

Our sample consists of 6,242 CEO-year observations from ExecuComp for 1995 through 2001.<sup>13</sup> Table 1 presents descriptive statistics for the sample. Table 1 Panel A describes our sample selection. Out of 11,693 CEO-year observations with compensation data over the 1995-2001 period, 3,460 are missing data to measure our financial reporting cost variable, and an additional 1,191 observations are missing data for the control variables.

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<sup>12</sup> Choudary, Rajgopal, and Venkatachalam (2006) document that some firms accelerate vesting of employee stock options in anticipation of SFAS 123(R).

<sup>13</sup> This time period allows us to examine the relation between financial reporting costs and stock options after SFAS 123 was issued and before a large number of firms began expensing stock options.

We obtain compensation data from ExecuComp. We obtain compensation from stock options (ExecuComp variable BLK\_VALUE), compensation from restricted stock (ExecuComp variable RSTKGRNT), and total compensation (ExecuComp variable TDC1) for all executives identified by ExecuComp as the CEO.<sup>14</sup> Financial statement data are obtained from Compustat.

The use of stock options increased steadily throughout the sample period (Table 1 Panel B). Specifically, the percent of sample firms granting options to CEOs increased from 76.5% in 1995 to 82.3% in 2001. Firms in the sample used very little restricted stock compared with options. However, the use of restricted stock to compensate CEOs increased steadily throughout the study period, from 18.0% of firms in 1995 to 21.6% of firms in 2001 (Table 1 Panel B). Panel C of Table 1 shows that the average firm in our sample awards \$3.1 million and \$0.4 million in options and restricted stock, respectively.

#### 4.3 Multivariate analysis

We estimate the following regression using pooled data for 1995 to 2001:<sup>15</sup>

$$\begin{aligned} \text{DEP\_VBL}_{jt} = & \alpha_0 + \alpha_1 \text{FINRPT\_1}_{jt} + \alpha_2 \text{FINRPT\_2}_{jt} + \alpha_3 \text{DEV\_INC}_{jt} + \alpha_4 \text{CASH\_CONSTR}_{jt} \\ & + \alpha_5 \text{DIV\_YLD}_{jt} + \alpha_6 \text{EARN\_VOL}_{jt} + \alpha_7 \text{EQ\_CONSTR}_{jt} + \alpha_8 \text{TENURE}_{jt} \\ & + \alpha_9 \text{LNASSET}_{jt} + \alpha_{10} \text{BOOK\_MKT}_{jt} + \alpha_{11} \text{RET}_{jt} + \alpha_{12} \ln\_pre\_DEP\_VBL_{jt} + \varepsilon_{jt} \quad (1) \end{aligned}$$

where:

Dependent variables:

$\ln\_OPT_{jt}$  = natural log of value of stock options granted to CEO of firm j in year t  
 $\ln\_RSTK_{jt}$  = natural log of value of restricted stock granted to CEO of firm j in year t  
 $\ln\_TC_{jt}$  = natural log of total compensation to CEO of firm j in year t

<sup>14</sup> We eliminate part-year executives because compensation in those years for those executives may not be representative of annual compensation. For example, new executives frequently get hire-on equity grants (Doubleday and Fujii, 2001).

<sup>15</sup> To mitigate the influence of outlying observations, we winsorize values DEV\_INC, CASH\_CONSTR, DIV\_YLD, EARN\_VOL, EQ\_CONSTR, TENURE, BOOK\_MKT, and RET that are below (above) the 1% (99%) percentile. Because of censoring in the equity grant data, we estimate equation (1) using Tobit when ln\_OPT and ln\_RSTK are the dependent variables.

Independent variables:

|                           |   |
|---------------------------|---|
| FINRPT_1 <sub>jt</sub>    | = factor created from principal component analysis equally weighting standardized values of EPS_INCR, BEAT_FCST, and LEVERAGE for firm j in year t  |
| FINRPT_2 <sub>jt</sub>    | = factor created from principal component analysis equally weighting standardized values of ISSUE_EQ and ISSUE_DEBT for firm in year t  |
| DEV_INC <sub>jt</sub>     | = ln (actual incentive level / predicted incentive level) for year t-1, where actual incentive level is the delta of the equity portfolio and predicted incentive level is estimated from a model based on Core and Guay (1999) for the CEO of firm j |
| CASH_CONSTR <sub>jt</sub> | = the three-year average over t-3 to t-1 of [(Common and preferred dividends – cash flow from investing – cash flow from operations) / total assets] for firm j   |
| DIV_YLD <sub>jt</sub>     | = three-year average over t-3 to t-1 of [dividends per share / price per share at the end of the fiscal year] for firm j  |
| EARN_VOL <sub>jt</sub>    | = square of the standard deviation of ROA, where the standard deviation of ROA is calculated over 10 years prior to year t for firm j   |
| EQ_CONSTR <sub>j</sub>    | = (executive options outstanding at the end of the fiscal year t-1 / the three-year average over t-3 to t-1 of percent of total options granted to executives) / total shares outstanding for firm j  |
| TENURE <sub>jt</sub>      | = the number of years the CEO has been in that position (if missing, the number of years at the firm) for firm j as of the end of year t  |
| LNASSET <sub>jt</sub>     | = natural log of total assets for firm j at the end of year t   |
| BOOK_MKT <sub>jt</sub>    | = book value of equity / market value of equity at the end of year t for firm j   |
| RET <sub>jt</sub>         | = cumulative 12-month returns for year t for firm j   |
| ln_pre_OPT <sub>jt</sub>  | = natural log of value of stock options granted to CEO of firm j in year t-1  |
| ln_pre_RSTK <sub>jt</sub> | = natural log of value of restricted stock granted to CEO of firm j in year t-1   |
| ln_pre_TC <sub>jt</sub>   | = natural log of total compensation to CEO of firm j in year t-1  |

To test our hypotheses, we examine the sign and significance of the coefficients on FINRPT\_1 and FINRPT\_2.

### Control variables

We include control variables that are expected to influence CEO compensation.

*Deviation from predicted equity incentive levels (DEV\_INC).* Because firms grant equity to align the interests of executives with those of shareholders, changes in the CEO's equity portfolio from selling shares would change the incentive alignment and may require the firm to grant equity to adjust the overall level of equity incentives. We use the proxy developed in Core and Guay (1999) to control for equity grants that may result from the firm's need to adjust equity

incentives. If the incentives inherent in an executive's equity portfolio are above (below) the predicted incentive level, a lower (greater) use of equity grants is expected. Accordingly, we expect a negative relation between the deviation from this predicted equity incentive level and compensation from restricted stock and stock options.

We measure the deviation of the CEO's equity incentive levels from its predicted level (DEV\_INC) as  $\ln(\text{actual incentive level}/\text{predicted incentive level})$  following the procedure in Core and Guay (1999).<sup>16</sup> That is, the actual incentive level is measured as the natural log of the delta of the CEO's equity portfolio. The predicted level is determined from estimating a model of the level of equity incentives as a function of firm size, firm risk, growth opportunities, length of CEO employment, and free cash flow, including industry and yearly indicator variables.

*Cash constraints* (CASH\_CONSTR). The use of restricted stock or stock options as compensation requires no cash outlay. Firms experiencing a shortage of cash may use equity as a substitute for cash compensation (Yermack, 1995; Dechow et al., 1996). Accordingly, we expect a positive relation between cash shortfall and both restricted stock and stock options. Consistent with Core and Guay (1999), we measure cash constraints (CASH\_CONSTR) as the three-year average of  $[(\text{Common and preferred dividends} - \text{cash flow from investing} - \text{cash flow from operations}) / \text{total assets}]$  so that a larger number represents a greater cash shortfall.

*Dividend Yield* (DIV\_YLD). Stock options typically are not dividend protected (dividends do not accrue to the option holder) making options less valuable to the executive. Firms that pay high dividends may be less likely to use options as a form of compensation. Accordingly, we expect a negative relation between dividend yield and the use of stock options.

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<sup>16</sup> We do make a few modifications worth mentioning. First, our measure of the risk-free rate is from ExecuComp, and we make no attempt to match that measure against the maturity of the options. Second, in eliminating new option grants from executive equity portfolios, we first take those out of unexercisable options. If that results in a negative number, we take all new option grants out of exercisable options. Despite these simplifying modifications, we are able to replicate the results in Core and Guay (1999) using their sample and time period.

Our proxy is the average dividend yield over the three-year period ending the fiscal year prior to the year of interest, where dividend yield (ExecuComp variable DIVYIELD) is measured as dividends per share / price per share at the end of the fiscal year. We use a three-year average because it likely better captures future expectations than using than just one (the prior) year data.

*Volatility (EARN\_VOL).* Higher volatility firms may be more likely to grant restricted stock because restricted stock offers the holder some protection on the downside. Alternatively, higher volatility firms may be less likely to grant restricted stock because the likelihood of stock options being in the money is greater with higher volatility firms. Accordingly, we make no prediction regarding the difference in the relation between volatility and stock options and the relation between volatility and restricted stock.

We measure volatility as the variance of return on assets (ROA), where the variance of ROA is calculated over 10 years prior to the year of interest using data from Compustat.

*Proximity to constraints on issuing equity (EQ\_CONSTR).* Firms that are close to their constraint on issuing equity may be more likely to offer cash compensation than equity compensation. Accordingly, we expect a negative relation between proximity to constraints on issuing equity and the use of stock options and restricted stock.

Ideally, we would measure the proximity to constraints on issuing equity as the ratio of issued to authorized shares. However, that information is not available in electronic form. Thus, we measure proximity to constraints on issuing equity as an estimate of the total options outstanding / total shares outstanding at the end of the fiscal year prior to the year of interest. We proxy for total options outstanding by dividing executive options outstanding [ExecuComp variable UXNUMEX + ExecuComp variable UEXNUMUN] at the end of the fiscal year prior to the year of interest by the average in the prior three years of percent of total options granted to executives [ExecuComp variable PCTTOTOPT].

*Risk aversion of executives* (TENURE). Executives that are more risk averse may prefer the certainty associated with fixed compensation over the uncertainty associated with performance-based compensation. Accordingly, we expect a negative relation between the risk aversion of executives and the use of options and restricted stock.

We proxy for risk aversion using the length of time the CEO has held that position. Individuals in the same position longer likely feel more stable and secure and therefore are likely to be less risk averse since the likelihood of CEO turnover decreases with tenure (Sebora, 1996; Farber, 1999; Allgood and Farrell, 2000; Allgood and Farrell, 2003). Accordingly, we expect a positive relation between TENURE and both stock options and restricted stock.

We measure the number of years the CEO has held that position (calculated from ExecuComp variable BECAMECEO), or if missing, the number of years an executive has been with the firm (calculated from ExecuComp variable JOINED\_CO).

*Standard economic determinants of compensation: size, investment opportunities, performance.* First, as firm size increases, it may become more difficult to monitor the actions of management (see Smith and Watts, 1992). If so, larger firms may be more likely to use incentive compensation plans. Accordingly, we expect a positive relation between size and both stock options and restricted stock. We include the natural log of total assets [Compustat Item 6] at the end of the fiscal year (LNASSET) as a measure of firm size.

Second, since it is more difficult to observe managers' actions when the firm has more investment opportunities, firms with larger growth opportunities may be more likely to use equity compensation to link managers' incentives to firm value (see Smith and Watts, 1992). We include book-to-market ratio at the end of the fiscal year (BOOK\_MKT), measured as (Compustat Item 216 – Compustat Item 130) / (Compustat Item 25 x Compustat Item 199), as a proxy for growth opportunities and expect a negative relation between book-to-market and both stock options and restricted stock.

Third, Murphy (1985) finds that executive compensation is positively correlated with firm performance. Accordingly, we expect a positive relation between firm performance and both options and restricted stock and between firm performance and total compensation. Using data from CRSP, we measure performance as stock returns over the fiscal year (RET), calculated as cumulative monthly returns in year  $t$ .

We include industry indicator variables using the industry classifications from Barth, Beaver, and Landsman (1998).<sup>17</sup> This allows us to capture different labor market conditions in different industries and thus to control for attraction or retention reasons that affects compensation design (Oyer and Schaefer, 2005a). Furthermore, industry indicators also control for other potential differences in pay practices across industries.

We include the previous year's option or restricted stock grant value ( $\ln\_pre\_OPT$  or  $\ln\_pre\_RSTK$ ) or the previous year's total compensation ( $\ln\_pre\_TC$ ) to control for the determinants of compensation design that are not captured by the other control variables.<sup>18</sup> Finally, we include year indicators and estimate the statistical significance using Huber/White standard errors to adjust for any potential heteroskedasticity and serial correlation in the data.

#### 4.4 Results

Table 2 Panel A presents the results of the regression of the natural logarithm of compensation from stock options on our independent variables. The amount of compensation from stock options is positively related to both  $FINRPT\_1$  and  $FINRPT\_2$  (z-statistic = 2.94 and 2.05, respectively), as expected. Compensation from stock options is greater for larger firms, higher growth firms, and firms with better performance, and smaller for firms with CEO equity incentives above predicted levels and firms with higher dividend yield, as expected. The sign of the coefficient on  $TENURE$  is contrary to predictions. It is possible that being in a position

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<sup>17</sup> Barth et al. (1998) classify firms into 15 industry groupings according to 4-digit SIC code.

<sup>18</sup> Our conclusions are unchanged if this variable is excluded.

longer signals that an executive is risk averse, so firms rely less heavily on variable compensation. The coefficient on EQ\_CONSTR also is contrary to predictions, but likely reflects that our proxy for proximity to equity constraints is higher, by construction, for those firms that grant more options. In general, though, the results in Panel A are consistent with our hypothesis and suggest that firms that are more concerned about financial reporting costs paid more option-based compensation, avoiding recognition of compensation expense.

Table 2 Panel B presents the results of the regression of the natural logarithm of compensation from restricted stock on our independent variables. The relation between the use of restricted stock and FINRPT\_1 is negative and significant (z-statistic = -2.54), as expected, suggesting that firms with greater financial reporting concerns use less restricted stock. Unexpectedly, FINRPT\_2 is not related to the use of restricted stock. Larger firms, firms with better performance, and firms with higher dividend yields pay more compensation from restricted stock; firms with CEO equity incentives above predicted levels and firms whose CEOs have been in that position longer pay less compensation from restricted stock. Again, the sign of the coefficient on TENURE is contrary to predictions, possibly because being in a position longer signals that an executive is risk averse, so firms rely less heavily on variable compensation. These results provide some evidence that the “unfavorable” accounting treatment restricted stock received relative to stock options decreased its use in compensation.

Table 2 Panel C presents the results of the regression of the natural logarithm of total compensation on our independent variables. The relation between total compensation and both FINRPT\_1 and FINRPT\_2 is positive and significant (z-statistic = 3.86 and 2.50, respectively). While we cannot draw definite conclusions regarding this relation from the regressions in Panel C, they are consistent with the favorable accounting treatment for stock options resulting in higher executive pay packages. We will explore this further in Section 5.

To mitigate possible concerns that equity issuances may be influenced by managers’ expectations about future prospects of the firm, we also estimate equation (1) including future

stock returns proxied by year t+1 cumulative 12-month stock returns (results not tabulated) and our conclusions are unchanged. To address the possibility that our proxy for financial reporting concerns might be correlated with past firm performance, we estimate equation (1) including two variables that capture prior performance: average return on assets in years t-3 to t-1 and cumulative stock returns from year t-3 to year t-1. Our conclusions from this analysis (results not tabulated) are unchanged.

Our results suggest that firms' concerns about financial reporting costs affected equity compensation. Even after controlling for standard determinants of compensation and other factors that may influence the choice between stock options and restricted stock, concerns about reported earnings have significant explanatory power when examining the amount of compensation from options and restricted stock.

## **5. Examination of changes in compensation by firms expensing stock options**

Results from Section 4 suggest that accounting played a role in firms' choice of equity compensation method. To further substantiate this finding, we examine, for firms that begin to expense stock options, changes in CEO compensation from the average of the two years prior to expensing to the year of and year after first expensing.<sup>19</sup> By eliminating the financial reporting benefits of stock options, these firms no longer have the ability to avoid recording an expense with any form of equity compensation. Using this sample of firms allows us to examine the role of financial reporting concerns without having to rely on a proxy for those concerns.

### 5.1 Sample selection

From Bear Stearns Equity Research dated December 16, 2004 (McConnell, Pegg, Senyek, and Mott, 2004), we obtain a sample of 824 firms that have chosen to expense stock

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<sup>19</sup> An alternative sample could have been firms expensing options after the effective date of SFAS 123(R). However, proxy data for the fiscal years subject to the new accounting rule are not yet available.

options from 1995 to 2004. According to Bear Stearns, almost fifty percent of these firms have a market capitalization greater than \$1 billion, and thirty-five percent are international firms. We focus our analysis on the 206 firms that began to expense stock options in either 2002 or 2003 and that have both ExecuComp and Compustat data in the year of their first option expensing.<sup>20</sup> Table 3 provides a description of those firms that, as well as firms not expensing options. Thirty-two percent of firms expensing options are financial institutions, ten percent are utilities, and twenty-three percent are in manufacturing industries (food, textiles, chemicals, durable manufacturers, and computers).

## 5.2 Univariate analysis

### 5.2.1 Changes in compensation in firms expensing options

Table 4 Panel A presents univariate statistics regarding compensation levels both before and after expensing for our sample of 206 firms that expense stock options.<sup>21</sup> The mean (median) decrease from the period before expensing in compensation from stock options is \$1,430.2 (\$345.8) thousand in the year of first expensing and \$1,709.2 (\$589.4) thousand in the year after first expensing (all significant at  $p = 0.00$ ). The mean (median) proportion of CEO compensation from options decreases from 46.5% (44.2%) to 38.5% (37.1%) in the year of first expensing and further to 32.4% (30.3%) in the year after first expensing (all significant at  $p = 0.00$ ). In addition, the percent of firms granting options declines significantly ( $p = 0.00$ ) from 88.7% to 68.9%

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<sup>20</sup> We focus on 2002 and 2003 because it is in those years that a substantial number of firms began to expense options (see Table 3). We do not include firms beginning to expense options in 2004 because sufficient executive compensation data are not yet available for those firms.

<sup>21</sup> Specifically, we compare the value for each variable in the year  $t$  and year  $t+1$ , separately, to the average value for each variable over years  $t-2$  and  $t-1$ , where year  $t$  is the year the firm first expenses options. A firm had to award stock options and restricted stock in at least one of  $t-1$  or  $t-2$  to be included in the calculation for that compensation component.

(64.3%) in the year of (after) first expensing. These changes are consistent with firms shifting away from options upon deciding to expense them.<sup>22</sup>

The proportion of our sample firms granting restricted stock increases significantly from 42.8% to 48.1% in the year of first expensing ( $p < 0.10$ ) and to 55.0% in the year after first expensing ( $p < 0.05$ ). In addition, the level of compensation from restricted stock in those firms is up significantly. The mean (median) increase from the period before expensing in compensation from restricted stock is \$508.8 (\$313.1) thousand in the year of first expensing and \$1,093.4 (\$969.3) thousand in the year after first expensing (all significant at either  $p < 0.01$  or  $p < 0.05$ ). This increase may reflect a shift from options towards restricted stock in providing longer-term performance incentives, suggesting that restricted stock was previously underweighted in equity compensation. Finally, firms expensing options show no significant change in total compensation.

### 5.2.2 Comparison to changes in compensation in firms not expensing options

The changes in CEO compensation in our sample of firms expensing options can occur as a result of these firms' decisions to expense options or can occur as a result of changes in other economic factors that affect compensation. To control for general macroeconomic factors that may affect compensation, we compare the changes in CEO compensation in our sample of firms expensing options to changes in CEO compensation over the same time period in a sample of firms not expensing options. That sample comprises 1,483 firms included on both ExecuComp and Compustat but not included on the Bear Stearns list.

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<sup>22</sup> One interpretation is that the decision to expense stock options leads to the reduced use of stock options, clearly asserting the role of accounting. Alternatively, firms may have decided to reduce their use of stock options then decided to expense them. Under this interpretation, the smaller grant would result in lower financial reporting costs (less impact on earnings) and these firms may find the net benefit of expensing greater with the resulting lower financial reporting costs. Our data, however, reveal no decline in the proportion of firms granting options in the years prior to expensing them. In fact, the data suggest the opposite for our sample of firms expensing options – the proportion of these firms that granted options increased steadily prior to expensing: 77.4% in 1998; 79.7% in 1999; 83.5% in 2000; and 85.1% in 2001.

Table 4 Panel B presents univariate statistics regarding changes in compensation for our control sample of 1,483 firms not expensing options. Control firms also decrease compensation from options and the proportion of compensation from options, and there is a decline in the proportion of control firms granting options over the study period. However, these changes are significantly smaller than changes exhibited by our sample firms expensing options.

Control firms increase pay from restricted stock, but this increase is significantly lower than that by expensing firms (the mean (median) increase in compensation from restricted stock is significantly lower than that for expensing firms in the year after at  $p < 0.05$  ( $p < 0.01$ )).<sup>23</sup> In addition, the proportion of control firms granting restricted stock *decreased* from 27.2% to 24.7% in the year of expensing, compared to an *increase* among the sample firms ( $p < 0.02$ ). This difference offers significant evidence of a shift by firms towards using restricted stock upon deciding to expense options.

The change in total compensation for expensing firms is not significant at conventional levels (with the exception of the mean decrease in the year of expensing, which is significant at only  $p < 0.10$ ). And, other than the median increase in the year after first expensing, there is no difference between expensing and control firms in changes in total compensation. Combined with results related to stock options and restricted stock, these results are consistent with firms shifting from stock options to restricted stock and maintaining pre-expensing compensation levels.

### 5.3 Multivariate analysis

In this section, we examine whether our inferences drawn from univariate statistics in Table 4 hold after controlling for both general economic trends and other factors that affect

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<sup>23</sup> It is important to note that we *understate* the increase in pay from restricted stock for our sample firms since our calculation requires firms to be granting restricted stock in years t-2 or t-1 and sample firms have a significant increase in the number of firms granting restricted stock in year t. Use of restricted stock in firms that begin granting in year t is excluded from our calculations. This understatement does not apply to control firms since there is a decline in the number of firms granting restricted stock.

compensation. We estimate the following regression for the year of and year after first expensing:<sup>24</sup>

$$\begin{aligned} \text{DEP\_VBL}_{jt} = & \alpha_0 + \alpha_1 \text{EXPENSER}_{jt} + \alpha_2 \text{DEV\_INC}_{jt} + \alpha_3 \text{CASH\_CONSTR}_{jt} \\ & + \alpha_4 \text{DIV\_YLD}_{jt} + \alpha_5 \text{EARN\_VOL}_{jt} + \alpha_6 \text{EQ\_CONSTR}_{jt} + \alpha_7 \text{TENURE}_{jt} \\ & + \alpha_8 \text{LNASSET}_{jt} + \alpha_9 \text{BOOK\_MKT}_{jt} + \alpha_{10} \text{RET}_{jt} + \alpha_{11} \ln\_pre\_DEP\_VBL_{jt} + \varepsilon_{jt} \quad (2) \end{aligned}$$

where:

Dependent variables:

$\ln\_OPT_{jt}$  = natural log of value of stock options granted to CEO for firm j in year t or t+1  
 $\ln\_RSTK_{jt}$  = natural log of value of restricted stock granted to CEO for firm j in year t or t+1  
 $\ln\_TC_{jt}$  = natural log of total compensation for CEO for firm j in year t or t+1

Independent variables:

$\text{EXPENSER}_j$  = 1 if firm expenses options in 2002 or 2003, 0 otherwise.  
 $\ln\_pre\_OPT_{jt}$  = natural log of average value of stock options granted to CEO for firm j in year t-2 and t-1  
 $\ln\_pre\_RSTK_{jt}$  = natural log of average value of restricted stock granted to CEO for firm j in year t-2 and t-1  
 $\ln\_pre\_TC_{jt}$  = natural log of average total compensation for CEO for firm j in year t-2 and t-1

All other variables are as defined in Section 4.

We include industry indicator variables in each regression and estimate significance using Huber/White standard errors to adjust for any potential heteroskedasticity and serial correlation in the data.

The coefficient on EXPENSER captures the differences in the dependent variable between firms expensing options and firms not expensing options, after controlling for other factors. If there is a shift away from stock options after expensing options, we expect a negative relation between compensation from stock options and EXPENSER. A positive relation between

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<sup>24</sup> To mitigate the influence of outlying observations, we winsorize the current and lagged values of the dependent variables and values of DEV\_INC, CASH\_CONSTR, DIV\_YLD, EARN\_VOL, EQ\_CONSTR, TENURE, BOOK\_MKT, and RET that are below (above) the 1% (99%) percentile. Because of censoring in the equity grant data, we estimate equation (2) using Tobit when ln\_OPT and ln\_RSTK are the dependent variables.

compensation from restricted stock and EXPENSER would suggest that firms shift into restricted stock once expensing options and would be consistent with firms having substituted options for restricted stock prior to expensing options. A negative relation between EXPENSER and total compensation would suggest that favorable accounting treatment for stock options in a pre-expensing regime led to higher levels of overall compensation and that expensing firms are adjusting compensation downward. While no relation between EXPENSER and total compensation would be consistent with the favorable accounting treatment from options having not led to higher overall levels of executive compensation, it is also consistent with it having led to higher levels but firms finding it difficult to downsize executive pay packages.

#### 5.4 Results

Table 5 Panels A, B, and C present the results of estimating equation (2). These results confirm inferences drawn from the univariate statistics in Table 4. Specifically, upon expensing options, firms pay less option compensation to CEOs (the coefficient on EXPENSER in Panel A is negative and significant at  $p < 0.01$ ). These firms increase their use of restricted stock significantly more than firms not expensing options (the coefficient on EXPENSER in Panel B is positive and significant at  $p < 0.01$ ). The shift away from stock options upon expensing them confirms that accounting mattered in the decision to grant options. That the shift away from options is accompanied by a shift into restricted stock is consistent with an underweighting of restricted stock in CEOs' pay packages under the regime of not expensing stock options.<sup>25, 26</sup>

We find no evidence of a change in total compensation (the coefficient on EXPENSER in Panel C is not significant at conventional levels). In combination with results from Section 4, this

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<sup>25</sup> We also estimate equation (2) with the natural log of salary and the natural log of bonus as dependent variables (results not tabulated). We find no evidence of an increase in the use of salary or bonus upon expensing options. These statistics provide no evidence that the shift away from options after expensing is accompanied by an increased reliance on cash compensation.

<sup>26</sup> As in the regressions in Table 2, the sign of the coefficient on TENURE is contrary to predictions.

result is consistent with the favorable accounting treatment for options leading to higher levels of overall compensation but firms now finding it difficult to downsize executive pay packages.

### 5.5 Robustness tests and additional analysis

We conduct several additional tests to assess the robustness of our results to alternative specifications. First, we estimate equation (2) including as the dependent variable the change in compensation from stock options, restricted stock, and total compensation from the two years before to year of and year after first expensing.<sup>27</sup> The coefficient on EXPENSER in our options regression is negative and significant at  $p < 0.05$ . The coefficient on EXPENSER in our restricted stock regression is positive and significant at  $p < 0.05$ . The coefficient on EXPENSER in our total compensation regression is positive and significant at  $p < 0.05$ . Accordingly, our conclusions that firms shift away from options and into restricted stock and that expensing does not result in a decrease in total compensation are unchanged.

Second, we estimate equation (2) including as the dependent variable the proportion of total compensation from stock options and restricted stock. The coefficients on EXPENSER in both the options and restricted stock regressions are of the predicted sign and both significant at  $p < 0.01$ , leaving our conclusions are unchanged.

Third, we estimate equation (2) scaling the dependent variable and prior year's compensation by sales. The coefficient on EXPENSER in the options regression is negative and significant ( $p < 0.10$ , one-tailed test). The coefficient on EXPENSER in the restricted stock regression is positive and significant ( $p < 0.05$ ). The coefficient on EXPENSER in the total compensation regression is not significant at conventional levels. Thus, our conclusions are unchanged.

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<sup>27</sup> In this specification, we exclude from our independent variables the prior year's compensation. We also exclude TENURE because in a changes specification, all observations have a value of 1 for this variable.

Fourth, we consider the possibility that firms' choices about expensing may result in a selection bias that impacts our conclusions regarding a reduction in options and an increase in restricted stock upon expensing options. We model the decision to expense options in the first stage relying on Aboody et al. (2004a). However, results from the Hausman test fail to reject the null hypothesis of no endogeneity in our options and restricted stock regressions. Due to these results, combined with the concerns about the instrumental variables approach raised by Larcker and Rusticus (2005), we rely on our results reported in Table 5.

Finally, we examine proxy statements for our sample of firms that expense options for any mention of changes to their equity compensation plans. We obtain proxy statements for the 206 expensing firms in our sample for the year in which they begin to expense options. Of the 206 firms, 70 (34%) indicate they are making changes to their equity compensation plans (45 firms are decreasing their use of options; 45 firms are increasing their use of restricted stock; 32 firms are doing both). Eleven (16%) of these 70 firms indicate that these changes are as a result of their decision to expense stock options. We interpret these data as further support that the previously available accounting treatment for options has played a role in equity compensation.

## **6. Conclusion**

Using a sample of ExecuComp firms and data from 1995 to 2001, we provide evidence that accounting does affect equity compensation. Our proxy for firms' concerns about financial reporting costs is positively related to the use of stock options and negatively related to the use of restricted stock, consistent with the favorable treatment for stock options having lead to an overweighting of options and an underweighting of restricted stock in CEO compensation packages. In addition, we find that our proxy for financial reporting concerns is positively related to total compensation, consistent with the former favorable accounting treatment for stock options possibly leading to higher overall CEO pay.

As further tests of the role of accounting in equity compensation, we examine whether firms that expense stock options alter CEO equity compensation packages in response to the decision to expense options. Using a sample of firms that began to expense stock options in 2002 and 2003, we examine changes in the structure of CEO pay packages concurrent with and after the decision to expense options. By eliminating the financial reporting benefit of stock options, firms expensing stock options no longer have an ability to avoid recording expenses with any form of equity compensation. Using this sample, we are able to test our hypotheses without having to rely on a proxy for firms' financial reporting concerns. Our findings confirm the role of accounting in equity compensation design. We find that firms expensing options decrease compensation from options and increase compensation from restricted stock, even after controlling for standard economic determinants of compensation and general economic trends. We find no evidence of a decrease in total compensation, suggesting either that the favorable accounting treatment for stock options did not lead to higher levels of executive compensation or that firms find it difficult to downsize hefty executive pay packages. In combination with the positive association between financial reporting concerns and total CEO compensation in the pre-expensing period, this result suggests that firms find it difficult to downsize the large executive pay packages that resulted from the favorable accounting treatment for stock options.

That firms expensing stock options are granting fewer options and more restricted stock suggests that firms shift towards restricted stock to provide longer-term performance incentives and that there will likely be changes in CEO compensation now that SFAS 123(R) is effective. Though firms may have appeared to favor options, under a regime of mandatory expensing, the role of options in executive compensation may be restricted. Overall, our results support the assertion that accounting plays a role in executive compensation plan design.

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**Table 1**  
**Descriptive statistics**

**Panel A: Sample selection**

|   |              |
|---|--------------|
| Number of CEO-year observations in<br>1995 – 2001 with compensation data            | 11,693       |
| Less: CEO-year observations missing data to measure<br>financial reporting concerns | 3,460        |
| Less: CEO-year observations missing control variables                               | <u>1,191</u> |
| Final sample  | 6,242        |

**Panel B: Proportion of firms granting stock options and restricted stock to CEOs**

| <b>% of firms granting</b> | <b>1995</b> | <b>1996</b> | <b>1997</b> | <b>1998</b> | <b>1999</b> | <b>2000</b> | <b>2001</b> |
|----------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Stock options to CEOs      | 76.5%       | 76.9%       | 76.8%       | 80.6%       | 80.8%       | 82.6%       | 82.3%       |
| Restricted stock to CEOs   | 18.0%       | 18.8%       | 18.6%       | 19.9%       | 18.9%       | 19.4%       | 21.6%       |
| N                          | 783         | 853         | 858         | 890         | 925         | 919         | 1,014       |

**Table 1 (continued)**  
**Descriptive statistics**

**Panel C: CEO compensation and financial data for 6,242 firm-year observations**

| Variable    | Mean        | Std dev      | Q1        | Median    | Q3          |
|-------------|-------------|--------------|-----------|-----------|-------------|
| OPT (\$)    | \$3,078,648 | \$13,006,230 | \$119,676 | \$743,737 | \$2,365,379 |
| RSTK (\$)   | \$432,694   | \$8,410,645  | \$0       | \$0       | \$0         |
| FINRPT_1:   |             |              |           |           |             |
| EPS_INCR    | 0.735       | 0.167        | 0.619     | 0.735     | 0.869       |
| BEAT_FCST   | 0.625       | 0.147        | 0.524     | 0.613     | 0.724       |
| LEVERAGE    | 0.768       | 0.175        | 0.652     | 0.776     | 0.918       |
| FINRPT_2:   |             |              |           |           |             |
| ISSUE_EQ    | 0.046       | 0.138        | 0.000     | 0.004     | 0.024       |
| ISSUE_DEBT  | 0.059       | 0.126        | 0.000     | 0.001     | 0.061       |
| DEV_INC     | 0.064       | 1.086        | -0.615    | 0.036     | 0.713       |
| CASH_CONSTR | 0.023       | 0.088        | -0.024    | 0.012     | 0.057       |
| DIV_YIELD   | 0.013       | 0.016        | 0         | 0.006     | 0.021       |
| EARN_VOL    | 0.008       | 0.027        | 0.000     | 0.001     | 0.004       |
| EQ_CONSTR   | 0.134       | 0.152        | 0.048     | 0.090     | 0.163       |
| TENURE      | 7.794       | 7.458        | 2         | 5         | 11          |
| LNASSET     | 7.396       | 1.617        | 6.206     | 7.228     | 8.427       |
| BOOK_MKT    | 0.470       | 0.365        | 0.232     | 0.391     | 0.606       |
| RET         | 0.180       | 0.539        | -0.149    | 0.107     | 0.392       |

Variable definitions

|                           |   |   |
|---------------------------|---|---|
| OPT <sub>jt</sub>         | = | value of stock options granted to CEO of firm j in year t   |
| RSTK <sub>jt</sub>        | = | value of restricted stock granted to CEO of firm j in year t  |
| FINRPT_1 <sub>jt</sub>    | = | factor created from principal component analysis equally weighting standardized values of EPS_INCR, BEAT_FCST, and LEVERAGE   |
| EPS_INCR <sub>jt</sub>    | = | proportion of quarters on IBES that firm has reported increase in EPS over the same quarter in the prior year   |
| BEAT_FCST <sub>jt</sub>   | = | proportion of quarters on IBES that firm has beat analysts' EPS forecast  |
| LEVERAGE <sub>jt</sub>    | = | (1 - debt/assets) (see footnote 10)   |
| FINRPT_2 <sub>jt</sub>    | = | factor created from principal component analysis equally weighting standardized values of ISSUE_EQ and ISSUE_DEBT   |
| ISSUE_EQ <sub>jt</sub>    | = | future increase in equity capital (year t+1) scaled by assets, zero otherwise   |
| ISSUE_DEBT <sub>jt</sub>  | = | future increase in debt capital (year t+1) scaled by assets, zero otherwise   |
| DEV_INC <sub>jt</sub>     | = | ln (actual incentive level / predicted incentive level) for year t-1, where actual incentive level is the delta of the equity portfolio and predicted incentive level is estimated from a model based on Core and Guay (1999) for the CEO in firm j |
| CASH_CONSTR <sub>jt</sub> | = | the three-year average over t-3 to t-1 of [(Common and preferred dividends - cash flow from investing - cash flow from operations) / total assets] for firm j   |
| DIV_YLD <sub>jt</sub>     | = | the three-year average over t-3 to t-1 of [dividends per share / price per share at the end of the fiscal year] for firm j  |
| EARN_VOL <sub>jt</sub>    | = | the square of the standard deviation of ROA, where the standard deviation of ROA is calculated over 10 years prior to year t for firm j   |
| EQ_CONSTR <sub>jt</sub>   | = | (executive options outstanding at the end of the fiscal year t-1 / the three-year average over t-3 to t-1 of percent of total options granted to executives) / total shares outstanding at the end of fiscal year t-1 for firm j                    |
| TENURE <sub>jt</sub>      | = | the number of years the CEO has been in that position (if missing, the number of years at the firm) in firm j as of the end of fiscal year t  |
| LNASSET <sub>jt</sub>     | = | natural log of total assets at the end of fiscal year t for firm j  |
| BOOK_MKT <sub>jt</sub>    | = | book value of equity / market value of equity at the end of fiscal year t for firm j  |
| RET <sub>jt</sub>         | = | cumulative 12-month returns for year t for firm j   |

**Table 2**

**Regressions of the level of CEO compensation from stock options, restricted stock, and total compensation in 1995 through 2001 on concern about financial reporting costs and other factors**

**Panel A: Natural logarithm of CEO compensation from stock options**

$$\ln\_OPT_{jt} = \alpha_0 + \alpha_1 \text{FINRPT\_1}_{jt} + \alpha_2 \text{FINRPT\_2}_{jt} + \alpha_3 \text{DEV\_INC}_{jt} + \alpha_4 \text{CASH\_CONSTR}_{jt} + \alpha_5 \text{DIV\_YLD}_{jt} + \alpha_6 \text{EARN\_VOL}_{jt} + \alpha_7 \text{EQ\_CONSTR}_{jt} + \alpha_8 \text{TENURE}_{jt} + \alpha_9 \text{LNASSET}_{jt} + \alpha_{10} \text{BOOK\_MKT}_{jt} + \alpha_{11} \text{RET}_{jt} + \alpha_{12} \ln\_pre\_OPT_{jt} + \varepsilon_{jt}$$

| Variable                          | Predicted sign | Coefficient     | z-statistic |     |
|-----------------------------------|----------------|-----------------|-------------|-----|
| Intercept                         | ?              | 0.45            | 1.09        |     |
| FINRPT_1                          | +              | 0.23            | 2.94        | *** |
| FINRPT_2                          | +              | 0.11            | 2.05        | **  |
| DEV_INC                           | -              | -0.45           | -7.63       | *** |
| CASH_CONSTR                       | +              | 0.06            | 0.10        |     |
| DIV_YLD                           | -              | -13.70          | -3.44       | *** |
| EARN_VOL                          | ?              | 1.36            | 0.73        |     |
| EQ_CONSTR                         | -              | 1.99            | 4.53        | *** |
| TENURE                            | +              | -0.06           | -7.11       | *** |
| LNASSET                           | +              | 0.48            | 12.01       | *** |
| BOOK_MKT                          | -              | -0.50           | -3.18       | *** |
| RET                               | +              | 0.38            | 4.26        | *** |
| ln_pre_OPT                        | +              | 0.38            | 15.41       | *** |
| N                                 |                | 6,242           |             |     |
| Wald $\chi^2$ statistic (p-value) |                | 1,243.61 (0.00) |             |     |

**Panel B: Natural logarithm of CEO compensation from restricted stock**

$$\ln\_RSTK_{jt} = \alpha_0 + \alpha_1 \text{FINRPT\_1}_{jt} + \alpha_2 \text{FINRPT\_2}_{jt} + \alpha_3 \text{DEV\_INC}_{jt} + \alpha_4 \text{CASH\_CONSTR}_{jt} + \alpha_5 \text{DIV\_YLD}_{jt} + \alpha_6 \text{EARN\_VOL}_{jt} + \alpha_7 \text{EQ\_CONSTR}_{jt} + \alpha_8 \text{TENURE}_{jt} + \alpha_9 \text{LNASSET}_{jt} + \alpha_{10} \text{BOOK\_MKT}_{jt} + \alpha_{11} \text{RET}_{jt} + \alpha_{12} \ln\_pre\_RSTK_{jt} + \varepsilon_{jt}$$

| Variable                          | Predicted sign | Coefficient     | z-statistic |     |
|-----------------------------------|----------------|-----------------|-------------|-----|
| Intercept                         | ?              | -11.56          | -9.21       | *** |
| FINRPT_1                          | -              | -0.62           | -2.54       | *** |
| FINRPT_2                          | -              | 0.14            | 0.80        |     |
| DEV_INC                           | -              | -0.43           | -2.85       | *** |
| CASH_CONSTR                       | +              | -2.46           | -1.29       |     |
| DIV_YLD                           | ?              | 32.83           | 2.66        | *** |
| EARN_VOL                          | ?              | -11.21          | -1.43       |     |
| EQ_CONSTR                         | -              | -1.09           | -0.87       |     |
| TENURE                            | +              | -0.11           | -4.77       | *** |
| LNASSET                           | +              | 0.50            | 4.60        | *** |
| BOOK_MKT                          | -              | 0.09            | 0.21        |     |
| RET                               | +              | 0.84            | 2.68        | *** |
| ln_pre_RSTK                       | +              | 1.58            | 33.72       | *** |
| N                                 |                | 6,242           |             |     |
| Wald $\chi^2$ statistic (p-value) |                | 2,347.84 (0.00) |             |     |

Coefficients on yearly and industry indicator variables not reported; z-statistics calculated using Huber/White standard errors. \*\*\*, \*\*, \* Significant at 1%, 5%, and 10% level, respectively, using a 2-tailed test

**Table 2 (continued)**

**Regressions of the level of CEO compensation from stock options, restricted stock, and total compensation in 1995 through 2001 on concern about financial reporting costs and other factors**

**Panel C: Natural logarithm of total CEO compensation**

$$\ln\_TC_{jt} = \alpha_0 + \alpha_1 \text{FINRPT\_1}_{jt} + \alpha_2 \text{FINRPT\_2}_{jt} + \alpha_3 \text{DEV\_INC}_{jt} + \alpha_4 \text{CASH\_CONSTR}_{jt} + \alpha_5 \text{DIV\_YLD}_{jt} + \alpha_6 \text{EARN\_VOL}_{jt} + \alpha_7 \text{EQ\_CONSTR}_{jt} + \alpha_8 \text{TENURE}_{jt} + \alpha_9 \text{LNASSET}_{jt} + \alpha_{10} \text{BOOK\_MKT}_{jt} + \alpha_{11} \text{RET}_{jt} + \alpha_{12} \ln\_pre\_TC_{jt} + \varepsilon_{jt}$$

| Variable                | Predicted sign | Coefficient | z-statistic |     |
|-------------------------|----------------|-------------|-------------|-----|
| Intercept               | ?              | 2.35        | 16.44       | *** |
| FINRPT_1                | +              | 0.06        | 3.86        | *** |
| FINRPT_2                | +              | 0.04        | 2.50        | **  |
| DEV_INC                 | ?              | -0.05       | -4.37       | *** |
| CASH_CONSTR             | ?              | -0.26       | -1.84       | *   |
| DIV_YLD                 | ?              | -3.11       | -3.89       | *** |
| EARN_VOL                | ?              | 1.68        | 3.90        | *** |
| EQ_CONSTR               | ?              | 0.80        | 7.02        | *** |
| TENURE                  | ?              | -0.00       | -2.60       | *** |
| LNASSET                 | +              | 0.26        | 17.49       | *** |
| BOOK_MKT                | ?              | -0.23       | -7.43       | *** |
| RET                     | +              | 0.21        | 8.38        | *** |
| ln_pre_TC               | +              | 0.48        | 18.42       | *** |
| N                       |                | 6,242       |             |     |
| Adjusted R <sup>2</sup> |                | 0.58        |             |     |

Coefficients on yearly and industry indicator variables not reported; z-statistics calculated using Huber/White standard errors.

\*\*\*, \*\*, \* Significant at 1%, 5%, and 10% level, respectively, using a 2-tailed test

**Variable definitions**

- ln\_OPT<sub>jt</sub> = natural log of value of stock options granted to CEO of firm j in year t
- ln\_RSTK<sub>jt</sub> = natural log of value of restricted stock granted to CEO of firm j in year t
- ln\_TC<sub>jt</sub> = natural log of total compensation to CEO of firm j in year t
- FINRPT\_1<sub>jt</sub> = factor created from principal component analysis equally weighting standardized values of EPS\_INCR, BEAT\_FCST, and LEVERAGE
- EPS\_INCR<sub>jt</sub> = proportion of quarters on IBES that firm has reported increase in EPS over the same quarter in the prior year
- BEAT\_FCST<sub>jt</sub> = proportion of quarters on IBES that firm has beat analysts' EPS forecast
- LEVERAGE<sub>jt</sub> = (1 - debt/assets) (see footnote 10)
- FINRPT\_2<sub>jt</sub> = factor created from principal component analysis equally weighting standardized values of ISSUE\_EQ and ISSUE\_DEBT
- ISSUE\_EQ<sub>jt</sub> = future increase in equity capital (year t+1) scaled by assets, zero otherwise
- ISSUE\_DEBT<sub>jt</sub> = future increase in debt capital (year t+1) scaled by assets, zero otherwise
- DEV\_INC<sub>jt</sub> = ln (actual incentive level / predicted incentive level) for year t-1, where actual incentive level is the delta of the equity portfolio and predicted incentive level is estimated from a model based on Core and Guay (1999) for the CEO in firm j
- CASH\_CONSTR<sub>jt</sub> = the three-year average over t-3 to t-1 of [(Common and preferred dividends - cash flow from investing - cash flow from operations) / total assets] for firm j
- DIV\_YLD<sub>jt</sub> = the three-year average over t-3 to t-1 of [dividends per share / price per share at the end of the fiscal year] for firm j
- EARN\_VOL<sub>jt</sub> = the square of the standard deviation of ROA, where the standard deviation of ROA is calculated over 10 years prior to year t for firm j
- EQ\_CONSTR<sub>jt</sub> = (executive options outstanding at the end of the fiscal year t-1 / the three-year average over t-3 to t-1 of percent of total options granted to executives) / total shares outstanding at the end of fiscal year t-1 for firm j
- TENURE<sub>jt</sub> = the number of years the CEO has been in that position (if missing, the number of years at the firm) in firm j as of the end of fiscal year t
- LNASSET<sub>jt</sub> = natural log of total assets at the end of fiscal year t for firm j
- BOOK\_MKT<sub>jt</sub> = book value of equity / market value of equity at the end of fiscal year t for firm j
- RET<sub>jt</sub> = cumulative 12-month returns for year t for firm j
- ln\_pre\_OPT<sub>jt</sub> = natural log of value of stock options granted to CEO for firm j in year t-1
- ln\_pre\_RSTK<sub>jt</sub> = natural log of value of restricted stock granted to CEO for firm j in year t-1
- ln\_pre\_TC<sub>jt</sub> = natural log of total compensation to CEO for firm j in year t-1

**Table 3**  
**Comparison of 206 firms beginning to expense stock options in 2002 or 2003 and 1,483 firms not expensing stock options in 2002 or 2003**

**Panel A: Firms beginning to expense stock options by year**

| Year  | Number of firms beginning to expense stock options (on Bear Stearns Report) | Number of firms beginning to expense stock options with data on ExecuComp and Compustat |
|-------|---|---|
| 1995  | 2   | 2   |
| 1996  | 2   | 1   |
| 1997  | 0   | 0   |
| 1998  | 3   | 1   |
| 1999  | 2   | 0   |
| 2000  | 2   | 1   |
| 2001  | 7   | 2   |
| 2002  | 145   | 43  |
| 2003  | 537   | 163   |
| 2004  | <u>124</u>  | <u>20</u>   |
| Total | 824   | 233   |

**Panel B: By-industry comparison of 206 firms beginning to expense stock options in 2002 or 2003 and 1,483 firms not expensing stock options**

| Industry description (a)  | Number of firms expensing on Execucomp and Compustat |          | Number of firms not expensing on Execucomp and Compustat |          |
|---------------------------|--|----------|--|----------|
| Mining and construction   | 7  | 3%       | 29   | 2%       |
| Food                      | 4  | 2        | 37   | 3        |
| Textiles, printing        | 16   | 8        | 82   | 6        |
| Chemicals                 | 7  | 4        | 44   | 3        |
| Pharmaceuticals           | 1  | 0        | 55   | 4        |
| Extractive industries     | 13   | 6        | 48   | 3        |
| Durable manufacturers     | 15   | 7        | 333  | 22       |
| Computers                 | 3  | 2        | 114  | 8        |
| Transportation            | 12   | 6        | 72   | 5        |
| Utilities                 | 20   | 10       | 75   | 5        |
| Retail                    | 17   | 8        | 178  | 12       |
| Financial institutions    | 66   | 32       | 138  | 9        |
| Insurance and real estate | 16   | 8        | 20   | 1        |
| Services                  | 7  | 3        | 251  | 17       |
| Other                     | <u>2</u>   | <u>1</u> | <u>7</u>   | <u>0</u> |
|                           | 206  | 100%     | 1,483  | 100%     |

(a) Industry classifications based on Barth, Beaver, Landsman (1998).

**Table 4**

**Mean (median) changes in CEO compensation for 206 firms beginning to expense stock options in 2002 or 2003 and 1,483 firms that do not expense stock options**

**Panel A: Mean (median) changes in CEO compensation for 206 firms beginning to expense stock options in 2002 or 2003**

|   | <b>Before expensing (a)</b> | <b>Year of expensing</b> | <b>Change from before</b> |            | <b>Year after expensing</b> | <b>Change from before</b> |            |
|---|-----------------------------|--------------------------|---------------------------|------------|-----------------------------|---------------------------|------------|
| Level of compensation from options (\$000)          | 4,704.1<br>(2,376.0)        | 3,421.4<br>(2,031.5)     | -1,430.2<br>(-356.8)      | ***<br>*** | 3,135.2<br>(2,105.9)        | -1,709.2<br>(-589.4)      | ***<br>*** |
| Proportion of compensation from options             | 46.5%<br>(44.2%)            | 38.5%<br>(37.1%)         | -8.5%<br>(-5.8%)          | ***<br>*** | 32.4%<br>(30.3%)            | -15.8%<br>(-15.3%)        | ***<br>*** |
| % of firms granting options                         | 88.7%                       | 68.9%                    | -18.6%                    | ***        | 64.3%                       | -23.7%                    | ***        |
| Level of compensation from restricted stock (\$000) | 1,790.2<br>(861.3)          | 2,434.4<br>(1,440.0)     | 508.8<br>(313.1)          | **<br>***  | 2,532.7<br>(1,679.7)        | 1,093.4<br>(969.3)        | ***<br>*** |
| % of firms granting restricted stock                | 42.8%                       | 48.1%                    | 6.7%                      | *          | 55.0%                       | 12.2%                     | **         |
| Total compensation (\$000)                          | 7,930.3<br>(4,804.6)        | 7,104.3<br>(4,168.7)     | -688.6<br>(18.9)          | *          | 7,650.2<br>(5,026.0)        | -216.7<br>(504.4)         |            |

- (a) Calculated as the average value for each variable over years t-2 and t-1, where year t is the year the firm first expenses options.  
 (b) Level of options/bonus/restricted stock are calculated only for firms that grant options/bonuses/restricted stock in that period.  
 (c) \*\*\*, \*\*, \* Significant at 1%, 5%, and 10%, respectively, using t-test of difference in means (Mann-Whitney rank sum test of difference in medians).  
 (d) To mitigate the influence of outliers, we winsorize the continuous variables at 1% and 99%.

Table 4 (continued)

Mean (median) changes in CEO compensation for 206 firms beginning to expense stock options in 2002 or 2003 and 1,483 firms that do not expense options

Panel B: Mean (median) changes in CEO compensation for 1,483 firms that do not expense stock options

|   | Before expensing<br>(a,b) | Year of expensing<br>(b) | Change from before |            | t (z) –statistic for difference from Panel A | Year after expensing<br>(b) | Change from before  |            | t (z) –statistic for difference from Panel A |
|---|---------------------------|--------------------------|--------------------|------------|--|-----------------------------|---------------------|------------|--|
| Level of compensation from options (\$000)          | 3,325.7<br>(1,415.2)      | 2,701.1<br>(1,321.6)     | -741.9<br>(-37.4)  | ***<br>*** | 2.14<br>(3.31)                               | 2,508.6<br>(1,377.4)        | -1,074.1<br>(-99.8) | ***<br>*** | 1.36<br>(1.86)                               |
| Proportion of compensation from options             | 50.8%<br>(50.6%)          | 47.9%<br>(46.7%)         | -3.6%<br>(-2.8%)   | ***<br>*** | 2.55<br>(3.21)                               | 44.5%<br>(42.5%)            | -7.3%<br>(-6.1%)    | ***<br>*** | 3.46<br>(3.90)                               |
| % of firms granting options                         | 88.2%                     | 75.4%                    | -12.8%             | ***        | 1.79   | 75.2%                       | -13.9%              | ***        | 2.39   |
| Level of compensation from restricted stock (\$000) | 1,137.6<br>(603.2)        | 1,575.6<br>(812.1)       | 503.2<br>(89.9)    | ***<br>*** | -0.03<br>(-1.48)                             | 1,661.9<br>(940.5)          | 527.9<br>(164.5)    | ***<br>*** | -2.34<br>(-2.92)                             |
| % of firms granting restricted stock                | 27.2%                     | 24.7%                    | -2.4%              | ***        | -2.08  | 30.5%                       | 3.1%                | ***        | -2.07  |
| Total compensation (\$000)                          | 4,876.3<br>(2,579.1)      | 4,366.6<br>(2,363.6)     | -608.9<br>(-38.0)  | ***<br>*** | 0.21<br>(-0.57)                              | 4,751.4<br>(2,722.3)        | -577.9<br>(26.4)    | ***        | -0.71<br>(-2.40)                             |

- (a) Calculated as the average value for each variable over years t-2 and t-1, where year t is the year the firm first expenses options.  
 (b) Year before expensing is the average of 2000 and 2001 and the average of 2001 and 2002; year of expensing is 2002 and 2003; year after expensing is 2003 and 2004.  
 (c) Level of options/bonus/restricted stock are calculated only for firms that grant options/bonuses/restricted stock in that period.  
 (d) \*\*\*, \*\*, \* Significant at 1%, 5%, and 10%, respectively, using t-test of difference in means (Mann-Whitney rank sum test of difference in medians).  
 (e) To mitigate the influence of outliers, we winsorize the continuous variables at 1% and 99%.

**Table 5**  
**Regressions of the level of CEO stock options, restricted stock, and total compensation in the year of and year after first expensing on an indicator of the expensing decision and other factors**

**Panel A: Natural logarithm of CEO compensation from stock options**

$$\ln\_OPT_{jt} = \alpha_0 + \alpha_1 EXPENSER_{jt} + \alpha_2 DEV\_INC_{jt} + \alpha_3 CASH\_CONSTR_{jt} + \alpha_4 DIV\_YLD_{jt} + \alpha_5 EARN\_VOL_{jt} + \alpha_6 EQ\_CONSTR_{jt} + \alpha_7 TENURE_{jt} + \alpha_8 LNASSET_{jt} + \alpha_9 BOOK\_MKT_{jt} + \alpha_{10} RET_{jt} + \alpha_{11} \ln\_pre\_OPT_{jt} + \varepsilon_{jt}$$

| Variable                          | Predicted sign | Coefficient   | t-statistic |     |
|-----------------------------------|----------------|---------------|-------------|-----|
| Intercept                         | ?              | 0.34          | 0.47        |     |
| EXPENSER                          | -              | -1.17         | -3.15       | *** |
| DEV_INC                           | -              | -0.15         | -1.69       | *   |
| CASH_CONSTR                       | +              | 0.12          | 0.11        |     |
| DIV_YLD                           | -              | -19.00        | -2.64       | *** |
| EARN_VOL                          | ?              | -2.71         | -1.07       |     |
| EQ_CONSTR                         | -              | 2.58          | 4.29        | *** |
| TENURE                            | +              | -0.06         | -4.40       | *** |
| LNASSET                           | +              | 0.54          | 8.48        | *** |
| BOOK_MKT                          | -              | -1.13         | -4.47       | *** |
| RET                               | +              | -0.23         | -1.59       |     |
| ln_pre_OPT                        | +              | 0.29          | 10.81       | *** |
| N                                 |                | 4,017         |             |     |
| Wald $\chi^2$ statistic (p-value) |                | 482.68 (0.00) |             |     |

**Panel B: Natural logarithm of CEO compensation from restricted stock**

$$\ln\_RSTK_{jt} = \alpha_0 + \alpha_1 EXPENSER_{jt} + \alpha_2 DEV\_INC_{jt} + \alpha_3 CASH\_CONSTR_{jt} + \alpha_4 DIV\_YLD_{jt} + \alpha_5 EARN\_VOL_{jt} + \alpha_6 EQ\_CONSTR_{jt} + \alpha_7 TENURE_{jt} + \alpha_8 LNASSET_{jt} + \alpha_9 BOOK\_MKT_{jt} + \alpha_{10} RET_{jt} + \alpha_{11} \ln\_pre\_RSTK_{jt} + \varepsilon_{jt}$$

| Variable                          | Predicted sign | Coefficient   | t-statistic |     |
|-----------------------------------|----------------|---------------|-------------|-----|
| Intercept                         | ?              | -6.03         | -3.58       | *** |
| EXPENSER                          | +              | 1.98          | 2.81        | *** |
| DEV_INC                           | -              | -0.15         | -0.78       |     |
| CASH_CONSTR                       | +              | -0.36         | -0.12       |     |
| DIV_YLD                           | ?              | 38.80         | 2.51        | *** |
| EARN_VOL                          | ?              | -2.10         | -0.30       |     |
| EQ_CONSTR                         | -              | -2.04         | -1.31       |     |
| TENURE                            | +              | -0.14         | -3.99       | *** |
| LNASSET                           | +              | 0.70          | 4.71        | *** |
| BOOK_MKT                          | -              | -0.55         | -0.99       |     |
| RET                               | +              | 0.17          | 0.45        |     |
| ln_pre_RSTK                       | +              | 0.56          | 20.16       | *** |
| N                                 |                | 4,017         |             |     |
| Wald $\chi^2$ statistic (p-value) |                | 947.15 (0.00) |             |     |

Coefficients on industry indicator variables not reported; t-statistics calculated using Huber/White standard errors.  
 \*\*\*, \*\*, \* Significant at 1%, 5%, and 10% level, respectively, using a 2-tailed test

**Table 5 (continued)**  
**Regressions of the level of CEO stock options, restricted stock, and total compensation in the year of and year after first expensing on an indicator of the expensing decision and other factors**

**Panel C: Natural logarithm of total CEO compensation**

$$\ln\_TC_{jt} = \alpha_0 + \alpha_1 \text{EXPENSER}_{jt} + \alpha_2 \text{DEV\_INC}_{jt} + \alpha_3 \text{CASH\_CONSTR}_{jt} + \alpha_4 \text{DIV\_YLD}_{jt} + \alpha_5 \text{EARN\_VOL}_{jt} + \alpha_6 \text{EQ\_CONSTR}_{jt} + \alpha_7 \text{TENURE}_{jt} + \alpha_8 \text{LNASSET}_{jt} + \alpha_9 \text{BOOK\_MKT}_{jt} + \alpha_{10} \text{RET}_{jt} + \alpha_{11} \ln\_pre\_TC_{jt} + \varepsilon_{jt}$$

| Variable           | Predicted sign | Coefficient | t-statistic |     |
|--------------------|----------------|-------------|-------------|-----|
| Intercept          | ?              | 2.17        | 6.14        | *** |
| EXPENSER           | 0 or -         | 0.04        | 0.87        |     |
| DEV_INC            | ?              | -0.07       | -2.05       | **  |
| CASH_CONSTR        | ?              | -0.79       | -1.84       | *   |
| DIV_YLD            | ?              | 0.16        | 0.08        |     |
| EARN_VOL           | ?              | -0.85       | -1.15       |     |
| EQ_CONSTR          | ?              | 0.45        | 3.08        | *** |
| TENURE             | ?              | -0.00       | -0.66       |     |
| LNASSET            | +              | 0.20        | 4.87        | *** |
| BOOK_MKT           | ?              | -0.34       | -2.60       | *** |
| RET                | +              | 0.04        | 1.10        |     |
| ln_pre_TC          | +              | 0.55        | 7.63        | *** |
| N                  |                | 4,016       |             |     |
| Adj R <sup>2</sup> |                | 0.50        |             |     |

Coefficients on industry indicator variables not reported; t-statistics calculated using Huber/White standard errors.  
 \*\*\*, \*\*, \* Significant at 1%, 5%, and 10% level, respectively, using a 2-tailed test

**Variable definitions**

- ln\_OPT<sub>jt</sub> = natural log of value of stock options granted to CEO for firm j in year t or t+1
- ln\_RSTK<sub>jt</sub> = natural log of value of restricted stock granted to CEO for firm j in year t or t+1
- ln\_TC<sub>jt</sub> = natural log of total compensation to CEO for firm j in year t
- EXPENSER<sub>jt</sub> = 1 if firm expenses options in 2002 or 2003, 0 otherwise.
- DEV\_INC<sub>jt</sub> = ln (actual incentive level / predicted incentive level) at the beginning of fiscal year t for firm j, where actual incentive level is the delta of the equity portfolio and predicted incentive level is estimated from a model based on Core and Guay (1999) for the CEO in firm j
- CASH\_CONSTR<sub>jt</sub> = the three-year average over t-3 to t-1 of [(Common and preferred dividends – cash flow from investing – cash flow from operations) / total assets] for firm j
- DIV\_YLD<sub>jt</sub> = the three-year average over t-3 to t-1 of [dividends per share / price per share at the end of the fiscal year]
- EARN\_VOL<sub>jt</sub> = the square of the standard deviation of ROA, where the standard deviation of ROA is calculated over 10 years prior to year t
- EQ\_CONSTR<sub>jt</sub> = (executive options outstanding at the end of the fiscal year t-1 / the three-year average over t-3 to t-1 of percent of total options granted to executives) / total shares outstanding at the end of fiscal year t-1 for firm j
- TENURE<sub>jt</sub> = the number of years the CEO has been in that position (if missing, the number of years at the firm) in firm j as of the end of fiscal year t
- LNASSET<sub>jt</sub> = natural log of total assets at the end of fiscal year t for firm j
- BOOK\_MKT<sub>jt</sub> = book value of equity / market value of equity at the end of fiscal year t for firm j
- RET<sub>jt</sub> = cumulative 12-month returns for year t for firm j
- ln\_pre\_OPT<sub>jt</sub> = natural log of average value of stock options granted to CEO for firm j in year t-2 and t-1
- ln\_pre\_RSTK<sub>jt</sub> = natural log of average value of restricted stock granted to CEO for firm j in year t-2 and t-1
- ln\_pre\_TC<sub>jt</sub> = natural log of average total compensation to CEO for firm j in year t-2 and t-1