

## CEOS ON THE EDGE: EARNINGS MANIPULATION AND STOCK-BASED INCENTIVE MISALIGNMENT

XIAOMENG ZHANG  
American University

KATHRYN M. BARTOL  
KEN G. SMITH  
University of Maryland

MICHAEL D. PFARRER  
University of Denver

DMITRY M. KHANIN  
California State, Fullerton

Synthesizing agency theory and prospect theory, we examined the effects of stock-based incentives on CEO earnings manipulation behaviors. In analyses of data compiled from the public companies listed in Compustat's Executive Compensation Database and a U.S. General Accounting Office restatements database, we found that CEOs were more likely to manipulate firm earnings when they had more out-of-the-money options and lower stock ownership. Firm performance and CEO tenure interacted with out-of-the-money options and ownership to influence CEO earnings manipulation behaviors. Our findings inform agency-based views by providing evidence that, under certain conditions, stock-based managerial incentives lead to incentive misalignment.

Inappropriate behavior by management (e.g., earnings manipulation, fraudulent financial reporting) has long been an important area of interest to scholars, regulators, investors, and the public at large. The recent high-profile scandals at Enron, Tyco, and WorldCom have drawn increased attention to earnings manipulation activities (Levitt, 1999; Wu, 2002). These corporate failures highlight the fact that earnings management can be abused (Davidson, Jiraporn, Kim, & Nemec, 2004; Erickson, Hanlon, & Maydew, 2006).

Earnings manipulation is intentional misapplication of accounting rules and misreporting of financial results that causes reported income to be larger or smaller than it would otherwise be (Davidson et al., 2004; Elitzur & Yaari, 1995; General Accounting Office [GAO], 2003). Prior evidence indicates that capital markets react negatively to earnings manipulation because it involves decisions that may lead

to severe declines in a company's stock price, the exposure of auditors to litigation risk and reputational damage, turnover among top management within the company, prison sentences for top executives, filings for bankruptcy, and loss of investor confidence (Pratt & Stice, 1994; Richardson, Tuna, & Wu, 2002; Weber, Little, Henry, & Lavelle, 2001; Wu, 2002).

Although the accounting and financial disciplines have a long history of examining earnings management and aggressive accounting practices (see Healy and Wahlen [1999] for a review), previous research has predominantly focused on antecedents of earnings manipulation at an industry level, such as industry competition and regulation (e.g., Clinard & Yeager, 1980), or antecedents at the firm level, such as financial condition and structural complexity (e.g., Brass, Butterfield, & Skaggs, 1998; Lee, Ingram, & Howard, 1999). Yet the 1999 Committee of Sponsoring Organizations of the Treadway Commission, which investigated the key factors influencing firms subject to enforcement action for accounting fraud, concluded that the CEOs of the firms were actively involved in most cases of earnings manipulation (Beasley, Carcello, & Hermanson, 1999).

CEOs are usually highly concerned with financial reports because such reports convey informa-

---

We are grateful to Amy Hillman and three anonymous reviewers, all of whom offered exceptionally insightful suggestions. We also appreciate the helpful advice of Cathy C. Durham, Paul J. Hanges, and Charles LaHaie. Finally, we thank the individuals at the U.S. General Accounting Office, the Huron Consulting Group, and the U.S. Securities and Exchange Commission who were very generous with their assistance.

tion about firm performance that directly reflects on their management ability and effectiveness and may also directly influence their personal wealth. As a result, CEOs may be highly motivated to manipulate reports of firm performance. The Sarbanes-Oxley Act of 2002 specifically requires CEOs to personally sign and approve all financial statements, thus increasing CEOs' responsibility for ethical behavior in their organizations. Thus, it is important for scholars and practitioners to understand the reasons why CEOs may be motivated to engage in earnings manipulation and to find ways to forestall this socially unwanted behavior.

Over the past two decades, many firms have used stock-based executive compensation as a governance mechanism to help discourage undesirable behaviors by executives (Westphal & Zajac, 1994). Such usage is consistent with agency theory, which advocates employing stock-based incentives as a way of aligning CEO self-interest with the interests of shareholders (e.g., Eaton & Rosen, 1983; Eisenhardt, 1988; Welbourne, Balkin, & Gomez-Mejia, 1995). However, this prescription fails to adequately address the accompanying impact on executives' perceptions of compensation risk—that is, perceived threats to their wealth (Durham & Bartol, 2000; Gomez-Mejia, Welbourne, & Wiseman, 2000; Wiseman & Gomez-Mejia, 1998). Prospect theory, with its assumption of loss aversion, provides reasons to question the uniformly beneficial influence of stock-based incentives and offers additional insight into the compensation risk issue.

Thus, drawing on both the agency-based view and prospect theory, this research focuses on investigating the effects of stock-based managerial incentives on CEO earnings manipulation behaviors. The overall purpose is to supplement the agency-based view with prospect theory notions that challenge the stock-based interest alignment argument by showing that certain categories of stock-based incentives may actually prompt CEO "incentive misalignment" (activity indicating that perceived self-interest and fiduciary interest diverge) in the form of earnings manipulation. We argue that improved understanding of the role of stock-based incentives in CEO earnings manipulation activity can facilitate more effective construction of executive compensation plans and governance of CEOs, and also discourage undesirable behaviors that have negative consequences for shareholders and society at large. Our specific purposes and contributions are threefold.

First, in amending the agency-based view, we draw from prospect theory (Kahneman & Tversky, 1979) to suggest that "in-the-money" stock options (those that are positively valued because the stock's

current market price is above the price at which they were granted) and "out-of-the-money" stock options (options that have no positive value because the current market price is not above the grant price) convey different compensation risks, which may have distinct impacts on CEO earnings manipulation behaviors. Our contribution is to argue, in line with prospect theory, that stock option incentives may not always be effective in aligning the interests of CEOs and stakeholders. Rather, they may actually encourage the pursuit of self-interest under some conditions, resulting in incentive misalignment.

Second, the argument of agency theory (Jensen & Meckling, 1976) is that ownership helps to align the interests of principals and agents. Following this logic, stock ownership should dampen earnings manipulation. Prospect theory (Kahneman & Tversky, 1979) may lead to the same conclusion, as it demonstrates that individuals are loss-averse and tend to forgo the possibility of a gain when it involves the potential for loss relative to one's current position. In the case of earnings manipulation, the financial stakes are significant. For example, the U.S. GAO (2003) reported an average 18 percent decline in market value in the 60 days after firm announcements of restatements due to aggressive accounting practices. Hence, our second contribution is to show, drawing simultaneously on agency theory and prospect theory, that stock ownership generally discourages CEOs from engaging in earnings manipulation, an area of major governance concern.

Finally, we further develop the agency-based view and prospect theory by demonstrating that various stock-based incentives differentially affect the likelihood of earnings manipulation, depending on situational contingencies (Sanders, 2001). In this study, we assess the impact of two major contingency variables, firm performance and CEO tenure, as they interact with stock-based incentives to influence the likelihood of CEO earnings manipulation. Our contribution is to begin to identify the boundary conditions under which the agency-based view and prospect theory combine to provide a better understanding of the motivation behind CEO decisions that are clearly in opposition to desired corporate governance.

## THEORY AND HYPOTHESES

In attempting to investigate issues such as executive compensation and corporate governance, researchers have increasingly drawn on agency theory (Beatty & Zajac, 1994; Tosi & Gomez-Mejia, 1989; Westphal & Zajac, 1994). The agency-based

view is characterized by its emphasis on the risk differential between principals and agents (Jensen & Meckling, 1976; Ross, 1973). Unlike principals, who can diversify their wealth, spreading capital across different firms, agents have already invested most of their human capital in one firm. This risk differential raises the possibility of interest conflicts between agents (CEOs) and principals (shareholders). Thus, the agency-based view is predicated on the belief that self-interested agents choose actions that maximize their personal utility (i.e., value), which may cause harm to shareholders (Jensen & Meckling, 1976; Ross, 1973).

According to agency theory, the conflicts of interest between agents and principals can be mitigated in two different ways. First, a firm's board of directors or its shareholders themselves can monitor agents' actions. However, these monitoring mechanisms are usually difficult to implement, owing to their high cost and the unobservability of agent behaviors in some cases. As a result, the second way—use of outcome-based incentives—has become an increasingly important mechanism that many firms use to align the interests of agents and principals (Eisenhardt, 1988; Henderson & Fredrickson, 1996; Tosi, Werner, Katz, & Gomez-Mejia, 2000; Welbourne et al., 1995).

Outcome-based incentives, such as stock options, place substantial amounts of managerial compensation and wealth at risk by tying them closely to firm performance (Denis, Denis, & Sarin, 1999; Jensen & Murphy, 1990). The underlying premise, based on agency theory, is that directly linking executive personal wealth to firm performance through stock-based incentives (e.g., stock options, stock ownership) motivates them to act congruently with the interests of shareholders, thereby realizing incentive alignment. However, stock-based incentives, which are directly related to stock price and firm performance, constitute compensation risk for executives because of uncertainty regarding future wealth enhancement. Given the inherent risk, stock-based incentives have the possibility of unwittingly motivating undesirable behaviors (Kerr, 1975, 1995), resulting in CEO interest misalignment.

Prospect theory, with its loss aversion assumption, provides the rationale for potentially revising the agency-based view to account for incentive misalignment. The argument of prospect theory (Kahneman & Tversky, 1979) is that decision makers evaluate options against a "reference point," or "frame." A central tenet of prospect theory is that the value function around the reference point is steeper in the direction of losses than in the direction of gains, leading to the important insight that

individuals tend to be *loss-averse*. This shift in risk preferences against a reference point for framing problems as a gain or loss amends the major emphasis on risk aversion articulated by the agency-based view. More specifically, in the context of possible gains, decision makers (e.g., executives) tend to forgo the possibility of a gain if pursuing the gain involves the perceived potential for loss relative to their current position. Conversely, when they face certain losses or have already experienced them, executives are prone to take more proactive measures aimed at stemming losses and regaining position even if it is necessary to sacrifice the interests of others in doing so (e.g., the firm, shareholders) (Kahneman & Tversky, 1979; Wiseman & Gomez-Mejia, 1998). In essence, decision makers are loss avoiders, rather than wealth maximizers.

In summary, prospect theory informs agency theory by providing the major insight that the fear of loss relative to existing wealth heavily influences decision makers' risk preferences. As a result, outcome-based incentives, such as stock options, may not always engender the agent risk preferences desired by principals, as per the agency theory assumption. Rather, outcome-based incentives can actually lead to serious misalignments.

In this next section, we draw on prospect theory to explore in greater depth the impact of various forms of stock-based incentives—namely, out-of-the-money options, in-the-money options, and stock ownership—on CEO decisions to engage in earnings manipulation. We also consider the impact of two major contingency variables, firm performance and CEO tenure, as we establish some boundary conditions on the applicability of prospect theory and the agency-based view and develop a more appropriate combination of these two theoretical perspectives as they apply to CEO decisions that are clearly in opposition to desired corporate governance.

### **In-the-Money and Out-of-the-Money Stock Option Pay**

Many public companies include stock options in CEO compensation packages. Under such arrangements, executives are given rights to purchase a specified number of shares of stock in their company at a prescribed price (the "grant" or "strike" price) over a predetermined period of time. Such grants are generally made once a year and involve a vesting period (an amount of time before the options can be exercised), commonly three to five years. Such options must be exercised before the predetermined maturity date, which is typically

ten years, or else they will expire (Brandes, Dharwadkar, & Lemesis, 2003; Ellig, 2002; Hall, 2000).

Building on the concept of "instant endowment" (Thaler, 1980; Thaler & Johnson, 1990), several theorists have argued that executives include the anticipated value of granted stock options in their calculations of personal wealth even before the options are eligible to be exercised (Fama & Jensen, 1980; Gomez-Mejia & Wiseman, 1997; Wiseman & Gomez-Mejia, 1998). Using current stock market price as a reference point, stock options at a given point in time can be categorized as in-the-money or out-of-the money, and executives may hold both because they have received grants with different strike prices in different years.

In-the-money options are positively valued stock options—that is, the grant price is below the current market price. Therefore, CEOs will have a financial gain if they exercise the options (now or when vested, assuming these conditions remain or improve), allowing them to profit from the positive spread between the strike price and the current market price.

In contrast, out-of-the-money options (sometimes referred to as "underwater" options) are worth zero because the current market value is lower than the strike price. Thus, no executive will be willing to exercise these options. However, option-pricing models (e.g., Black & Scholes, 1973) and related information available when stock options are issued include the assumption that the valuation will be positive in the future (Brandes et al., 2003; Choi & Wohar, 1994; Hall, 2000). Accordingly, executives tend to incorporate the options into their calculations of personal wealth under the endowment effect (Thaler, 1980; Thaler & Johnson, 1990; Wiseman & Gomez-Mejia, 1998) and may even hold inflated expectations (Devers, Wiseman, & Holmes, 2007).

From a prospect theory point of view, out-of-the money options put executives in a loss situation. Although they will not exercise underwater stock options, given the negative market-exercise stock price, they are likely to view them as a decrement to personal wealth relative to their instant endowment position because they are unexpectedly, in essence, worthless. However, because there is the possibility that a rise in stock price could put these options in the money, CEOs may be tempted to manipulate earnings to rectify the situation. This notion is in line with the prospect theory premise that individuals are risk takers in the context of losses.

Consequently, executives with significant out-of-the money stock options may make self-serving decisions aimed at aggressively minimizing losses

and regaining individual wealth. The larger the number of out-of-the-money options they hold, the greater the possibility that CEOs will be motivated to inflate company-reported earnings to positively influence market stock prices and thereby rectify their loss situations. Stated formally:

*Hypothesis 1. The relationship between CEO out-of-the-money options and earnings manipulation is positive: The larger the number of a CEO's out-of-the-money options, the higher the likelihood that the CEO will manipulate firm earnings.*

In contrast, in-the-money options put CEOs in a context of gain from a prospect theory point of view. The positive valuation of the stock options is likely to dissuade executives from opportunistic actions. This is because, although executives may temporarily increase the market price of firm stock and the associated value of their in-the-money options through earnings manipulation, such gains involve the potential for loss of their current personal wealth should the earnings manipulation be exposed. This thinking is in line with research by O'Connor, Priem, Coombs, and Gilley (2006), who found some tendency for stock options in general to be associated with less fraudulent financial reporting, although they did not consider the in-the-money versus out-of-the-money differentiation. Building on the prospect theory notion that decision makers are loss avoiders in the context of gain rather than wealth maximizers (Kahneman & Tversky, 1979), we expect executives to be likely to choose actions that preserve the current positive value of in-the-money options over actions that may enhance their value, but may also place that value in jeopardy. Agency theory suggests similar predictions based on arguments relating to the alignment of principal and agent interests. Therefore, the greater the amounts of in-the-money options the executives have, the less likely they will manipulate firm earnings. Stated formally:

*Hypothesis 2. The relationship between CEO in-the-money options and earnings manipulation is negative: The larger the amount of a CEO's in-the-money options, the lower the likelihood that the CEO will manipulate firm earnings.*

## Stock Ownership

Compared to stock options, stock ownership has a more direct effect on executives' current wealth, because executives actually *own* the stocks in the most real sense. This ownership means that the

executives benefit along with shareholders when stock prices rise, but they also stand to suffer immediate losses in their actual wealth if stock prices decline.

With respect to stock ownership, the agency-based argument is that when CEOs have substantial stock ownership, their decisions are more likely to be aligned with the interests of shareholders (Certo, Daily, Cannella, & Dalton, 2004; Jensen & Meckling, 1976). The logic behind stock ownership alignment is that, because the value of executive shares changes in direct proportion to stakeholder returns, executives will incorporate a shareholder perspective and try to maximize company performance and, hence, their own wealth, thus resolving self-interest conflicts that might lead to earnings manipulation.

Prospect theory leads to a similar prediction, but for different underlying reasons. Given loss aversion, stock-owning CEOs are likely to be reluctant to engage in earnings manipulation because such actions may result in a stock price collapse and other negative consequences (Pratt & Stice, 1994; Wu, 2002). Moreover, as their stock ownership increases, CEO wealth becomes more dependent on their firm's stock performance. This dependence is particularly likely in that CEOs often have relatively undiversified holdings, compared to shareholders (Fox & Gunn, 1997). Therefore, in line with the prospect theory notion that individuals are loss avoiders rather than wealth maximizers, the greater the value of a CEO's stock ownership, the more loss averse the CEO is likely to become. As a result, stock-owning executives will be less likely to engage in manipulation behaviors that may severely reduce the value of stock they own. Accordingly, prospect theory and agency theory imply:

*Hypothesis 3. The relationship between CEO stock ownership and earnings manipulation is negative: The larger the amount of stock owned by a CEO, the lower the likelihood that the CEO will manipulate firm earnings.*

### Contingency of Stock-Based Incentives

The effect of stock-based incentives on CEO earnings manipulation does not happen in a vacuum. Specific contextual characteristics play a significant role (Amburgey & Miner, 1992; Sanders, 2001). Understanding how contingencies influence the effects of stock-based incentives on executive inappropriate management behaviors is especially important to boards of directors because situational contingencies may either strengthen or dilute the governance effects desired by a board (Kosnik,

1987). Contingencies may influence the framing of decisions and the evaluation of risks, thus affecting CEO decision-making behaviors (Pollock, Fischer, & Wade, 2002). In this study, we examine both firm performance and executive tenure as contingency variables that may influence CEO engagement in earnings manipulation.

**Firm performance.** Prospect theory suggests that the performance results of strategic choices may influence subsequent decision-making behaviors by affecting the reference point of decision makers. In fact, Wiseman and Gomez-Mejia (1998) argued that it is the consideration of how firm performance affects subsequent behavior that distinguishes behavioral decision models (e.g., prospect theory) and agency-based models. Firm performance has been shown to be an important predictor of executive decision-making behaviors and also constitutes an indicator of personal performance because shareholders, and even CEOs themselves, usually attribute a firm's poor performance to its top executives (Meindl, Ehrlich, & Dukerich, 1985).

High firm performance creates relatively favorable conditions for top executives as it usually increases CEO wealth (Sanders, 2001). Under such conditions, executives tend to believe that maintaining the strategic status quo will ensure the future value of their options (Hambrick, Geletkanycz, & Fredrickson, 1993; Sanders, 2001). From a prospect theory point of view, high performance is likely to contribute to perceptions of a gain context. Under such circumstances, CEOs may be inclined to forgo any further gain they might realize through manipulating earnings in order to avoid the loss consequences also possible from such actions.

In contrast, poor firm performance puts CEOs in an unfavorable position because executives are more likely to perceive losses of wealth that will continue unless the poor performance can be improved. Prospect theory suggests that, under such circumstances, CEOs are likely to be tempted to manipulate earnings so as to improve the firm's performance on paper and extract themselves from a loss situation. Improved firm performance not only reflects positively on CEOs' capabilities and effectiveness in managing their firms, but also is directly related to CEO personal wealth. Along these lines, Alexander and Cohen (1996) found that firms with poor performance were more likely to commit environmental crimes. Research on corporate corruption also supports the idea that poor performance is often an antecedent to corrupt behaviors (Baucus, 1994). However, the impact of performance is likely to depend on the stock-based incentive situation.

Accordingly, we propose that firm performance

may interact with stock-based incentives to influence the probability that CEOs will engage in earnings manipulation. More specifically, low firm performance, plus out-of-the-money options, puts extra pressure on CEOs to manipulate firm earnings to rectify a loss situation and preclude additional losses. Therefore, in the case of significant out-of-the money stock option holdings, poor firm performance might be expected to exacerbate the existing loss situation, making manipulation of earnings even more likely. In contrast, when performance is high, CEOs have little to gain by attempting to manipulate earnings, particularly because inflating earnings that are already high might arouse suspicions with ensuing serious negative repercussions. Thus, as prospect theory suggests, in this relative gain situation, CEOs are less likely to manipulate earnings, even if they have significant out-of-the money stock option holdings. Stated formally:

*Hypothesis 4. Firm performance moderates the relationship between CEO out-of-the-money options and earnings manipulation behaviors: Lower firm performance strengthens the positive relationship between CEO out-of-the-money options and earnings manipulation, whereas high performance weakens it.*

In contrast, because low firm performance is a factor that advances CEO propensity to manipulate firm earnings, low performance weakens the negative relationships involving in-the-money options and stock ownership. Thus, when performance is low, CEOs with larger amounts of in-the-money options are more prone to engage in earnings management behaviors than they would be if performance were high. Similarly, CEOs with greater amounts of stock ownership are more likely to manipulate earnings than they would be under conditions of high performance. As mentioned previously and as supported by prospect theory, CEOs would seem to gain little advantage by manipulating earnings when performance is high, given the dangers of doing so. Stated formally:

*Hypothesis 5. Firm performance moderates the relationship between CEO in-the-money options and earnings manipulation: Low firm performance weakens the negative relationship between CEO in-the-money options and earnings manipulation, and high performance weakens it still further.*

*Hypothesis 6. Firm performance moderates the relationship between CEO stock ownership and earnings manipulation: Low firm performance weakens the negative relationship between CEO stock ownership and earnings ma-*

*nipulation, and high performance weakens it still further.*

**CEO tenure.** Additionally, drawing on upper echelons theory (Hambrick & Mason, 1984), researchers in several fields have identified the importance of top executive characteristics (e.g., tenure) to managerial decision making (Daboub, Rasheed, Priem, & Gray, 1995; Hambrick et al., 1993; Hayward & Hambrick, 1997).

There is considerable evidence that CEO tenure strongly influences decision-making behaviors (Child, 1974; Hambrick & Mason, 1984; Markóczy, 1997; Stevens, Beyer, & Trice, 1978). Research shows that longer-tenured executives are less likely to respond to increasing external threats with risky behaviors (Hambrick & Mason, 1984). As executives build longevity in senior positions, they tend to put most of their energy into maintaining the status quo. Hence, longer-tenured executives may be less willing to engage in unethical or fraudulent behaviors that might ruin their established reputations (Gray & Cannella, 1997). On the other hand, newly appointed CEOs may have less to lose and may be more likely to be aggressive and take chances in order to build their personal wealth (Brouthers, Brouthers, & Werner, 2000; MacCrimmon & Wehrung, 1990). Thus, they are more likely to respond to increasing external threats (e.g., adverse economic conditions) by engaging in self-serving or even illegal activities such as earnings manipulation.

Additionally, longer tenure results in greater experience, which makes individuals more confident in their decision making (Child, 1974). Thus, CEOs with greater experience may perceive negative situations as less threatening (Dunn, 2004). Accordingly, we argue that tenure interacts with stock-based incentives to affect executives' earnings manipulation behaviors. More specifically, the compensation risk associated with stock-based incentives is likely to be perceived as less severe and more controllable by longer-tenured CEOs than by shorter-tenured CEOs. Thus, for reasons outlined above, longer-tenured CEOs are less prone to make self-serving decisions in the form of earnings manipulation when they have high levels of out-of-the-money options. Stated formally:

*Hypothesis 7. CEO tenure moderates the relationship between CEO out-of-the-money options and earnings manipulation: Longer tenure weakens the positive relationship between CEO out-of-the-money options and earnings manipulation behaviors.*

Given evidence that longer-tenured CEOs are less prone to enact risky behaviors in response to external threats, more concerned about their reputations, and more confident in difficult situations, we expect such CEOs to be particularly likely to bypass questionable self-interested tactics that could have major negative consequences if discovered. Because in-the-money options and stock ownership can both lead to losses if things go wrong, increased CEO tenure will compound the negative relationship between earnings manipulation and both in-the-money options and stock ownership. More specifically, CEOs with more in-the-money options and longer tenure are less likely to manipulate earnings than CEOs with lower tenure. Similarly, CEOs with higher stock ownership and longer tenure are less likely to manipulate earnings. Overall, stated formally, we hypothesize:

*Hypothesis 8. CEO tenure moderates the relationship between CEO in-the-money options and earnings manipulation: Longer CEO tenure strengthens the negative relationship between in-the-money options and earnings manipulation.*

*Hypothesis 9. CEO tenure moderates the relationship between CEO stock ownership and earnings manipulation: Longer CEO tenure strengthens the negative relationship between stock ownership and earnings manipulation.*

## METHODS

### Sample

The sample for this study consisted of the 2,532 public companies listed in Compustat's Executive Compensation Database (Execucomp) over the six years 1996–2001. We used a restatement database, the Financial Statement Restatement Database (GAO-03-395R) released by the U.S. General Accounting Office on January 17, 2003, to identify which companies in the Execucomp database had manipulated earnings. More specifically, the GAO report included a list of 919 restatement announcements identified from January 1, 1997, to June 30, 2002. Firms in the database restated their earnings because of accounting *irregularities*, including aggressive accounting practices, intentional misuse of facts, and fraud. That is, this database does not include restatements for benign reasons, such as oversight, stock splits, changes in accounting rules, human error, and discontinued operations. By matching the Execucomp database against the GAO database, we were able to identify restatement announcements during the period 1996–2001 involving 225 companies.

Note that earnings *manipulation* happens before restatement *announcement*. Thus, in order to capture the real years of earnings manipulation and confirm that the restatements obtained from the GAO were to the result of aggressive behaviors, we had three independent coders conduct an extensive media search on Lexis-Nexis as well as a search of official 10K or 10Q reports by using the Securities and Exchange Commission's (SEC's) Electronic Data Gathering Analysis and Retrieval (EDGAR) database. After completing an investigation of the restatement announcements involving the 225 companies and having conversations with representatives of the GAO, the Huron Consulting Group, and the SEC, the coders identified 365 earnings manipulation cases involving overstatement of earnings by the 225 companies and also confirmed that each company had restated its earnings for reasons appropriately characterized by the GAO report as irregularities and aggressive accounting. These data were then used to code Execucomp database firms that had overstated earnings in the years under study and those that had not. By then comparing restating firms to nonrestating firms, we were able to investigate how stock-based executive incentives led to earnings manipulation.

### Variables and Analysis

The dependent variable, earnings manipulation behavior, was obtained from the GAO report through the process described above. Except where otherwise indicated, we obtained data for the control variables from Execucomp, and we obtained all independent variables from that database.

**Dependent variable.** *Earnings manipulation behavior* was a dichotomous variable coded 1 if a firm manipulated its earnings and 0 otherwise. The behavior was coded for the year in which the manipulation occurred.

**Independent variables.** *Out-of-the-money options* was the number of options held by a CEO that had nonpositive value with respect to the spread between strike price and market price as reported in Execucomp. Similarly, *in-the-money options* was the number of options held by a CEO that had positive market value. Using number of options as a measure is reasonable because options are granted and recorded for vesting and record keeping in terms of number rather than value (Ellig, 2002). Therefore, CEOs are likely to consider their number of options in various categories in contemplating earnings manipulation. Although different measures for stock options have been used in other studies, including spread value (current stock price minus grant price [Devers et al., 2007]) and Black-

Scholes valuation (O'Connor et al., 2006), we used number of options because it was necessary to differentiate between those that were in-the-money and those that were out-of-the-money. Unfortunately, insufficient data existed with which to calculate spread values or Black-Scholes values for out-of-the-money stock options. Further analyses with in-the-money options, however, indicated that the average correlation over the six years of our study between number of in-the-money options and spread value was .58, and for Black-Scholes value, it was .47, thus suggesting favorable convergent validity for our measure. Given that we had to use number of options rather than spread value, which should be even more sensitive to the variables of theoretical interest here, our analyses represent a conservative test of our hypotheses.

For compatibility, we measured *stock ownership* as the number of shares of stock owned by a CEO. *Firm performance* was measured as sales change in a given year. This measure was chosen because it represents a useful gauge of the extent to which pressure due to low revenue recognition might induce CEOs to manipulate earnings (Beneish, 1999). *CEO tenure* was the number of years that an individual had served as CEO of his or her present company.

**Control variables.** We controlled several factors at different levels (industry, firm, and individual) that might affect CEO earnings manipulation behaviors. First, we created dummy variables to capture the influences of *year* (1996–2001) on firm earnings manipulation.

We also controlled for *industry*, which previous research has shown to be associated with pricing decisions and earnings management (Bedard & Johnstone, 2004; Johnstone & Bedard, 2001). Because of our large sample size, we used the Huron Consulting Group's (2003) industry categorization to measure the industry effect. It uses a company's four-digit SIC code to break down the observations relating to restatements into eight major industries.<sup>1</sup>

At a firm level, we controlled for the *outsider ratio* on a firm's board of directors and the existence of a board *audit committee* because previous studies have indicated that companies with independent boards (those with greater proportions of

unaffiliated outsiders) and audit committees were less likely to be sanctioned for fraudulent or misleading reporting (Abbott, Park, & Parker, 2000; Davidson et al., 2004; Rezaee, Olibe, & Minmier, 2003; Xie, Davidson, & DaDalt, 2003). The data for board ratio and audit committee presence were obtained from the Directors Dataset of the Investor Responsibility Research Center. Outsider ratio was the percentage of board members who were non-firm-affiliated, nonemployee directors. Audit committee was a dichotomous variable coded 1 if a firm had an audit committee and 0 otherwise.

We also controlled for *firm size* in terms of firm assets, obtained from the Compustat database, because the Huron Consulting Group (2003) indicated that larger companies were experiencing more aggressive accounting problems necessitating restatements. Tosi et al. (2000) showed that organizational size was one of the most important determinants of total CEO pay, accounting for more than 40 percent of its variance.

At the individual level, we controlled for *salary* and *bonus* as part of CEO compensation. The behavioral agency model suggests that incentive alignment as a control mechanism includes not only stock-based incentives, but also the allocation of compensation between salary and bonus (Wiseman & Gomez-Mejia, 1998). Base pay is tied directly to a CEO's standard of living, and, thus, threats to future base pay would seem more salient than threats to bonuses. Thus, we controlled for salary and bonus because the change of allocation between salary and bonus may influence CEO risk preferences resulting from stock-based incentives. Both salary and bonus were measured as yearly dollar value (cash and noncash).

We also controlled for chief financial officer (CFO) stock-based compensation (i.e., stock options and stock ownership) because research has indicated that CFOs have a direct influence on firm earnings manipulation decisions (Arthaud-Day, Certo, Dalton, & Dalton, 2006; Beasley et al., 1999). *CFO in-the-money* and *CFO out-of-the-money options* and *CFO stock ownership* were measured in the same way as the comparable variables for CEOs.

**Analysis.** To test our theory, we used logit regression with random effects and repeated measures to examine the predictive relationships between the stock-based incentives, contingencies (firm performance and CEO tenure), and CEO earnings manipulation behaviors. We chose the random-effects approach mainly to allow for across-group variance, indicating the differences between restatement companies and nonrestatement companies. Repeated measures were primarily employed to han-

<sup>1</sup> Huron's (2003) industry categorization is as follows: (1) agriculture, forestry, fishing, mining and construction, (2) manufacturing, (3) computer manufacturing, (4) transportation, communications, electric, gas and sanitary services, (5) wholesale and retail trade, (6) finance, insurance and real estate, (7) services, and (8) software.

**TABLE 1**  
**Descriptive Statistics and Correlations**

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Restatement	0.02	0.15													
2. Outsider ratio	0.63	0.19	-.003												
3. Audit committee	0.99	0.07	-.03	-.02											
4. Firm size <sup>a</sup>	9,514.31	40,407.71	-.01	-.04*	.01										
5. Salary <sup>a</sup>	588.20	326.87	.04**	-.02*	.00	.29**									
6. Bonus <sup>a</sup>	652.30	1,607.40	.00	-.02*	.00	.35**	.30**								
7. CFO out-of-the-money options <sup>b</sup>	152.65	339.81	.04**	.01	.00	.16**	.25**	.21**							
8. CFO in-the-money options <sup>b</sup>	81.42	292.88	-.03*	-.02	.02	.06**	.09**	.13**	.17**						
9. CFO stock ownership stock	91.30	392.59	-.01	.02	.01	.08**	.06**	.09**	.12**	.10**					
10. Firm performance <sup>c</sup>	20.56	75.63	.01	-.001	-.01	-.004	.00	.08**	.16**	-.06**	.04**				
11. CEO tenure	10.06	7.57	.04**	-.02	-.02	.10**	.12**	.10**	.08**	-.01	.04**	-.59**			
12. Out-of-the-money options <sup>b</sup>	614.27	2,441.63	.03**	-.001	.01	.08**	.15**	.00	.14**	.09**	.05**	.03**	-.01		
13. In-the-money options <sup>b</sup>	388.30	1,236.16	-.01	-.01	.01	.04**	.10**	.03*	.14**	.04**	.08**	.26**	.18**	.01	
14. Stock ownership <sup>b</sup>	2,727.11	4,837.52	.01	.02	.01	.02**	.01	.12**	-.06*	.06**	.07**	-.004	-.02	.05	-.09**

<sup>a</sup> In thousands of dollars.

<sup>b</sup> Number of shares.

<sup>c</sup> Percentage.

\*  $p < .05$

\*\*  $p < .01$

dle the longitudinal panel data (data for different years) for each company.

All variables (except the dummy and dichotomous variables, year, restatement, and audit committee presence) were standardized before model analysis. The logit model was the appropriate regression model to use because it effectively deals with binary or categorical dependent variables (Press & Wilson, 1978) such as our dichotomous earnings manipulation variable. To clearly illustrate the interactions, we plotted the significant ones, which depict the effects of the moderating variables on the predictors. To do so, we split the independent variables into high and low categories, respectively one standard deviation above and below the mean.<sup>2</sup>

## RESULTS

Table 1 presents a correlation matrix and descriptive statistics for all the variables used in the

models reported. Table 2 shows the results of logit regression analysis testing of our hypotheses. The overall model (model 5) is significantly predictive of earnings manipulation behaviors ( $\text{Wald } \chi^2 = 68.05, p < .001$ ). We mainly utilize model 5 for the interpretation of our results because the conditions under investigation (stock options, stock ownership, performance, and tenure) occur simultaneously, and our interest is in these overall effects (Cohen, Cohen, Aiken, & West, 2003). However, we consider model 2, to aid our interpretation of our main effects, and provide the other models for completeness. We also include odds ratios in Table 2 to indicate effect sizes. Odds ratios show how a change in an independent variable affects the odds that the dependent variable (here, earnings manipulation) will occur (Long, 1997).

Hypothesis 1 states a positive relationship between CEO out-of-the-money options and earnings manipulation behaviors. Both the main effects only (model 2) and the full model (model 5) strongly support this view ( $\beta = 2.36, p < .05$ ), indicating that the larger the amount of out-of-the-money options, the more likely CEOs are to engage in earnings manipulation. However, these results must be tempered by the moderation findings, which we discuss below. Hypothesis 2 predicts a negative

<sup>2</sup> Because of the positive skewness of compensation data, we ran several additional models by excluding cases that were three times the standard deviation from the mean and obtained the same results. Therefore, skewness of the compensation does not influence our findings.

**TABLE 2**  
**Results of Logit Regression Analysis for the**  
**Effects of Stock-Based Incentives on Earnings**  
**Manipulation Behaviors<sup>a</sup>**

Independent Variables	Model 1	Model 2	Model 3	Model 4	Model 5
<i>Step 1: Control</i>					
Outsider ratio	-0.38 (0.29)	-0.22 (0.27)	-0.20 (0.28)	-0.42 (0.33)	-0.19 (0.28)
Audit committee	-0.69 (1.14) <sup>†</sup>	-1.27 (1.52) <sup>†</sup>	-1.92 (1.51) <sup>†</sup>	-0.48 (1.21) <sup>†</sup>	-0.53 (0.63)**
Firm size	-0.97 (1.20)	-1.47 (1.43)	-2.30 (1.75)	-2.02 (2.02)	-2.56 (1.62)
Salary	0.12 (0.38)	0.15 (0.37)	0.07 (0.43)	0.40 (0.38)	-0.11 (0.44)
Bonus	0.31 (0.40)	0.87 (0.49) <sup>†</sup>	0.81 (0.49) <sup>†</sup>	0.33 (0.44)	0.95 (0.53) <sup>†</sup>
CFO out-of-the-money options	0.08 (1.49)	0.51 (0.26) <sup>†</sup>	0.05 (0.18)	0.74 (0.50)	0.33 (0.59) <sup>†</sup>
CFO in-the-money options	-0.02 (0.17)	-0.02 (0.16)	-0.29 (0.25)	-0.47 (0.36)	-0.25 (0.38)
CFO stock ownership	-0.13 (0.44)	-1.20 (1.46)	-0.75 (1.46)**	-2.08 (1.45)	-0.86 (0.52)
Firm performance	-0.03 (0.42)	-0.86 (0.62)	-2.62 (0.99)	-0.06 (0.48)	-2.19 (0.92)
CEO tenure	0.15 (0.28)	0.24 (0.32)	0.35 (0.33)	0.24 (0.42)	-0.02 (0.40)
<i>Step 2: Main effects</i>					
CEO out-of-the-money options		2.62 (0.81)**	1.47 (0.68)**	1.05 (0.59)	2.36 (0.88)**
CEO in-the-money options		-2.51 (1.37)	-1.47 (0.84) <sup>†</sup>	-1.53 (1.05) <sup>†</sup>	-0.97 (0.61) <sup>†</sup>
CEO stock ownership		-0.19 (0.24)	-0.19 (0.33)**	-0.36 (0.37)**	-0.20 (0.51)**
<i>Step 3: Performance interactions</i>					
Out-of-the-money options × firm performance			-1.42 (0.56)**		-0.33 (1.32)**
In-the-money options × firm performance			1.22 (0.70) <sup>†</sup>		1.09 (0.94)
Stock ownership × firm performance			2.36 (2.74)		2.32 (1.15)**
<i>Step 4: Tenure interactions</i>					
Out-of-the-money options × tenure				0.44 (0.40)	1.04 (0.48)**
In-the-money options × tenure				0.46 (0.31)	0.46 (0.40)
Stock ownership × tenure				-0.92 (1.83) <sup>†</sup>	-1.78 (1.79) <sup>†</sup>
Observations	1,409	1,390	1,390	1,390	1,390
Log-likelihood chi-square	-296.72	-284.94	-281.29	-281.75	-278.21
Wald chi-square	41.73	62.49***	61.14***	64.29 <sup>†</sup>	68.05***

<sup>a</sup> For ease of presentation, results relating to controls for year and for eight major industries are not shown. Values in parentheses are robust standard errors. Values in the rightmost column are odds ratios.

<sup>†</sup>  $p < .10$

\*\*  $p < .05$

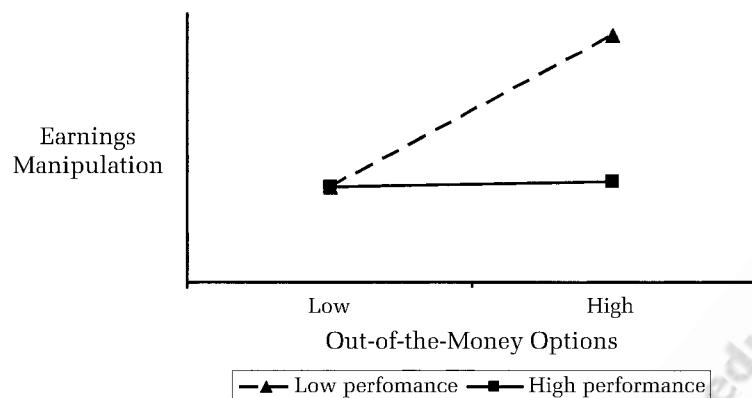
\*\*\*  $p < .001$

relationship between CEO in-the-money options and earnings manipulation. The main effects results show no impact on earnings manipulation for in-the-money options, whereas the full model suggests marginal support for Hypothesis 2 ( $\beta = -0.97, p < .10$ ) when simultaneous effects are considered. We discuss this issue further below. Hypothesis 3 posits a negative relationship between CEO stock ownership and earnings manipulation. When main effects only are considered, this hypothesis is not supported. However, the full model shows support ( $\beta = -0.20, p < .05$ ), with the results conditional on moderator effects.

Firm performance and CEO tenure were tested as

moderators. For firm performance, we posited a loss-averse reference point, with lower levels of performance leading to a higher likelihood of earnings manipulation and higher levels of performance leading to a lower likelihood of earnings manipulation. As a result, it was expected that poor firm performance would strengthen the positive link between out-the-money options and earnings manipulation (Hypothesis 4) but weaken the negative relationships between in-the-money options (Hypothesis 5), stock ownership (Hypothesis 6), and earnings manipulation. High performance was expected to weaken the link between stock incentives and earnings manipulation.

**FIGURE 1**  
**Moderating Effect of Firm Performance on the Relationship between CEO Out-of-the-Money Options and Earnings Manipulation**

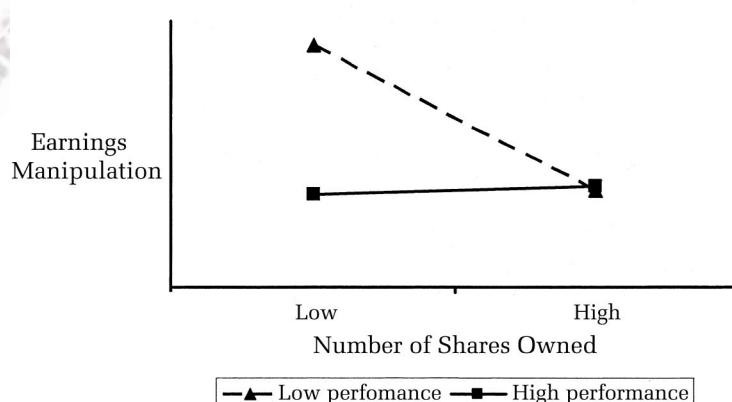


In support of Hypothesis 4, our results showed that firm performance significantly interacted with out-of-the-money options ( $\beta = -0.33, p < .05$ ) in such a way that low firm performance and larger amounts of out-of-the-money options were associated with a higher propensity to engage in earnings manipulation, whereas high performance did not make a difference regardless of the level of out-of-the-money options. Contrary to expectations, firm performance did not significantly interact with the relationship between in-the-money options and earnings manipulation ( $\beta = 1.09, p = 0.24$ ). Thus, Hypothesis 5 was not supported. However, as anticipated by Hypothesis 6, firm performance did significantly interact with stock ownership ( $\beta = 2.32, p < .05$ ) in such a way that low firm performance was associated with greater earnings manipulation when less stock was owned. High performance did not make a difference regardless of

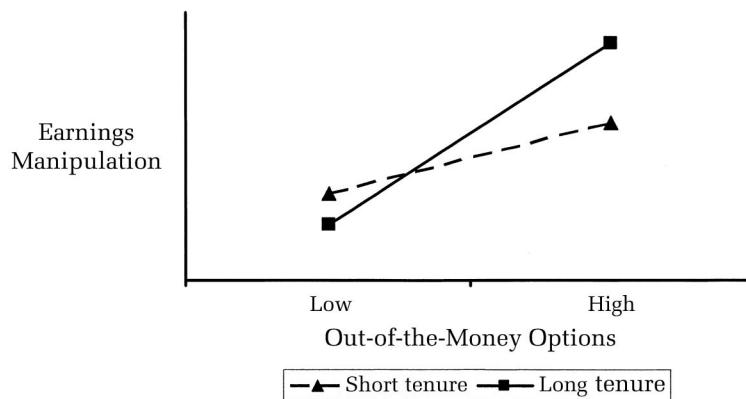
the amount of stock owned. Overall, these results support Hypotheses 4 and 6. Figures 1 and 2 are graphs of these relationships. They respectively indicate that CEOs with more out-of-the-money options under conditions of low performance and CEOs with lower stock ownership under conditions of low performance were the most likely to manipulate earnings.

For CEO tenure, Hypothesis 7 argues that CEO tenure negatively interacts with out-of-the-money options to decrease CEO earnings manipulation, whereas Hypotheses 8 and 9 propose that CEO tenure interacts with in-the-money options and stock ownership to further decrease the likelihood of earnings manipulation behaviors. The logic was that tenure is associated with conservatism, which further reduces the likelihood of earnings manipulation with exercisable options and stock ownership.

**FIGURE 2**  
**Moderating Effect of Firm Performance on the Relationship between CEO Stock Ownership and Earnings Manipulation**



**FIGURE 3**  
**Moderating Effect of CEO Tenure on the Relationship between CEO Out-of-the-Money Options and Earnings Manipulation**



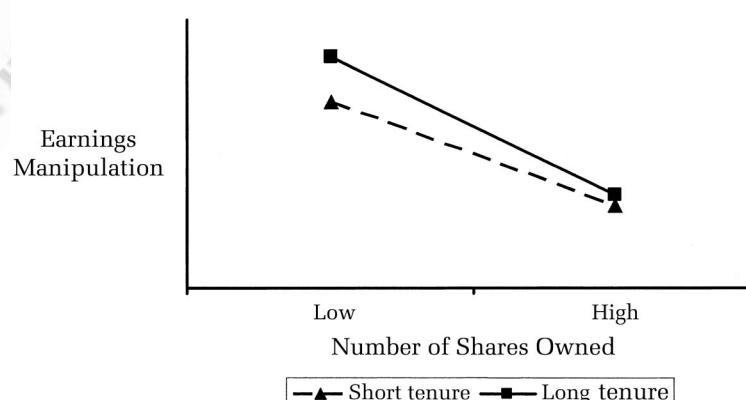
Our results indicated that CEO tenure did not interact with in-the-money options to influence earnings manipulation behaviors ( $\beta = 0.46, p = 0.25$ ). Thus, Hypothesis 8 was not supported. However, our findings showed that CEO tenure did significantly interact with out-of-the-money options ( $\beta = 1.04, p < .05$ ) and also with stock ownership ( $\beta = -1.78, p < .10$ ), albeit at a marginal level in the latter case. Interestingly, as is depicted in Figure 3 and 4, plots of the relationships indicated that the interactive effect of tenure was contrary to what was expected. That is, longer-tenured CEOs with higher amounts of out-of-the-money options (Figure 3) and longer-tenured CEOs with lower amounts of stock ownership (Figure 4) were the most likely to manipulate earnings. We discuss the implications in the next section.

## DISCUSSION

Our research makes four distinct contributions. First, our study synthesizes the perspectives of agency theory and prospect theory on the role of stock-based incentives in corporate governance. We challenge the agency view that stock-based incentives invariably align principal and agent interests. Instead, combining the perspectives, we argue that, under certain conditions, stock-based incentives can cause CEO incentive misalignment that in turn can have such negative consequences as earnings manipulation. Our findings support this general premise.

Second, this study is the first to demonstrate that out-of-the-money and in-the-money options have different impacts on an important inappropriate CEO management behavior, earnings manipula-

**FIGURE 4**  
**Moderating Effect of CEO Tenure on the Relationship between CEO Stock Ownership and Earnings Manipulation**



tion. Third, our findings support the premise that stock ownership generally dampens CEO tendencies toward earnings manipulation. Finally, we tested the boundaries of agency theory by exploring the influence of two contingency variables—firm performance and CEO tenure—on the relationship between stock-based incentives and earnings manipulation.

In keeping with our hypotheses, the out-of-the-money options were positively related to earnings manipulation. The underlying logic is that out-of-the-money options put executives in a perceived loss situation in which, according to prospect theory, they are more likely to take aggressive actions to minimize and rectify losses (Kahneman & Tversky, 1979). As a result, CEOs with substantial out-of-the-money stock option holdings may be tempted to manipulate firm earnings to create an illusion that firm performance meets stakeholder expectations, thereby potentially raising their underwater options into the in-the-money range. However, this impact was also influenced by contingency factors that we discuss below.

Conversely, in-the-money options had a weak effect at best, and only when the contingency factors were also considered. Recently, a few studies (e.g., Erickson et al., 2006; O'Connor et al., 2006) have indicated that stock options have an inconsistent impact on the likelihood of accounting fraud. For instance, O'Connor et al. (2006) argued that large amounts of CEO stock options are associated with both higher and lower incidences of fraudulent financial reporting, depending on other contingency factors. Although their results are useful, they did not consider the possibility that differentiating among categories of stock options might lead to more consistent findings with respect to CEO earnings manipulation. Erickson et al. (2006) focused on a more limited sample of firms accused by the Securities and Exchange Commission of fraud and did not consider the categories of stock options delineated here. Building on previous research (e.g., Sanders, 2001; Wiseman & Gomez-Mejia, 1998), our findings point to the usefulness of further differentiating among stock incentives. To our knowledge, we are the first to distinguish between out-of-the-money and in-the-money stock options in attempting to predict earnings manipulation behaviors.

Finally, we tested the boundaries of theory by examining the contingent effects of firm performance and CEO tenure. We found support for interactive effects of both moderators on out-of-the-money options and stock ownership. However, in-the-money options did not interact with either

firm performance or tenure to influence CEO earnings manipulation tendencies.

More specifically, our results indicate that firm performance interacted with out-of-the-money options; as hypothesized, CEOs with larger amounts of out-of-the-money options under conditions of low performance were the most likely to manipulate earnings. Additionally, we found support for our argument that CEOs with lower amounts of stock ownership in low firm performance situations would be the most inclined to manipulate earnings. From a prospect theory point of view, these latter CEOs had little company-related wealth at risk and thus could take aggressive action to rectify losses associated with the low firm performance. These results are consistent with previous literature indicating that poor firm performance is positively related to committing organizational crimes (Alexander & Cohen, 1996). The finding here also supported the notion that CEOs tend to avoid earnings manipulation when firm performance is high.

Interestingly, in evaluating contingencies related to CEO tenure, we found significant interaction results that were opposite in direction from what we expected. We predicted that shorter tenure in their positions would increase CEOs' tendencies to engage in earnings manipulation. However, our results indicated that longer-tenured CEOs with more out-of-the-money options were the most likely to manipulate firm earnings. Conversely, when executives held only a small amount of out-of-the-money options, tenure did not make a significant difference in earnings manipulation behavior. One reasonable explanation is that longer-tenured CEOs are likely toward the end of their careers. As a result, they have little time left to benefit from the stock options that were previously granted. Therefore, sensing they are about to lose all these options, they may succumb to the temptation to "create" value in inappropriate ways. Along these lines, as CEOs accrue time in their top positions, they may become concerned with wealth accumulation if the anticipated benefits from their stock options do not appear to be materializing. These results are also consistent with the notion of an instant endowment effect in which executives anticipate value from stock options once they are granted (Fama, 1980; Wiseman & Gomez-Mejia, 1998).

In a similar manner, longer-tenured CEOs with low stock ownership were the most likely to engage in earnings manipulation. However, this interaction was only marginally supported. Overall, the results related to tenure suggest that long-tenured CEOs who have not been able to accumulate substantial wealth through stock incentives may per-

ceive themselves as in a relative loss situation that they have little time to fix. Thus, they may be more willing to take action to stem losses and better their wealth status. In contrast, when CEOs own large amounts of stock, they appear less willing to engage in earnings manipulation, regardless of their length of time in office.

Like any study, this one is not without limitations. The use of archival data does not allow access to direct information about the decision-making processes that ultimately lead to earnings manipulation. To help assuage this concern, we checked and confirmed the GAO data against other sources to be certain that the restatements were for egregious accounting violations. Moreover, we could only identify earnings manipulation behaviors when they came to light through public announcements of restatements, suggesting that there may well be other such behaviors occurring that go undetected. Nevertheless, the earnings manipulation we could identify was sufficient to allow a test that supported our theory that categories of stock options are differentially linked to CEO incentive misalignment in the form of earnings manipulation.

Another potential limitation is our use of the number of shares as a measure of stock options. We did, however, find strongly positive correlations (Cohen et al., 2003) between the number of in-the-money stock options and both spread and Black-Scholes values, providing evidence of convergent validity. As a partial test of our earlier contention that using the number of shares for stock options constitutes a conservative test of our hypotheses, we conducted a sensitivity analysis in which we substituted spread value for number of in-the-money stock options in our main effects model (model 2 in Table 2). We used model 2 because the theoretical question underlying our sensitivity analysis is a main effects one. Moreover, spread value constitutes a different metric from the other two main variables and, as such, for theoretical and practical reasons this combination would not ordinarily be used in the same stock incentives analysis model. The substitution led to a significant effect for in-the-money options ( $\beta = -2.56$ ,  $p < .05$ ), which was not previously significant. This analysis further validates the use of number of options as our measure.

Future research might extend our inquiry by considering the pay packages of other members of firms' top management teams, as earnings manipulation is likely to involve multiple players, despite the overall responsibility of CEOs. Another avenue for future research might be investigating differences in the pay packages of CEOs who are pro-

moted to their positions versus brought in from outside. Given that new CEOs are often hired from the outside when firm performance is lagging (Daily & Dalton, 1995), boards of directors may be tempted to make heavy use of stock options in a situation that has a high probability of quickly leading to options falling out-of-the-money. At any rate, evidence suggests that the pay packages of insiders and outsiders may differ significantly (Heskett, 2005), and future research might trace the impact of such differences on CEO incentive alignment. Another avenue of inquiry might be to investigate the impact of internal organizational complexity, which might make it more difficult for CEOs to manipulate earnings (Eisenmann, 2002). Yet another intriguing arena for future research is stock price momentum, a factor that may interact with stock-based incentive categories to further influence CEO decisions regarding earnings manipulation. This factor may also lead CEOs to consider the probabilities of gain or loss in choosing a course of action (Tversky & Kahneman, 1992; Wakker, 2003).

Despite the limitations, the results of this study hold important implications for research on the agency-based view, prospect theory, and executive compensation. Although the agency-based view suggests that stock-based incentives are an effective mechanism for aligning the interests of agents and principals (Eisenhardt, 1988), our findings indicate that, under certain conditions, stock-based rewards may lead to incentive misalignment. Thus, the lens of prospect theory, with its emphasis on loss aversion rather than risk aversion, helps to amend the overly simplistic risk aversion and incentive alignment assumptions of the agency-based view.

This study adds to the growing body of knowledge regarding the effectiveness of various compensation and governance mechanisms in encouraging CEO attention to stakeholder interests and discouraging self-interested behaviors by corporate executives. Our focus on earnings manipulation provides a particularly valuable venue for assessing the extent to which stock-based incentives might encourage self-serving behaviors that constitute the misalignment of principal and agent interests. Sanders and Carpenter (2003) found that CEOs paid with high levels of stock options were more likely to have their companies buy back company shares, even when growth opportunities were available to the companies. They argued that the underlying reason was that the buybacks created instant wealth in the options of the CEOs. Our study builds on their findings and goes beyond them by indicating that CEOs not only divert company resources to repurchase programs that might not be optimal, but also engage in "accounting legerdemain" (Walsh &

Seward, 1990: 428). Therefore, our findings aid understanding of the governance potential of both stock options and stock ownership, reinforcing recent calls for limits on excessive grants of stock options (Sanders, 2001; Wiseman & Gomez-Mejia, 1998) and providing deeper and unique insight into the implications of CEO stock-based incentives. Although calls for reform have reduced the use of stock options as a means of executive compensation, options still constitute a major form of remuneration for executives and have been the major vehicle for CEO pay gains over the past decade or so (Conyon, 2006).

By focusing further attention on the impact of the various forms of stock-based incentives, our research aids efforts to rethink how these incentives should be configured. More specifically, our results offer reasons for both researchers and practitioners to rethink assumptions about the nature of executive compensation in practice. Despite the popular and extensive use of stock options and stock ownership in CEO pay packages, our findings suggest that stock-based incentives are not a monolithic governance panacea that can be implemented in a simplistic manner. Instead, it is important for companies to design appropriate performance-contingent compensation plans that balance the advantages of incentives with the disadvantages of excessive self-serving inclinations.

Miller, Wiseman, and Gomez-Mejia (2002) suggested that moderate levels of risk in CEO compensation are the most likely to be advantageous to shareholders. Per the present study, moderate risk is likely to translate into avoiding very high levels of out-of-the-money options, while providing reasonable levels of stock ownership. This formula may call for a company to consider executives' amounts of stock ownership in configuring annual compensation packages involving potential stock option awards. Some companies are experimenting with restricted stock shares that become valuable only if certain goals are met (Strauss & Hansen, 2005). Used judiciously, such arrangements may provide ownership to CEOs quickly but avoid an excess of stock options.

Overall, this paper synthesizes the agency theory and prospect theory perspectives on corporate governance and provides some important guidance to an area of major current concern among both researchers and practitioners—earnings manipulation. In uniquely differentiating out-of-the money from in-the-money stock options, as well as considering stock ownership, our results offer insights that may aid firms in implementing appropriate compensation plans and corporate governance.

## REFERENCES

- Abbott, L. J., Park, Y., & Parker, S. 2000. The effects of audit committee activity and independence on corporate fraud. *Managerial Finance*, 26(11): 55–67.
- Alexander, C. R., & Cohen, M. A. 1996. New evidence on the origins of corporate crime. *Managerial and Decision Economics*, 17: 421–435.
- Amburgey, T. L., & Miner, A. S. 1992. Strategic momentum: The effects of repetitive momentum on merger activity. *Strategic Management Journal*, 13: 335–348.
- Arthaud-Day, M. L., Certo, S. T., Dalton, C. M., & Dalton, D. R. 2006. A changing of the guard: Executive and director turnover following corporate financial restatements. *Academy of Management Journal*, 49: 1119–1136.
- Baucus, M. S. 1994. Pressure, opportunity and predisposition: A multivariate model of organization illegality. *Journal of Management*, 20: 699–721.
- Beasley, M. S., Carcello, J. V., & Hermanson, D. R. 1999. *Fraudulent financial reporting 1987–1997: An analysis of U.S. public companies*. New York: Committee of Sponsoring Organizations of the Treadway Commission.
- Beatty, R. P., & Zajac, E. J. 1994. Managerial incentives, monitoring, and risk bearing: A study of executive compensation, ownership, and board structure in initial public offerings. *Administrative Science Quarterly*, 39: 313–335.
- Bedard, J. C., & Johnstone, K. M. 2004. Earnings manipulation risk, corporate governance risk, and auditors' planning and pricing decisions. *Accounting Review*, 79: 277–304.
- Beneish, M. D. 1999. The detection of earnings manipulations. *Financial Analysts Journal*, 55(5): 24–36.
- Black, F., & Scholes, M. 1973. Pricing of options and corporate liabilities. *Journal of Political Economy*, 81: 637–654.
- Brandes, P., Dharwadkar, R., & Lemesis, G. V. 2003. Effective employee stock option design: Reconciling stakeholder, strategic, and motivational factors. *Academy of Management Executive*, 17(1): 77–92.
- Brass, D. J., Butterfield, K. D., & Skaggs, B. C. 1998. Relationships and unethical behavior: A social network perspective. *Academy of Management Review*, 23: 14–31.
- Brouthers, K. D., Brouthers, L. E., & Werner, S. 2000. Influences on strategic decision-making in the Dutch financial services industry. *Journal of Management*, 26: 863–883.
- Certo, S. T., Daily, C. M., Cannella, A. A., & Dalton, D. D. 2004. Giving money to get money: How CEO stock options and CEO equity enhance IPO valuation. *Academy of Management Journal*, 46: 643–653.
- Child, J. 1974. Managerial and organizational factors as-

- sociated with company performance—Part I. *Journal of Management Studies*, 11: 175–189.
- Choi, S., & Wohar, M. E. 1994. S & P 500 index options prices and the Black-Scholes option pricing model. *Applied Financial Economics*, 4: 249–263.
- Clinard, M. B., & Yeager, P. C. 1980. *Corporate crime*. New York: Macmillan.
- Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. 2003. *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed.). Mahwah, NJ: Erlbaum.
- Conyon, M. J. 2006. Executive compensation and incentives. *Academy of Management Perspectives*, 20(1): 25–44.
- Daboub, A. J., Rasheed, A. A., & Priem, R. L., & Gray, D. A. 1995. Top management team characteristics and corporate illegal activity. *Academy of Management Review*, 20: 138–170.
- Daily, C. M., & Dalton, D. R. 1995. CEO and director turnover in failing firms: An illusion of change? *Strategic Management Journal*, 16: 393–400.
- Davidson, W. N., Jiraporn, P., Kim, Y. S., & Nemec, C. 2004. Earnings management following duality-creating successions: Ethnostatistics, impression management, and agency theory. *Academy of Management Journal*, 47: 267–275.
- Denis, D. J., Denis, D. K., & Sarin, A. 1999. Agency theory and the influence of equity ownership structure on corporate diversification strategies. *Strategic Management Journal*, 20: 1071–1076.
- Devers, C. E., Wiseman, R. M., & Holmes, R. M. 2007. The effect of endowment and loss aversion in managerial stock option valuation. *Academy of Management Journal*, 50: 191–208.
- Dunn, P. 2004. The impact of insider power on fraudulent financial reporting. *Journal of Management*, 30: 397–412.
- Durham, C. C., & Bartol, K. M. 2000. Pay for performance. In E. A. Locke (Ed.), *Handbook of principles of organizational behavior*: 150–165. Oxford, U.K.: Blackwell.
- Eaton, J., & Rosen, H. S. 1983. Agency, delayed compensation, and the structure of executive remuneration. *Journal of Finance*, 38: 1489–1505.
- Eisenhardt, K. M. 1988. Agency and institutional explanations of compensation in retail sales. *Academy of Management Journal*, 31: 488–511.
- Eisenmann, T. R. 2002. The effects of CEO equity ownership and firm diversification on risk taking. *Strategic Management Journal*, 23: 513–534.
- Elitzur, R. R., & Yaari, V. 1995. Executive incentive compensation and earnings manipulation in a multi-period setting. *Journal of Economic Behavior and Organization*, 26: 201–219.
- Ellig, B. R. 2002. *The complete guide to executive compensation*. New York: McGraw-Hill.
- Erickson, M., Hanlon, M., & Maydew, E. L. 2006. Is there a link between executive equity incentives and accounting fraud? *Journal of Accounting Research*, 44: 113–143.
- Fama, E. F., & Jensen, M. C. 1980. Separation of ownership and control. *Journal of Law and Economics*, 26: 301–325.
- Fox, J., & Gunn, E. P. 1997. How to manage your stock options. *Fortune*, 136(12): 167–173.
- General Accounting Office. 2003. *Financial statement restatement database* (report no. GAO-03-395R). Washington, DC: U.S. General Accounting Office.
- Gomez-Mejia, L. R., Welbourne, T. M., & Wiseman, R. M. 2000. The role of risk sharing and risk taking under gain sharing. *Academy of Management Review*, 25: 492–507.
- Gomez-Mejia, L. R., & Wiseman, R. M. 1997. Reframing executive compensation: An assessment and outlook. *Journal of Management*, 23: 291–375.
- Gray, S. R., & Cannella, A. A. 1997. The role of risk in executive compensation. *Journal of Management*, 23: 517–540.
- Hall, B. J. 2000. What you need to know about stock options. *Harvard Business Review*, 78(2): 121–129.
- Hambrick, D. C., Geletkanycz, M. A., & Fredrickson, J. W. 1993. Top executive commitment to the status quo: Some tests of its determinants. *Strategic Management Journal*, 14: 401–418.
- Hambrick, D. C., & Mason, P. A. 1984. Upper echelons, the organization as a reflection of its top managers. *Academy of Management Review*, 9: 193–206.
- Hayward, M. L., & Hambrick, D. C. 1997. Explaining the premiums paid for large acquisition: Evidence of CEO hubris. *Administrative Science Quarterly*, 42: 103–127.
- Healy, P. M., & Wahlen, J. M. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons*, 13: 365–383.
- Henderson, A. D., & Fredrickson, J. W. 1996. Information-processing demands as a determinant of CEO compensation. *Academy of Management Journal*, 39: 575–606.
- Heskett, J. 2005. *Is there an “efficient market” in CEO compensation?* Working paper, Harvard Business School, Boston.
- Huron Consulting Group. 2003. *An analysis of restatement matters: Rules, errors, ethics for the five years ended December 31, 2002*. Chicago: Huron Consulting Group.
- Jensen, M. C., & Meckling, W. H. 1976. Theory of the firm, managerial behavior, agency costs and owner-

- ship structure. *Journal of Financial Economics*, 3: 305–360.
- Jensen, M. C., & Murphy, K. J. 1990. Performance pay and top-management incentives. *Journal of Political Economy*, 98: 225–264.
- Johnstone, K. M., & Bedard, J. C. 2001. Engagement planning, bid pricing, and client response in the market for initial attest engagement. *Accounting Review*, 76: 199–220.
- Kahneman, D., & Tversky, A. 1979. Prospect theory: An analysis of decision making under risk. *Econometrica*, 42: 262–291.
- Kerr, S. 1975. On the folly of rewarding A while hoping for B. *Academy of Management Journal*, 18: 769–783.
- Kerr, S. 1995. On the folly of rewarding A while hoping for B. *Academy of Management Executive*, 9(1): 7–14.
- Kosnik, R. D. 1987. Greenmail: A study of board performance in corporate governance. *Administrative Science Quarterly*, 32: 163–185.
- Lee, T. A., Ingram, R. W., & Howard, T. P. 1999. The difference between earnings and operating cash flow as an indicator of financial reporting fraud. *Contemporary Accounting Research*, 16: 749–786.
- Levitt, A. 1999. *The numbers game*. Remarks presented at the New York University Center for Law and Business, October 18.
- Long, J. S. 1997. *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage.
- MacCrimmon, K. R., & Wehrung, D. A. 1990. Characteristics of risk taking executives. *Management Science*, 36: 422–435.
- Markóczy, L. 1997. Measuring beliefs: Accept no substitutes. *Academy of Management Journal*, 40: 1228–1242.
- Meindl, J. R., Ehrlich, S. B., & Dukerich, J. M. 1985. The romance of leadership. *Administrative Science Quarterly*, 30: 78–102.
- Miller, J. S., Wiseman, R. M., & Gomez-Mejia, L. R. 2002. The fit between CEO compensation design and firm risk. *Academy of Management Journal*, 45: 745–756.
- O'Connor, J. P., Priem, R. L., Coombs, J. E., & Gilley, K. M. 2006. Do CEO stock options prevent or promote fraudulent financial reporting? *Academy of Management Journal*, 49: 483–500.
- Pollock, T. G., Fischer, H. M., & Wade, J. B. 2002. The role of power and politics in the repricing of executive options. *Academy of Management Journal*, 45: 1172–1182.
- Pratt, J., & Stice, J. D. 1994. The effects of client characteristics on auditor litigation risk judgments, re-
- quired audit evidence, and recommended audit fees. *Accounting Review*, 69: 639–656.
- Press, S. J., & Wilson, S. 1978. Choosing between logistic regression and discriminant analysis. *Journal of the American Statistical Association*, 73: 699–705.
- Rezaee, Z., Olibe, K. O., & Mimmier, G. 2003. Improving corporate governance: The role of audit committee disclosures. *Managerial Auditing Journal*, 18: 530–537.
- Richardson, S., Tuna, I., & Wu, M. 2002. *Predicting earnings management: The case of earnings restatements*. Working paper, Wharton School, University of Pennsylvania.
- Ross, S. A. 1973. The economic theory of agency: The principal's problem. *American Economic Review*, 63: 134–139.
- Sanders, G. 2001. Behavioral responses of CEOs to stock ownership and stock option pay. *Academy of Management Journal*, 44: 477–492.
- Sanders, G., & Carpenter, M. A. 2003. Strategic satisficing? A behavioral-agency theory perspective on stock repurchase program announcement. *Academy of Management Journal*, 46: 160–178.
- Stevens, J. M., Beyer, J. M., & Trice, H. M. 1978. Assessing personal, role, and organizational predictors of managerial commitment. *Academy of Management Journal*, 21: 380–396.
- Strauss, G., & Hansen, B. 2005. CEO pay packages “business as usual.” *USA Today*, March 31: 01b.
- Thaler, R. H. 1980. Toward a positive theory of consumer choice. *Journal of Economic Behavior and Organization*, 1: 39–60.
- Thaler, R. H., & Johnson, E. J. 1990. Gambling with the house money and trying to break even: The effects of prior outcomes on risky choice. *Management Science*, 36: 643–660.
- Tosi, H. L., & Gomez-Mejia, L. 1989. The decoupling of CEO pay and performance: An agency theory perspective. *Administrative Science Quarterly*, 34: 169–190.
- Tosi, H. L., Werner, S., Katz, J. P., & Gomez-Mejia, L. R. 2000. How much does performance matter? A meta-analysis of CEO pay studies. *Journal of Management*, 26: 301–339.
- Tversky, A., & Kahneman, D. 1992. Advances in prospect theory: Cumulative representation of uncertainty. *Journal of Risk and Uncertainty*, 5: 297–323.
- Wakker, P. P. 2003. The data of Levy and Levy (2002) “Prospect theory: Much ado about nothing?” Actually support prospect theory. *Management Science*, 49: 979–981.
- Walsh, J. P., & Seward, J. K. 1990. On the efficiency of internal and external corporate control mechanisms. *Academy of Management Review*, 15: 421–458.
- Weber, J., Little, D., Henry, D., & Lavelle, L. 2001. Arthur

- Andersen: How bad will it get? *BusinessWeek*, December 24, online.
- Welbourne, T. M., Balkin, D. B., & Gomez-Mejia, L. R. 1995. Gainsharing and mutual monitoring, A combined agency–organizational justice interpretation. *Academy of Management Journal*, 38: 881–899.
- Westphal, J. D., & Zajac, E. J. 1994. Substance and symbolism in CEOs' long-term incentive plans. *Administrative Science Quarterly*, 39: 367–390.
- Wiseman, R. M., & Gomez-Mejia, L. R. 1998. A behavioral agency model of managerial risk-taking. *Academy of Management Review*, 23: 133–153.
- Wu, M. 2002. *Earnings restatements: A capital market perspective*. Working paper, New York University.
- Xie, B., Davidson, W. N., & DaDalt, P. J. 2003. Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance*, 9: 295–316.

---

**Xiaomeng Zhang** (xmzhang@american.edu) is an assistant professor at the Kogod School of Business, American University. She received her Ph.D. in organizational behavior/human resource management from the University of Maryland, College Park. Her research interests focus on creativity and innovation, leadership, CEO compensation, and motivation.

**Kathryn M. Bartol** (kbartol@rhsmith.umd.edu) is the Robert H. Smith Professor of Management and Organization at the Robert H. Smith School of Business, University of Maryland, College Park. She received her Ph.D. in organizational behavior and human resource management from Michigan State University. Her research centers on reward systems and exchange, knowledge sharing, empowerment, and information technology implications for management and organizations.

**Ken G. Smith** (kgsmith@rhsmith.umd.edu) is the Dean's Chair and Professor of Business Strategy at the Robert H. Smith School of Business, University of Maryland, Col-

lege Park. He earned a Ph.D. in business policy from the University of Washington. His research interests include strategic decision making, competitive dynamics, and the management of knowledge and knowledge creation.

**Michael D. Pfarrer** (michael.pfarrer@du.edu) is an assistant professor at the Daniels College of Business, University of Denver. He received his Ph.D. in strategic management from the University of Maryland, College Park. His research focuses on external perceptions of firm behavior—how stakeholders, institutions, and the media evaluate firm strategies and performance—and how firms manage these perceptions.

**Dmitry Khanin** (dkhanin@fullerton.edu) is an assistant professor of management at California State, Fullerton. He received his Ph.D. in business and management from the University of Maryland, College Park. His research explores venture capital, entrepreneurship, and governance.

**Copyright of Academy of Management Journal is the property of Academy of Management and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.**

Disponível em: <http://www.ebscohost.com>. Acesso em 11/6/2008.