The Impact of Directors' Option Compensation on Their Independence

Donal Byard*
Baruch College -- CUNY

and

Ying Li
Baruch College -- CUNY

Current draft: September 2005

[First Draft: December 2003]

* Corresponding author. Phone: (646) 312-3187; E-mail: Donal_Byard@baruch.cuny.edu

We appreciate the helpful comments and suggestion of Jay Dahya, Masako Darrough, John Elliott, Jonathan Glover, Wayne Guay, Peter Joos, Bjorn Jorgensen, Oliver Kim, S.P. Kothari, Lin Peng, John Shon, Joe Webber, Joe Weintrop, and Jimmy Ye, as well as seminar participants at the 2004 European Accounting Association Annual Meetings, the 2004 American Accounting Association Annual Meetings, and workshop participants at Baruch College -- CUNY, Beijing University, Duke University, New York University, Rutgers University, the Securities and Exchange Commission, and Tsinghua University. We also acknowledge the able research assistance of Ran Luo, and the contribution of IBES International Inc. for providing earnings per share forecast data, available through the Institutional Brokers' Estimate System. These data have been provided as part of a broad academic program to encourage earnings expectation research. Ying Li gratefully acknowledges the financial support provided by the Eugene M. Lang Fellowship.

The Impact of Directors' Option Compensation on Their Independence

Abstract

This study examines how the use of option-based compensation for directors affects their independence in their decisions on CEOs' option-grant dates. Firms typically grant CEOs options with the strike price set equal to the grant-day stock price. This practice creates a unique opportunity for CEOs to benefit from *timing opportunism*, whereby CEOs lower grant-day stock prices in order to increase the value of their option grants. Prior studies find that CEOs tend to receive options before (after) good news (bad news), indicating that timing opportunism exists. Since directors frequently receive options at the same time as CEOs, directors also benefit from timing opportunism. We argue that these directors may not have an incentive to constrain CEO timing opportunism. We hypothesize and find that it is more (less) difficult for CEOs to implement timing opportunism when option compensation is less (more) important to directors. Our results indicate that, when used as a common component of CEOs' and directors' compensation, stock options can compromise directors' independence in their role of constraining timing opportunism.

1. Introduction

Managers are agents of stockholders (Jensen and Meckling, 1976). Monitoring by the board of directors is a key mechanism for shareholders to reduce managerial agency costs. To ensure that directors provide disinterested oversight of management on behalf of stockholders, it is important that directors remain independent of management. To determine director independence, prior studies typically focus on a director's family ties with management or business relationships with the firm. They find that boards or audit committees with more independent directors reduce managerial opportunism in the form of excessive compensation (Core, Holthausen, and Larcker, 1999), and earnings management (Klein, 2002).[1]

In this paper, we argue that directors' family ties with management or business relationships with the firm do not fully capture director independence in all settings. We identify a particular setting in which stock options, when used as a common component of CEO and director compensation, compromise directors' independence in constraining one type of CEO opportunism, *timing opportunism*. Timing opportunism refers to the opportunistic practice where CEOs increase the value of their option grants by lowering their companies' stock prices on days when they receive option grants; since CEOs typically receive at-the-money options with strike prices set equal to the grant-day stock prices, lowering grant-day stock prices lowers options' strike prices, thereby increasing the value of option grants. Yermack (1997, p. 470) finds that CEOs tend to receive options before the release of good corporate news, providing the first evidence of timing opportunism in the literature. Further, he points out that timing opportunism resembles "a surrogate form of insider trading, albeit without the ordinary requirements of disclosure or risks of detection and prosecution."[2] CEOs' gains from timing opportunism (i.e., the increase in the value of CEO option grants as a result of lowered strike

[1] Recent regulatory changes also reflect an increasing emphasis on the role of independent directors in improving corporate governance. For example, the NYSE's 2004 listing standards require that all members of audit and compensation committees be independent outside directors, i.e., director with "no material relationship with the listed company." Material relationship includes "commercial, industrial, banking, consulting, legal, accounting, charitable and family relationships."

[2] Though CEOs are prohibited under Rule 10b-(5) from trading their companies' stock during "blackout periods" around the dissemination of market-sensitive information, no such "blackout periods" apply to their option grants. However, timing opportunism seems to have come under heightened scrutiny recently (see Solomon 2004).

prices) represent an additional cost to shareholders.

In their role to monitor CEOs on behalf of shareholders, directors have a responsibility to constrain CEO timing opportunism. However, as pointed out by a number of compensation consultants we consulted, directors frequently receive options on the same day with their CEO. Since these directors also benefit from timing opportunism, they likely do not have an incentive to constrain CEO timing opportunism. Our own reading of proxy statements also confirms that directors' and CEOs' option-grant dates frequently coincide. Though companies are not required to disclose directors' option-grant dates, some companies make such disclosures in their proxy statements voluntarily.[3] For example, Analog Devices' 1998 proxy statement clearly specifies that the company would grant "*stock options to Non-Employee Directors at or about the same time that the annual option grants are made to the officers and employees of the Company.*" Analog Devices is currently under SEC investigation for its announcement on November 13, 2000 that Siemens had decided to use Analog's computer chips in its new wireless phone, precipitating an 8.3 percent increase in Analog's stock price. This announcement came just three days after the company simultaneously granted 920,000 options to its top five executives and 125,000 options to its five non-employee directors.[4]

In this paper, we study how directors' option compensation affects their independence in their role to constrain CEO timing opportunism. By definition, timing opportunism involves a certain sequencing of corporate events, i.e., option grants before (after) good (bad) news. Thus, implementing timing opportunism requires a coordination of two decisions: the compensation committee's decision on when to grant options to the CEO, and the CEO's decision on when to release corporate news. Directors for whom option compensation is more important stand to benefit more from timing opportunism, and we argue that they have an economic incentive to "side with" CEOs and facilitate CEOs' implementation of timing opportunism, e.g., by giving

[3] For a randomly selected sample of 500 firm-years, we searched their proxy statements for any disclosed option-grant dates of directors. When companies disclose directors' option-grant dates, these dates tend to coincide with CEOs' option-grant dates, which we infer from the options' maturity dates reported in the proxy statements.

[4] See The New York Times (Morgenson, 2004) and Wall Street Journal (Solomon, 2004).

CEOs sufficiently advanced notice of upcoming option-grant dates to make it easier for CEOs to time corporate news around these grants, or by following CEOs' suggestions to set option-grant dates. Conversely, for directors for whom option compensation is less important, they have a stronger incentive to constrain timing opportunism by making decisions on CEOs' option-grant dates independent of CEOs' influence. We hypothesize that it is more difficult for CEOs to implement timing opportunism when option compensation is less important to directors.[5]

We test our hypothesis using a large sample of CEO option grants based on 12,142 firm-years between 1992 and 2002. Similar to Yermack (1997), we identify timing opportunism by either positive Cumulative Abnormal Returns (*CAR*) after CEO option grants, or negative *CAR* before the grants, based on a standard market model; that is, CEOs receive options before good news or after bad news. We find that timing opportunism is present in 81 percent of our sample, and its magnitude increases over our sample period. Further, the magnitude of timing opportunism increases with the importance of option compensation to CEOs, measured by the proportion of options in CEO compensation. This is the first evidence in the literature that timing opportunism increases with CEOs' potential gains from timing opportunism. Since CEOs likely implement timing opportunism via their news discourses to analysts, we also examine analyst forecast revisions around CEO option grants. We find that CEOs who stand to benefit more from timing opportunism "talk down" analysts more prior to their option grants.

Our most important finding is that, when directors receive a lower (higher) proportion of their compensation in options, the positive association between the magnitude of timing opportunism and the importance of option compensation to CEOs becomes weaker (stronger). This finding indicates that it is more (less) difficult for CEOs to implement timing opportunism when directors' potential gains from this opportunism are smaller (greater). This finding is robust to controlling for corporate governance quality using measures constructed from the Investor Responsibility Research Center (IRRC) database, and to the use of Fama-French risk-

[5] If some directors do not receive options on the same day as CEOs, this biases against finding results consistent with our hypothesis.

adjusted returns. Thus, the increasing timing opportunism during the 1990s seems, at least partly, attributable to the increasing importance of option compensation for both CEOs and directors over this period.

In further analysis, we show that it is not optimal to curb timing opportunism simply by abolishing option grants to directors, because timing opportunism is a by-product of using options for efficient contracting, i.e., using options to align CEOs' and directors' incentives with shareholders. We find that timing opportunism is greater in firms with more agency costs (e.g., growth firms), and that, consistent with the prediction of agency theory, these firms use more option compensation to align both CEOs' and directors' incentives with shareholders. Our results point to some potential policies to limit timing opportunism: granting options to CEOs and directors in equal installments staggered throughout a year, or subject option grants to blackout periods.

Our study differs from prior research in several ways. First, we study *when* timing opportunism is likely to occur, while prior research has largely focused on *how* CEOs implement timing opportunism (Yermack, 1997; Aboody and Kasznik, 2000). Second, we provide the first evidence in the literature that timing opportunism is greater when CEOs' potential gains from this opportunism are higher. Third, while Yermack (1997) attributes timing opportunism to weak corporate governance, we argue timing opportunism can occur even in firms with solid governance systems because directors likely also benefit from timing opportunism. Our findings indicate that it is important to consider directors' economic incentives in addition to their family or business ties with management when determining director independence.[6]

The remainder of this paper is organized as follows. Section 2 develops our hypotheses regarding the cross-sectional determinants of timing opportunism. This is followed by Section 3, which outlines our research design. Section 4 presents our results, and Section 5 follows with further analysis and sensitivity tests. Section 6 concludes.

[6] Since we only study the setting of CEO timing opportunism, our results do not imply that all directors' decisions to provide oversight are similarly affected by their option compensation. For example, directors may still provide disinterested oversight of managers' long-term investment decisions.

2. Hypothesis development

Prior research finds that CEOs tend to receive option grants before good corporate news or after bad corporate news (Yermack, 1997; Chauvin and Shenoy, 2001), indicating that *timing opportunism* exists. Yermack (1997) argues that CEOs implement timing opportunism by influencing compensation committees to time CEOs' option grants to be before the release of good news. Aboody and Kasznik (2000) provide an alternative explanation. For firms that grant options to CEOs on "fixed" dates, they show that CEOs implement timing opportunism by timing bad (good) news to be before (after) such "fixed" grant dates.

While these prior studies examine *how* CEOs implement timing opportunism, we focus on the cross-sectional variation in timing opportunism, that is, *when* timing opportunism is likely to occur.[7] We argue that the magnitude of timing opportunism, i.e., the extent to which a CEO opportunistically lowers the grant-day stock price, depends on how much a CEO can potentially benefit from timing opportunism. A CEO for whom option compensation is more important stands to benefit more, so he has a stronger incentive to implement timing opportunism. Our first hypothesis, stated in its alternative form, is thus:

> *H1: The magnitude of timing opportunism increases with the importance of option compensation to CEOs.*

Directors have a responsibility to constrain CEO timing opportunism on behalf of shareholders. Since timing opportunism results from CEOs' sequencing of corporate news releases around their option-grant dates, implementing timing opportunism requires the coordination of two decisions: the *compensation committees' decision* on when to grant options to CEOs, and *CEOs' decision* on when to release corporate news. To the extent that directors on compensation committees make decisions on CEO option-grant dates independent of CEOs' influence, directors can mitigate timing opportunism.

However, the very existence of timing opportunism suggests that directors on compensation committees lack independence when setting CEOs' option-grant dates. The

[7] We use the CEO as representative of the top management team, because "in most companies, other top executives receive options on the same day as the CEO" (Aboody and Kasznik, 2000, p.78).

widespread timing opportunism documented by Yermack (1997) in about 60 percent of his sample, therefore, indicates that director independence is questionable in most firms.[8] Yermack (1997) attributes this lack of director independence to poor governance quality, where CEOs have influence over compensation committees. We argue, however, that timing opportunism can occur even in firms with well-functioning governance systems. Specifically, directors frequently receive options on the same day as CEOs, so directors also benefit from timing opportunism. Those directors with significant option compensation likely even have an incentive to facilitate CEOs' implementation of timing opportunism, for example, by providing CEOs with sufficient advance notice of upcoming option-grant dates, or by choosing CEO option-grant dates based on CEOs' preferences.[9] The significance of this director "disincentive" has grown in recent years, as option compensation has become more important to directors (NACD 2001).[10] Thus, the widespread timing opportunism documented by Yermack (1997) may simply reflect the increased importance of option compensation to directors, rather than widespread governance problem as Yermack (1997) suggests.

Based on the above arguments, we hypothesize that it is more (less) difficult for CEOs to implement timing opportunism when option compensation is less (more) important to directors.[11] Note that our hypothesis applies to all firms, including firms that grant options to CEOs on 'fixed' schedules as studied by Aboody and Kasznik (2000). They define 'fixed' grant schedules

[8] Out of the 313 CEO option grants around earnings announcements studied by Yermack (1997, Table IV), about 60 percent (or 179 grants) exhibit timing opportunism, with large positive (negative) earnings surprises following (preceding) the option grant.

[9] Compensation committees typically make decisions on CEOs' compensation packages based on proposals prepared by human resources departments. It is possible for a CEO to indirectly suggest a grant date to the compensation committee via the human resources department.

[10] Most corporations now use stock options to compensate outside directors (NACD 2001). The 2002 annual survey of directors' compensation by the Conference board reports that 84-percent of directors now receive some form of stock or option-based compensation (Peck et al., 2002). Yermack (2004) also finds that director option-based compensation awards are highly skewed, with some directors getting million-dollar awards in some years.

[11] One may argue that timing opportunism does not harm shareholders as long as compensation committees can reduce the number of options granted to CEOs to offset the expected gains from timing opportunism. We argue that this scenario is unlikely. First, when directors on the compensation committees also benefit from timing opportunism, they may not have an incentive to reduce the number of options granted to CEOs. Second, because of information asymmetry between directors and CEOs, directors may not be able to accurately anticipate the timing and magnitude of corporate news that CEOs can time around a future grant date. As a result, directors may not be able to make the appropriate offsetting adjustment in the number of options to grant to CEOs.

as the practice of granting options within the same calendar week each year during their sample period from 1992 to 1996. Since they treat such "fixed" grant schedules as exogenous, they remove the role of directors in timing opportunism from their sample. We argue, however, that our hypothesis still applies to CEOs with "fixed" option-grant schedules, i.e., director independence still affects timing opportunism. First, for CEOs with "fixed" grant schedules, it is not uncertain whether CEOs indeed implement timing opportunism by timing news releases around the "fixed" grant dates as argued by Aboody and Kasznik (2000). In about 25 percent of their sample, firms announce earnings within the same calendar week as CEOs' option grants. Since earnings release dates are typically known in advance, for these firms, an alternative scenario is equally likely: CEOs implement timing opportunism by influencing directors to time CEOs' option grants around the "fixed" earnings releases. In this scenario, director independence still affects the magnitude of timing opportunism. Second, while Aboody and Kasznik (2000) use *ex post* realizations of grant dates to identify "fixed" grant schedules and treat such schedules as exogenous, it is doubtful whether these grant schedules are "fixed" *ex ante*. Grant schedules are unlikely exogenous, because they are conscious decisions of compensation committees. To explore this possibility, we identify firms that granted options in the same calendar week each year between 1992 and 1996 from the ExecuComp database. In the later period from 1997 to 2002, only 35 percent of the surviving firms continue to have such "fixed" schedules, indicating that some firms indeed change their grant schedules. Our second hypothesis, stated in its alternative form, is as follows.

H2: It is more difficult for CEOs to implement timing opportunism when option compensation is less important to directors.

Having developed two hypotheses on when CEO timing opportunism likely arises, we explore how differences in CEOs' potential gains from timing opportunism affect their implementation of timing opportunism, i.e., their opportunistic reduction of grant-day stock prices. Aboody and Kasznik (2000) study CEOs' implementation of timing opportunism by examining analyst forecast errors around option grants, as analysts' forecasts largely reflect guidance from

management (Waymire, 1986; Baginski and Hassell, 1990). In a sample of firms that grant options to CEOs on "fixed" schedules, they find that analyst forecasts are *less* optimistically biased in the months before option grants than in other months, suggesting that CEOs release bad news to "talk down" analysts before option grants.

Building on Aboody and Kasznik's (2000) study of the type (i.e., good or bad) of news released around CEO option grants, we examine, in our third hypothesis, how the magnitude of news releases around CEO option grants varies with CEOs' incentive to implement timing opportunism. Since CEOs for whom option compensation is more important stand to benefit more from timing opportunism, they have a stronger incentive to guide financial analysts downward (upward) before (after) CEO option-grant dates. We predict larger downward (upward) analyst forecast revisions before (after) option grants to CEOs for whom option compensation is more important. Note that this prediction applies to all CEOs, not just CEOs who receive option grants under "fixed" grant schedules as studied in Aboody and Kasznik (2000). This difference in the scope of our studies stems from our different research questions. Aboody and Kasznik study *how* CEOs implement timing opportunism, and they focus on CEOs' decisions with respect to news releases by fixing directors' decisions on CEOs' option-grant dates. In contrast, we focus on *when* timing opportunism is more likely to arise. Our hypothesis applies to all firms because, regardless of different mechanisms CEOs use to implement timing opportunism under "fixed" (i.e., CEOs time news around option grants) or "variable" option-grant schedules (i.e., CEOs can either time news releases or exert influence over the compensation committees to time option grants), timing opportunism always involves CEOs releasing bad news before grants or good news after the grants. Our third hypothesis is thus:

H3: CEOs for whom stock options are more important release more negative (positive) news to analysts before (after) CEOs' option grants.

Note that while H1 and H2 make predictions on how CEOs' and directors' economic incentives affect the magnitude of timing opportunism, in H3, we only focus on CEOs because corporate news disclosure is a CEO, not director, decision.

3. Variable measurement and research design

To test our hypotheses, we follow Yermack (1997) and measure the magnitude of timing opportunism by the risk-adjusted abnormal returns around CEO option-grant dates using a standard market model event-study methodology with daily stock returns. We retrieve daily stock returns from CRSP, and define daily abnormal returns (AR) for firm *i* for day *d* as:

$$AR_{id} = R_{id} - \hat{R}_{id} = R_{id} - (\hat{\alpha}_i + \hat{\beta}_i MP_d),$$

where R_{id} is the observed total return for firm *i* on day *d*; $\hat{R}_{id}$ is the market model estimate of expected returns for firm *i* on day *d*; $\hat{\alpha}_i$ and $\hat{\beta}_i$ are the parameter estimates from an out-of-sample estimate of the market model over a one-year period ending 46-trading days before the option grant date; and MP_d is the market portfolio return for day *d*. Our proxy for the market portfolio (*MP*) is the CRSP dividend-inclusive value-weighted index for the NASDAQ or New York and American Stock Exchanges.[12] Based on parameter estimates from the market model, we calculate cumulative abnormal returns (*CAR*) over six return windows surrounding CEO option grants: three pre-grant windows (from day -10, -20, or -30 to the option-grant date, day 0), and three post-grant windows (from day 1 to day +10, +20, or +30). For a CEO receiving multiple option grants in a given year, we use the sum of *CAR* across the grants.[13] Consistent with Yermack (1997) and Aboody and Kasznik (2000), we treat negative pre-grant *CAR* or positive post-grant *CAR* as indicative of timing opportunism.

3.1. Research design for hypotheses 1

H1 predicts that the magnitude of timing opportunism increases with the importance of option compensation to CEOs. We measure the importance of option compensation to CEOs by the *percentage* of options in total CEO compensation, termed *CEO_OPTIONS*. Using the ExecuComp database, we calculate *CEO_OPTIONS* as the Black-Scholes value of a CEO's option grants divided by the CEO's total compensation. Based on H1, we predict that the

[12] Our inferences are unchanged if we use an equally weighted index in the market model, or if we generate risk-adjusted returns using a three-factor Fama-French model.

[13] Our results are robust to using the weighted average of *CAR* for a CEO-year with multiple grants, or to excluding CEO-years with multiple grants. In our sample, about 26 percent of CEO-years have multiple grants.

magnitude of timing opportunism increases with the *percentage* of options in total CEO compensation (*CEO_OPTIONS*). Yermack (1997, p.462) finds an insignificant relation between the magnitude of timing opportunism (measured as the 50-day *CAR* following grant dates) and the *dollar* amount of CEOs' option compensation. We argue that our *percentage* measure captures the importance of option compensation to CEOs better than the *dollar* amount of CEO option compensation, because CEOs with different wealth levels likely treat the same dollar amount of option compensation differently. We test H1 in the following pooled regression with year indicators to capture year-specific effects:

$$CAR_{it} = \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 ANALYST\ FOLLOWING + year\ dummies + \varepsilon_{it} \ . \quad (1)$$

The dependent variable *CAR*, as discussed above, is our measure of the magnitude of timing opportunism. For the three pre-grant *CAR* windows (from day -10, -20, or -30 to the option-grant date, day 0), we predict negative coefficients on *CEO_OPTIONS*. For the three post-grant *CAR* windows (from day 1 to day +10, +20, or +30), we predict that the coefficients on *CEO_OPTIONS* are positive.

In equation (1), we also include the number of analysts following a firm (*ANALYST FOLLOWING*), obtained from the I/B/E/S database, to control for the quality of a firm's information environment (e.g., see Shores 1990).[14] This variable inversely captures CEOs' capacity to implement timing opportunism. In firms with richer information environments, CEOs are more constrained in their capacity to implement timing opportunism, because news releases by these firms must compete with a greater number of alternative information sources and hence have less impact on stock prices. Furthermore, the number of analysts following a firm is strongly positively associated with firm size (Bhushan, 1989), so this variable also captures a firm's political sensitivity (Watts and Zimmerman, 1986). CEOs of bigger firms potentially face greater cost (e.g., reputation loss) from media publicity of, or regulatory actions

[14] Our results are robust to using firm market capitalization as an alternative control for the quality of a firm's information environment.

against, timing opportunism. As a result, we predict negative (positive) coefficients on *ANALYST FOLLOWING* for the pre-grant (post-grant) windows.

3.2. Research design for hypotheses 2

H2 makes a prediction on directors' impact on timing opportunism. To test H2, we focus on directors servicing on compensation committees, as they are directly responsible for enacting and implementing compensation policies, including decisions on the size and dates of option grants to CEOs. Further, we focus on *outside* directors, because since early 1990s almost all compensation committees have been populated exclusively by outside (i.e., non-employee) directors.[15] In the rest of the paper, we use 'directors' and 'outside directors' interchangeably unless otherwise specified.

Consistent with our use of a percentage measure to capture the importance of option compensation to CEOs (i.e., *CEO_OPTIONS*), we use a similar percentage measure to capture the importance of option compensation to outside directors: the percentage of options in director compensation, *DIR_OPTIONS*. We estimate *DIR_OPTIONS* using data from ExecuComp, which reports compensation for outside directors at the firm, not the individual director, level, because outside directors typically receive uniform compensation. For each outside director, we calculate director compensation as the sum of his cash, stock, and option compensation.[16] Cash compensation is the cash retainer plus the meeting fee times the number of board meetings held.[17] Stock compensation is the shares of stock that the outside director receives multiplied by the year-end stock price. We estimate director option compensation as (*number of options awarded*value of each option*). Though ExecuComp provides the *number of options awarded* to

[15] This is largely due to the enactment of §162(m) of the Internal Revenue Code, which limits the tax deductibility of executive compensation unless a compensation committee comprised solely of two or more outside directors determines executive compensation based on some performance goals.

[16] While "Seasoned" outside directors receive uniform compensation, new outside directors typically receive additional option grants in their initial year of appointment (Yermack 2004). These additional grants are not available in ExecuComp, so we do not include them in our calculations.

[17] If a director does not attend all board meetings, our measure overestimates his meeting fees because ExecuComp only reports the total number of board meetings held. On the other hand, if a director also serves on a board committee and attends its meetings, our measure underestimates his meeting fees because ExecuComp does not report the number of committee meetings held or attended. On average, meeting fee has declined in significance as part of director compensation during the 1990s (NACD 2001), which corresponds to our sample period.

each director, it does not provide the necessary parameters (e.g., option strike price, option maturity, and stock price on the grant day etc.) to calculate the *value of each option.* Since directors frequently receive options on the same day as their CEOs, we use parameters of CEOs' option grants as proxies for the parameters of directors' option grants. To summarize, we estimate the percentage of option pay in director compensation, *DIR_OPTIONS*, as:

$$DIR\_OPTIONS = \frac{Option\ Compensation\ for\ Each\ Outside\ Director}{Total\ Director\ Compensation\ for\ Each\ Outside\ Director},$$

Where: *Total Director Compensation of Each Outside Director*
= *Cash retainer + (meeting fee x number of board meetings held)*
+ *Dollar value of restricted stock awarded to each outside director*
+ *Dollar value of options granted to each outside director*

Since H2 predicts that it is more difficult for CEOs to implement timing opportunism when option compensation is less important to directors, we test this hypothesis by interacting *DIR_OPTIONS* with *CEO_OPTIONS* in the following specification:

$$CAR_{it} = \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 (CEO\_OPTIONS_{it} * DIR\_OPTIONS_{it}) + \alpha_3 DIR\_OPTIONS_{it} + \alpha_4 ANALYST\ \ FOLLOWING_{it} + year\ dummies + \varepsilon_{it}. \quad (2)$$

We first discuss our prediction for *CEO_OPTIONS* before proceeding to the interaction term. Earlier, in equation (1), we use the coefficient on *CEO_OPTIONS* to test H1. In equation (2), however, this coefficient tests H1 only for the subset of firms that do not grant options to outside directors (i.e., when *DIR_OPTIONS* is zero). In this subset of firms, outside directors do not benefit from timing opportunism, so they have a stronger incentive to constrain CEO timing opportunism. For these firms, we argue that CEOs can still implement timing opportunism, e.g., by obtaining their upcoming option-grant dates through CFOs. Since CFOs administer option grants to executives, compensation committees need to inform CFOs of option grants in advance.[18] Thus, in equation (2), we expect to find evidence consistent with H1, so we predict a negative (positive) coefficient on *CEO_OPTIONS* for the pre-grant (post-grant) *CAR* windows. Empirically, it is meaningful to test this coefficient on *CEO_OPTIONS*, as it is fairly common

[18] In addition, executive compensation plans are typically prepared by the human resources department and then sent to the compensation committee. Some plans contain suggestions on the date of the grants.

for firms to grant options to CEOs, but not to outside directors. These firms represent about 30-percent of all firm-years covered by ExecuComp Between 1992 and 2002.

In equation (2), the interaction term *CEO_OPTIONS* DIR_OPTIONS* provides evidence on H2. H2 predicts that it is more (less) difficult for CEOs to implement timing opportunism when option compensation is less (more) important to directors. Based on H2, we expect that, as option compensation becomes less (more) important to directors, the positive association between the magnitude of CEO timing opportunism and *CEO_OPTIONS* predicted by H1 becomes weaker (stronger). Therefore, for pre-grant *CAR* windows, we predict that the coefficient on the interaction term *CEO_OPTIONS* DIR_OPTIONS* is negative, indicating a weaker (stronger) negative relation between pre-grant *CAR* and *CEO_OPTIONS* as option compensation becomes less (more) important to directors. Similarly, for post-grant *CAR* windows, we predict that the coefficient on the interaction term is positive.

While H2 predicts that directors have an impact on timing opportunism, this impact is indirect through CEOs, because directors only affect the degree of difficulty CEOs face in implementing timing opportunism. No theory, however, predicts that directors have a direct impact on timing opportunism independent of CEOs. To implement timing opportunism independent of CEOs, outside directors would need to be able to anticipate the date and magnitude of upcoming corporate news releases in order to time their option grants around such releases. However, corporate news releases are CEOs', not outside directors', decisions. Since outside directors do not have the same knowledge of upcoming corporate news as CEOs do, we argue that outside directors do not have the capacity to implement timing opportunism independent of CEOs. To provide evidence on our argument, we select from ExecuComp *all* firm-years where firms grant options to outside directors, but not to top executives. From 1992 to 2002, merely 804 (or 3.85 percent) of all 20,865 firm-years covered by ExecuComp satisfy this requirement. In these firms, executives do not receive option grants, so they have no incentive to engage in timing opportunism. We test whether directors implement timing

opportunism in these firms. Grant dates for outside directors are not a required disclosure, so we search proxy statements for any voluntarily disclosed grant dates. We are able to identify option-grant dates for directors for 158 out of the 804 firm-years. For these 158 grant dates, we confirm that on average outside-director-implemented timing opportunism is zero, and that the relation between the magnitude of timing opportunism and *DIR_OPTIONS* is insignificant.

In equation (2), the coefficient on *DIR_OPTIONS* tests outside directors' direct impact on timing opportunism: this coefficient reflects how outside-director-implemented timing opportunism varies with *DIR_OPTIONS* in firms where CEOs do not receive option grants (i.e., when *CEO_OPTIONS* is zero). Based on the discussion above, we expect the coefficient on *DIR_OPTIONS* to be zero. We include this variable merely for completeness. When including an interaction term in a regression, empirical researchers typically include the components of the interaction term as separate regressors, because failing to do so can bias the coefficient on the interaction term. In our study, however, excluding *DIR_OPTIONS* as a separate regressor would not cause such an econometrics concern, because we expect the coefficient on *DIR_OPTIONS* to be zero. As a result, we test H2 using two forms of equation (2), with *DIR_OPTIONS* included or excluded as a separate regressor.

3.3. Research design for hypotheses 3

To test H3, we first calculate analysts' forecast revisions around CEOs' option grants. For each analyst, we use the I/B/E/S database to calculate her forecast revision: the difference between her forecast of the upcoming annual earnings and her prior forecast of the same earnings scaled by the most recent stock price on file in I/B/E/S on the forecast revision date.

We identify three types of analyst forecast revisions for each option grant: (1) revisions in the 30-day period before the grant date, *REV_BEFORE*; (2) revisions in the 30-day period after the grant date, *REV_AFTER*; and (3) revisions beyond this 60-day period (i.e., from 30 days prior to the grant to 30 days after) around CEO option grant, *REV_NOGRANT*. We require each option grant to have at least one of each of these three types of forecast revisions; if more than one forecast revisions exist for a particular type, we use the mean forecast revision for that type.

For each set of *REV_BEFORE, REV_AFTER*, and *REV_NOGRANT* corresponding to a grant, we calculate the difference between the forecast revision from a pre-grant or post-grant period and that from the non-grant period, i.e., (*REV_BEFORE* - *REV_NOGRANT*) or (*REV_AFTER*-*REV_NOGRANT*). We test H3 using the following equations (3a) and (3b), which estimate analyst forecast revisions for the pre-grant and post-grant periods respectively:

$$(REV\_BEFORE - REV\_NOGRANT) = \psi_0 + \psi_{1a} CEO\_OPTIONS + \psi_{2a} HORIZON\_DIFF + \varepsilon, \quad (3a)$$

$$(REV\_AFTER - REV\_NOGRANT) = \psi_0 + \psi_{1b} CEO\_OPTIONS + \psi_{2b} HORIZON\_DIFF + \varepsilon. \quad (3b)$$

We test H3 using the coefficients on *CEO_OPTIONS* in these two equations. In equation (3a) (equation (3b)), we predict that the coefficient on *CEO_OPTIONS* is negative (positive), indicating that CEOs release more negative (positive) news before (after) their option grants as option compensation becomes more important to them. In both equations, *HORIZON_DIFF* is the difference between the horizons of the two revision types compared, where the horizon of a forecast revision is the number of days between the forecast revision date and the eventual earnings announcement date. Since revisions made earlier in the fiscal year may be larger in magnitude (Richardson et al., 2004), *HORIZON_DIFF* controls for possible horizon-induced differences between the two revision types compared. Note that we employ a within-firm study design in equations (3a) and (3b), where the dependent variables are the differences between revision types within firm-years. Such a research design controls for any firm-specific determinants of analyst forecast revisions.

Though Aboody and Kasznik (2000) also study analyst forecasts, their tests differ from ours in two important ways. First, while they study analyst forecast *errors*, we focus on analyst forecast *revisions*, which captures analysts' new information better than forecast errors. In addition, using forecast revisions also avoids any confounding effect from stale forecasts (see Brown and Han 1992). Second, Aboody and Kasznik (2000) use a cross-sectional model with fixed firm effects. In contrast, we use a within-firm study design, so we do not need to controls for multiple cross-sectional determinants of forecast revisions. This helps alleviate concerns regarding potential correlated omitted variable problems.

4. Results

In this section, we discuss our test results. We first discuss our sample selection, and then present evidence on our three hypotheses.

4.1. Sample selection

We collect a sample of CEOs between 1992 and 2002 from the ExecuComp database. For firms not identifying their CEOs, we choose the executive with the highest cash compensation. We exclude CEO-years where CEOs do not receive option, because there are no grant dates for these observations. We also exclude observations where the number of options granted to outside directors is missing. This yields a sample of 19,400 option grants for 13,013 CEO-years, representing 2,385 firms. We match this sample with daily stock returns data from the Center for Research in Security Prices (CRSP) database, and data for analyst following (*ANALYST FOLLOWING*) from the I/B/E/S database. Our final sample includes 17,993 option grants for 12,142 CEO-years, representing 2,250 firms. Since 1992, proxy statements filed with the SEC must disclose the expiration dates and durations of options granted to executives during the year. We use these reported expiration dates and durations to infer CEO option-grant dates.

4.2. Summary statistics

In Panel A of Table 1, we present summary statistics of the average *CAR* around CEO option grants. Consistent with prior studies, we find that, on average, *CAR* following option grants is significantly positive (Yermack, 1997; Aboody and Kasznik, 2000), while *CAR* before option grants is significantly negative (Chauvin and Shenoy, 2001). The mean *CAR* over the 30-day period after (before) option grants is +2.39 (-1.86) percent, significant at *p*-value less than 0.001 (0.001), one-tailed.[19] This pattern of negative *CAR* before grants and positive *CAR* afterwards is also evident from the "V-shaped" graph in Figure 1, where we plot mean abnormal

[19] While we document significantly negative pre-grant *CAR*, both Yermack (1997) and Aboody and Kasznik (2000) find that pre-grant *CAR* is *insignificant*. The difference between our results and theirs is a result of our sample differences. Our sample includes more firms and covers a longer time period, which likely increases the power of our tests. In addition, our sample is less biased toward better-performing firms. For example, in Yermack's sample of Fortune 500 CEOs between 1992 and 1993, the mean ROA (ROE) is 4.52 (11.74) percent, significantly higher ($p<0.01$) than the 3.75 (9.78) percent for option-granting non-Fortune 500 firms during the same period.

returns cumulated from 30 days before option grants to 30 days after the grants.[20] In Figure 1, the "V-shaped" pattern is more pronounced after 1996, indicating that timing opportunism is greater in our later sample years, consistent with the findings of Lie (2004).[21] Further, untabulated results show that timing opportunism (as indicated by either negative pre-grant *CAR* or positive post-grant *CAR*) is widespread: it exists in 9,793, or about 81 percent of our CEO-years.

The significantly negative pre-grant *CAR* is noteworthy, because it indicates that bad news is released before option grants and thus provides unequivocal support for the existence of timing opportunism. In contrast, the positive post-grant *CAR* is consistent with two alternative explanations: the release of good news after option grants, or a positive market reaction to option grants. Yermack (1997) argues that the first explanation is more likely, as the market does not know option-grant dates until the release of proxy statements about three months after the end of the fiscal year, which is between three to fifteen months after the grant date. However, one cannot entirely rule out the second explanation, because some market participants, e.g., analysts, may learn of a grant soon after the grant date.

Panel B, Table 1 provides summary statistics for our hypothesized determinants of timing opportunism. Over our sample period, we observe increased use of options to compensate CEOs (directors): the average percentage of options in CEO (director) compensation, *CEO_OPTIONS* (*DIR_OPTIONS*), is 50 (45) percent between 1997 and 2002, much higher than the 38 (31) percent between 1992 and 1996. It is possible that the greater timing opportunism in our later sample period (see Figure 1 again) is a result of the greater use of options in CEO and director compensation. Panel B also shows that our sample firms tend to be large: the mean market capitalization is $5.77 billion. The mean of the number of analysts following a firm is 19.36.

[20] Callaghan et al. (2004) document a similar "V-shaped" pattern around option repricing, i.e., significant negative (positive) *CAR* before (after) option repricing.

[21] While the mean of *CAR* exhibit a "V-shape," this does not imply that every individual CEO-year observation exhibits this "V-shaped" patters in abnormal returns. Table 2 documents a Pearson correlation coefficient of -0.02 between 20-day pre-grant *CAR* and 20-day post-grant *CAR*. The small magnitude of the correlation coefficient indicates that, by and large, the stock-price run-down before option grants and the run-up afterwards do not occur for the same firms. If firms with bad news choose to release it before grants, while firms with good news choose to release it after option grants, on average, we would observe a "V-shape" for the entire sample.

Since timing opportunism transfers wealth from shareholders to CEOs and directors, it is meaningful to quantify CEOs' and outside directors' gains from this opportunism. Yermack (1997) calculates the upper bound on a CEO's abnormal gain as the face value of his option grants (the number of options times the stock price on the grant date) multiplied by the firm's *abnormal* stock return in the period following the grant date.[22] Based on this metric, in our sample, CEOs' mean abnormal gain based on the 30-day abnormal stock returns after option grants is $127,699, much lower than the mean of their cash pay, $1,180,900. However, for CEOs in the top quintile of *CEO_OPTIONS*, their mean abnormal gain is $1,845,569, comparable with their mean cash pay of $1,576,643. Though outside directors' abnormal gains from timing opportunism are less than CEOs', the abnormal gains are still substantial for some directors, i.e., those with significant option compensation. For directors in the top quintile (decile) of *DIR_OPTIONS*, their mean abnormal gain is $87,537 ($161,529), much higher than their mean cash pay of $16,325 ($8,715).

4.3. Results for hypothesis 1

Table 2, the correlation matrix, provides preliminary evidence in support of H1. We find a positive (negative) relation between *CAR* over the 20-day window after (before) option grants and *CEO_OPTIONS*, significant at *p*-value less than 0.001 (0.001), one-tailed. Our finding indicates that timing opportunism increases with *CEO_OPTIONS*, and is consistent with H1. Except for the correlation coefficient of 0.40 between *CEO_OPTIONS* and *DIR_OPTIONS*, other correlation coefficients are small.

In Table 3, we formally test H1 using equation (1). Since there is almost certainly autocorrelation in panel data, we report *t*-statistics based on the Huber-White heteroscadasticity- and autocorrelation-consistent standard errors.[23] Our evidence supports H1, i.e., that the magnitude of timing opportunism increases with the proportion of options in CEO compensation.

[22] Note, this metric reflects the upper bound of the CEO's *abnormal*, instead of *total*, gain from timing opportunism, because it is based on *abnormal* (or firm-specific), not *total*, stock returns. Abnormal returns are used because CEOs can only affect the abnormal component of stock returns, not the market component.

[23] All of our results in this paper are robust to using Fama-MacBeth (1973) regression procedures.

Specifically, we find that *CAR* over the pre-grant (post-grant) windows is significantly *negatively* (*positively*) related to *CEO_OPTIONS* as predicted. For *CAR* over the 10-, 20-, or 30-day window before (after) CEO option grants, the coefficients on *CEO_OPTIONS* are -3.33, -4.40, and -5.99 (5.07, 6.27, and 4.95) respectively.[24]

4.4. Results for hypotheses 2

Figure 2 provides preliminary evidence in support of H2. This figure graphs the average *CAR* around CEO option grants for two portfolios, formed on whether an observation has above or below the median value of the proportion of options in director compensation (i.e., *DIR_OPTIONS*). We find that the portfolio with below (above)-median *DIR_OPTIONS* is associated with less (more) CEO timing opportunism, as evidenced by a less (more) pronounced "V-shaped" average *CAR*. This finding supports H2, i.e., it is more difficult for CEOs to implement timing opportunism when option compensation is less important to directors. However, this portfolio analysis examines directors' incentives to constrain CEO timing opportunism without simultaneously controlling for CEOs' potentially different incentives to implement timing opportunism across the two portfolios. Below, we test H2 in a regression analysis that examines both directors' and CEOs' incentives.

4.4.1. Tests of hypotheses 2 in a regression analysis

We formally test H2 using equation (2), and report our results in Panel A of Table 4. Before discussing our evidence on H2, which is provided by the coefficient of the interaction term *CEO_OPTIONS* DIR_OPTIONS,* we first examine the coefficient on *CEO_OPTIONS.* In the research design section, we clarify that the coefficient on *CEO_OPTIONS* tests H1 only for the subset of firms that do not grant options to outside directors (i.e., when *DIR_OPTIONS* is zero). Consistent with our prediction, we find that the coefficient on *CEO_OPTIONS* is negative (positive) for pre-grant (post-grant) *CAR* windows. However, the negative coefficients

[24] As a sensitivity analysis, we include the dollar amount of CEOs' option compensation as an additional explanatory variable in equation (1). We find that this variable is insignificantly related to the magnitude of timing opportunism, consistent with the evidence in Yermack (1997).

corresponding to pre-grant windows are insignificant. Overall, for the subset of firms that do not grant options to outside directors, our findings support H1, as CEO timing opportunism still increases with the proportion of options in CEO compensation. Firms that do not grant options to outside directors account for 36-percent (or 4,362) of our sample of 12,142 firm-years.

Our evidence on the interaction term *CEO_OPTIONS* DIR_OPTIONS* largely supports H2. In columns 1~3, which report results on pre-grant *CAR* windows, the three coefficients on the interaction term are all significantly negative, at $p < 0.10$ or better, one-tailed. These negative coefficients show that, as the proportion of options in director compensation becomes smaller (larger), the negative relation between pre-grant *CAR* and *CEO_OPTIONS* becomes weaker (stronger), indicating that CEOs are less (more) effective in implementing timing opportunism. Further, in column 4, which reports results for the 10-day post-grant *CAR* window, we find as predicted a significantly positive coefficient, 3.26, on the interaction term ($p<0.05$, one-tailed). This positive coefficient shows that, as directors receive a smaller (larger) proportion of option compensation, the positive relation between the 10-day post-grant *CAR* and *CEO_OPTIONS* becomes weaker (stronger), indicating that CEOs are less (more) effective in implementing timing opportunism. However, for the 20- and 30-day post-grant *CAR* windows, the coefficients on the interaction term are insignificant, and their signs are opposite to our prediction.

Equation (2) suffers from a multicollinearity problem, however. This problem arises because *DIR_OPTIONS* is highly correlated with *CEO_OPTIONS*DIR_OPTIONS*, with a Pearson correlation coefficient of 0.87. The high correlation results, in part, because 36 percent of our sample firms do not grant options to directors; for these observations, both terms are zero. Excluding *DIR_OPTIONS* from equation (2) would solve this multicollinearity problem. As discussed in the research design section, the inclusion of *DIR_OPTIONS* is merely for completeness, because we expect its coefficient to be zero. If we had included either *DIR_OPTIONS* or *CEO_OPTIONS* DIR_OPTIONS* in equation (2), the coefficient on either

term would have been highly significant and consistent with our prediction.[25] However, including both terms in the equation creates a multicollinearity problem, which reduces the significance level of the coefficient of each term; as shown in Panel A of Table 4, the coefficients of both terms are not simultaneously significant.

Further, there is a second empirical problem related to *DIR_OPTIONS* in equation (2). In theory, the coefficient on *DIR_OPTIONS* captures outside directors' direct impact on timing opportunism independent of CEOs', as this coefficient reflects the relation between the magnitude of director-implemented timing opportunism and *DIR_OPTIONS* when CEOs do not receive options. Our estimated coefficient on *DIR_OPTIONS*, however, only reflects an *extrapolated* relation, because our sample does not include observations where CEOs receive no option grants. This "inconsistency" between theory and our empirical test can bias the estimated coefficient on *DIR_OPTIONS*. While we expect an insignificant coefficient on *DIR_OPTIONS*, the estimated coefficient is significantly positive in two (20-day and 30-day post-grant windows) of the six *CAR* windows. In our sample, we exclude CEOs without option grants for two reasons. First, we study a type of CEO opportunism, timing opportunism. When CEOs do not receive option grants, CEO-implemented timing opportunism does not exist. Second, when CEOs do not receive option grants, though it is possible for outside directors to receive some option grants, such cases are rare. As discussed in our research design, such cases account for only 3.85 percent of all firm-years covered by ExecuComp, and we argue that outside directors are incapable of implementing timing opportunism when CEOs do not receive option grants.

In Panel B of Table 4, we test H2 again by re-estimating equation (2) after removing *DIR_OPTIONS* as a separate regressor. This removal addresses the two empirical problems discussed above, and makes our model consistent with our argument that outside directors are

[25] Specifically, if we included only *CEO_OPTIONS* DIR_OPTIONS* in equation (2), as predicted, its coefficient is negative (positive) for pre-grant (post-grant) *CAR* windows, significant at $p < 0.01$. These results are reported in Panel B of Table 4. Similarly, if we only include *DIR_OPTIONS* in the equation, untabulated results show that its coefficient is also negative (positive) for pre-grant (post-grant) windows, significant at $p < 0.01$.

incapable of implementing timing opportunism independent of CEOs.[26] The results from this model strong support H2. For the pre-grant (post-grant) windows, the three coefficients on the interaction term are -3.47, -5.78, and -8.63 (1.98, 2.47, and 2.25), all significant at *p*-value less than 0.01 (0.01), one-tailed. Since the multicollinearity problem no longer exists, these coefficients are much more significant than the corresponding ones in Panel A, Table 4, where *DIR_OPTIONS* is included.

4.4.2. Tests of hypotheses 2 after controlling for governance quality

Yermack (1997) provides preliminary evidence that timing opportunism is greater in firms with poor governance quality. He compares two sub-samples with different governance quality, and finds that timing opportunism, on average, is less in the sub-sample with better corporate governance quality. In this section, we test whether our evidence on H2 is robust to controlling for corporate governance quality. We conduct our tests by merging our primary sample of 12,142 CEO-years with the Investor Responsibility Research Center (IRRC) database, which provides corporate governance measures. This yields a sub-sample of 4,418 observations. This sub-sample is dramatically smaller than our primary sample, mainly because our primary sample covers the period from 1992 to 2002 while IRRC only covers 1997 to 2002.

We measure governance quality using the percentages of employee directors on the compensation committee (*EMP_DIR_COMP*) and the percentages of employee directors on the full board (*EMP_DIR_BOARD*).[27] Higher values of both variables reflect more influence of executives over the compensation committee and the board. We test H2 by interacting each of the two governance variables with *CEO_OPTIONS*. However, we do not include the two governance measures as separate regressors for two reasons. First, doing so would introduce a

[26] Our approach is similar to Collins and Kothari (1989). They include an interaction term without including one of its components as a separate regressor, because the component is highly correlated with the interaction term.

[27] We include *EMP_DIR_BOARD* because compensation committees report to boards, so directors on the rest of the boards also have influence over executive compensation. We use these two governance quality measures to succinctly capture the independence of both compensation committees and boards. However, our results are also robust to including other measures of governance quality, e.g., an indicator variable indicating whether CEOs also serve as chair of the board.

severe multicollinearity problem. For example, in about 97-percent of our sample, *EMP_DIR_COMP* is zero (i.e., no employee directors serve on compensation committees), so this variable is almost perfectly correlated with its interaction term with *CEO_OPTIONS*. Second, no theory suggests that governance quality should directly affect abnormal returns in the short window around CEO option grants. We test H2 in the following equation (2′):

$$\begin{aligned} CAR_{it} = {} & \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 (CEO\_OPTIONS_{it} * DIR\_OPTIONS_{it}) \\ & + \alpha_3 (CEO\_OPTIONS_{it} * EMP\_DIR\_COMP_{it}) \\ & + \alpha_4 (CEO\_OPTIONS_{it} * EMP\_DIR\_BOARD_{it} \\ & + \alpha_5 FOLLOWING_{it} + year\ dummies + \varepsilon_{it} . \end{aligned} \qquad (2')$$

To facilitate interpretation, we subtract from the two governance variables their means over all observations in our sample before including them in equation (2′). Without demeaning, interpreting the coefficient on *CEO_OPTIONS* is difficult, because this coefficient would capture the (extrapolated) relation between timing opportunism and *CEO_OPTIONS* for a hypothetical set of firms where (i) directors receive no option grants, and (ii) no employee directors serve on the compensation committee or the board. These firms are unlikely to be a relevant baseline. Our demeaned approach, however, enables us to interpret the coefficient on *CEO_OPTIONS* when the two governance variables (i.e., *EMP_DIR_COMP* and *EMP_DIR_BOARD*) are at their means, which untabulated results show are 1.1 percent and 20.58 percent respectively.

Before testing H2 using the sub-sample of 4,418 firm-years, it is important to understand differences between this sub-sample and our primary sample of 12,142 firm-years. Untabulated results show that this sub-sample is more skewed toward larger firms than the primary sample.[28] Thus, we expect to find less timing opportunism in this sub-sample. Our results confirm this expectation. Specifically, in Panel A of Table 5, we test H1 by estimating equation (1) based on this sub-sample; the coefficients on *CEO_OPTIONS* are smaller in magnitude and weaker in significance than the corresponding coefficients based on our primary sample in Table 3.

In Panel B, Table 5, we reports results from estimating equation (2′), which controls for

[28] The mean (median) of firm market capitalization of this sub-sample is $8.95 (1.84) billion, greater than the corresponding mean (median) of $5.77 ($1.21) of our primary sample.

governance quality. As discussed above, the coefficient on *CEO_OPTIONS* reflects the relation between timing opportunism and *CEO_OPTIONS* for the subset of firms that do not grant options to outside directors and where the two governance variables are at their means. We find that, except for the 20-day post-grant window, all coefficients on *CEO_OPTIONS* are insignificant, indicating that timing opportunism is negligible for this subset of firms.

Furthermore, in Panel B of Table 5, our evidence on the interaction term *CEO_OPTIONS* DIR_OPTIONS* strongly supports H2. For pre-grant (post-grant) *CAR* windows, the coefficient on this interaction term are -2.07, -3.28, and -4.34 (2.41, 1.89, and 1.87) respectively, all significantly negative (positive) at *p*-value less than 0.01 (0.1). The signs of these coefficients are the same as those of the corresponding coefficients in Table 4, Panel B, where we test H2 in our primary sample without controlling for governance quality. Our evidence on the two governance interaction variables is consistent with the findings in Yermack (1997). For pre-grant windows, though we find insignificant coefficients on *CEO_OPTIONS* EMP_DIR_COMP*, the coefficients on *CEO_OPTIONS* EMP_DIR_BOARD* are significantly negative for the 10- and 30-day windows (*p*-value <0.1 or better, one tailed). These negative coefficients on *CEO_OPTIONS* EMP_DIR_BOARD* indicate that, as the proportion of employee directors on the board becomes higher (lower), the strength of the negative association between the pre-grant *CAR* and *CEO_OPTIONS* becomes stronger (weaker), indicating less (more) difficulty for the CEO to implement timing opportunism. For the three post-grant *CAR* windows, the coefficients on both *CEO_OPTIONS*EMP_DIR_COMP* and *CEO_OPTIONS* EMP_DIR_BOARD* are significantly positive, again indicating that it is more (less) difficult for CEOs to implement timing opportunism in firms where a lower (higher) proportion of employee directors serve on the compensation committee or the board.

4.5. Results for hypotheses 3

To test H3, we match our primary sample of 12,142 CEO-years with analyst forecast data from the I/B/E/S database. This yields 9,928 observations with three observations corresponding

to each CEO-year: *REV_BEFORE* (revisions in the 30-day period before the grant date), *REV_AFTER* (revisions in the 30-day period after the grant date), and *REV_NOGRANT* (revisions beyond the 60-day period around CEO option grant). In Panel A of Table 6, we examine the nature (i.e., good or bad) of news released around CEO option grants. We find that, forecast revisions made in the 30-day period before (after) an option grant are more negative (positive) than forecast revisions beyond the 60-day period surrounding option grants, significant at p-value less than 0.01 (p=0.02), one-tailed. Our results suggest that CEOs both "talks down" analysts before option grants, and "talks up" analysts after option grants.[29]

We now turn to results on H3 from estimating equations (3a) and (3b), presented in Panel B, Table 6. H3 predicts that the degree analysts revise their earnings forecasts downward (upward) before (after) CEOs' option grants increases with *CEO_OPTIONS*. Our results are consistent with H3 for the pre-grant period, but not for the post-grant period. Specifically, when option compensation is more important to CEOs, forecast revisions before option grants are more negative than revisions beyond the 60-day period surrounding option grants ($p<0.05$, one-tailed).[30] Our results provide some evidence indicating that the importance of option compensation to CEOs determines the magnitude of corporate news released to analysts around option grants.

5. Timing opportunism and firm characteristics

In this section, we show that it is not optimal to curb timing opportunism simply by abolishing option grants to directors, because timing opportunism is likely a by-product of using options for efficient contracting, i.e., using options to align CEOs' and directors' interests with shareholders. Figure 3 illustrates our argument in two steps: (1) options are granted to both CEOs

[29] Results in Aboody and Kasznik (2002) indicate that analysts are "talked down" before option grants, but they find no evidence that analysts are "talked up" after option grants. The difference between our results and theirs is possibly due to the effect of stale forecast, which is likely present in forecast errors that they study (see Brown and Han 1992). We avoid such an effect by focusing on forecast revisions.

[30] We find similar results when using 45- or 60-day period either before or after option grants.

and directors to align their incentives with shareholders;[31] and (2) options create an incentive for CEOs and directors to engage in timing opportunism. Step 2 is the focus of our analysis so far.

Based on these two steps, we test below whether certain firm characteristics that determine option grants to both CEOs and directors in step 1 also predict the magnitude of timing opportunism. Before proceeding, we first provide evidence on our argument in step 1 using equation (4), which explains option grants to CEOs or directors using firm characteristics.

$$\begin{aligned} CEO\_OPTIONS_{it} \text{ or } DIR\_OPTIONS_{it} = {} & a_0 + a_1\,(Sales\ Growth)_{it} \\ & + a_2\,(Net\ Operating\ Loss)_{it-1} + a_3\,(Cash\ Flow\ Shortfall)_{it-1} \\ & + a_4\,(Dividend\ Constraint)_{it-1} + a_5\,Firm\ Size_{it-2} \\ & + year\ dummies + industry\ dummies + v_{it} \end{aligned} \quad (4)$$

where *Sales Growth* for the past five years serves as a proxy for growth opportunities.[32] Agency theory predicts that firms with more agency costs (e.g., growth firms) use more incentive compensation (e.g., options) to align CEOs' and directors' incentives with shareholders. The next three explanatory variables are proxies for firms' financial or accounting constraints, which lead to more use of option compensation. *Net operating loss* is an indicator variable equal to one if the firm has net operating loss carry-forwards in any of the three prior years. *Cash flow shortfall* is the three-year average of: [(common and preferred dividends +cash flow from investing –cash flow from operations)/total assets]. *Dividend constraint* is a dummy variable equal to one if the firm is dividend constrained in any of the three prior years. We classify a firm as dividend constrained if: [(retained earnings at year-end+ cash dividends and stock repurchases during the year)/the prior year's cash dividends and stock repurchases] is less than two. If the denominator is zero for all three years, we also classify the firm as dividend constrained (Core and Guay 1999). *Firm Size* is log of market capitalization at the beginning of the prior year.

[31] See Dechow et al. (1996), Core and Guay (1999), Bryan et al. (2000a, 2000b), and Perry (2002) for details. Fich and Shivdasani (2004) provide evidence consistent with improved incentive-alignment between shareholders and directors resulting from directors' option grants.

[32] We do not use the market-to-book ratio of assets as our proxy for growth opportunities because of a possible mechanical relation: calculating the market-to-book ratio requires the use of stock price, which we also use to calculate *CAR*, our proxy for the magnitude of timing opportunism.

Next, in equation (5), we test whether this same set of firm characteristics that explain option grants to CEOs and directors also predict the magnitude of timing opportunism:

$$\begin{aligned} CAR_{it} \quad &= b_0 + b_1\,(Sales\ Growth)_{it} + b_2\,(Net\ Operating\ Loss)_{it-1} \\ &+ b_3\,(Cash\ Flow\ Shortfall)_{it-1} + b_4\,(Dividend\ Constraint)_{it-1} \\ &+ b_5\,Firm\ Size_{it-2} + year\ dummies + industry\ dummies + r_{it} \end{aligned} \qquad (5)$$

We estimate equations (4) and (5) using a sample of 10,771 firm-years, created by matching our primary sample of 12,142 firm-years with Compustat, which provides measures of the firm characteristics. Panel A, Table 7 reports results from equations (4). Both *CEO_OPTIONS* and *DIR_OPTIONS* are significantly positively related to *Sales Growth*, *Net operating loss* (proxy for marginal tax rate), *Cash flow shortfall*, and *Dividend constraint* (proxies for firm constraints) -- $p<0.01$, one tailed, for all. Our findings indicate that option compensation is more important to both CEOs and directors in certain firms: high-growth firms, firms issuing options for tax-related reasons, and firms with cash constraints, suggesting that options are granted to both CEOs and outside directors for incentive-alignment purposes.

In Panel B of Table 7, we find that the above set of firm characteristics, in turn, predicts timing opportunism, measured by *CAR* around CEOs' option grants. The magnitude of positive (negative) post- (pre-) grant *CAR* is greater for firms with high growth ($p<0.01$, one-tailed) and that are more dividend-constrained ($p<0.05$, one-tailed). Our results indicate that timing opportunism varies with economic determinants of the use of options for incentive-alignment purposes. In summary, our results in Table 7 indicate that timing opportunism is a by-product of using options to align CEOs' and directors' incentives with shareholders.

Finally, when testing H1 in the previous section, we find a positive association between the magnitude of timing opportunism and the importance of option compensation to CEOs. However, this positive association is subject to an alternative explanation regarding causation: perhaps CEOs manage to receive more options before the release of particularly good news, or after the release of particularly bad news. In other words, it is possible that large *CAR* (i.e., our proxy for larger timing opportunism) causes large options grants to CEOs. Our findings in Table

7 can help rule out this alternative explanation. Since we show that firm characteristics explain the cross-sectional variation in timing opportunism, this finding supports our argument that CEOs for whom option compensation is more important implement larger timing opportunism. To provide more evidence on this issue, we test H1 again by re-estimating equation (1) using the average percentages of options in CEO compensation over the prior two years, which we use as a proxy for the "normal" or "expected" levels of option compensation in the current year. Untabulated results show that our inferences are unchanged using this alternative specification.

6. Conclusions

Prior studies typically focus on directors' family ties with management, or business ties with the firm, to determine director independence (e.g., Core et al., 1999; Klein, 2002). Our study examines a previously unexplored aspect of director independence: the similarity between directors' compensating and CEOs' compensation. Firms typically grant options to CEOs with the options' strike price equal to the grant-day stock price, so CEOs benefit from taking actions that lower grant-day stock prices. We term this opportunism *Timing Opportunism.* Prior studies document that timing opportunism exists (Yermack, 1997; Aboody and Kasznik, 2000). We show that stock options, when used as a common component of both directors' and CEOs' compensation, can compromise directors' independence from management in terms of constraining CEO timing opportunism.

A considerable proportion of directors' compensation now comes from stock options. Since directors frequently receive option grants on the same day as CEOs, they also benefit from timing opportunism. As a result, directors may have an incentive not to constrain CEO timing opportunism. We hypothesize that it is more difficult for CEOs to implement timing opportunism when option compensation is less important to directors. Using the ExecuComp database, we identify a sample of 17,993 option grants for 12,142 CEO-years from 1992 to 2002, representing 2,250 firms. Similar to Yermack (1997), we identify timing opportunism by negative *CAR* before option grants or positive *CAR* after option grants. We find that timing

opportunism exists in 81 percent of our sample. Further, we provide the first evidence in the literature that timing opportunism increase with the importance of option compensation to CEOs. Since CEOs implement timing opportunism likely through their communications with analysts, we also study analyst forecast revisions around CEO option grants, and find that analysts are "talked down" more before option grants when option compensation is more important to CEOs. Finally, and most importantly, our evidence indicates that it is more difficult for CEOs to implement timing opportunism when option compensation is less important to directors. This finding is robust to controlling for corporate governance quality.

Our study highlights the importance of directors' economic incentives when determining director independence. Prior studies typically focus on directors' family ties with management and business relationships with the company to assess any lack of independence on the part of directors. We show that stock options, when used as a common component in CEOs' and directors' compensation, can compromise directors' independence in their role of constraining CEO timing opportunism. Our results also indicate that the observed pattern of increasing timing opportunism during the 1990s is, at least partially, attributable to the growing importance of options in both CEOs' and directors' compensation.

References

Aboody, D., and R. Kasznik. 2000. CEO Stock Option Awards and the Timing of Corporate Voluntary Disclosures. *Journal of Accounting and Economics* 29(1): 73-100.

Baginski, S., and J. Hassell. 1990. The Market Interpretation of Management Earnings Forecasts as a Predictor of Subsequent Financial Analyst Forecast Revisions. *The Accounting Review* 65(1): 175-190.

Bhushan, R. 1989. Firm characteristics and analyst following. *Journal of Accounting and Economics* 11(2-3): 255-274.

Bryan, S., L. Hwang, and S. Lilien. 2000a. CEO Stock-Based Compensation: An Empirical Analysis of Incentive-Intensity, Relative Mix, and Economic Determinants. *Journal of Business* 73: 661-693.

Bryan, S., L. Hwang, A. Klein, and S. Lilien. 2000b. Compensation of Outside Directors: An Empirical Analysis of Economic Determinants. Working paper, Baruch College -- City University of New York.

Callaghan, S., J. Saly, and C. Subramaniam. 2004. The Timing of Option Repricing. *The Journal of Finance*: Forthcoming.

Chauvin, K., and C. Shenoy. 2001. Stock Price Decreases Prior to Executive Stock Option Grants. *Journal of Corporate Finance* 7: 53-76.

Collins, D. and S.P. Kothari. 1989. An Analysis of Intertemporal and Cross-sectional Determinants of Earnings Response Coefficients. *Journal of Accounting and Economics* 11: 143-181.

Core J., and W. Guay. 1999. The Use of Equity Grants to Manage Optimal Equity Incentive Levels. *Journal of Accounting and Economics* 28, 151-184.

Core, J., R. Holthausen, and D. Larcker. 1999. Corporate Governance, Chief Executive Officer Compensation, and Firm Performance. *Journal of Financial Economics* 51(3): 371-406.

Dechow, P., Hutton, A., and Sloan, R. 1996. Economic Consequences of Accounting for Stock-Based Compensation. *Journal of Accounting Research* 34, 1-20.

Fama, E., and J. MacBeth. 1973. Risk, Return, and Equilibrium: Empirical Tests. *Journal of Political Economy* 71: 607-636.

Fich, E., and A. Shivdasani. 2004. The Impact of Stock-Option Compensation for Outside Directors on Firm Value. *Journal of Business*: Forthcoming.

Jensen, M., and W. Meckling. 1976. Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3(4): 305-360.

Klein, A. 2002. Audit Committee, Board of Director Characteristics, and Earnings Management. *Journal of Accounting and Economics* 33(3): 375-400.

Lie, E. 2004. On the Timing of Stock Option Awards. Working paper, College of William and Mary.

Morgenson, G. 2004. In the Timing of Options, Many, Um, Coincidences. *New York Times*, December 5, 2004: Page 1 (Section 3).

NACD. Report of the NACD Blue Ribbon Commission on Director Compensation – Purpose, Principles, and Best Practice. *National Association of Corporate Directors (NACD)*, Washington DC, 2001.

Peck, C., H. Silvert, and G. McCormick. 2002. Directors' Compensation and Board Practices in 2002. The Conference Board, Research Report R-1324-02-RR.

Perry, T. 2002. Incentive Compensation for Outside Directors and CEO Turnover. Working paper, Arizona State University.

Richardson, S., S. Teoh, and P. Wysocki. 2004. The Walk-Down to Beatable Analyst Forecasts: The Role of Equity Issuance and Insider Trading Incentives. *Contemporary Accounting Research* 21(4): 885-925.

Shores, D. 1990. The Association Between Interim Information and Securities Returns Surrounding Earnings Announcements. *Journal of Accounting Research* 28(1): 164-181.

Solomon, D. 2004. SEC Probes Options Grants Made as Company News Boosts Stock. *The Wall Street Journal*, March 30, 2004: Page A1.

Watts, R. and J. Zimmerman. 1986. Positive Accounting Theory. Prentice Hall, Englewood Cliffs, NJ.

Waymire, G. 1986. Additional Evidence on the Accuracy of Analyst Forecasts Before and After Voluntary Management Earnings Forecasts. *The Accounting Review* 61(1): 129-142.

Yermack, D. 1997. Good Timing: CEO Stock Option Awards and Company News Announcements. *The Journal of Finance* 52(2): 449-476.

Yermack, D. 2004. Remuneration, Retention, and Reputation Incentives for Outside Directors. *The Journal of Finance* 59(5): 2281-2308.

FIGURE 1
Mean Cumulative Abnormal Returns Around Option Grants
For 1992-1996 and 1997-2002 Sub-Samples of Primary Sample [N=12,142]

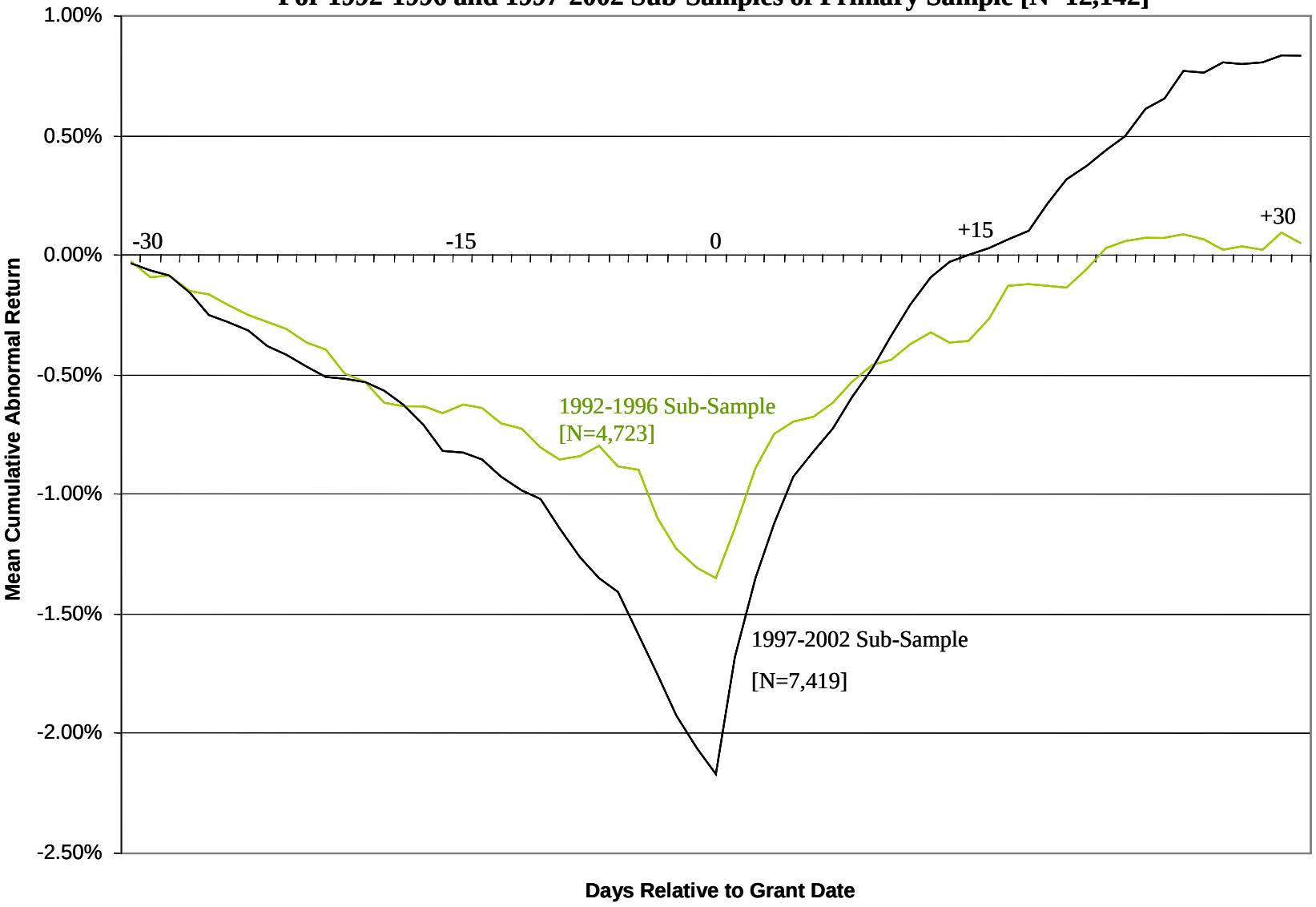

FIGURE 2
Mean Cumulative Abnormal Returns Around Option Grants
For High and Low Director Options (*DIR_OPTIONS*) Sub-Samples of Primary Sample [N=12,142]

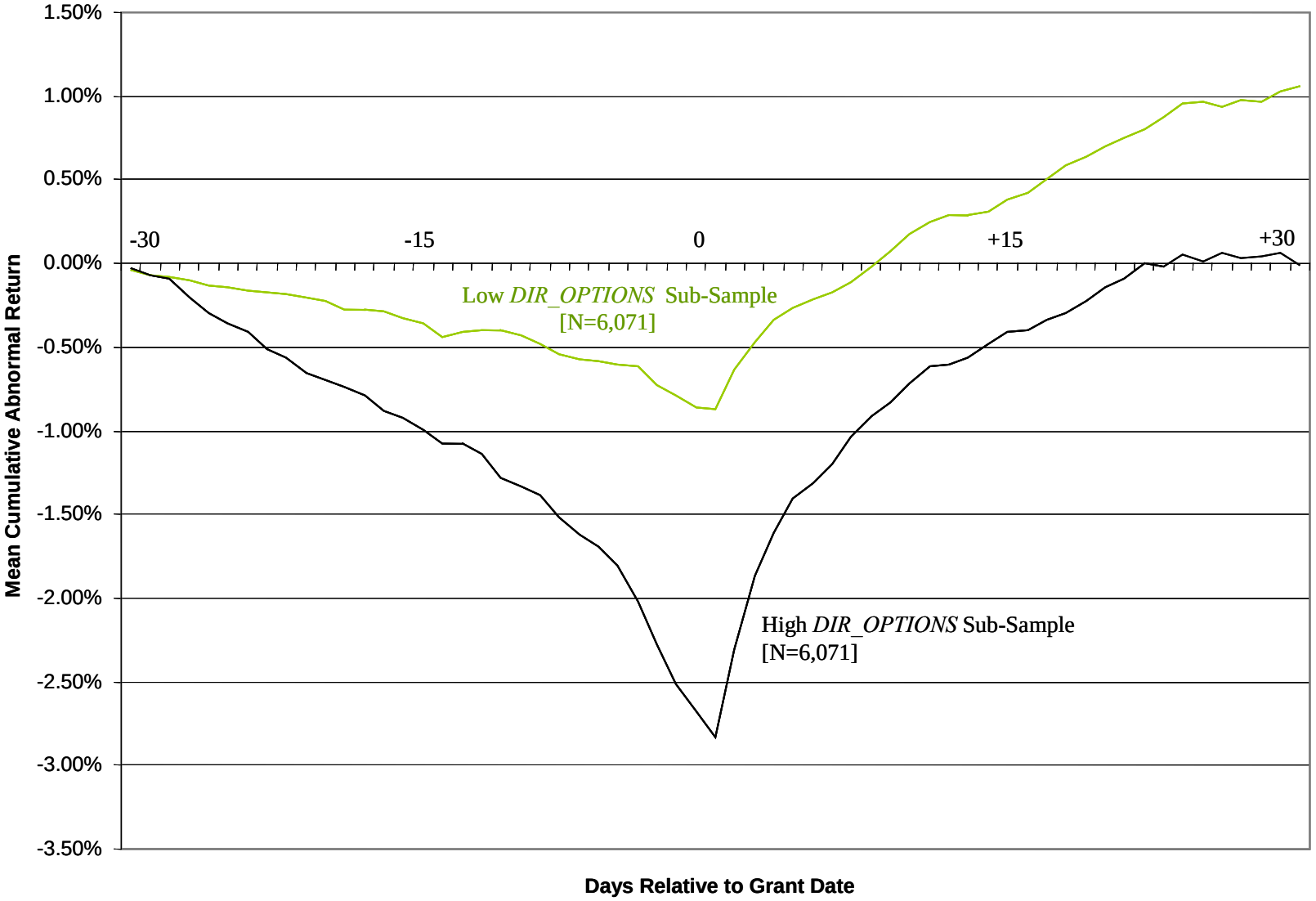

FIGURE 3

Overview of Study Design

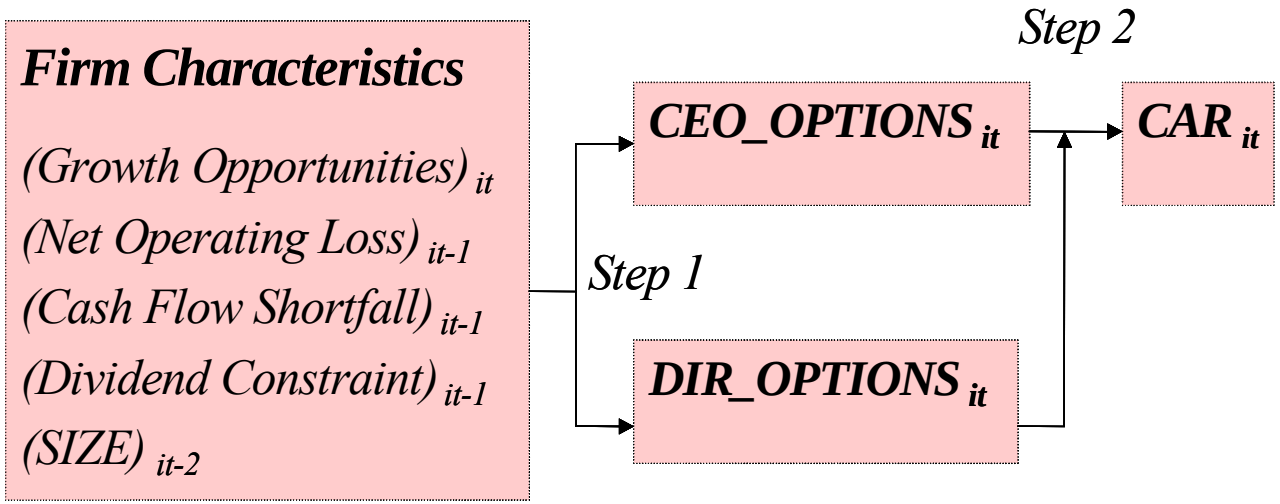

TABLE 1
Summary statistics

Panel A: Cumulated Abnormal Returns around Option Grants [N=12,142]

Variables	Mean	*t*-stat.	Std. Dev.	Percent Positive	Q1	Median	Q3
CAR [1,10]	1.60%	21.17	8.33%	56.12%	-3.05%	0.84%	5.38%
CAR [1,20]	2.18%	20.89	11.49%	56.31%	-4.09%	1.25%	7.43%
CAR [1,30]	2.39%	18.53	14.22%	55.64%	-5.29%	1.40%	8.88%
CAR [1,30] (92-96)	1.43%	8.84	11.13%	54.86%	-4.76%	1.09%	6.94%
CAR [1,30] (97-02)	3.01%	16.31	15.85%	56.14%	-5.76%	1.70%	10.50%
CAR [-10, 0]	-1.01%	-12.66	8.79%	45.73%	-5.22%	-0.65%	3.54%
CAR [-20, 0]	-1.39%	-12.73	12.05%	46.22%	-7.19%	-0.82%	4.98%
CAR [-30, 0]	-1.86%	-13.93	14.72%	45.16%	-9.08%	-1.25%	6.07%
CAR [-30, 0] (92-96)	-1.38%	-8.14	11.62%	46.69%	-7.11%	-0.72%	5.27%
CAR [-30, 0] (97-02)	-2.17%	-11.40	16.38%	44.18%	-10.57%	-1.67%	6.69%

Panel B: Explanatory Variables

Variables	N	Mean	Std. Dev.	Q1	Median	Q3
CEO_OPTIONS	12,142	0.45	0.25	0.25	0.43	0.65
CEO_OPTIONS (92-96)	4,723	0.38	0.23	0.20	0.34	0.54
CEO_OPTIONS (97-02)	7,419	0.50	0.25	0.30	0.49	0.70
DIR_OPTIONS	12,142	0.40	0.37	0	0.35	0.75
DIR_OPTIONS (92-96)	4,723	0.31	0.35	0	0.16	0.64
DIR_OPTIONS (97-02)	7,419	0.45	0.36	0	0.46	0.80
Value of CEO option grants (in thousands)	12,142	$2,874.51	$10,877.23	$353.29	$886.54	$2,368.44
Value of director option grants (in thousands)	12,142	$90.10	$326.02	0.00	$18.07	$75.73
Market capitalization ($billion)	12,142	$5.77	$19.06	$0.44	$1.21	$3.77
ANALYST FOLLOWING	12,142	19.36	12.89	10.00	16.00	27.00

Variable definition:

CAR [1, 10] = the cumulative abnormal return from day 0 through to day +10, where day 0 is the option grant date;
CEO_OPTIONS = the percentage of option value in a CEO's total compensation;
DIR_OPTIONS = average percentage of option value in outside director's total compensation;
ANALYST FOLLOWING = the number of analysts following the firm;

TABLE 2
Correlation matrix

This table presents Pearson Correlation Coefficients for variables used in our analysis. The sample includes 12,142 firm-years. Two-tailed *p*-values are reported in the parentheses. *CAR [1, 20]* is the cumulative abnormal return from day 0 through to day +20, where day 0 is the option grant date. *CEO_OPTIONS* is the percentage of option value in a CEO's total compensation. *DIR_OPTIONS* is the average percentage of option value in outside director's total compensation. *ANALYST FOLLOWING* is the number of analysts following the firm.

Variables	*CAR [1, 20]*	*CAR [-20, 0]*	*CEO_OPTIONS*	*DIR_OPTIONS*	*ANALYST FOLLOWING*
CAR [1, 20]	1.00				
CAR [-20, 0]	-0.02 (0.02)	1.00			
CEO_OPTIONS	0.06 (<0.0001)	-0.06 (<0.0001)	1.00		
DIR_OPTIONS	0.07 (<0.0001)	-0.08 (<0.0001)	0.40 (<0.0001)	1.00	
ANALYST FOLLOWING	-0.04 (<0.0001)	0.01 (0.39)	0.17 (<0.0001)	-0.05 (<0.0001)	1.00

TABLE 3

The magnitude of timing opportunism and the importance of option compensation to CEO – a test of H1

The sample includes of 12,142 CEO-year observations from 1992 to 2002, which we use to test equation (1):

$$CAR_{it} = \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 ANALYST\ \ FOLLOWING + year\ dummies + \varepsilon_{it} \quad (1)$$

CAR [d_1, d_2] is the cumulative abnormal return from day d_1 to day d_2, where day *0* is the option-grant date. *CEO_OPTIONS* is the percentage of option compensation in total CEO compensation. *t*-statistics, presented in the parentheses, are calculated using Huber-White autocorrelation- and heteroskedasticity-consistent standard errors.

	Dependent Variable						
Explanatory Variables	Pred. Sign	*Pre-grant cumulative abnormal returns*			Pred. Sign	*Post-grant cumulative abnormal returns*		
		CAR [-10, 0]	**CAR [-20, 0]**	**CAR [-30, 0]**		**CAR [1, 10]**	**CAR [1, 20]**	**CAR [1, 30]**
INTERCEPT	?	0.18	-0.46	-1.12	?	0.41	0.58	1.12
		(0.36)	(-0.59)	(-1.02)		(0.92)	(0.89)	(1.28)
CEO_OPTIONS$_{it}$	-	**-3.33**	**-4.40**	**-5.99**	+	**5.07**	**6.27**	**4.95**
		(-5.00)***	(-3.86)***	(-3.42)***		(7.91)***	(6.23)***	(3.38)***
ANALYST	+	0.01	0.01	0.02	-	-0.04	-0.06	-0.06
FOLLOWING		(0.98)	(1.01)	(1.15)		(-4.60)***	(-4.12)***	(-3.36)***
D_{93}		0.41	1.34	2.08		0.54	0.88	1.49
		(0.83)	(1.88)*	(2.36)**		(1.15)	(1.33)	(1.82)*
D_{94}		-0.25	-0.31	0.11		-1.00	-1.42	-1.85
		(-0.52)	(-0.44)	(0.12)		(-2.08)**	(-2.16)**	(-2.29)**
D_{95}		-0.24	0.49	1.10		-0.16	-0.08	-0.07
		(-0.47)	(0.67)	(1.18)		(-0.34)	(-0.13)	(-0.09)
D_{96}		0.54	1.21	1.82		<-0.01	0.36	0.63
		(1.03)	(1.59)	(1.96)**		(-0.01)	(0.53)	(0.73)
D_{97}		-0.52	0.02	0.45		0.16	1.26	1.71
		(-0.87)	(0.03)	(0.45)		(0.31)	(1.80)*	(2.02)**
D_{98}		-0.81	-1.26	-1.01		0.32	-0.47	-0.01
		(-1.43)	(-1.60)	(-1.03)		(0.58)	(-0.59)	(-0.02)
D_{99}		0.95	2.31	3.93		2.38	3.35	5.20
		(1.47)	(1.88)*	(2.06)**		(3.92)***	(3.30)***	(3.50)***
D_{00}		-0.14	0.26	0.29		1.45	3.24	5.51
		(-0.23)	(0.28)	(0.23)		(2.22)***	(3.49)***	(4.87)***
D_{01}		-1.17	0.07	0.30		1.54	2.55	2.14
		(-1.79)*	(0.08)	(0.26)		(2.52)**	(3.04)***	(2.09)**
D_{02}		-0.71	0.30	1.12		-0.61	-1.29	-1.20
		(-1.17)	(0.36)	(1.03)		(-1.17)	(-1.66)*	(-1.95)*
Adjusted-R^2		0.55%	0.41%	0.38%		1.54%	1.39%	1.06%

Coefficients with ***, **, and * *are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*

TABLE 4
The influence of directors' option grants on the magnitude of CEO timing opportunism – a test of H2

Panel A

The sample includes 12,142 firm-year observations from 1992 to 2002, which we use to estimate equation (2):

$$CAR_{it} = \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 (CEO\_OPTIONS_{it} * DIR\_OPTIONS_{it}) + \alpha_3 DIR\_OPTIONS_{it} + \alpha_4 ANALYST\ \ FOLLOWING_{it} + year\ dummies + \varepsilon_{it}. \quad (2)$$

CAR [d_1, d_2] is the cumulative abnormal return from day d_1 to day d_2, where day *0* is the option grant date. *CEO_OPTIONS* (*DIR_OPTIONS*) is the percentage of option compensation in total CEO (or outside-director) compensation. *ANALYST FOLLOWING* is the number of analysts following the firm. *t*-statistics, presented in parentheses, are based on Huber-White autocorrelation- and heteroskedasticity-consistent standard errors. Coefficients on the year dummies are not reported.

	Dependent Variable:						
	Pre-grant cumulative abnormal returns				*Post-grant cumulative abnormal returns*		
Explanatory Variables	Pred. Sign	**CAR [-10, 0]**	**CAR [-20, 0]**	**CAR [-30, 0]**	Pred. Sign	**CAR [1, 10]**	**CAR [1, 20]**	**CAR [1, 30]**
		(1)	**(2)**	**(3)**		**(4)**	**(5)**	**(6)**
INTERCEPT		-0.08 (-0.16)	-1.00 (-0.93)	-2.22 (-1.28)		0.86 (1.69)	3.57 (0.41)	3.09 (0.24)
$CEO\_OPTIONS_{it}$	-	-1.19 (-1.12)	-0.65 (-0.25)	-1.66 (-0.04)	+	2.94 (3.02)***	5.65 (2.74)***	6.30 (1.91)**
$CEO\_OPTIONS_{it}$ * $DIR\_OPTIONS_{it}$	-	**-2.47** (-1.77)**	**-4.67** (-1.69)**	**-8.64** (-1.42)*	+	**3.26** (1.82)**	**-0.64** (-0.20)	**-0.38** (-0.26)
$DIR\_OPTIONS_{it}$	0	-0.65 (-0.78)	-0.72 (-0.51)	0.001 (0.00)	0	-0.33 (-0.39)	1.85 (1.44)*	3.17 (1.67)**
$ANALYST\ FOLLOWING_{it}$	+	0.01 (0.57)	0.01 (0.56)	0.01 (0.76)	-	-0.04 (-4.34)***	-0.05 (-3.72)***	-0.05 (-3.05)***
Adjusted-R^2		0.76%	0.65%	0.64%		1.68%	1.45%	1.09%

Coefficients with ***, **, and * *are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*

Panel B:

The sample includes 12,142 firm-year observations from 1992 to 2002, which we use to estimate the following equation:

$$CAR_{it} = \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 (CEO\_OPTIONS_{it} * DIR\_OPTIONS_{it}) + \alpha_3 ANALYST\ \ FOLLOWING_{it} + year\ dummies + \varepsilon_{it}.$$

CAR [d_1, d_2] is the cumulative abnormal return from day d_1 to day d_2, where day *0* is the option grant date. *CEO_OPTIONS* (*DIR_OPTIONS*) is the percentage of option compensation in total CEO (or outside-director) compensation. *ANALYST FOLLOWING* is the number of analysts following the firm. *t*-statistics, presented in parentheses, are based on Huber-White autocorrelation- and heteroskedasticity-consistent standard errors. Coefficients on the year dummies are not reported.

	Dependent Variable:							
	Pre-grant cumulative abnormal returns				*Post-grant cumulative abnormal returns*			
Explanatory Variables	Pred. Sign	**CAR [-10, 0]** **(1)**	**CAR [-20, 0]** **(2)**	**CAR [-30, 0]** **(3)**	Pred. Sign	**CAR [1, 10]** **(4)**	**CAR [1, 20]** **(5)**	**CAR [1, 30]** **(6)**
INTERCEPT		-0.26 (-0.52)	-1.20 (-1.35)	-2.21 (-1.64)		1.24 (4.43)***	1.88 (4.81)***	2.36 (4.87)***
$CEO\_OPTIONS_{it}$	-	-0.85 (-0.92)	-0.27 (-0.13)	0.16 (0.04)	+	1.05 (2.52)***	1.04 (1.78)**	0.11 (0.16)
$CEO\_OPTIONS_{it}$ * $DIR\_OPTIONS_{it}$	-	**-3.47** (-3.79)***	**-5.78** (-2.98)***	**-8.63** (-2.68)***	+	**1.98** (4.43)***	**2.47** (4.02)***	**2.25** (2.94)***
$ANALYST\ FOLLOWING_{it}$	+	0.01 (0.67)	0.01 (0.65)	0.01 (0.80)	-	-0.03 (-5.47)***	-0.04 (-5.11)***	-0.05 (-4.74)***
Adjusted-R^2		0.76%	0.65%	0.64%		1.68%	1.44%	1.06%

Coefficients with ***, **, and * *are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*

TABLE 5
Analysis on a sub-sample controlling for governance quality – more evidence on H2

Results are based on a *sub-sample* of 4,418 CEO-year observations between 1997 and 2002. Data to measure our two governance controls -- *EMP_DIR_COMP* and *EMP_DIR_BOARD* -- is only available for the sample period 1997 to 2002, whereas our *primary sample* [N=12,142] uses a sample period of 1992 to 2002. *CAR [d_1, d_2]* is the cumulative abnormal return from day d_1 to day d_2, where day *0* is the option grant date. *CEO_OPTIONS* (or *DIR_OPTIONS*) is the percentage of option value in the CEO's (or an outside director's) total compensation. *ANALYST FOLLOWING* is the number of analysts following the firm. $EMP\_DIR\_COMP_{it}$ (or $EMP\_DIR\_BOARD_{it}$) is the percentage of employee directors on the compensation committee (or on the board). *t*-statistics are presented in the parentheses, and calculated using Huber-White autocorrelation- and heteroskedasticity-consistent standard errors.

$$CAR_{it} = \alpha_0 + \alpha_1 CEO\_OPTIONS_{it} + \alpha_2 (CEO\_OPTIONS_{it} * DIR\_OPTIONS_{it}) + \alpha_3 (CEO\_OPTIONS_{it} * EMP\_DIR\_COMP_{it}) + \alpha_4 (CEO\_OPTIONS_{it} * EMP\_DIR\_BOARD_{it} + \alpha_5 (CEO\_OPTIONS_{it} * FOLLOWING_{it}) + year\ dummies + \varepsilon_{it} \quad (2')$$

Note, the coefficients on the year dummy variables are not shown in panels A and B below.

Panel A: Testing H1 in the sub-sample of 4,418 CEO-years

	Dependent Variable						
	Pre-grant cumulative abnormal returns				*Post-grant cumulative abnormal returns*		
Explanatory Variables	Pred. Sign	**CAR [-10, 0]** **(1)**	**CAR [-20, 0]** **(2)**	**CAR [-30, 0]** **(3)**	Pred. Sign	**CAR [1, 10]** **(4)**	**CAR [1, 20]** **(5)**	**CAR [1, 30]** **(6)**
INTERCEPT	?	-0.01 (-0.32)	-0.44 (-0.63)	-0.68 (-0.74)	?	1.17 (2.26)**	2.37 (3.37)***	3.71 (4.04)***
CEO_OPTIONS$_{it}$	-	-2.68 (-2.32)***	-2.06 (-1.36)*	-3.48 (-1.75)**	+	4.17 (4.18)***	3.28 (2.11)**	0.97 (0.44)
ANALYST FOLLOWING	+	0.01 (0.06)	-0.01 (-0.63)	-0.01 (-0.28)	-	-0.05 (2.26)**	-0.05 (-2.00)**	-0.05 (-1.63)
Adjusted-R^2		0.18%	0.09%	0.12%		0.57%	0.17%	0.05%

Coefficients with ***, **, and * *are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*

Panel B: Testing H2 after controlling for governance quality in the sub-sample

	Dependent Variable:						
	Pre-grant cumulative abnormal returns			*Post-grant cumulative abnormal returns*			
Explanatory Variables	Pred. Sign	**CAR [-10, 0]**	**CAR [-20, 0]**	**CAR [-30, 0]**	Pred. Sign	**CAR [1, 10]**	**CAR [1, 20]**	**CAR [1, 30]**
		(1)	**(2)**	**(3)**		**(4)**	**(5)**	**(6)**
INTERCEPT		-0.93 (-2.21)**	-0.45 (-0.77)	-0.97 (-1.36)		0.38 (0.94)	0.81 (1.45)	1.11 (1.61)
CEO_OPTIONS$_{it}$	-	-0.19 (-0.24)	0.22 (0.20)	0.70 (0.52)	+	-0.30 (-0.39)	1.18 (1.49)*	0.35 (0.36)
***CEO_OPTIONS*$_{it}$ * *DIR_OPTIONS*$_{it}$**	-	**-2.07** (-3.01)***	**-3.28** (-3.46)***	**-4.34** (-3.72)***	+	**2.41** (3.62)***	**1.89** (2.04)**	**1.87** (1.64)*
***CEO_OPTIONS*$_{it}$ * *EMP_DIR_COMP*$_{it}$**	-	**0.64** (0.19)	**4.73** (1.05)	**4.99** (0.90)	+	**6.02** (1.90)**	**13.90** (3.11)***	**14.28** (2.60)***
***CEO_OPTIONS*$_{it}$ * *EMP_DIR_BOARD*$_{it}$**	-	**-3.33** (-1.48)*	**-3.64** (-1.18)	**-8.21** (-2.15)**	+	**10.72** (4.93)***	**13.15** (4.26)***	**15.06** (3.96)***
ANALYST FOLLOWING$_{it}$	+	0.01 (0.94)	-0.02 (-1.27)	-0.01 (-0.59)	-	-0.03 (-2.84)***	-0.04 (-2.61)***	-0.04 (-2.45)***
Adjusted-R^2		0.74%	0.46%	0.56%		1.59%	1.41%	1.39%

Coefficients with ***, **, and * *are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*

TABLE 6
Analyst Forecast Revisions surrounding CEO Option Grants – a test of H3

The sample includes 9,928 firm-years, compiled by matching our primary sample with data for forecast revisions from the I/B/E/S database. For each individual analyst, we calculate her forecast revision as her forecast of annual earnings less her prior forecast of the same annual earning for the same firm, scaled by the most recent value of stock price on file in I/B/E/S on the forecast revision date. For each firm-year, we identify three types of earnings forecast revisions of one-year ahead annual earnings: (1) revisions in the 30-day period before an option-grant date (*REV_BEFORE*); (2) revisions in the 30-day period after an option-grant date (*REV_AFTER*); and (3) revisions that are not made within 30 days of an option-grant date (*REV_NOGRANT*). To enter our sample, a firm-year must have at least one of each of these three revision types. If a firm-year has more than one revision of any type, we take the mean value across the available revisions. This yielded a sample of 9,928 firm-years with observations for *REV_BEFORE*, *REV_AFTER,* and *REV_NOGRANT.* We base our tests for abnormality in forecast revisions around option grants on comparisons of *REV_BEFORE* and *REV_AFTER* with *REV_NOGRANT.*

Panel A: Evidence of Abnormality in Forecast Revisions Close to Option Grant Dates

Variable	Prediction	Mean	Median	*p*-value for 1-tailed t-test = 0
REV_BEFORE - REV_NOGRAN	-	-2.79	-0.40	<0.01
REV_AFTER - REV_NOGRANT	+	1.98	1.63	0.02

Panel B: CEOs' Incentive for Timing Opportunism and Abnormality in Forecast Revisions Near Option Grants

To test if any abnormality in forecast revisions around option grants is related to CEOs' incentive to engage in timing opportunism, we regress both (*REV_BEFORE-REV_NOGRANT)* and (*REV_AFTER-REV_NOGRANT*) on *CEO_OPTIONS* as follows:

$$(REV\_BEFORE - REV\_NOGRANT) = \psi_0 + \psi_{1a} CEO\_OPTIONS + \psi_{2a} HORIZON\_DIFF + \varepsilon, \quad (3a)$$

and $$(REV\_AFTER - REV\_NOGRANT) = \psi_0 + \psi_{1b} CEO\_OPTIONS + \psi_{2b} HORIZON\_DIFF + \varepsilon, \quad (3b)$$

where *CEO_OPTIONS* is the percentage of option value in the CEO's total compensation. We also include *HORIZON_DIFF* as a control variable for the difference in forecast revision horizon either between *REV_BEFORE* and *REV_NOGRANT,* or between *REV_AFTER* and *REV_NOGRANT*. Forecast horizon is the number of days from a forecast revision date until the eventual earnings announcement date.

	Model (3a)		**Model (3b)**	
Independent Variable	Prediction	Coeff. Est. (t-stat)	Prediction	Coeff. Est. (t-stat)
CEO_OPTIONS	-	-7.01 (-1.84)**	+	-1.56 (-0.51)
HORIZON_DIFF	?	0.01 (7.69)***	?	0.05 (7.35)***

*Coefficients with ***, **, and * are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*

TABLE 7
Supplemental Analysis Using Firm Characteristics as Explanatory Variables

This table presents results from using firm characteristics to explain the use of stock options to compensate CEOs or directors (Panel A), and to explain the timing opportunism around CEOs' option grants (Panel B). The results are based on a sample of 10,771 observations, the subset of our primary sample with available data to measure the firm characteristics examined. *CAR [d_1, d_2]* is the cumulative abnormal return from day d_1 to day d_2, where day *0* is the option grant date; *5-yr Sales Growth*$_t$ is the growth rate in net sales over the last 5 years; *Net Operating Loss*$_{t-1}$ is an indicator variable equal to one if the firm has net operating loss carry-forwards in any of the three years prior to the year the new option grant is awarded, and zero otherwise; *Cash Flow Shortfall*$_{t-1}$ is the three-year average of [(common and preferred dividends + cash flow from investing – cash flow from operations)/total assets]; *Dividend Constraint*$_{t-1}$ is a dummy variable equal to one if the firm is dividend constrained in any of the three years prior to the year the options are granted. We classify a firm as dividend constrained if [(retained earnings at year-end + cash dividends and stock repurchases during the year)/the prior year's cash dividends and stock repurchases], is less than two. If the denominator is zero for all three years, we also categorize the firm as dividend constrained; and *Firm Size*$_{t-2}$ is the log of market capitalization at the beginning of the prior year. *t*-statistics are presented in the parentheses, and calculated using Huber-White autocorrelation and heteroskedasticity-consistent standard errors. Note, the coefficients on the year dummy variables are not shown in panels A and B below.

Panel A: Determinants of Option Grants to CEOs and Outside Directors

$$CEO\_OPTIONS_{it} \text{ or } DIR\_OPTIONS_{it} = a_0 + a_1 (\text{5-yr Sales Growth})_{it} + a_2 (\text{Net Operating Loss})_{it-1} + a_3 (\text{Cash Flow Shortfall})_{it-1} + a_4 (\text{Dividend Constraint})_{it-1} + a_5 \text{Firm Size}_{it-2} + \text{year dummies} + \text{industry dummies} + v_{it} \quad (4)$$

Explanatory Variables	Predicted Sign	***CEO_OPTION$_t$*** Coeff. Est. (*t*-stat.)	***DIR_OPTION$_t$*** Coeff. Est. (*t*-stat.)
Intercept		0.06 (1.57)	0.35 (6.84)***
5-yr Sales Growth$_{it}$	+	0.001 (4.76)***	0.002 (4.61)***
Net Operating Loss$_{i,t-1}$	+	0.03 (5.88)***	0.04 (4.77)***
Cash Flow Shortfall$_{i,t-1}$	+	0.14 (3.61)***	0.21 (4.10)***
Dividend Constraint$_{i,t-1}$	+	0.09 (17.39)***	0.09 (11.64)***
Firm Size$_{i,t-2}$	+/-	0.03 (21.20)***	-0.02 (-10.64)***
Adjusted-R^2		29.24%	25.83%

Panel B: Determinants of Risk-Adjusted Returns around Option Grants

$$CAR_{it} = b_0 + b_1 (\text{5-yr Sales Growth})_{it} + b_2 (\text{Net Operating Loss})_{it-1} + b_3 (\text{Cash Flow Shortfall})_{it-1} + b_4 (\text{Dividend Constraint})_{it-1} + b_5 \text{Firm Size}_{it-2} + \text{year dummies} + \text{industry dummies} + v_{it} \quad (5)$$

Explanatory Variables	Predicted Sign	**CAR [1, 30]** Coeff. Est. (*t*-stat.)	Predicted Sign	**CAR [-30, 0]** Coeff. Est. (*t*-stat.)
Intercept		3.47 (4.33)***		-4.56 (-5.25)***
5-yr Sales Growth$_{it}$	+	0.02 (2.33)***	-	-0.03 (-2.82)***
Net Operating Loss$_{i,t-1}$	+	0.19 (0.55)	-	-0.16 (-0.46)
Cash Flow Shortfall$_{i,t-1}$	+	2.21 (1.41)*	-	-0.04 (-0.02)
Dividend Constraint$_{i,t-1}$	+	1.14 (3.39)***	-	-0.83 (-2.37)***
Firm Size$_{i,t-2}$	-	-0.39 (-4.23)***	+	0.44 (4.77)***
Adjusted-R^2		2.08%		0.92%

*Coefficients with ***, **, and * are significant at less than 0.01, 0.05, and 0.1 respectively. A one-tailed t-test is performed when the sign of coefficient is predicted. Otherwise a two-tailed t-test is performed.*