EXECUTIVE STOCK OPTIONS, MISSED EARNINGS TARGETS AND EARNINGS MANAGEMENT: EVIDENCE FROM BOOK-TAX DIFFERENCES

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Abstract: We examine whether managers with larger stock-option *grants* are more likely to *miss* earnings targets, and if so, whether earnings management is implicated. Anecdotal evidence and recent surveys suggest that managers believe that missing an earnings target can cause stock prices to slide sharply (Graham, et al. 2005). Thus, missing a target can reward executives via a lower strike price on option grants. To explore the relation among stock-option incentives, missed earnings targets and earnings management, we collect data for 1,744 firms for the years 1993 through 2004. We find that CEOs' option grants increase in number and in dollar value when firms *miss* earnings targets by reporting small losses or small year-over-year earnings declines (Burgstahler and Dichev, 1997). We use book-tax differences to proxy for earnings management (Mills and Newberry 2001, Phillips et al. 2003) and our results suggest that firms manage earnings downward around CEO option-grant dates. Most importantly, we document that option grants create strong incentives for executives to *miss* earnings targets via downward earnings management. To the extent that missed targets precipitate larger negative price reactions (Skinner and Sloan 2002, Lopez and Rees 2002), they provide a greater increase in stock-option grant value than managing earnings at any other point in the earnings distribution.

JEL Classification: G34, J33, M41, M52

Keywords: Book-tax differences; Earnings management; Stock options; Earnings benchmark

Data Availability: All data used in this study are publicly available.

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I. INTRODUCTION

Theoretically, executive stock-options align managers' and shareholders' interests. Practically however, stock options may engender manager-shareholder conflicts (Jensen 2005) and create incentives for earnings management (e.g. Jensen, Murphy and Wruck 2004, Burns and Kedia 2005, Efendi et. al. 2006). Both conventional wisdom and prior empirical results suggest that *grants* (*exercises*) provide incentives to manage earnings *downward* (*upward*) (e.g. Balsam et al. 2003; Baker et al. 2003, Bartov and Mohanram 2004, Bergstresser and Philippon 2006, Kadan and Yang 2005). Prior research also shows that exercises create incentives for firms to meet or beat earnings targets (Cheng and Warfield 2005). We extend prior research by studying whether managers with larger stock-option *grants* are more likely to *miss* earnings targets, and if so, whether earnings management is implicated (Burgstahler and Dichev, 1997). Recent surveys suggest that managers believe that missing an earnings target can cause stock prices to slide sharply (Graham, et al. 2005). Anecdotal evidence supports managers' beliefs. For example, Google lost seven percent of market cap when it missed its 2005 fourth-quarter earnings target (Associate Press 2006), and Ebay lost 20 percent when it missed a recent earnings target by one penny (Defner 2005). Empirically, missed targets precipitate larger negative price reactions (Skinner and Sloan 2002, Lopez and Rees 2002). Thus, while missed earnings targets may be costly to shareholders, they can reward executives via a lower strike price on option grants.

We use Execucomp and Compustat data for 1,744 firms for the years 1993 through 2004 to address our research question. We proceed in two steps. First, we establish a positive association

between missed earnings targets and option grants. Then we explore the role of earnings management in missed earnings targets. With respect to the first step, we find that after firms miss *quarterly* earnings targets, executives are more likely to receive option grants and those grants are larger in dollar terms. We extend this analysis with annual data (because not all variables of interest are available quarterly) and find that CEOs receive more option grants when their firms *miss* earnings targets by reporting small losses or small year-over-year earnings declines (Burgstahler and Dichev, 1997). These findings complement Cheng and Warfield (2005) who document significantly higher option exercises for firms that just *meet or beat* earnings target.

In our second research step, we employ a novel approach to triangulate among earnings management, option grants and missed earnings targets. In particular, we use the difference between GAAP income and taxable income (the book-tax difference) to proxy for the magnitude and direction of earnings management (Mills and Newberry 2001, Phillips, et al. 2003). Book-tax differences measure earnings management more cleanly than traditional accruals measures for at least three reasons: 1) traditional measures systematically misclassify normal accruals as abnormal (Bernard and Skinner 1996; Guay, et al. 1996), 2) traditional measures narrowly focus on working capital accruals thereby misstating total current and long-term operating accruals (Richardson et al. 2005) and 3) traditional measures systematically understate accruals because the methods used to calculate accruals misclassify financing cash flows as operating for firms with tax benefits arising from employees' exercise of non-qualified stock options (Hanlon and Shevlin 2002, Broome 2004). In steady state, the magnitude of the accrual understatement is directly related to the variable of interest – stock-option activity. In contrast, book-tax differences are unbiased because employee stock option tax benefits flow through neither book

nor taxable income (as measured). Therefore, we believe that the book-tax difference mitigates the first two measurement problems, and obviates the third.

We find a negative relation between book-tax differences and stock option grants. Because smaller (i.e. more negative) book-tax differences indicate downward earnings management, our results suggest that CEOs manage earnings downward around option grant dates, which decreases the stock price and thus the strike price of option grants, thereby increasing CEOs' personal wealth. Most importantly, by triangulating among missed earnings targets, earnings management, and option grants, we document that option grants create strong incentives for executives to *miss* earnings targets via downward earnings management. To the extent that missed targets precipitate larger negative price reactions (Skinner and Sloan 2002, Lopez and Rees 2002), they provides a greater increase in stock-option grant value than managing earnings at any other point in the earnings distribution. Thus, we highlight a situation where managers' interests are at odds with shareholders' (Jensen 2005).

We control for competing option incentives (Fields et al. 2001) and find that book-tax differences are positively related to option exercises and option holdings. Our findings are robust when we include traditional book-accruals measures. From this we conclude that book-tax differences provide incremental earnings management information beyond that provided by book accruals (Heflin and Kross 2005). We also rule out tax planning as an alternate explanation of our results (Desai and Dharmapala 2006).

We believe that our results suggest a chain of events from earnings management to missed earnings targets to increased option grants. There could however, be an alternative explanation. Empirical evidence suggests that firms opportunistically time their option activity (Yermack 1997). More recently, Heron and Lie (2006) conclude that firms back date option grants to

coincide with stock price declines. In depth investigations by the SEC and New York's District Attorney corroborate these academic findings.[1] Given this evidence, one might suspect that opportunistic timing or back dating, and not earnings management, explain the relation between missed earnings targets and option grants. We conduct additional tests to rule out these alternate explanations. We use *quarterly* data and find that opportunistic timing or back dating can at best explain only 7.5 percent of grants. Further, we use *annual* data and find that missed earnings targets are positively associated with option grants. By construction, opportunistic shifting of option grants within a fiscal year has no effect on annual data. Finally, our strong book-tax difference results (again, based on annual data) clearly implicate earnings management. Taken together, our follow-on tests eliminate opportunistic timing and back-dating as the *only* explanation of our findings.

Our study makes at least two contributions to the literature. First, we provide new evidence that option grants create incentives for executives to miss important earnings targets. While many prior studies document that firms strive to meet or beat earnings targets (Burgstahler and Dichev 1997, Dhaliwal, et al. 2004, Cheng and Warfield 2005), we are aware of no study that considers whether and how firms *miss* earnings targets. This is important because earnings management that leads to missed targets is potentially more costly to shareholders than earnings management at unspecified points along the earnings distribution (Skinner and Sloan 2002). Second, ours is the first study of the association between stock-options and earnings management using book-tax differences. Our finding that book-tax differences provide incremental earnings-management information adds support to the argument for greater use of book-tax differences to detect earnings management as opposed to relying solely on accruals-based proxies (Mills and

[1] The Wall Street Journal maintains an online record of details of such investigations at http://online.wsj.com/public/resources/documents/info-optionsscore06-full.html

Newberry 2001, Phillips et al. 2003). The measurement error endemic in traditional accruals measures is especially critical for studies, such as ours, that consider stock-option based executive compensation during the late 1990s (when equity-based compensation packages ballooned), but before the implementation of SFAS 123R (FASB 2004) that requires firms to classify stock option tax benefits as financing cash flows.

These results should be of interest to compensation committees in designing compensation packages that align shareholder and managerial interests; to investors who scrutinize differences between firms' book income and taxable income; to the members of the accounting and auditing community for presenting a more accurate measure of firms' economic income; and to regulators and law enforcement officials who safeguard the public trust.

The paper proceeds as follows. In section II we develop our hypotheses and section III discusses using book tax differences to detect earnings management. Section IV describes our sample and the research design. Section V reports our results, and section VI concludes.

II. HYPOTHESES DEVELOPMENT

Jensen (2005) shows that stock options do not always align managers' and shareholders' interests as intended. One unintended consequence is that managers adjust earnings to maximize their stock option compensation, potentially to the detriment of other shareholders (Jensen et al. 2004). Indeed, Dechow and Skinner (2000) argue that because of the continued importance of stock-based compensation, managers are increasingly sensitive to stock price and how prices react to key accounting numbers such as earnings. We develop two hypotheses to explore the relation between earnings management and stock option grants. First, we hypothesize a positive association between missed earnings targets and option grants. Then, we posit that downward earnings management is related to missed earnings targets in the presence of option grants.

It's imperative at the outset, to make clear our understanding of the link between earnings management and managers' ultimate goal – to strategically affect stock prices to coincide with particular stock-option activity. Prior research concludes that investors are unable to fully incorporate the lower persistence of the accruals component of earnings; therefore, earnings management that increases (decreases) earnings can increase (decrease) stock price (Sloan 1996, Subramanyam 1996, Richardson et al. 2005). More recently, Heflin and Kross (2005) find that the book-tax difference explains contemporaneous annual stock returns.[2] Further, Hanlon (2005) concludes that investors' earnings-persistence estimates do not fully incorporate the book-tax difference. Taken together, these studies imply that earnings management in general and book-tax differences in particular, can affect stock prices at least temporarily. We hold this as a maintained hypothesis.[3]

Prior studies establish that stock-options create bidirectional incentives. In particular, *exercises* and *holdings* create incentives to manage earnings upward whereas *grant*s create incentives to manage earnings downward. The value of an exercised option is its intrinsic value, i.e., the difference between the strike price and the exercise-date market value. Therefore, the value of option exercises can be increased by increasing the stock price before the option exercise date and evidence suggests that firms use income-increasing accruals to increase stock prices surrounding option exercises (Bartov and Mohanram 2004, Bergstresser and Philippon 2006). Similarly, managers with potential equity stakes in the firm are likely to manage earnings upwards in order to keep the stock price high (Cheng and Warfield 2005, Burns and Kedia 2005, and Efendi et al. 2006).

[2] Heflin and Kross (2005) decompose book and taxable income into operating cash flows, book accruals and tax accruals and test the relative explanatory power of the components. They do not directly test the book-tax difference as we do. However, by construction, the difference between book and tax accruals equals the book-tax difference.
[3] For our study to find results, it is sufficient that managers believe that earnings management can impact stock price. Evidence that managers hold such beliefs comes from Graham, et al. (2005).

In contrast, the value of option grants can be increased by lowering the stock price on or before the grant date.[4] Stock options are typically granted at the money, i.e. the strike price equals the grant-date market price. Therefore, ceteris paribus, the value of an option grant increases as the firm's stock price decreases. Consistent with this argument, Balsam et al. (2003) and Baker et al. (2002) document an association between downward earnings management and option grants. While option grants create incentives to *generally* manage earnings downward, potentially more interesting is the situation where the CEO manages earnings downwards, or fails to manage them upwards, thereby just missing an important earnings target. Graham et al. (2005) report that managers believe missing an earnings target reduces stock price. Indeed, empirical evidence ascertains that failing to meet earnings targets can be particularly costly to shareholders (Skinner and Sloan 2002) and that investors' response to firms' missing (large negative response) or meeting earnings targets (moderate positive response) is asymmetric (Lopez and Rees 2002). However, missed earnings targets can reward a CEO with significant option grants that are pegged to the lower stock price.

H1: Missed earnings targets are positively associated with option grants.

A missed earnings target is not an indictment of managerial behavior. However, prior research shows that firms do avoid reporting losses and earnings decreases (Burgstahler and Dichev 1997, Dhaliwal et al. 2004). More on point is evidence from Cheng and Warfield (2005) who document that stock option exercises and holdings provide incentives for firms to *meet or beat* earnings targets. But no prior research explores whether and why firms *miss* earnings

[4] Related research finds that managers also use private information to maximize the value of their stock options by opportunistically timing option exercises, option grants, and news releases (Yermack 2000, Aboody and Kasznik 2000, Bartov and Mohanram 2004). More recently, Heron and Lie (2006) show that firms also back date option grants to coincide with stock-price lows. In section 4, we report tests that rule out these alternate explanations for our results.

targets. We posit that managers who face strong option-grant incentives may take actions to miss earnings targets.[5] Empirically, we would expect the association between earnings management and missed earnings targets to be stronger for firms with option grants. Such a finding would show that targets were missed when earnings were managed downward. Thus we hypothesize:

H2: Downward earnings management is more strongly associated with missed earnings targets for firms with option grants.

III. USING BOOK-TAX DIFFERENCES TO DETECT EARNINGS MANAGEMENT

Extant research measures accruals as some function of the difference between GAAP net income and cash flows (Healy 1985, Jones 1991, Dechow et al. 1995). However, book accrual measures may be flawed: Guay et al. (1996) report that book accruals are imprecise; and Bernard and Skinner (1996) find that normal accruals are systematically misclassified as abnormal.

Potentially of more concern, is that book accruals systematically misclassify *financing* cash flows as *operating* prior to Statement of Financial Accounting Standard 123R (FASB 2004). Hanlon and Shevlin (2002), Broome (2004), and Ciccotello et al. (2004) document that book accruals routinely *understate* both total and discretionary accruals because prior to SFAS 123R, operating cash flows included tax benefits arising from employees' exercising non-qualified stock options whereas net income did not.[6] The accrual understatement is especially serious for studies addressing stock-option questions because the magnitude of the accrual understatement is directly related to the variable of interest – stock-option activity (see for example, Baker et al.

[5] However, it is unlikely that managers would miss earnings targets by a larger margin therefore we examine near misses only.

[6] For example, Microsoft saved over $13 billion in Federal taxes between 1998 and 2002 when employees exercised stock options. Because these tax benefits increased Microsoft's reported operating cash flows but had no effect on net income, estimated accruals are understated by the tax benefit amount.

2002; Balsam et al. 2003, Bartov and Mohanram 2004).[7] In contrast, book-tax differences do not suffer from this omitted correlated variables problem because employee stock option tax benefits flow through neither book nor taxable income (as measured) during our study period.

The book-tax difference relates to earnings management as follows: book income is subject to more managerial judgment and discretion as compared to taxable income because of the relative flexibility of GAAP. The underlying idea is that if firms manage earnings, they do so with book accruals because both book income and taxable income include equivalent operating cash flows. Figure 1 shows several examples of earnings management and the effect on book-tax differences. As the figure shows, some earnings management activities create permanent book-tax differences. For example, a firm could reduce its deferred tax asset valuation allowance to increase book income (see Bauman et al. 2001 and Phillips et al. 2003). Other earnings management activities create temporary book-tax differences. For example, GAAP allows flexibility in determining the provision for bad debts; whereas the tax treatment for this item is prescribed. As these examples demonstrate, book-tax difference will reflect managers' use of GAAP flexibility to manage earnings.

[INSERT FIGURE 1 ABOUT HERE]

Moreover, the book-tax difference is a superior earnings-management measure when firms manage earnings with cash-based techniques that do not affect taxable income. In such cases traditional accruals measures fail to capture earnings management because both income and cash are affected such that there is no accrual component (e.g. Graham et al. 2005, Roychoudhuri 2006). Examples of these sorts of techniques include managing foreign subsidiaries' earnings

[7] The accruals are understated by an amount equal to the tax benefit, which is directly related to current-period exercises and, in steady state, indirectly related to current period grants. Thus, it is not clear how to interpret results from studies that use the understated accrual measures to test hypotheses concerning option exercises, holdings or grants. In related work, the authors are currently exploring the empirical effects of the accrual understatement.

(cash and book earnings are affected but there is no taxable income until the foreign earnings are repatriated); substituting cash for non-cash compensation for executives paid more than $1 million (cash and book earnings are affected because all compensation is an expense but there is no additional tax deduction because of the $1 million cap); and timing the receipt of dividends that are subject to the dividends-received deduction (cash and book earnings are affected but dividends are not taxable). Book-tax difference captures these items whereas traditional accruals measures do not.[8]

Prior research directly supports the use of the book-tax difference as an effective earnings-management proxy. Consistent with an earnings-management hypothesis, Mills and Newberry (2001) find that book-tax differences are associated with managers' bonus thresholds and firms' past earnings patterns. Phillips et al. (2003) find that deferred tax-expense, a measure of the temporary differences between book income and taxable income, is associated with firms' objectives of meeting earnings targets or avoiding losses, again consistent with the notion of earnings management.[9]

Additional evidence indirectly supports using the book-tax difference to gauge earnings management. Lev and Nissim (2004) find that the book-tax ratio predicts subsequent five-year earnings changes and therefore, indicates earnings quality. Similarly, Hanlon (2005) finds that large book-tax differences predict lower earnings persistence. Finally, Heflin and Kross (2005) find that tax accruals provide information beyond book accruals to explain firms' raw returns. They also ascertain that while the explanatory power of tax accruals has remained unchanged

[8] As an alternative to using book-tax differences to proxy for earnings management, we might correct for the tax benefit in traditional accruals measures. However, because the stock option tax benefit is disclosed only sporadically we would lose a substantial number of observations using this alternative method.

[9] As Figure 1 shows, book-tax differences can be either permanent or temporary; consequently, using deferred taxes (the temporary book-tax difference) to measure earnings management, may inadvertently exclude important earnings-management activities that create permanent differences.

over time, the explanatory power of book accruals has decreased (perhaps concurrent with the increase of stock option tax benefits).

In addition, figure 1 distinguishes between conforming activities (similar book and tax treatments) and nonconforming activities (different book and tax treatments). By definition, the book-tax difference captures only non-conforming activities. Thus, the book-tax difference will fail to detect earnings management that involves conforming activities. However, the prevalence of earnings-management via conforming activities is unclear.[10]

Book and taxable income differ for two additional reasons unrelated to earnings management. First, tax rules promulgated by Congress and implemented by the IRS, have multiple objectives: to generate revenues, to achieve macroeconomic goals and to encourage or discourage particular economic activities. Thus, the Internal Revenue Code is more rules-based than GAAP (Scholes, et al. 2005). Heflin and Kross (2005) label this "mandated-rule error" in that taxable income measures true economic income with error induced by rules designed to accomplish multiple objectives. Book-tax differences arising from mandated-rule error will add noise, but not bias, to our earnings-management measure. Figure 1 provides examples.

Second, tax planning may cause book-tax differences. As figure 1 shows, tax-planning creates temporary book-tax differences (e.g. accelerated tax depreciation), and permanent differences (e.g. investing in tax-exempt bonds). As well, some tax-planning mechanisms such as tax-deductible debt affect both taxable and book income. This suggests that tax planning and

[10] Badertscher et al. (2006) find that nonconforming earnings management is more prevalent than conforming earnings management in a sample of firms that restate earnings. In contrast, in a small sample study, Erickson et al. (2004) find that managers are willing to incur additional tax costs to boost reported financial earnings suggesting that managers use conforming activities to manage earnings.

earnings management are *not* mutually exclusive, which prompts us to conduct additional tests to address the potential confound created by tax planning.[11]

IV. SAMPLE SELECTION, RESEARCH DESIGN AND VARIABLE MEASUREMENT

Sample

Our sample begins with all firms in Compustat's executive compensation database (Execucomp) for the years 1992-2004. Consistent with Hanlon (2005), we removed financial-services firms (SIC 6000-6999) and utilities (SIC 4900-4999). We excluded firms with missing CEO salary data because we use this variable to scale certain regression variables. Then, we gathered data from Compustat and dropped observations that indicated the firm was in a tax-loss position. In particular, to be included in the final sample, a firm-year must have non-negative current tax expense, and must not have a tax net operating loss (consistent with Hanlon 2005). As Panel A of Table 1 shows, our final sample comprises 1,744 unique firms and 9,954 firm-year observations. Most of our tests use these annual data. Certain tests of hypothesis 1 use quarterly data gathered in a manner identical to that described above for annual data except for the tax-loss position filter.[12] Untabulated results show that our quarterly data (55,973 observations), are similar to our annual data on key variables including assets, salary, and grants.

[INSERT TABLE 1 ABOUT HERE]

Table 1 Panel B shows that except for 1992, the sample is fairly evenly distributed over the twelve years. Panel C reveals some evidence of industry clustering—Business Equipment

[11] Recent research by Desai and Dharmapala (2006) posits that any earnings-management information contained in book-tax differences is a strict subset of information contained in book accruals and that the residuals obtained by regressing book-tax differences on accruals represent only tax-sheltering activities. Thus, while our econometric approach is similar to Desai and Dharmapala (2006), our interpretation of the results is markedly different. In section 5, we test the robustness of our interpretation.

[12] We use quarterly data to test the association between missed earnings targets and option grants (hypothesis 1), but not to test for earnings management (hypothesis 2). The latter requires reliable book-tax difference information which necessitates the tax-loss filter. The filter is not warranted to test hypothesis 1 and thus, we use a wider sample for these tests.

(Fama-French industry 23) accounts for more than a fifth of the observations. This is not surprising because this category comprises numerous SIC codes, including industrial equipment (SIC 35) and Instrumentation (SIC 37) as well as computer manufacturers and other computer hardware firms that traditionally have been intensive stock-option users.

Methods and models

Our hypotheses maintain that option grants may create such strong incentives to manage earnings (and stock price) downward that some managers may be willing to miss important earnings targets. Managers focus on meeting or beating certain earnings targets including last year's earnings, positive earnings (Burgstahler and Dichev 1997), and analysts' forecasts (Brown and Caylor, 2005). Of these three common earnings targets, Phillips et al. (2003) find that earnings management is most strongly related to avoiding losses and earnings decline, and that the relation with meeting analysts' forecasts is weaker. One explanation for the weaker analysts' forecast results may be that managers can *guide* analysts' expectations (Richardson, Teoh, and Wysocki, 2004). The other two earnings targets (avoiding loss or earnings declines) are more independent benchmarks because they can't be similarly guided. Thus, we take our cue from prior findings consider positive earnings and last year's earnings as our earnings targets.

We create a variable, *Miss*, to indicate firms that miss earnings targets. Consistent with Burgstahler and Dichev (1997) we specify *Miss* in two ways. First, we identify firms that just miss reporting positive earnings (i.e. report a small loss). We construct an indicator variable, *Miss_zero,* that identifies firms that report earnings (Compustat DATA172) no less than two percent of lagged market value (DATA25 × DATA199). That is, *Miss_zero* is coded 1 when -2% < [Earnings / Market Value] < 0; and coded 0 when the firm reports positive earnings. Our tests exclude firms with losses exceeding two percent of market value. We use quarterly data for

additional tests that assess whether firms issue more grants following small loss quarters. These quarterly tests use *Miss_Qtr*, which is computed in an identical manner to that described above, using quarterly Compustat data.

Second, we identify firms that report small year-over-year earnings declines. We define *Miss_priorYR*, to indicate firms with current-year earnings (scaled by lagged market value) lower than prior year's earnings by no more than one percent. That is, *Miss_priorYR* is coded 1 when -1% < [Earnings / Market Value] < 0; and coded 0 when the firm reports an earnings increase. Our tests exclude firms with earnings declines greater than one percent of market value.

Consistent with prior studies we use CEO-level data to measure our option variables because CEOs have ultimate control over, and responsibility for, reported earnings (e.g. Yermack 1997, Aboody and Kasznick 2000, Burns and Kedia 2005, Cheng and Warfield 2005, Heron and Lie 2006, Efendi et al. 2006). Moreover, CEOs typically receive the lion's share of option grants. We specifically do not use data for the top five executives as reported in the Execucomp database. Often the included executives have no control over earnings management decisions.[13]

Testing hypothesis 1

If hypothesis 1 holds we would expect to observe a higher incidence of missed earnings targets when CEOs have more option grants, which we test with contingency tables. Moreover, we expect that options granted in missed-target years would be of greater dollar value than in other years and we use means tests to test for differential magnitudes.

We use both quarterly and annual data to test hypothesis 1. We use quarterly data because Execucomp reports specific option grant dates, which permits us to spot increased option grants in the subsequent quarter for firms that miss quarterly earnings targets. If there is a relation

[13] Arguably, the CEO will find it difficult to manipulate earnings without the CFO's collusion. Untabulated results show that the correlation between CEO and CFO compensation is significantly positive, implying that CEO and CFO incentives are largely aligned.

between option grants and missed earnings targets, we would expect increased grants in the quarter *after* firms report very small losses. Thus, quarterly data enable us to establish temporal precedence and contiguity (Shadish, Cook and Campbell 2001).

However, we cannot use quarterly data for all our empirical tests because quarterly data have the following limitations. First, not all compensation data items are available quarterly (e.g., exercise dates, options held, restricted stock holdings, and number of shares owned are available only annually in Execucomp).[14] Second, some quarterly compensation variables are less accurate than their annual counterparts because firms typically use annual rather than quarterly performance to calculate bonuses and other components of compensation (Jacob and Jorgensen, 2005). Third, quarterly option grants data cannot distinguish opportunistic timing and back-dating (Heron and Lie 2006) from earnings management. Fourth, quarterly data engenders certain econometric problems. In particular, quarterly earnings and tax expense, which we use to calculate book-accruals and taxable income respectively, are not serially independent because firms often use their final fiscal quarter to meet annual earnings targets (Brown and Rozeff 1979, Dhaliwal et al. 2004, Jacob and Jorgensen 2005). Thus, while quarterly data can help establish contiguity and temporal precedence, annual tests can address hypothesis 1 more completely. Consequently, we rely on both quarterly and annual results to test our first hypothesis.

We use quarterly data to explore whether firms opportunistically time option grants. In particular, we examine the preponderance of *fixed-date* option grants after missed earnings targets (e.g. Yermack 1997, Heron and Lie 2006, Forelle and Bandler 2006). Firms often grant options at the same time each year. These "fixed-date grants" form 50 to 60 percent of all grants

[14] Execucomp data come from firms' annual Def 14A (definitive proxy statement) SEC filings. Many other studies of the association between earnings management and executive compensation incentives use Execucomp annual data, including Bartov and Mohanram (2004), Cheng and Warfield (2005), Burns and Kedia (2005), Erickson et al. (2005), and Efendi et al. (2006).

to CEOs (Aboody and Kasznik, 2000). The remaining option grants are awarded randomly throughout the year, which creates the possibility for firms to grant options at opportune dates. If firms strategically grant options in quarters after missed earnings targets, we would expect a smaller proportion of fixed-date grants relative to total grants after loss quarters as compared to other quarters. We use Execucomp grant dates to determine whether grants are "fixed-date" or not. We determine option grant date from the options expiration date (Execucomp EXDATE) and assume that the option lives are measured in whole years. We further assume that a grant is a fixed-date grant if the quarter in which the options are granted is the same as the grant quarter in either of the previous two fiscal years, i.e. if two or more grants occur in same fiscal quarter over three year period.[15]

In addition to the univariate tests described above, we use annual data to estimate the following multivariate logistic regression:

$$Miss_{it} = \beta_0 + \beta_1 \times Grants_{it} + \beta_2 \times Exercises_{it} + \beta_3 \times Options_{it} + \Sigma \beta_s \times Control_{sit} + \varepsilon_{it} \qquad (1)$$

The model includes exercises (*Exercises*) and option holdings (*Options*) as well as grants because both exercises and holdings provide incentives to manage earnings *upwards* whereas grants provide incentives to manage earnings *downward* (Bartov and Mohanram 2004, Bergstresser and Philippon 2006, Cheng and Warfield 2005). Our novel, joint approach more fully examines how managers respond to conflicting incentives (Fields et al. 2001).

Grants is the reported Black-Scholes fair value of stock options granted to the CEO that year.[16] *Exercises* is the intrinsic value of options exercised by the CEO. *Options* is the sum of the intrinsic

[15] We use a broader definition of fixed-date grants than prior studies that look for grant shifting within a given quarter. We attempt to detect annual grants that have been shifted across quarters so that the grants occur immediately after the quarters with missed earnings targets. Admittedly, we will misclassify grants to the extent that previous years' grants were also opportunistically timed.

[16] The Black-Scholes model was not designed to value employee stock options and considerable theoretical and empirical evidence documents problems with doing so (Lambert et al. 1991, Rubinstein 1995, Cuny and Jorion 1995, Huddart and Lang 1996). Nonetheless, most firms use Black-Scholes fair values and we follow suit.

values of the CEO's exercisable (vested) options and unexercisable (unvested) options and measures the potential stake the CEO will have in the firm's equity. We deflate *Exercises*, *Options* and *Grants* by CEO salary to capture the relative importance of each option characteristic.

Equation 1 includes control factors known to influence the firms' incentives to meet earnings targets. We include *Bonus,* the CEO's annual bonus (Healy 1985, Mills and Newberry 2001) and *Stock,* the level of CEO stock ownership including restricted stock and stock owned outright (Nagar et. al. 2003). We scale *Bonus* and *Stock* by CEO salary and expect both to have positive coefficients. We also include firm-level controls including *Leverage*, measured as long-term debt scaled by assets, to assess firms' proximity to debt default (DeFond and Jiambalvo 1994, Sweeney 1994). We include *Size*, the log of total assets to control for size and because growth affects investors' response to earnings performance, we include a control variable *Growth*, measured as the book to market ratio.

We predict a positive coefficient on *Grants* in equation 1 above, because we hypothesize that CEOs will more likely miss earnings targets as option grants increase, ceteris paribus. While we don't have formal hypotheses about *Exercises* or *Options,* we expect that these coefficients will be negative – reporting losses or earnings declines is inconsistent with CEOs maximizing the value of current period exercises or option holdings.

Testing hypothesis 2

We test hypothesis 2 in two steps. First, we document the relation between missed earnings targets and earnings management. To disentangle opportunistic timing or back dating from earnings management, we re-estimate equation 1 above and add an earnings management variable, book-tax difference (*BTD*), as follows:

$$Miss_{it} = \beta_0 + \beta_1 \times Grants_{it} + \beta_2 \times Exercises_{it} + \beta_3 \times Options_{it} + \beta_4 \times BTD_{it} + \Sigma \beta_s \times Control_{sit} + \varepsilon_{it} \quad (2)$$

We calculate *BTD* as pre-tax book income (Compustat # 170) minus an estimate of taxable income. Because taxable income is not publicly disclosed, we follow Hanlon (2005) and estimate taxable income as: current tax expense (Compustat # 16 - Compustat # 50) divided by 35%, the highest statutory tax rate during the sample period. We expect a negative coefficient on *BTD*, which would provide some support for the notion that missed earnings targets are not happenstance (Burgstahler and Dichev 1997).

Our second step to test hypothesis 2, uses the following OLS regression model:

$$BTD_{it} = \beta_0 + \beta_1 \times Miss_{it} + \beta_2 \times Grants_{it} + \beta_3 \times (Grants_{it} \times Miss_{it}) + \beta_4 \times Exercises_{it} + \beta_5 \times Options + \Sigma \beta_s \times Control_{sit} + \varepsilon_{it} \quad (3)$$

Consistent with prior research, we expect negative (positive) coefficients on *Grants* (*Exercises* and *Holdings*). We interact *Grants* with the indicator variables *Miss*. This allows for differential effects of option activity on *BTD* for firms with missed earnings targets. A missed earnings target can cause firm value to drop. By this reasoning, CEOs can maximize personal wealth by managing earnings *downward* and even reporting small losses (which increase the value of option grants) in periods when grants are relatively large. Thus, we will find support for hypothesis 2, if the interaction variable (*Grants* × *Miss*) is significantly negative, consistent with the idea that grants provide an even stronger incentive for CEOs to manage earnings downward in missed-target years.

Equation 3 also includes the previously discussed control variables along with indicator variables to capture both year and industry fixed effects. Further, because book-tax differences

are mean reverting, we include lagged book-tax differences to control for the serial-correlation and any general, contemporaneous factors that the book-tax difference captures (Hamilton 1994).

Ancillary tests that include book-tax difference and accruals

The existing literature concerning stock options and earnings management uses accruals to detect earnings management. As previously explained, we use book-tax difference because we believe doing so provides a cleaner test of earnings management, especially in the stock-option setting. However, to directly compare our work to prior studies, we also estimate the following reverse regression models using seemingly unrelated regressions:

$$Incentive_{it} = \gamma_0 + \gamma_1 \times BTD_{it} + \gamma_2 \times Accruals_{it} + \gamma_3 \times Competing\_Incentive_{it} + \Sigma\, \gamma_m \times Control_{mit} + \upsilon_{it} \quad (4)$$

where *Incentive* represents *Exercises*, *Options* and *Grants*. Consistent with prior studies, we measure total accruals as the difference between net income (Compustat # 172) and operating cash flows (Compustat # 308), all scaled by assets. We expect the estimated coefficient on accruals to have the same sign as the estimated coefficient on *BTD*, i.e., positive for *Exercises* and *Options* and negative for *Grants*. In each of the three regressions, we include a second incentive variable (*Competing_Incentive*) to allow for the fact that CEOs face multiple option-related incentives and to control for any other factors that may affect option compensation. Specifically, we include *Grants* in the *Exercises*, and the *Options* regressions and *Exercises* in the *Grants* regression. Each regression also includes *Size* and *Growth* control factors along with industry and year fixed effects.

Equation 4 tests the association between book-tax differences and stock-option incentives, after controlling for book accruals. Equation 4 produces regression coefficient (γ_1) based only on the information contained in book-tax difference and not in book accruals (Frisch and Waugh

1933, Lovell 1963). If γ_1 is significant we would conclude that book-tax differences provide information incremental to that provided by traditional accrual measures.

V. RESULTS

Sample

Table 2 presents sample demographics. Our sample includes small and large firms: the inter-quartile range of market capitalization is from $463 million to $3.6 billion. Comparing the mean and medians for total assets ($5.287 billion versus $944 million) reveals that our sample includes a few very large S&P 1500 firms. There is little dispersion of CEO salary and bonuses are similarly clustered. However, bonus and salary typically represent only a small fraction of the average CEO's total compensation package. Sample firms have diverse stock option activity: the average CEO grant (exercise) has a fair value of $2.2 million ($1.83 million) but the median is only $540,000 ($0). CEOs receive option grants most years (sample mean = 72.5%) but CEO exercises are more sporadic (sample mean = 38.6%).

[INSERT TABLE 2 ABOUT HERE]

Table 2 also reports that very few firms just miss earnings targets. Only 230 firm-years (3 percent) report slightly negative earnings (*Miss_zero* = 1), far fewer than would be expected if earnings were normally distributed, but consistent with the "trench" just below zero earnings documented by Burgstahler and Dichev (1997).[17] Table 2 shows that both book-tax difference and total accruals are negative on average, which is consistent with prior findings (see Richardson et al. (2005) for example). While the distributions of the scaled regression variables is more normal than the raw variables, the disparate means and medians indicate that the data are skewed, prompting us to also estimate rank regressions.

[17] Burgstahler and Dichev (1997) report that 3.13% of firms in their sample "just miss" reporting positive earnings.

Results of tests of hypothesis 1

We first use quarterly and then annual data to test hypothesis 1. Table 3 Panel A shows that firms grant more options after missing quarterly earnings targets: 18.2 percent of firms that miss quarterly earnings targets, grant stock options in the subsequent quarter, whereas only 17 percent of non-miss firms do so—this 1.2 percent difference is statistically significant. In addition, option grants after a missed earnings targets are larger, both in terms of dollars ($562,924 compared to $464,831) and relative to total CEO salary (0.741 compared to 0.597). Given that all of these differences are statistically significant, we conclude that firms grant more options in the quarter after a missed earnings target and that these options are more valuable to the CEO.

[INSERT TABLE 3 ABOUT HERE]

Consistent with our expectation that some backdating or opportunistic timing of option grants are related to missed earnings targets, we find that 55.7 percent of grants are fixed-date grants following loss quarters whereas 63.2 percent of grants are fixed-date in other quarters. This implies that firms opportunistically grant options following losses. Taken together, our quarterly data provide strong evidence that firms issue more grants when firms miss earnings targets.

Our annual data corroborate and extend our quarterly results, and rule out opportunistic timing as the *only* explanation of our results We observe greater incidence of option grants among the 230 firm-years that report small losses (i.e., *Miss_zero* =1): 75.2 percent of small-loss firms grant options during the year compared to 74.3 percent for firms that did not report a small loss. Chi-square and odds-ratio tests, controlling for exercises, are significant at 1% and 5% levels respectively, indicate that missing positive earnings targets is positively associated with the incidence of option grants. When we consider the second earning target (*Miss_priorYR* = 1), we observe a similar pattern— more options are granted in years when earnings decline slightly.

Table 3 Panel C, reports that grants are significantly larger in dollar terms for firms that report small losses (mean of 5.18 compared to 3.03) as well as for firms that report earnings declines (mean of 3.49 compared to 3.16). Panels B and C of Table 3 provide compelling evidence that option grants are both more frequent and are of larger magnitude in years when earnings targets are missed as compared to when targets are met or beat.

If our results on grants are driven by systematic differences between firms' inherent option based compensation policies and earnings characteristics, and not by opportunistic managerial behavior, then we should observe a similar pattern for option exercises. However, we document the opposite pattern for option exercises: they are less frequent (Table 3 Panel B) and smaller in dollar terms (Table 3 Panel C) in years when firms miss earnings targets. In particular, while 29.1 percent of CEOs exercised options in years when their firms reported a small loss, 40.6 percent of CEOs exercised options when their firms were profitable. Both chi-square and odds ratio tests, controlling for grants, are significant (at 1% and 5% levels respectively). The pattern is similar, but less pronounced, for the second earnings target (i.e., earnings decline). These results show that indeed, option grants are positively associated with missed earnings targets.

To allow econometrically for conflicting incentives created by exercises and grants and to control for other factors that may affect the likelihood of missing an earnings target, we estimate two multivariate logistic regressions, one for each of *Miss* variable. Table 4, Panel A, shows that the likelihood of reporting a small loss (*Miss_zero* =1) increases with option grants and decreases with option exercises. The second logistic regression (where the dependent variable is *Miss_priorYR*) shows similar results. These results suggest that reporting small losses or earnings declines is not random, it is predictably related to specific CEO option activity.

Results of tests of hypothesis 2

To test hypothesis 2, we first document the relation between missed earnings targets and earnings management. Table 4 Panel B reports the results of our logistic regressions (equation 2) that include *BTD*. Negative coefficients on the *Miss* variable in both specifications, demonstrate that the likelihood of reporting a small loss decreases as the book-tax difference increases (*Miss_zero*: β_1 = -0.309, p = 0.001; *Miss_priorYR* :β_1 = -0.017, p = 0.022). Admittedly, this result is somewhat mechanical because higher *BTD* implies higher GAAP earnings (i.e. vis-à-vis taxable income, which we constrain to be non-zero in our sample). Nonetheless, Panel B confirms that the positive (negative) relations between missed earnings targets and option grants (exercises and holdings) are robust to the inclusion of the *BTD* variable.

[INSERT TABLE 4 ABOUT HERE]

These logistic regression results complement Cheng and Warfield (2005) who report that option holdings are significantly higher for firms that meet or beat earnings targets. In contrast, we identify firms that do not meet or beat and find that option grants are more frequent and larger in magnitude; and option exercises are less frequent and smaller. We extend this line of research by adding earning management variables and we conclude that firms that manage earnings upward (downward) are less (more) likely to miss earnings targets.

Table 5 reports the results of our OLS regression (equation 3) that triangulates earnings management, grants, and missed earnings targets. The table shows that book-tax differences are negatively associated with option grants (β_1 = -0.047, p = 0.001) indicating that firms manage GAAP earnings downwards as CEO grants increase. To the extent that lower earnings lead to lower stock price, the CEO can lock in a low strike price on current-period grants thereby increasing its future value. Further, if book-tax differences imply a subsequent reversion of discretionary accruals (Hanlon 2005), decreasing income in the grant year enables the CEO to

book higher income in subsequent exercise years. The table also shows that book-tax differences are positively associated with option exercises (β_2= 0.013, p = 0.073) and option holdings (β_3= 0.003 p = 0.035). These positive coefficients imply that earnings are managed upwards when the CEO has incentives to increase the share price.

[INSERT TABLE 5 ABOUT HERE]

The negative (positive) coefficients on grants (exercises / option holdings) indicate a trade-off between two competing incentives. Recall from Table 2 that CEOs receive option grants most years (sample mean = 72.5%) but option exercises are more sporadic (sample mean = 38.6 %). Thus, the decision about whether and how to manage earnings is a strategic decision and our regression coefficients, discussed above, calibrate this trade off. Interestingly, the coefficient on *Options* is an order of magnitude smaller than that on either *Grants* or *Exercises*. One possible explanation for this is that not all of the CEO's options are vested: the incentive to manage current earnings is weaker for future exercises than for immediate cash outs.[18]

The most important test of hypothesis 2 is the interaction term (between *Grants* and *Miss*) that captures the differential effect on book-tax difference of option grants in a missed-target year. As predicted, the interaction term is negative and significant. This shows that option grants provide an even stronger incentive for CEOs to manage earnings downward in the missed-target years. For firms that miss the positive earnings target, the effect of grants on book-tax difference is five times larger than for other firms (combining the β_1 and β_3 coefficients yields the total effect for firms that report small losses: -0.021 + -0.096). We obtain similar results for firms that miss earnings increase target. These results corroborate the association among missed earnings targets, earnings management and option incentives and we conclude that option grants

[18] CEOs rarely exercise options and retain the shares because doing so creates a less-diversified (riskier) portfolio, requires significant cash investment, exposes the executive to upfront tax liabilities as well as to the downside risk of loss on the shares (Hall and Murphy 2003, Ofek and Yermack 2000, Carpenter and Remmers 2001).

exacerbate earnings-management incentives for firms that miss earnings targets. Because our data are skewed, we re-estimate (3) using ranks for key regression variables and find even stronger results. A second alternate specification replaces the continuous option variables with indicator variables that measure abnormal values, where "abnormality" is defined as a 50% increase over the previous years' value (Bartov and Mohanram 2004). Results are robust and suggest that when the CEO is granted an abnormally large number of options, or experiences an abnormal level of exercise, the incentives to manage earnings are even more compelling.

These results bring to light a specific situation where a CEO's option-induced incentives to maximize personal wealth appears to prevail over the firm-level incentive to report positive earnings and/or earnings increases. The exact boundary conditions of this trade-off remain areas for future research.

Ancillary tests that include accruals and book-tax differences

Because of the prevalence of accruals as a proxy for earnings management, we conducted additional tests to assess whether book-tax differences provide incremental (or superior) information about earnings management in the stock-option context. To that end, we estimate the reverse regressions (equation 4) that separately model each of the three stock-option incentive variables as dependent variables and the book-tax difference and book accruals (along with other control variables) as independent variables. We present the results in Table 6.

[INSERT TABLE 6 ABOUT HERE]

Controlling for book-accruals, both option exercises and holdings are positively associated with book-tax differences, as expected. Conversely, option grants continue to be negatively associated with book-tax differences after controlling for accruals. In all three regressions, the coefficients on book-tax difference are statistically larger and more statistically significant:

untabulated nested J-tests show that explanatory power of *BTD* is greater than that of accruals (Davidson and MacKinnon 1981). Taken together, these results imply that the earnings-management information conveyed by book accruals is largely subsumed by the book-tax difference. Thus we conclude that book-tax differences provide incremental (and superior) information on earnings management beyond that provided by book-accruals, consistent with Phillips et al. (2003) and Heflin and Kross (2005). Moreover, the bi-directional associations that we document between book-tax differences and conflicting stock option incentives (i.e. exercises and options versus grants) are consistent with prior literature.

Tests to distinguish between tax planning and earnings management

As discussed in section 2, the book-tax difference includes rules-induced differences and tax planning in addition to earnings management. Using a single book-tax difference to disentangle the three components is ambitious. Nonetheless, Desai and Dharmapala (2006) posit that removing book-accruals information from the book-tax difference removes all earnings-management information. In particular, Desai and Dharmapala (2006) regress *BTD* on *Accruals* and use the residuals to proxy for tax shelters. Their approach is econometrically equivalent to the reverse regressions we estimate in Table 6. Thus, one might argue that an alternate explanation of our results is that book-tax difference explains the relation between stock options and tax planning, but not earnings management.

We make three arguments to refute this alternate tax-planning explanation and to support our earnings-management interpretation. First, Desai and Dharmapala (2006) predict negative associations with both option grants and exercises. They hold, as a maintained hypothesis that shareholders prefer less tax sheltering because such activities lead to long-run negative abnormal returns. They argue that because options align the managers' and shareholders' interests, options

ought to be negatively associated with tax-shelter use. While Desai and Dharmapala (2006) do find a *negative* association with grants (as predicted), they fail to explain their documented *positive* association with exercises (contrary to prediction). Interestingly, Desai and Dharmapala's bi-directional results are completely consistent with our Table 6 results and we offer a re-interpretation of Desai and Dharmapala's results. We suggest that the bi-directional results support an *earnings-management* story that predicts negative association with grants and positive association with exercises. The bi-directional results are inconsistent with Desai and Dharmapala's *tax-shelter* story.

Second, the leverage variable in our regressions *indirectly* tests the tax-shelter notion. Ceteris paribus, greater debt levels preclude the need for tax sheltering activities (DeAngelo and Masulis 1980, Bathala and Carlson 1995, Graham and Tucker 2006). Therefore, if the residuals used by Desai and Dharmapala (2006) represent *only* tax-sheltering activities, then the residuals should be negatively associated with debt level. However, in untabulated results we find that the residuals are positively associated with debt level, implying that residuals must also include earnings management information (Phillips et al. 2003, Heflin and Kross 2005).

Third, we construct tests that use pre-financing (i.e. ex ante) marginal tax rates to *directly* measure tax-shelter demand. Ceteris paribus, firms with the highest marginal tax rates (MTR) have the greatest potential demand for tax shelters. Under the tax-shelter hypothesis , high-MTR firms should have the strongest *negative* association between option exercises and the book-tax difference after controlling for accruals. If however, the earnings-management hypothesis prevails, as we posit, high-MTR firms, similar to the other firms, should have a non-negative (even *positive*) association between option exercises and the book-tax difference after controlling for accruals. Using ex ante marginal tax rates we create an indicator variable for firms in the top

MTR decile (*HighMTR*). [19] We estimate a regression, shown in Table 7, that allows the coefficient on *Exercises* to differ for these high-MTR firms (i.e., *Exercises* × *HighMTR*). We find that the coefficient on this interaction variable is positive and very significant, consistent with our earnings-management story.

[INSERT TABLE 7 ABOUT HERE]

These additional tests corroborate our claim that even after controlling for accruals, the book-tax difference is a strong proxy for earnings management. Further research is needed to fully understand the interplay of tax shelters, earnings management and stock-option incentives.

VI. CONCLUSIONS

Using CEO compensation data for 1,744 firms for the years 1992-2004, we pinpoint an important situation where CEO and firm-level incentives sharply conflict, namely when option grants create the incentive for the CEO to manage earnings downward yet doing so causes the firm to miss a critical earnings target. In particular, we find that larger CEO option grants and smaller CEO option exercises are associated with downward earnings management and the increased likelihood that the firm will report a small loss or slight earnings decline. These novel tests highlight a situation where CEOs might trade-off firm value to enhance personal wealth.

While many prior studies ascertain that firms deliberately *meet* or *beat* earnings targets, ours is the first study to document incentives for firms to *miss* earnings targets. Further, no prior study simultaneously considers exercises and/or option holdings (which create incentives to manage earnings upward) *and* grants (which create incentives to manage earnings downward). In addition, ours is the first study to use book-tax differences to test equity-based compensation incentives. Finally, consistent with recent studies on opportunistic timing of option grants (Heron

[19] These rates are taken from Professor John Graham's website. His variable definitions say: "The third column is the simulated corporate MTR based on income BEFORE interest expense has been deducted." We interpret this MTR as a proxy for the ex ante demand for tax shelters and not for the ex post use of tax shelters.

and Lie 2006), we document that managers time their options after missing earnings targets, which we believe has not yet been documented.

Follow-on tests show that book-tax differences are useful in detecting earnings management and provide information beyond that provided by book-accruals, the traditional earnings-management variable. We rule out tax-shelter demand as a possible alternative explanation for our findings. Thus, in contrast to conclusions in Desai and Dharmapala (2006), we conclude that the association between incremental information in book-tax differences (beyond accruals) and stock-option incentives provides strong evidence of managerial opportunistic behavior.

More broadly, our study responds to Dechow and Skinner (2000), who encourage academics to focus earnings-management research on capital market incentives, arguing that managers have become increasingly sensitive to stock prices and price reactions to key accounting numbers such as earnings. While stock options are intended to align managers' and owners' interests, we document a specific situation where options create or exacerbate manager-shareholder conflicts (Jensen 2005) and encourage earnings management. This is an important field of inquiry because numerous studies report that accounting manipulations benefit managers at the expense of shareholders. In the extreme, earnings management may spur costly litigation, SEC enquiry and fines, severe share price drops, loss of management credibility, and higher cost of capital.

As with any empirical archival study, our research suffers from certain limitations including the use of current tax expense to estimate taxable income, the use of annual executive compensation data rather than quarterly data, and the use of the Black-Scholes formula to estimate option grant values. Nonetheless, our study represents an important contribution to the collective understanding of how conflicting incentives influence managerial decisions (Fields et al. 2001).

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FIGURE 1
Components of the book-tax difference

	Earnings management (Column 1)	**Mandated rule differences** (Column 2)	**Tax planning** (Column 3)
Permanent differences	***Nonconforming*** Release tax contingencies (B ↑ T ↔) Designate permanently reinvested earnings (B ↑ T ↔) Reduce deferred tax asset valuation allowance (B ↑ T ↔)	***Nonconforming*** Dividends received deduction (B ↔ T ↓) Meals and entertainment (B ↔ T↑)	***Nonconforming*** Tax-exempt bonds (B ↔ T ↓) Income shifting to low foreign tax jurisdictions (B ↔ T ↔ tax expense ↓)
Temporary differences	***Nonconforming*** Release reserves (B ↑ T ↔) Decrease book bad debt expense (B ↑ T ↔) ***Conforming*** Accelerate revenue recognition (B ↑ T ↑) Postpone purchases under LIFO (B ↑ T ↑)	***Nonconforming*** Depreciation (B ↔ T ↓) Bad debt expense (B ↔ T↑) Warranty reserve (B ↔ T↑)	***Nonconforming*** Installment sales (B ↔ T ↓) Prepay pension asset (B ↔ T ↓) ***Conforming*** Accelerate R&D expenditures (B ↓ T ↓) Postpone revenue recognition (B ↓ T ↓)

Notes to Figure 1:

The ↓ ↑ and ↔symbols indicate the direction of the effect on taxable income (T) or book income (B), the arrows indicate increase, decrease, or no change respectively.

The examples shown in column 1, are the type of earnings management activities we intend to capture in our book-tax difference measure.

The mandated rules differences shown in column 2, add noise to our earnings-management measure.

The tax planning activities shown in column 3, may confound our tests of earnings management; therefore, we conduct additional tests to distinguish between tax planning and earnings management activities.

Both permanent and temporary differences can be nonconforming however temporary differences will ultimately reverse thereby switching the direction of the difference. The differences related to mandated rule differences are unrelated to earnings management and will add noise but not bias to our measure.

In the case of temporary differences, the book-tax difference does not reflect conforming activities, such as accelerating revenue recognition.

TABLE 1
Sample derivation and distribution

Panel A: Sample selection

	Distinct firms	Firm years
Total Execucomp observations for fiscal years 1992-2004	2,661	19,991
Less: Observations with missing salary data	-10	-151
Less: Observations with non-positive current tax expense	-283	-4,029
Less: Observations with NOLs	-276	-3,697
Less: Observations in utilities and financial-services industries	-348	-2,160
Final sample	1,744	9,954

Panel B: Distribution of firms by year

Year	Distinct firms	Percent of sample
1992	246	2
1993	672	7
1994	893	9
1995	888	9
1996	916	9
1997	898	9
1998	902	9
1999	937	9
2000	903	9
2001	732	7
2002	679	7
2003	671	7
2004	617	6
Total firm-years	9,954	100

TABLE 1 (Continued)

Panel C: Industry distribution

	Fama-French industry classification	Number of observations	Percent of sample
1	Food Products	47	3
2	Beer and Liquor	7	0
3	Tobacco Products	1	0
4	Recreation	45	3
5	Printing and Publishing	34	2
6	Consumer Goods	44	3
7	Apparel	15	1
8	Healthcare, Medical Equipment	102	6
9	Chemicals	59	3
10	Textiles	5	0
11	Construction and Construction	60	3
12	Steel Works Etc	44	3
13	Fabricated Products and Machinery	69	4
14	Electrical Equipment	14	1
15	Automobiles and Trucks	48	3
16	Aircraft, ships, and railroad	16	1
17	Precious Metals, Non-Metallic	16	1
19	Petroleum and Natural Gas	57	3
21	Communication	63	4
22	Personal and Business Services	109	6
23	Business Equipment	379	22
24	Business Supplies and Shipping	21	1
25	Transportation	33	2
26	Wholesale	74	4
27	Retail	129	7
28	Restaurants, Hotels, Motels	5	0
	Others	248	14
		1,744	100

TABLE 2
Descriptive statistics for 9,954 firm-year observations from 1992-2004

	Mean	Standard deviation	First quartile	Median	Third quartile
Firm demographics					
Assets in $M	5,287	23,292	377	944	2,833
Sales in $M	4,607	14,257	438	1,090	3,160
Market value in $M	6,743	24,564	463	1,147	3,635
Net income in $M	248	1,468	17	48	153
Return on assets	0.06	0.16	0.03	0.06	0.10
CEO compensation characteristics					
Salary in $M	0.605	0.346	0.375	0.537	0.763
Bonus in $M	0.640	1.185	0.107	0.350	0.747
Option grants in $M	2.20	9.38	-	0.54	1.84
Option exercises in $M	1.83	10.25	-	-	0.51
Options held in $M	12.80	52.40	0.24	2.15	8.69
Shares held in $M	94.07	1,124.90	2.08	7.89	30.09
Regression variables					
MISS - Loss	0.03	0.17	0	0	0
MISS - Earnings decline	0.13	0.34	0	0	0
BTD - Book-tax difference as % of assets	-0.75	5.80	-2.47	-0.04	2.13
Grants - Option grants to salary	3.02	6.38	-	1.00	2.96
Exercises - Option exercises to salary	2.28	6.79	-	-	0.92
Options - Options held to salary	17.14	41.15	0.54	4.14	14.62
Stock - Shares held to salary	120.05	381.61	3.64	12.81	52.31
Bonus - Bonus to salary	0.92	1.06	0.27	0.71	1.18
Growth - Market to book ratio	3.76	10.22	1.69	2.52	4.02
Accruals - Total accruals to assets	-5.02	7.26	-8.43	-4.79	-1.36
Leverage - Long-term debt to assets	0.18	0.16	0.03	0.16	0.28

TABLE 2 (Continued)

All compensation variables are winsorized at the 99th percentile

Variable definitions (Data items in Compustat and Execucomp):

Assets	=	Compustat DATA6
Sales	=	Compustat DATA12
Net income	=	Compustat DATA172
Market value	=	Common shares outstanding (Compustat DATA25) multiplied by fiscal year end closing price (Compustat DATA199)
Return on assets	=	Net income (DATA172) divided by total assets (DATA6)
Salary	=	Execucomp SALARY
Bonus	=	Execucomp BONUS
Option grants	=	Execucomp BLK_VALU
Option exercises	=	Execucomp SOPTEXER
Options held	=	Execucomp INMONEX + INMONUN
Shares held	=	Execucomp SHROWN × PRCCF + RSTKHLDV
Miss	=	*Loss*: Defined as "1" if earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.02; and zero otherwise *Earnings decline*: Defined as "1" if change in earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.01; and zero otherwise
BTD	=	Pre-tax book income (Compustat DATA170) minus taxable income calculated as current tax expense (DATA16 - DATA50) divided by highest statutory tax rate (35% for the sample period). It is deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile
Grants	=	Option grants (BLK_VALU) deflated by Salary (SALARY)
Exercises	=	Option exercises (SOPTEXER) deflated by Salary (SALARY)
Options	=	Options held (INMONEX + INMONUN) deflated by Salary (SALARY)
Stock	=	Shares held (SHROWN × PRCCF + RSTKHLDV) deflated by Salary (SALARY)
Bonus	=	Bonus (BONUS) deflated by Salary (SALARY)
Growth	=	Market to book ratio: (DATA25×DATA199)/SEQ
Accruals	=	Net income (DATA172) minus cash flow from operations (DATA308), both variables deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile
Leverage	=	Long-term debt (DATA9) divided by total assets (DATA6)

TABLE 3
Missed earnings targets and stock-option activity

Panel A: Frequency of quarterly option activity by missed earnings targets

	Miss_Qtr=1	***Miss_Qtr=0***	***Difference***
Firm quarters with option grants	18.2%	17.0%	1.2%***
Mean options grants $M	0.563	0.464	0.099***
Mean *Grants* - Option grants to salary	0.742	0.597	0.145***
Fixed-date grants/Total grants	55.7%	63.2%	-7.5%***

Panel B: Frequency of annual option activity by missed earnings targets

Miss = Miss_zero	**Firm years with option grants**	**Firm years with option exercises**	**Sample size**
Miss_zero = 1	75.2%	29.1%	230
Miss_zero = 0	74.3%	40.6%	7,536
			7,766

Chi-square statistic: 6.38***
Case-Control Odds Ratio: 1.44**

Miss = Miss_priorYR	**Firm years with option grants**	**Firm years with option exercises**	**Sample size**
Miss_priorYR = 1	75.5%	40.4%	848
Miss_priorYR = 0	73.9%	42.1%	5,496
			6,344

Chi-square statistic: 0.74
Case-Control Odds Ratio: 1.06

TABLE 3 (Continued)

Panel C: Magnitude of option activity by missed earnings targets

Miss = Miss_zero	*Miss_zero* = 1 N = 230		*Miss_zero*= 0 N =7,536	
	Mean	**Median**	**Mean**	**Median**
Grants - Option grants to salary	5.18***	1.48***	3.03	1.07
Exercises - Option exercises to salary	1.02	0.00***	2.28	0.00
Options - Options held to salary	14.07	2.31***	17.63	4.79

Miss = Miss_priorYR	*Miss_priorYR* = 1 N = 848		*Miss_ priorYR* = 0 N = 5,496	
	Mean	**Median**	**Mean**	**Median**
Grants - Option grants to salary	3.49*	1.13	3.16	1.07
Exercises - Option exercises to salary	2.06***	0.00**	2.78	0.00
Options - Options held to salary	15.53***	3.35***	21.17	5.67

*, **, *** Indicates significance at the 0.10, 0.05, and 0.01 level
Panel A sample comprises 64,903 quarterly observations in Compustat, with corresponding data in Execucomp database. Sample excludes quarters with losses greater than *Miss_Q* described below.
All compensation variables are winsorized at the 99th percentile.

Variable definitions (Data items in Compustat and Execucomp):

Miss_Q	=	Defined as "1" if quarterly earnings (Compustat DATA69) divided by lagged market value (DATA14 × DATA61) is less than 0.00 but greater than -0.02; and zero otherwise
Miss_zero	=	*Loss*: Defined as "1" if earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.02; and zero otherwise
Miss_priorYR	=	Defined as "1" if change in earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.01; and zero otherwise
Exercises	=	Option exercises (SOPTEXER) deflated by Salary (SALARY)
Options	=	Options held (INMONEX + INMONUN) deflated by Salary (SALARY)
Grants	=	Option grants (BLK_VALU) deflated by Salary (SALARY)
Fixed-date option grants	=	If the quarter in which the options are granted is the same as the grant quarter in any of the previous two fiscal years. We determine option grant date from the options expiration date (Execucomp EXDATE) and assume that the options have full years of life before expiration.

TABLE 4
Logistic regressions of missed earnings target on stock-option incentives and book-tax differences

Panel A: Tests of incentives to miss earnings target

$$Miss_{it} = \beta_0 + \beta_1 \times Grants_{it} + \beta_2 \times Exercises_{it} + \beta_3 \times Options_{it} + \Sigma\, \beta_4 \times Control_{sit} + \varepsilon_{it} \quad (1)$$

		Miss = Miss_zero		***Miss = Miss_priorYR***	
Variable[a]	**Predicted sign**	**Estimate**	**P-value**	**Estimate**	**P-value**
Intercept		-14.520	0.946	-2.144	0.001
Grants	+	0.042***	0.001	0.025***	0.000
Exercises	-	-0.019*	0.069	-0.009*	0.094
Options	-	0.003*	0.050	-0.003**	0.019
Bonus	-	-0.403***	0.001	-0.475***	0.001
Stock	+/-	0.000	0.198	0.000	0.309
Leverage	+/-	0.549	0.275	-0.253	0.384
Size	+/-	0.084*	0.113	0.052*	0.078
Growth	+/-	-0.154***	0.001	-0.026**	0.034
Year fixed effects		Yes		Yes	
Industry fixed effects		Yes		Yes	
N		7,686		6262	
Adjusted R-squared		7.12%		5.85%	
LR Chi-square		127.79		202.88	
Probability		0.001		0.001	
ROC Curve c-statistic		0.73		0.66	

Panel B: Tests of earnings management and missed earnings target

$$Miss_{it} = \beta_0 + \beta_1 \times Grants_{it} + \beta_2 \times Exercises_{it} + \beta_3 \times Options_{it} + \beta_4 \times BTD_{it} + \Sigma\, \beta_s \times Control_{sit} + \varepsilon_{it} \quad (2)$$

		Miss = Miss_zero		***Miss = Miss_priorYR***	
Variable[a]	**Predicted sign**	**Estimate**	**P-value**	**Estimate**	**P-value**
Intercept		-14.677	0.933	-2.196***	0.001
Grants	+	0.027 ***	0.005	0.024***	0.001
Exercises	-	-0.026 **	0.031	-0.009*	0.096
Options	-	0.004 **	0.030	0.003**	0.021
BTD	-	-0.309 ***	0.001	-0.017**	0.022
Bonus	-	-0.400 ***	0.001	-0.474***	0.001
Stock	+/-	0.000	0.220	0.000	0.293
Leverage	+/-	2.055 ***	0.001	-0.219	0.452
Size	+/-	0.160 ***	0.005	0.058**	0.049
Growth	+/-	-0.280 ***	0.001	-0.026**	0.035
Year fixed effects		Yes		Yes	
Industry fixed effects		Yes		Yes	
N		7,686		6,262	
Adjusted R-squared		25.8%		6.0%	
LR Chi-square		474.12		206.86	
Probability		0.001		0.001	
ROC Curve c-statistic		0.87		0.67	

TABLE 4 (Continued)

*, **, *** Indicates significance at the 0.10, 0.05, and 0.01 level (one-tailed if signed, else two-tailed)

[a] All compensation variables are winsorized at 99th percentile

Variable definitions (Data items in Compustat and Execucomp):

Miss_zero	=	*Loss*: Defined as "1" if earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.02; and zero otherwise
Miss_priorYR	=	Defined as "1" if change in earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.01; and zero otherwise
Grants	=	Option grants (BLK_VALU) deflated by salary (SALARY)
Exercises	=	Option exercises (SOPTEXER) deflated by salary (SALARY)
Options	=	Options held (INMONEX + INMONUN) deflated by salary (SALARY)
BTD	=	Pre-tax book income (Compustat DATA170) minus taxable income calculated as current tax expense (DATA16 - DATA50) divided by highest statutory tax rate (35% for the sample period). It is deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile
Bonus	=	Bonus (BONUS) deflated by salary (SALARY)
Stock	=	Shares held (SHROWN × PRCCF + RSTKHLDV) deflated by salary (SALARY)
Leverage	=	Long-term debt (DATA9) divided by total assets (DATA6)
Size	=	Natural log of total assets
Growth	=	Market to book ratio: (DATA25×DATA199)/SEQ
Year fixed effects	=	Indicator variables for each year in sample, defined as "1" if the observation comes from that year and 0 otherwise
Industry fixed effects	=	Indicator variables for each one-digit SIC, defined as "1" if the firm belongs to that industry and 0 otherwise

TABLE 5
OLS Regression of book-tax difference on stock-option incentives and missed earnings target variables

$$BTD_{it} = \beta_0 + \beta_1 \times Miss_{it} + \beta_2 \times Grants_{it} + \beta_3 \times (Grants_{it} \times Miss_{it}) + \beta_4 \times Exercises_{it} + \beta_5 \times Options + \Sigma \beta_6 \times Control_{sit} + \varepsilon_{it}$$

		Baseline model		Miss = Miss_zero		Miss = Miss_priorYR	
Variable[c]	**Pred. sign**	**Estimate**	**P-value**	**Estimate**	**P-value**	**Estimate**	**P-value**
Intercept		-2.329**	0.011	-0.911	0.200	-2.062***	0.010
Miss	-			-4.788***	0.001	-0.543***	0.001
Grants	-	-0.047***	0.001	-0.021***	0.005	-0.013*	0.086
Grants × Miss	-			-0.096***	0.001	-0.050***	0.006
Exercises	+	0.013*	0.073	0.004	0.283	-0.001	0.465
Options	+	0.003**	0.035	0.002*	0.095	0.002	0.090
Bonus	+	0.269***	0.001	-0.137***	0.001	-0.192***	0.001
Stock	+/-	0.000	0.441	0.000**	0.011	0.000**	0.012
Leverage	+	0.585*	0.068	2.209***	0.001	1.514***	0.001
Size	+/-	0.205***	0.001	0.165***	0.001	0.290***	0.001
Growth	+/-	0.017***	0.001	0.013***	0.001	0.015***	0.001
Lag BTD (one year)	+/-	0.206***	0.001	0.146***	0.001	0.171***	0.001
Lag BTD (two year)	+/-	0.047***	0.001	0.026***	0.001	0.061***	0.001
Lag BTD (three year)	+/-	0.015**	0.032	0.006**	0.020	0.005*	0.066
Year fixed effects		Yes		Yes		Yes	
Industry fixed effects		Yes		Yes		Yes	
N		9,780		7,371		6,022	
Adjusted R-squared		10.96%		17.1%		21.3%	
F-value		39.81		48.34		50.63	
Probability		0.001		0.001		0.001	

*, **, *** Indicates significance at the 0.10, 0.05, and 0.01 level (one-tailed if signed, else two-tailed)

All compensation variables used for regressions are winsorized at 99th percentile

Variable definitions (Data items in Compustat and Execucomp):

BTD = Pre-tax book income (Compustat DATA170) minus taxable income calculated as current tax expense (DATA16 - DATA50) divided by highest statutory tax rate (35% for the sample period). It is deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile

Miss = *Loss*: Defined as "1" if earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.02; and zero otherwise
Earnings decline: Defined as "1" if change in earnings (Compustat DATA172) divided by lagged market value (DATA25 × DATA199) is less than 0.00 but greater than -0.01; and zero otherwise

Options = Options held (INMONEX + INMONUN) deflated by salary (SALARY)

Grants = Option grants (BLK_VALU) deflated by salary (SALARY)

Bonus = Bonus (BONUS) deflated by salary (SALARY)

Stock = Shares held (SHROWN × PRCCF + RSTKHLDV) deflated by salary (SALARY)

Leverage = Long-term debt (DATA9) divided by total assets (DATA6)

Size = Natural log of total assets

Growth = Market to book ratio: (DATA25×DATA199)/SEQ

Year fixed effects = Indicator variables for each year in sample, defined as "1" if the observation comes from that year and 0 otherwise

Industry fixed effects = Indicator variables for each one-digit SIC, defined as "1" if the firm belongs to that industry and 0 otherwise

TABLE 6
Reverse regression of option characteristics (System of Equations using Seemingly Unrelated Regression technique)

$Incentive_{it} = \gamma_0 + \gamma_1 \times BTD_{it} + \gamma_2 \times Accruals_{it} + \gamma_3 \times Competing\_Incentive_{it} + \Sigma\, \gamma_m \times Control_{mit} + \upsilon_{it}$

	Incentive = Exercises			***Incentive = Options***			***Incentive = Grants***		
	Pred sign	**Estimate**	**P-value**	**Pred sign**	**Estimate**	**P-value**	**Pred sign**	**Estimate**	**P-value**
Intercept		1.871*	0.080		-2.173	0.744		-1.077	0.443
BTD	+	0.041***	0.001	+	0.296***	0.001	-	-0.040***	0.002
Accruals	+	0.025***	0.005	+	0.070*	0.097	-	-0.023*	0.090
Competing _Incentive: Exercises							+	0.497	0.051
Competing_Incentive: Grants	+	0.584***	0.001	+	3.491***	0.001			
Size	+/-	0.001***	0.009	+/-	0.003**	0.030	+/-	-0.001***	0.001
Salary	+/-	0.000	0.216	+/-	0.000**	0.033	+/-	0.000***	0.001
Growth	+/-	0.024***	0.001	+/-	0.353***	0.001	+/-	0.027	0.443
Year fixed effects		Yes			Yes			Yes	
Industry fixed effects		Yes			Yes			Yes	
Adjusted R^2		11.6%			25.4%			13.7%	
N		9,779			9,779			9,779	
F value		50.48			129.20			60.76	
Probability		0.001			0.001			0.001	

*, **, *** Indicates significance at the 0.10, 0.05, and 0.01 level (one-tailed if signed, else two-tailed)

[a] All compensation variables used for regressions are winsorized at 99th percentile

Variable definitions (Data items in Compustat and Execucomp):

Incentive = *Grants*: Option grants (BLK_VALU) deflated by salary (SALARY); *Exercises*: Option exercises (SOPTEXER) deflated by salary (SALARY); or *Options*: Options held (INMONEX + INMONUN) deflated by salary (SALARY)

Accruals = Net income (DATA172) minus cash flow from operations (DATA308), both variables deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile

BTD = Pre-tax book income (Compustat DATA170) minus taxable income calculated as current tax expense (DATA16 - DATA50) divided by highest statutory tax rate (35% for the sample period), deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile

Size = Natural log of total assets

Salary = Execucomp SALARY

Growth = Book to market ratio: (DATA25×DATA199)/SEQ

Year fixed effects = Indicator variables for each year in sample, defined as "1" if the observation comes from that year and 0 otherwise

Industry fixed effect = Indicator variables for each one-digit SIC, defined as "1" if the firm belongs to that industry and 0 otherwise

TABLE 7
Tests of tax shelters as alternative explanation

$$BTD_{it} = \beta_0 + \beta_1 \times Exercises_{it} + \beta_2 \times (Exercises_{it} \times HighMTR_{it}) + \beta_3 \times Options_{it} + \beta_4 \times Grants_{it} + \beta_5 \times Accruals_{it} + \Sigma \beta_s \times Control_{sit} + \varepsilon_{it}$$

Variable[a]	Predicted sign	Estimate	Probability
Intercept		-2.177 **	0.012
Exercises	+	0.002	0.404
Exercises × HighMTR	?	0.062 ***	0.003
Options	+	0.004 ***	0.010
Grants	-	-0.037 ***	0.001
Accruals	+	0.228 ***	0.001
Bonus	+	0.089 **	0.045
Stock	+/-	0.000 **	0.023
Leverage	+	0.777*	0.019
Size	+/-	0.276 ***	0.001
Growth	+/-	0.019 ***	0.001
Lag BTD (one year)	+/-	0.205 ***	0.001
Lag BTD (two year)	+/-	0.048 ***	0.001
Lag BTD (three year)	+/-	0.016 **	0.016
Year fixed effects		Yes	
Industry fixed effects		Yes	
N		9,780	
Adjusted R-squared		19.0%	
F value		70.39	0.001
Test whether coefficient on *Exercises* + (*Exercises*HighMTR*) is different from 0			
F Value		8.63	0.003

*, **, *** Indicates significance at the 0.10, 0.05, and 0.01 level (one-tailed if signed, else two-tailed)

[a] All compensation variables used for regressions are winsorized at 99th percentile

Variable definitions (Data items in Compustat and Execucomp):

BTD = Pre-tax book income (Compustat DATA170) minus taxable income calculated as current tax expense (DATA16 - DATA50) divided by highest statutory tax rate (35% for the sample period). It is deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile

Exercises = Option exercises (SOPTEXER) deflated by salary (SALARY)

HighMTR = Dummy variable defined as one if marginal tax rate before debt financing (obtained from John Graham's website) is in top two deciles of the sample firm years

Options = Options held (INMONEX + INMONUN) deflated by salary (SALARY)

Grants = Option grants (BLK_VALU) deflated by salary (SALARY)

Accruals = Net income (DATA172) minus cash flow from operations (DATA308), both variables deflated by assets (DATA6) and reported in percent; winsorized at 1st and 99th percentile

Bonus = Bonus (BONUS) deflated by salary (SALARY)

Stock = Shares held (SHROWN × PRCCF + RSTKHLDV) deflated by salary (SALARY)

Leverage = Long-term debt (DATA9) divided by total assets (DATA6)

Size = Natural log of total assets

Growth = Market to book ratio: (DATA25×DATA199)/SEQ

Year fixed effects = Indicator variables for each year in sample, defined as "1" if the observation comes from that year and 0 otherwise

Industry fixed effects = Indicator variables for each one-digit SIC, defined as "1" if the firm belongs to that industry and 0 otherwise