

Right on schedule: CEO option grants and opportunism^{*}

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Abstract

After the public outcry over backdating, many firms began awarding options at scheduled times each year. Scheduling option grants eliminates backdating, but creates other agency problems. CEOs that know the dates of upcoming scheduled option grants have an incentive to temporarily depress stock prices before the grant dates in order to obtain options with lower strike prices. We provide evidence that in recent years some CEOs manipulate stock prices to increase option compensation. We document negative abnormal returns before scheduled option grants and positive abnormal returns after the grants. These returns are explained by measures of a CEO's incentive and ability to influence stock prices. We document several mechanisms CEOs use to lower the strike price, including changing the substance and timing of the firm's disclosures.

Keywords: Executive compensation; Stock options; Corporate governance; CEO pay; Option backdating; Stock price manipulation

1. Introduction

Abnormal stock price movements around CEO option grant dates in the 1990s resulted in lower strike prices and consequently higher CEO compensation. Lie (2005) and Heron and Lie (2007, 2009) showed that “most, if not all” of these abnormal returns before 2002 were explained by option backdating with executives retroactively and strategically reporting fake award dates with low stock prices to ensure their options were awarded with low strike prices. The revelation of backdated CEO options unleashed a storm of criticism, resulting in new regulations and governance reforms.

One such reform was the move to “scheduled” options. Many argued that, to eliminate such opportunism, “firms must be required to schedule their grant dates in advance” (Narayanan and Seyhun, 2008). Bebchuk and Fried (2010) urged that the “timing of equity awards to executives should not be discretionary. Rather, such grants should be made only on prespecified dates.” Practitioners concurred; the Public Company Accounting Oversight Board counseled auditors to watch for “highly variable grant dates”¹ and Institutional Shareholder Services recommended that directors adopt a fixed schedule for option grants.² One reason for favoring scheduled grants was that prior studies found that executives did not earn abnormal returns around scheduled, in contrast to unscheduled, grants (Heron and Lie, 2007; Sen, 2009).

Several studies tracking the abnormal returns around CEO grant dates in the early 2000s conclude that these reforms, including new federal regulations, public scrutiny, and improvements in governance practices eliminated such CEO opportunism around option grants.³ These papers show that the large abnormal returns around CEO option grants weakened and/or disappeared in the years leading up to 2006 as the regulations took effect. The problem of opportunism and option grants was therefore considered largely solved.

We disagree. We report new evidence of significant abnormal price movements around scheduled

¹ Public Company Accounting Oversight Board Staff Audit Practice Alert No. 1, 2006, p. 6.

² See the ISS US Corporate Governance Policy 2007 Updates issued in November 2006 and http://va.issproxy.com/resourcecenter/publications/Governance_Weekly/2006-Dec-1.htm.

³ For examples of studies reporting evidence that the abnormal returns around CEO grant dates lessened, or disappeared, following changes in regulations and/or reporting see Lie (2005), Heron and Lie (2007, 2009), Narayanan and Seyhun (2008), Bebchuk, et al. (2010), and Liu, et al. (2014).

CEO option grant dates after 2006 that are consistent with ongoing price manipulation. The move to scheduled options solved some problems, but created others. When a company adopts an annual schedule for option grants, there is a given date (known in advance) when the CEO is personally better off if the firm's stock price is temporarily low. We find evidence that some executives respond to this perverse incentive: firms' stock prices tend to be temporarily low on the grant date. Our identification strategies rule out plausible alternative explanations for these abnormal returns.

This paper makes three contributions. First, we provide new evidence of abnormal price movements before and after scheduled CEO option grants made after 2006. Figure 1 shows average cumulative abnormal returns (CARs) on the order of 2% centered on CEO scheduled option grant dates (the second line of circles). In the absence of opportunistic behavior, the CARs should randomly move around 0; clearly, they do not. The V-shaped pattern around grant dates is consistent with some managers taking actions to ensure they receive option grants with artificially low strike prices.

[Insert Figure 1]

This new evidence of price manipulation is surprising given the (a) extensive regulatory changes, (b) consequent public scrutiny and enforcement, and (c) prior empirical findings suggesting that the problem of CEO opportunism around grant dates was solved. We discuss each of these below.

Regulation Fair Disclosure, adopted in 2000, prevents managers from privately releasing material information to analysts. This change effectively eliminated a potential channel, suggested in Aboody and Kasznik (2000) and Chauvin and Shenoy (2001), for CEOs to quietly release information that might affect analysts' forecasts and instead forced the CEO to publicly release news, thus making the manner and content of any opportunistic news release a matter of public record. The Sarbanes-Oxley Act of 2002 (SOX) dramatically limited backdating by requiring firms to notify the SEC of a grant within two business days and to post information about the grant on the company's website the following day; previously, firms

had a month to report the grant.⁴ Starting in 2007, the SEC required management to disclose “the reasons a company selects particular grant dates for awards” and to discuss whether management granted options “in coordination with the release of material non-public information?”⁵ These rules limited managers’ ability to delay good news until after the grant (spring loading) or to release bad news before the grant (bullet dodging) (Bickley and Shorter, 2009) and were backed by civil and criminal penalties.

There is reason to think these changes limited managerial opportunism around grants. Since 2005, the Federal government investigated hundreds of companies, brought criminal cases against dozens of executives, won criminal convictions with almost a billion dollars in fines, and barred suspected wrongdoers from serving as officers of public companies. Journalists, academics, and governance advisors focused a spotlight on options and firm disclosures and a wave of shareholder lawsuits alleged that executives manipulated option grants (Curtis and Myers, 2015). The American College of Trial Lawyers (2008) reports that thousands of companies launched internal investigations into their own option practices.

Prior research concludes that these changes were effective and document that abnormal returns around option grants became significantly weaker after 2002 and disappeared after 2006. Heron and Lie (2007, 2009) show that the abnormal returns before 2002 were concentrated in unscheduled option grants (grants made at irregular intervals throughout the year) and decreased after 2002. Narayanan and Seyhun (2008) argue that the new rules the SEC adopted in 2006 made it even more “difficult to conceal dating games.” Sen (2009) found that spring loading “disappeared completely.” Bebchuk, et al. (2010) report that “once the practice of backdating came into the limelight in the spring of 2006, the incidence of opportunistically timed lucky grants declined drastically.” Liu, et al. (2014) find that changes associated with SOX effectively curbed abnormal returns and CEO manipulation in firms with scheduled options. Despite the regulations, scrutiny and enforcement, and empirical work to the contrary—Figure 1 documents a suspicious and recent pattern of abnormal returns around CEO stock option grants.

⁴ Before August 29, 2002 firms could report on either the 10th day of the month following the grant on Form 4 or 45 days after the company’s fiscal year-end on Form 5.

⁵ See SEC Press Release July 26, 2006-123, *SEC Votes to Adopt Changes to Disclosure Requirements Concerning Executive Compensation and Related Matters*.

Our second contribution is to document that these abnormal returns are larger when managers have the most to gain from manipulating the firm's disclosures and stock price. Where prior research examined all CEOs receiving option grants (and concluded that abnormal returns were no longer a problem), not all CEOs have the same incentive or ability to manage earnings or disclosures; we find evidence of continuing manipulation among those CEOs with the most incentive and ability to do so. We predict that CEOs receiving higher numbers of options at firms that are hard to value have the most incentive and ability to act opportunistically around grant dates.

As predicted, we find larger abnormal returns for the subset of CEOs with the strongest incentives to behave opportunistically. For example, the top line in Figure 1 (plus line) shows the CARs for CEOs receiving below the median number of options (less incentivized) and the third line (solid line) is for those receiving more than the median number of options. Furthermore, the bottom line (X line) shows that the greatest post-grant abnormal stock price increases occur precisely when managers have the strongest incentives and perhaps the ability to manipulate a firm's stock price (i.e., a high number of scheduled CEO options at hard-to-value firms). We also find that abnormal returns are higher when the firm's CFO also receives stock options at the same time as the CEO.

Our paper's third contribution is to document several mechanisms CEOs appear to use in recent years to generate abnormal returns around the grant dates. We find evidence that managers accelerate bad news before the grant and delay good news until after the grant. For example, market reactions to SEC Form 8-K filings (which report material corporate events) tend to be negative in the months immediately before a scheduled CEO option grant and then positive in the months after the grant. Executives also appear to move earnings from the pre-grant period to the post-grant period, for example, by changing a firm's accounting choices (e.g., accruals management) and perhaps even by timing investments (e.g., real earnings management).⁶ We show that these mechanisms for depressing expected earnings in advance of an option

⁶ Liu, et al. (2014) also look at the relation between accruals and CEO option grants. Using a sample that extends several years before and after SOX, they document that current discretionary accruals are negatively correlated with the number of upcoming option grants. In contrast to our paper, they find that "the SOX mandatory stock option

grant predict *positive* subsequent abnormal post-grant returns suggesting CEO opportunism.⁷

Our results highlight the unintended consequences of reform and have both public policy and corporate governance implications. Scheduled options eliminate backdating but create incentives to have a low stock price on a known date each year. Managers appear to respond to this perverse incentive. This form of opportunism may actually be worse than backdating. While backdating may have simply increased CEO compensation, the opportunism we document also distorts stock prices leading to capital misallocation and may dissipate firm value if executives postpone valuable projects. From both a public policy and governance standpoint we recommend that groups arguing for scheduled options keep these incentives in mind. In the conclusion we describe several ways that boards can adjust their firm's CEO option grant policy to offset the perverse incentives described above.

Before describing our results, we note that the V pattern in Figure 1 is the average of abnormal returns for many firms. With backdating, both the average and the individual company returns tended to have V-shaped price patterns since each CEO could look back and pick the date of the stock's lowest price as the exercise price. This is not the case for firms in our sample of scheduled grants. For example, some firms might accelerate the announcement of legitimate bad news before the scheduled grant date. These firms' stock prices would show a one-time drop, followed by a random walk. Other firms could postpone the announcement of good news, resulting in a one-time abnormal stock price increase following the option grant. Alternatively, the CEO could use discretionary accruals to miss an earnings target before the grant and then beat the next quarter's target in the months after receiving options with artificially low exercise prices. Or firms could do some combination of the above. These actions would produce a V shape for the full sample, but not for each individual firm.

disclosure requirement effectively curbs CEO manipulation of stock prices in firms with scheduled option grants.” They do not test for evidence of stock price manipulation in the post-backdating period following the SEC mandated disclosure changes in 2006. Our results show a relation between accruals management around CEO options and abnormal stock returns.

⁷ Other mutually inclusive mechanisms are possible. For example, Devos, et al. (2015) document opportunistically timed CEO options (scheduled and unscheduled) and stock splits. Of their 290 CEO option grants, only 76 are scheduled and of their 276 stock splits, only 20 are after 2006. Despite differences in samples, dates, mechanism, as well as methodology, like us, they find evidence of opportunistic CEO stock option grants.

The paper is organized as follows: Section 2 motivates the empirical predictions and describes the data used to test these predictions. Section 3 discusses univariate and multivariate evidence for the V-shaped pattern in abnormal returns. Section 3 also describes our robustness tests and explains our identification strategies to rule out three plausible alternative explanations for the abnormal return pattern: a mechanical relationship where firms award more options when the stock price is low, confounding earnings announcements, and optimal contracting practices. Section 4 investigates potential mechanisms managers could use to depress the stock price in advance of stock option grants. Section 5 concludes.

2. Empirical predictions and data

In this section we motivate the empirical predictions and describe the data used in the analysis. The discussion of the predictions below is based on intuitive arguments that mirror the formal predictions from a partial equilibrium model described in the appendix.

2.1 Empirical predictions

A CEO can personally profit from any news or event that causes the stock price to temporarily drop below its fundamental value before the scheduled option grant date since each option will then have a lower strike price if, as is standard practice, they are issued at-the-money using current stock prices. Thus scheduled CEO option grants create a unique monetary incentive for CEOs to emphasize, hasten, and/or manufacture negative news in advance of these dates and to delay the reporting of, or underemphasize, good news until after these dates. The payoff to such price manipulation is proportional to the number of options granted (N) times the amount the strike price is temporarily decreased. The relation is proportional, as opposed to exact, for several reasons including: the CEO cannot immediately profit from the lower exercise price due to vesting requirements, blackout periods exist for many option awards limiting the times when they can be exercised, time is needed for the stock price to return to its fundamental value, and over time the fundamental value varies. Thus, the benefit of manipulation is not the overall value of the option grant nor its value relative to, say, salary. Rather, it is directly proportional to the temporary change in stock price times the number of options being awarded.

Manipulation is less costly to the CEO when changing the stock price by small amounts and when the firm is hard for investors to value (H). The costs of manipulation (e.g., costs associated with effort or the likelihood of discovery) increase with each percentage change in the stock price. Similarly, if investors are perfectly informed, CEOs cannot manipulate the stock price, but where investors already disagree about firm value, a CEO may be able to affect the stock price with small changes in accruals or company-issued earnings guidance. When firm value is opaque, detection is difficult, which lowers a CEO's cost. Thus, the cost of manipulation also decreases as the firm becomes harder to value (H).

The discussion above, and the formal model reported in the appendix, suggest two specific empirical predictions: among firms that grant scheduled CEO options, manipulation should be more prevalent when (1) the number of options granted is large and when (2) the firm is hard to value (or, more generally, when the costs of manipulation are low.)

2.2 Variable descriptions

In our empirical tests we measure the number of options in two ways. The first, N , is calculated as $\ln(1 + \text{the number of CEO options})$. The log is intended to help deal with the right skew evident in the data as some firms award large numbers of options. The measure is standardized such that a one unit increase is associated with a standard deviation increase in the logged underlying variable. A second and simpler measure of N , *CEO Options (High N)*, is an indicator variable for whether the number of options awarded is in the top or bottom half of CEO option grants awarded that year.⁸

We identify hard-to-value (H) firms where CEOs may have more short-term influence over the firm's stock price. Our proxy for firms that are hard-to-value is firms in the top half of option-granting firms in terms of their idiosyncratic volatility. We measure the idiosyncratic volatility as the standard deviation of daily market-adjusted returns using the CRSP value-weighted index over the 365-day period ending on the day of the grant. Chatterjee, et al. (2011) argue that high levels of idiosyncratic volatility "indicates a larger degree of divergence of opinion" about firm value. In robustness tests described in

⁸ The median number of options per award per year is calculated using both scheduled and unscheduled options.

Section 3, we explore alternative ways of identifying hard-to-value firms as well as several alternative measures for costs that reduce the CEO's incentives to manipulate the stock price and find qualitatively similar results as when using our main hard-to-value proxy.⁹

2.3 Data sources and measures

Our empirical tests focus on CEOs receiving scheduled stock option grants as reported by Equilar. Several prior studies of CEO option grants use ExecuComp or insider filings data from Thomson Reuters. We use Equilar data because of its broad coverage (Equilar covers approximately 4,000 firms each year during our sample period where ExecuComp focuses on S&P 1500 firms) and its detailed information about CEO tenure, CEO ownership, insiders on the board, and CEO options (Thomson Reuters lacks some of this information). In the analysis, our sample is limited to around 1,500 of these 4,000 firms because many firms do not grant CEO options and some firms covered by Equilar are not covered by the Center for Research in Security Prices (CRSP). Our sample starts with the intersection of firm years in Equilar and CRSP for the firms that award options to their CEOs.

Each month we identify the CEO using the titles, resignation dates, and tenure information provided in Equilar. If we cannot identify the CEO using this information, we assume the highest paid individual at the firm is the CEO. If a CEO received more than one option grant on the same day (for example, several grants with varying vesting periods), we consider them as one event and sum the number of grants.¹⁰

Following Aboody and Kasznik (2000), we consider a grant to be scheduled if it occurs within

⁹ An additional CEO cost of manipulation occurs if a CEO sells shares near the option grant due to, say, safe harbor (SEC Rule 10b5-1) plans that automate selling. When a CEO sells near a grant date, any gain from a low exercise price on an awarded option is offset by a loss on the sale of a stock. A similar manipulation cost to shareholders occurs if a company sells shares (secondary equity offering) near a grant date. In our robustness tests, we document that evidence of manipulation decreases if the CEO or the company sells shares around the option grant date as predicted.

¹⁰ Due to possible backdating, researchers using pre-2007 data allow for the actual grant date to differ from the stated grant date. In our 2007–2011 sample, we accept the reported grant date as the actual date because firms were required to report option grants to the SEC within two business days. In 2011, for example, over 95% of scheduled grants were reported on time and approximately 97% within three business days. Many of the apparently late reports were either (a) contingent grants, grants conditionally promised but earned and then awarded in the future or (b) amendments to a timely SEC filing correcting, for example, a vesting period.

seven days of the prior year's grant anniversary.¹¹ For robustness, we alternatively consider grants made within one business day (as in Heron and Lie, 2007, 2009) and within 15 days of the anniversary (similar to Fich, et al., 2011; Sen, 2009) as scheduled. Unscheduled grants are defined as those that occur outside the 15-day anniversary window. To ensure the analysis is based on typical public firms, we also require that as of 90 days before the grant the stock price is at least \$5. Our results are qualitatively similar if we instead require a stock price of at least \$1.

We focus on option grants made after the backdating scandal, the subsequent enhanced SEC reporting requirements, and the FASB 123(R) requirement to expense options at their fair value. Thus, our primary dataset runs from January 2007 to December 2011 at which time the Thomson Reuters' Company Guidance database was discontinued. We also consider pre-2007 grant data for comparison purposes.¹² Table 1 reports the number of firms making CEO option grants as well as the number of CEO option grants awarded each year that are categorized as scheduled (within +/- 7 days of anniversary) and unscheduled (more than +/- 15 days from anniversary).

[Insert Table 1]

Two trends deserve comment. First, the proportion of grants that are scheduled has grown significantly since the 2005 backdating scandal—from 45.4% in 2005 to almost 66% in 2010.¹³ The growth in scheduled option grants reflects the advice of many governance advisors and the Public Company Accounting Board that unscheduled options create the risk of backdating. The second trend worth noting in Table 1 is a decreasing overall reliance on CEO stock option grants over time. This trend is consistent with Hayes, et al. (2012) who find that the adoption of FAS 123(R) in 2005 increased the cost of option

¹¹ Most of the grants in our sample are categorized as scheduled based on the anniversary of a grant from the prior year. This approach, however, miscategorizes a grant in the first year that a firm adopts a scheduled approach to awarding option grants. For this reason, we follow Heron and Lie (2009) and also categorize a grant as scheduled if it falls within seven days of the anniversary of the grant from the next year.

¹² Our early sample period starts January 2003 just after the Sarbanes-Oxley Act.

¹³ The increase in scheduled grants is primarily driven by firms switching from unscheduled to scheduled grants and not from firms initiating option grants. For example, of the firms only using unscheduled grants in 2005, 343 eventually used scheduled grants by the end of 2011. The number of scheduled grants for 2011 is likely higher than reported in Table 1; we can only identify the 2011 grants as scheduled by looking back to 2010 but not forward to 2012 since the 2012 Equilar data is not available to us.

grants. Some firms have replaced stock option grants with stock grants (typically time restricted or performance based) as documented by Frydman and Jenter (2010).

Stock option grants occur across all months in our sample with approximately 44% occurring in January or February. Our main sample is described in Panel B and consists of 7,003 firm-years with CEO stock option grants, and 4,852 *scheduled* option grants. In subsequent regressions, the sample size is smaller depending on the availability of control variables such as analysts' earnings forecasts.

To test whether CEOs depress stock prices before the option grant date, we look for evidence of abnormal price movements around the grant date using cumulative abnormal returns (CAR) as our dependent variable—measured as the cumulative difference between actual daily returns and the predictions of a Fama-French four-factor model that includes momentum (Carhart, 1997; Fama and French, 1993). The parameters of the four-factor model are estimated over the year ending 120 days before the scheduled grant date.¹⁴ Our qualitative results are similar using cumulative raw returns. The stock prices and returns are based on information from CRSP.

We also look at the market reactions to news over which the CEO has some influence on its timing or substance, including earning guidance announcements, 8-K filings, and quarterly earnings announcements. The number of analysts and expected earnings per share come from IBES. The control variables in the regressions including firm assets, net income, operating cash flow, R&D and SG&A expenditures, and actual earnings per share and earnings announcement dates are from the Compustat database.

Data on management's earnings guidance comes from Thomson Reuters' First Call's Company Issued Guidance (GIC) database. We gather Form 8-K filing dates from the SEC's Edgar website. We use

¹⁴ We winsorize the estimated four-factor coefficients at the 1st and 99th percentiles to mitigate potential outlier parameters. Raw returns, as opposed to abnormal returns, are appropriate evidence for backdating; with hindsight, a CEO appears to “control” both the market's as well as the firm's influence on the stock price by picking the lowest observed price during the year. In contrast, the stock price manipulation we document assumes that CEOs' actions can influence firm specific, but not systematic, price movements.

SDC data to identify and eliminate firms that were acquired or merged within 1 year of the option grant.¹⁵ We use Thomson Reuters' Insider Filings and 13F Institutions data sets to obtain data on CEOs that sell and buy shares in the open market and the presence of a large stockholder (defined as one controlling 30% of the shares or more).

3. CEO opportunism

In this section we discuss evidence of abnormal returns using univariate and multivariate tests, we use several identification strategies to rule out alternative explanations, and we document the robustness of our main findings.

3.1 Univariate cumulative abnormal returns

Panel A of Table 2 documents the statistical significance of the V-shaped CARs in Figure 1 across various windows of time.¹⁶ In the absence of price manipulation, the CARs should not be significantly different from 0. We report CARs for a variety of event horizons to show that the abnormal negative returns before (and positive returns after) a scheduled CEO option grant are not limited to a few days around the grant, but are spread out over several months. We also show that this effect tends to be larger when CEOs are in a position to profit more from pre-grant declines in stock prices or post-grant increases as predicted (i.e., the CEO receives more options (higher N) and the firm is hard to value (H)).

[Insert Table 2]

Column 1 of Table 2, Panel A, reports the mean abnormal returns and their statistical significance for the CEOs receiving the fewest options (below median) and Column 2 reports results for those receiving the most options (above median). The CEOs in both Columns 1 and 2 have some incentive to manipulate prices around grant dates although the CEOs receiving the higher numbers of option grants clearly have

¹⁵ We eliminate firms acquired or merged in the year following the option grant because Fich, et al. (2011) show that stock options granted to CEOs in advance of acquisitions can be related to upcoming acquisition activity.

¹⁶ Table 1 and Figure 1 are based on 4,852 scheduled option grants between 2007 and 2011 found in both Equilar and CRSP. Starting in Table 2, our sample drops to 4,045 after requiring prices greater than \$5 and data in Compustat, IBES, and Thompson Reuters.

stronger incentives. The abnormal returns reflect these absolute and relative incentives. The CEOs with the most options experience negative abnormal returns before the grant and positive abnormal returns after the grant. For example, the above-median firms experience on average a negative 1.9% CAR over the 90 days before the grant followed by a positive 1.1% CAR over the 90 days following the grant. Both CARs are statistically significant (p -values less than 0.01 and 0.05, respectively). Furthermore, for all eight event windows in Panel A, the CAR is larger (more negative in the pre-grant period and more positive in the post-grant period) for the CEOs receiving above median number of grants (Column 2) than for the CEOs receiving relatively few options (Column 1). Abnormal returns are thus greater for CEOs with the most to gain from pre-grant declines or post-grant increases in stock price.

Columns 3 and 4 split the data on whether or not the firm is hard to value (H). The hard-to-value firms exhibit larger significant negative CARs before the grant date than the non-hard-to-value firms and positive CARs after. The final column of Table 2 reports pre- and post-grant CARs for the subset of firms with CEOs that receive a high number of options and manage hard-to-value firms. This is the subset that we predict will show the most evidence of manipulation and corresponds to the firms with the deepest V-shaped pattern of abnormal returns in Figure 1. Clearly, the returns support these predictions. For example, in Column 5 the $CAR(-120,0)$ is a negative 3.5% and the $CAR(1,120)$ is 3.4%.

Panel B provides evidence of manipulation in non-overlapping event windows. When CEOs have more incentive to engage in opportunism, (Columns 2, 4, and 5), the month-long horizon CARs are always negative before the grant date and generally positive after the grant date. The bulk of the statistically significant CARs are in the 60 days before and the 30 days after the grant with some evidence of abnormal returns also over the 60 to 90 day period before the grants. In the multivariate tests that follow, we focus on returns over the 90 days before and after the grant dates but obtain qualitatively similar results using 30-, 60-, or 120-day horizons.

In Panel C of Table 2, we present evidence that returns are significantly lower before scheduled grants than they are after, as would be expected if CEOs depress the stock price in advance of the scheduled grant. For instance, we find that for the most incentivized CEOs (Panel C, Column 5) the difference

between $CAR(1,90)$ and $CAR(-90,0) = 0.023 - (-0.027) = 0.050$ and this 5% swing in abnormal returns is statistically significant with a p -value less than 0.01.¹⁷ This pattern is strongest for the motivated subsets in Columns 2, 4, and 5.

In short, the abnormal returns in Figure 1 are striking and consistent with self-interested, rather than value-maximizing, disclosure choices. Table 2 confirms that these returns are statistically significant, show a distinct inflection point around the grant date, and are greater when managers have greater incentive and ability to manipulate firm disclosures and to reduce the stock price before the grant date.

3.2 Multivariate cumulative abnormal returns

We now test whether these results remain significant using multivariate analysis. Following Gao and Mahmudi (2008) and Heron and Lie (2009), our dependent variable is the “round trip” return as measured by $CAR(1,90) - CAR(-90,0)$. This measure captures both the decrease in price before the grant and the increase in price afterwards. If CEOs, for example, delay good news their stock will exhibit positive abnormal cumulative returns following the grant. However, if CEOs simply accelerate the reporting of bad news, their stock prices will fall before the grant but will not necessarily exhibit positive cumulative abnormal returns after the grant. Thus, in testing for the “round trip” abnormal return, we account for both scenarios.

The basic form of the regression is:

$$\begin{aligned} \text{Round Trip } CAR_i = & \alpha + \beta_1(\text{CEO options}_i) + \beta_2(\text{Hard to value}_i) \\ & + \sum_{k=3}^8 \beta_k x_{i,k} + \sum_{l=2}^{48} \delta_l \text{Ind}_{i,l} + \sum_{y=2}^4 \gamma_y Y_{i,y} + \sum_{q=2}^4 \theta_q Q_{i,q} + \varepsilon_i, \end{aligned} \quad (1)$$

Our focus is on the first two variables (*CEO options* and *Hard to value*).

The main two independent variables are described earlier; x_i represents six additional control variables that may affect a CEO’s willingness or ability to engage in self-interested behavior (% of insiders on the board, number of analysts, presence of a large shareholder, CEO tenure, CEO ownership, and firm size). We are agnostic about the expected sign of the governance and monitoring control variables for the

¹⁷ Huang and Lu (2012) find significant reversals in pre and post 30-day CARs in only 5.5% (40 out of 727) of their post-scandal sample of scheduled grants.

following two reasons. First, governance and monitoring efforts often focus on keeping managers from reporting inflated measures of firm performance whereas in our application, managers have the incentive to deflate earnings and to be conservative before the grant date. Second, analysts may serve to dissuade CEOs from such strategic disclosures or, alternatively, may unwittingly help propagate whatever news and information the CEO strategically releases across time. *Ind*, *Y*, and *Q* are a series of indicator variables that control for industry, year, and quarter fixed effects, respectively. We use Fama-French's 48 industry classifications.

The results in Column 1 of Table 3 are consistent with our first prediction. For example, a one standard deviation increase in the underlying variable for *CEO options (N)* is associated with a statistically significant 3.0% larger swing in cumulative abnormal returns. To facilitate the interpretation of the relation between higher numbers of options and abnormal returns, in Column 2 we re-estimate the regression after splitting the number of CEO options into a simple high and low group. Moving from the bottom to the top half in the number of options granted is associated with a 2.7% increase in the round-trip 90-day CAR.

[Insert Table 3]

The results in Columns 3-6 provide support for our prediction that increasing costs of manipulation discourage opportunism. Abnormal returns should be larger if the firm is hard to value since a CEO's manipulation costs decrease with the ease of influencing the firm's stock price. The *Hard-to-value* coefficient indicates that CEOs at hard-to-value firms experience greater abnormal returns around grant dates. The results in Column 3 show that the round-trip abnormal return around the grant date increases by 2.3%, on average, for CEOs that lead firms classified as relatively hard to value.

In Column 3, when we include *N* and *H* together both effects remain statistically significant consistent with our predictions.¹⁸ Whereas Columns 1 - 3 in Table 3 use a +/- 90 day cumulative abnormal

¹⁸ Table 3 reports that the control variables are generally not significant in explaining returns. Collectively, the independent variables, all of which are publically known at time zero, explain 2–4% of the variation in cumulative abnormal returns around stock grants.

return window, Columns 4 to 6 show that our findings can also be found using 30-, 60-, and 120-day return windows.

Thus, Figure 1 illustrates and Table 3 documents a V-shaped pattern in abnormal returns that starts several months before and ends several months after the option grant date and tends to be strongest when CEOs have the incentives and perhaps the ability to manipulate prices. Consistent with our predictions, abnormal returns are largest when the number of options is high and the firm is hard to value. To estimate the magnitude and wealth impact of these effects, we take the mean number of CEO options in our sample for the CEOs receiving more than the median number of options (300,128 options) and multiply this number by the product of the mean share price of firms in this subsample (\$32.45 per share) and 3%, a reasonable estimate of the observed abnormal returns around option grants from Tables 2 and 3 for incentivized CEOs. This rough calculation suggests that the mean CEO in this group stands to increase their compensation each year by \$292,174 by achieving slightly lower strike prices on their options.

This \$292,174 payoff for incentives CEOs is a “paper” profit because the calculation implicitly assumes the CEO could, in fact, exercise the option at the artificially low strike price and then immediately sell the stock for its true value. In practice, options typically vest over several years and the actual payoff to the CEO would be some fraction of the value noted above. To provide a more conservative estimate, the change in value for receiving 300,128 options with an exercise price of \$31.48 rather than \$32.45 (i.e., a 3% drop in price) is approximately \$100,243. This calculation is based on a Black Scholes valuation of an European call option assuming no dividends, an underlying price of \$32.45, a 2.5% risk free rate, a 3-year horizon, and an annualized volatility of 50%.¹⁹

In fact, these estimates are conservative for the subset of CEOs that actually try to manipulate the stock price around the grants because the calculations treat all incentivized CEOs as if they are in fact manipulating their stock prices. Heron and Lie (2009) estimate that around 20% of unscheduled option grants were backdated between 1996 and 2005. If a similar small fraction of scheduled option grants since

¹⁹ Edmans, et al. (2014) report a gain of \$14,504 to the average CEO in their sample who strategically discloses one discretionary news item around the vesting, as opposed to granting, of their options.

2006 involve stock price manipulation, then the subset of CEOs that engage in this strategy would earn a multiple of the amount we estimate above using an average of all CEOs in our sample.

3.3 Alternative explanations and identification strategies

The average abnormal returns shown in Figure 1 are visually striking, statistically significant, and show patterns consistent with managerial opportunism. Table 3 demonstrates that abnormal returns are higher when CEOs can anticipate upcoming grants and have greater incentive and ability to temporarily reduce stock prices before the grant dates. In this section, we consider three possible alternative explanations for the results as well as several additional robustness tests.

The results related to the alternative explanations and robustness tests are tabulated in Table 4. Most of the Table 4 results, unless otherwise noted, come from regressions like the one in Table 3 Column 3, but each row changes one or two of the assumptions to show the robustness of our results. We examine alternative dependent variables, alternative proxies for manipulation costs, and different samples, as noted in Columns 5 to 7. Due to space limitations, we only report the coefficients directly related to our main empirical predictions involving the proxies related to the costs and benefits to the CEO for manipulation (i.e., β_1 and β_2 from Equation 1). The two coefficients from Table 3 Column 3 are included in Row 1 of Table 4 for comparison purposes.

3.3.1 Changing N as a possible explanation

Our results could be explained by an alternative story that does not require manipulation of the stock price if boards grant more options in response to recent drops in stock price before the grant date. Hall (1999) shows some firms follow a “fixed value” multi-year compensation strategy suggesting a possible mechanical relationship between N and negative return movements prior to the grant. For these fixed-value firms, some of the correlation we document between the number of options granted and the pre-grant returns (the left half of Figure 1) could then be mechanically driven, rather than evidence of manipulation.

We rule out this alternative explanation using two identification strategies. First, similar to Shue and Townsend (2016a, 2016b), we show that the relationship between abnormal returns and the number of

options granted exists even after eliminating any mechanical relationship. Specifically, we document that the V-shaped returns exist around the scheduled grant dates even in the subset of observations when N does not increase from the prior year thus eliminating the cases where the board might have increased N following a drop in price. Row 2 of Table 4 documents a significant correlation between N and the round-trip abnormal return in this subset of observations. The coefficient for H is not statistically significant in this subsample, perhaps because the sample size is cut by more than 50%. Second, we eliminate the potential mechanical relationship between N and price drops by focusing only on the post-grant returns, CAR(1,90) (i.e., the right half of Figure 1). That is, if our results are explainable due to boards increasing N after the price drops, then any potential mechanical relationship would occur before the grant date and not afterwards. In the absence of manipulation, and given the scheduled nature of the grants, it is difficult to imagine that the board could anticipate the timing of a stock price increase a year in advance. In Row 3 of Table 4, we show that higher N is correlated with higher post-grant abnormal returns and that this relationship is significant at the 5% level. That is, after conditioning on a date known a year in advance, we still find positive abnormal post-grant returns and the magnitude of the returns are consistent with the CEO's incentives to manipulate the stock price.

[Insert Table 4]

3.3.2 Earnings announcements as a possible explanation

The second alternative explanation we consider focuses on the possibility that the abnormal returns we find are in some way related to quarterly earnings announcements rather than scheduled grant events. Many firms grant options near the date they announce earnings. For example, 30% of the scheduled stock grants in our sample occur within 1 week (before or after) of a quarterly earnings announcement. Figure 2 shows the distribution of option grant dates relative to the closest earnings announcement date. Many firms grant options to their CEOs after earnings announcements ostensibly to minimize information asymmetry

and the possibility of opportunism.²⁰ However, these announcements also offer a convenient opportunity for CEOs to temporarily lower expectations to obtain a favorable exercise price on the subsequently granted stock options. Regardless of the motivation, the frequent proximity of earnings announcements and CEO option grant dates allows for the possibility that the pattern of returns in Figure 1 is somehow driven by earnings announcements rather than scheduled grants.

[Insert Figure 2]

We use two identification strategies to eliminate the potential confounding influences from earnings announcements. First, we re-estimate the results of Table 3 after eliminating grants within seven days of an earnings announcement. Eliminating confounding earnings announcements does not affect the V pattern of returns around scheduled grants and the predictions remain statistically significant (see Table 4 Row 5). In untabulated tests, when we further eliminate any grants with 15 days of a potential confounding earnings announcement, we get qualitatively similar results to those reported in Table 3. Second, as reported in Row 6, we document that the same firms that experience abnormal returns around scheduled option grant dates do not experience abnormal returns around “pseudo-grant dates” that occur six months after the scheduled grant dates. That is, for the regression in Row 6, we use $t = 180$ days rather than $t = 0$, where $t = 0$ is the date of the scheduled CEO grant. This is a placebo regression as we would expect no abnormal returns on an arbitrary date. The advantage of using $t = 180$ is that this pseudo grant date is generally as close to a quarterly earnings date as the actual grant date, making it a test of whether these types of abnormal returns occur at these firms around quarterly earnings dates rather than scheduled grant dates.

Row 6 of Table 4 reports no significant correlation between N and abnormal returns on the pseudo-grant dates, even though they occur near an earnings announcement. Furthermore, hard-to-value firms also experience significantly *smaller* round-trip return on the pseudo dates, the opposite of what our model

²⁰ As an example, consider Alcoa’s 2009 definitive proxy statement. Per this statement “The company grants stock options to named executive officers at a fixed time every year—the date of the regular board and committee meetings...The timing of the meetings...is such that the meetings occur after we release earnings for the year and the performance of the company for the year is publicly disclosed.”

predicts for the actual event dates. We note that quarterly controls are included in the Table 3 specifications as well as in the robustness specifications in Table 4.

Additionally, it is worth comparing our results with the post-earnings announcement drift literature. In that literature, a negative drift in returns would be expected to follow a negative earnings surprise and the inflection point in returns would occur at the time of the earnings announcement. In contrast, we find that (1) the inflection point in our sample lines up with the option grant date, not the earnings announcement date, and (2) as later discussed in Section 4.2, negative earnings surprises before the grant lead to *positive* abnormal post-grant returns, just the opposite of the documented *negative* drift after weak earnings news. This result further confirms that our results are not being driven by their proximity in time to earnings announcements and in fact are opposite what would be expected from the post-earnings announcement drift literature.

3.3.3 Optimal contracting as a possible explanation

A third possible explanation for our results involves the alignment of CEO incentives via option grants. For example, if CEO incentives and effort were suboptimal and the new stock option grants corrected this problem, then the stock returns following a grant would be positive as market participants priced the improved incentives and anticipated effort and performance.

This improved-contracting explanation seems unlikely because it requires that the market annually penalize firms for bad incentives, but only over the few months leading up to the scheduled grant and then, when the option grants are made, gradually rewards firms for having better incentives. Such a predictable pattern and gradual reaction seems unlikely. Our identification strategy to rule out this alternative involves testing for structural breaks in different samples involving comparisons between scheduled and unscheduled grants and comparisons between the 2003-2006 and 2007-2011 scheduled grants. Under improved contracting, both unscheduled and scheduled grants would incentivize CEOs, but as shown in Table 4 we observe larger pre- and post-grant abnormal returns for the scheduled options group (Rows 3 and 4) than for the unscheduled group (Rows 7 and 8). Likewise, if improving incentives led to the observed abnormal returns, we would have expected to find similar incentive effects both before and after 2006. Yet,

in our 2003 to 2006 sample, Row 9, we find a much smaller relationship between N and returns (β_1 drops from 0.028 to 0.007) and the significance of the relation is much less in the earlier period. In a stacked regression (untabulated), we find that this drop is statistically significant. This structural break is inconsistent with the optimal contracting explanation. We make no specific predictions about the expected differences between the pre- and post-2007 periods, but the history of apparent option misuse and its consequences, as well as recent changes in regulations, suggest a temporal break if an unintended consequence of the elimination of backdating was an increase in the manipulation of scheduled grants.

3.4 Additional robustness tests

As reported in the remaining rows of Table 4, we further test the robustness of our key results to alternative samples and measurement choices.

3.4.1 Other officers receiving grants, alternative definitions for scheduled grants, different samples

Our analysis has focused on CEOs. However, other executives receive scheduled options and may also have the incentive and ability to influence stock prices. Grants to other directors and officers increase management's collective benefit from manipulation, increasing the collective N. Additionally, manipulation may be less costly if other officers and directors are complicit. We therefore condition on whether the CFO or other officers and directors received stock option grants at the same time as the CEO.

In Row 10, we limit the sample to the 2,559 observations where the CFO receives stock options in the same week as the CEO. With the CFO on board, the key coefficients both increase. The Row 11 subsample consists of CEO grant dates where at least one other executive (an officer or director) receives options with little change to the base-case results.

In our base case, we define scheduled grants as grants that occur within +/- 7 days from the prior year's grant, and we eliminate stocks with a price below \$5 per share 90 days prior to the CEO option grant. In Rows 12 and 13, we define scheduled grants as being within +/- 1 and +/-15 days from the anniversary. Using these alternative definitions results in qualitatively similar conclusions although H becomes insignificant in one specification when using the smaller sample. Our conclusions remain qualitatively

unchanged with the results becoming stronger after decreasing the stock price cutoff to \$1, rather than \$5, and when we exclude stock prices greater than \$100 (see Rows 14 and 15).

If we limit the results to S&P 1500 firms (Row 16), our basic finding with regard to N and H are stronger. Over 70% of our firm year observations are from S&P 1500 firms. Opportunistic use of option grants is not just a small firm phenomenon.

3.4.2 Backdating and at-the-money options

We also confirm that our key results are not attributable to continued backdating. In our analysis, we treat the stated grant date as the actual grant date under the assumption that the grant was promptly reported to the SEC. However, in some cases the firm took more than the mandated two days to report to the SEC. In these cases, backdating rather than price manipulation could be causing part of the V pattern. In Row 17, we eliminate all late filers, thus removing the possibility of backdating, without materially changing the coefficients.²¹

In untabulated regressions we also test whether firms that previously backdated options are more or less likely to be associated with abnormal returns around scheduled CEO option grant dates. Following Bebchuk, Grinstein, and Peyer (2010), we identify prior backdating firms (so called “Lucky CEOs”) as those firms that reported CEO option grants prior to 2007 on dates that corresponded with the lowest stock price within a month of the reported award date. We do not find any evidence that firms that previously backdated options are associated with larger or smaller abnormal returns around scheduled CEO option grants than firms that never backdated.²²

The Internal Revenue Code Section 162(m) encourages the issuance of at-the-money option grants (see, Heron and Lie, 2007)). Hence, in Row 18 we limit our sample to the options where the strike price is within 1 percent of the closing price on the grant date, within 1 percent of the closing price on any of the

²¹ To condition on the number of days between the grant date and the reporting date we merged the Equilar data with the Thomson Reuters data. Some of the reduction in sample size for this test is due to not being able to match firms in the Equilar sample with the firm identifiers provided in the Thomson Reuters data.

²² We also identified 545 firms that switched from unscheduled to scheduled grants. Abnormal returns around CEO grants for these “switchers” are not significantly different from the remaining firms using scheduled grants.

prior five days, or within 1 percent of the average closing price over the prior week, and continue to find coefficients similar to our main specification.

3.4.3 Different data sources and raw returns

In Rows 19-22, we use CEO option grant information from Thomson Reuters and ExecuComp rather than Equilar.²³ In the Thomson Reuter's sample we do not have information on CEO tenure, ownership, or board insiders and so these controls are dropped from the regressions. For the ExecuComp sample we use ExecuComp information to identify the CEO, the grant dates, CEO ownership, and tenure. Our main findings remain consistent using data from Equilar, Thomson Reuters, or ExecuComp although the H coefficient loses significance when using the smaller ExecuComp sample in one specification.

In Row 23, we cumulate raw returns rather than abnormal returns and obtain slightly larger coefficients for the two key variables. In unreported tests, we find that risk adjusting using a one- or three-factor model yields similar results to the four-factor model in our Row 1 base case.

3.4.4 Controlling for confounding sales events

Although the CEO can personally profit from a temporarily low stock price when options are granted, the CEO's incentives are less clear if the CEO is selling stock around that same time. In Row 24, we therefore add an indicator variable to the base case to control for whether the CEO sold shares on the open market within 3 months of the grant. As reported in Row 24, the coefficients on N and H are unaffected. In Row 25, we eliminate all observations where the CEO sold stock within 3 months of the grant dates and our main results remain significant.

3.4.5 Alternative measures for the costs associated with CEO opportunism

Rows 1-25 use a hard-to-value measure to identify which CEOs experience relatively lower costs of manipulation. Rows 26-30 use alternative approaches to identify firms with low manipulation costs.

²³ As with the Equilar data, when we use the Thomson Reuters and ExecuComp data, we require that each firm be identified in CRSP, Compustat, and IBES and that information regarding the prior quarter's earnings surprise be available. The data filters we use with the Thomson Reuters data are similar to earlier backdating papers (e.g., see Heron and Lie (2007) and Narayanan and Seyhum (2008)).

In Rows 26 and 27 we use *CEO buying* and *company buying* in lieu of the hard-to-value proxy. CEOs that sell their personal shares on the open market around grant dates face an additional cost if they depress their stock price – they get less for the stock they sell. In contrast, a CEO who planned to purchase personal shares on the open market would receive an ancillary benefit if the stock price was temporarily low. We therefore examine whether abnormal returns around grant dates are related to the CEO’s stock sales or purchases.

Table 4, Row 26, Column 2 reports the estimated coefficient for *CEO buying* during the 3-month window around the grant (+/- 45 days). *CEO buying* equals -1 for CEOs selling shares, +1 for CEOs buying shares on the open market, and 0 where the CEO neither purchases nor sells shares or in the small handful of cases where the CEO has mixed incentives from both buying and selling. As reported in Row 26, the *CEO buying* coefficient is 0.023 (significant at the 5% level). Thus, a CEO is less likely to act opportunistically around scheduled grants if a low stock price would be costly because of personal stock sales.

In Table 4, Row 27, we examine *company buying* as a proxy for manipulation costs. If a company’s stock price were temporarily low, shareholders (including managers owning shares) would be harmed by a secondary equity offering (SEO) and helped by a stock buyback. Thus, it is more costly to depress the stock price for option grants at a firm that is selling shares. We therefore examine *company buying*, which is set equal to -1 for companies issuing new shares in a 3-month window of the grant, +1 for companies repurchasing shares during this time, and 0 where neither event occurs (the majority of cases). As predicted, the *company buying* coefficient (reported in Column 2) is positive and significant. The CEO is less likely to act opportunistically around scheduled grants if a low stock price would be costly for the firm.²⁴

²⁴ SEOs (repurchases) tend to be associated with neutral or negative (positive) reactions. Opportunistic CEOs could therefore conduct SEOs before the grant date in order to reduce the strike price and conduct stock repurchases after the grant. Consistent with these predictions, in our sample there were 175 (versus 109) instances of repurchases in the month following (preceding) the grant. Similarly, there were 23 (versus 27) instances where a SEO occurred in the month following (preceding) the grant. The SEO data comes from SDC. The repurchase data come from Bloomberg.

In Rows 28 and 29 the coefficients reported in Column 2 are again based on measures of the firm being hard to value. Whereas the base measure is based on idiosyncratic volatility from a market model, the hard-to-value indicator used in Row 28 is based on the residuals from a 4-factor model that includes momentum. As with the main measure, firms are classified as being hard to value if the standard deviation of these residuals is in the upper half of the sample. In Row 29 the hard-to-value measure is based on the firm being in the upper half of firms in terms of the standard deviation of analyst earnings forecasts. The coefficients for H using both of these alternative measures for the firm being hard to value are positive but the coefficient is not significant in the second case.

In Row 30 we use an indicator variable for international operations as a hard-to-value proxy. As motivated in Duru and Reeb (2002), the presence of international operations increases the complexity for investors and analysts to forecast cash flows and hence makes firm valuation more difficult. They report that the accuracy of analysts' forecasts declines for firms with international operations. Under the Statement of Financial Accounting Standards No. 131 U.S. companies are required to disclose "material" operations in other countries. Using this information we classify firms as having international operations if the Compustat segments database reports a foreign segment. As with the main hard-to-value proxy, the coefficient on international operations in Column 2 is positive and significant in explaining abnormal returns around scheduled option grants.²⁵

Focusing on the results across Rows 26-30, in four of five robustness tests the coefficients on the various proxies for relatively low manipulation costs are positive and significant in explaining the abnormal returns around grants consistent with our predictions.

As an additional robustness test, in untabulated tests we step outside of our model's specific predictions and repeat the main analysis using two alternative variables that are both intuitively related to the CEO's costs and benefits from manipulation. First, we calculate the standard deviation of the firm's

²⁵ In the sample used in Row 30 of Table 4, 54% of the firms did not report a material foreign segment. In untabulated tests we find that when we include both the main hard-to-value indicator variable as well as the indicator variable for international operations that both coefficients are positive and significant in explaining the abnormal returns.

idiosyncratic return times the share price and number of options $[(\text{std})(P)(N)]$, and second, the difference between the high and low closing stock price times the number of options awarded $(P_H - P_L)(N)$. These proxies combine measures of both the potential payoff and the likely magnitude of price changes the CEO could affect using actual recent price changes. The standard deviation and price range information are measured using data from the 6-month period ending 90 days before the grant. The standard deviation of the firm's idiosyncratic risk was estimated using the residuals from a four-factor model estimated over this period using daily data. Using either of these alternative proxies for the costs and benefits of manipulation yields similar results to those reported in Tables 2, 3, and 4.

3.4.6 The impact of auditors

Tables 3 and 4 include quarterly fixed effects and hence our main conclusions are net of quarterly effects. As described in Sections 1 and 2, CEOs are incentivized to temporarily lower their stock price before an option grant. In the next section we show evidence that earnings management, guidance, and surprises are mechanisms to accomplish this. However, manipulating earnings during the 4th quarter may be more difficult than the other three quarters because fiscal year-end reports are audited. If auditors make it more difficult to send an overly negative signal at the end of the 4th quarter, then CEO option grants made during the 1st quarter should have “fairer” strike prices and thus show less evidence of abnormal returns than grants made in the other three quarters.

Rows 31 and 32 compare grants made in the 1st quarter to the remaining quarters. Both samples show evidence of opportunism.²⁶ The results for N are statistically significant and the coefficients for H are positive, as predicted, but not statistically significant perhaps due to the loss of power from splitting the sample. In the next section we follow-up on this finding and suggest two explanations. First, management has several mechanisms or tools to achieve lower strike prices including conservatively delaying good news and accelerating bad news and being cautious in their earnings guidance. That is, the opportunism we find

²⁶ Because we are interested in how earnings announcements may be used to temporarily lower a strike price, we define the 4th quarter as the time between the 3rd and 4th quarter earnings announcements rather than the end of quarter dates.

may not require any 4th quarter financial statement manipulation. Second, although we find evidence consistent with some accruals management even in the audited 4th quarter statements, the accruals management that occurs prior to scheduled grants understates rather than overstates earnings. Nelson, Elliott, and Tarpley (2002) note that auditors have greater incentives to prevent overstatements than understatements and hence are more likely to require changes to reported earnings if the managers are using earnings management to overstate rather than understate earnings.

4. Mechanisms

In this section, we investigate several possible mechanisms that CEOs could use to achieve lower strike prices on scheduled grants. To achieve lower strike prices CEOs could accelerate, emphasize or manufacture bad news before scheduled grants and/or delay the release of good news until after the grant dates. To the extent that a CEO can opportunistically influence the timing, tone and/or content of a firm's disclosures to investors this would lead to low stock prices on the grant date and be associated with negative returns before (and/or positive returns after) the grant date.

Hence opportunistic behavior around scheduled grant dates should be detectable using two different empirical approaches: (1) An event study: Does company news tend to generate negative market reactions before and positive market reactions after the grant dates? (2) An examination of whether price-depressing events (such as earnings-lowering accounting choices, negative earnings guidance, or negative earnings surprises) are followed by abnormal *positive* returns when a scheduled grant occurs during this time period. We describe both of these tests in more detail in the next two sections.

4.1 Event studies of news around the grant dates

We examine investor reactions to three types of news events: 8-K filings, quarterly earnings announcements, and managerial guidance announcements. Absent opportunistic behavior, there is no reason to think that investors would react to such announcements differently before the grant than they would react after the grant (grant dates are scheduled a year in advance).²⁷ Investor reactions to these

²⁷ Our documentation of some firms timing news releases around the *granting* of stock options complements Edmans, et al. (2014) who document news manipulation around the *vesting* of stock options.

disclosures are related to the return tests in Tables 2, 3, and 4, but differ in that we are measuring abnormal returns around narrow event windows for specific news events over which the CEO has some control of timing, content, and/or tone. This allows us to focus on mechanisms: CARs around specific news releases are easily attributable to the content and tone of the news releases whereas the multi-month CARs used in the earlier tests (while being interesting for their abnormal movements, inflection points, and sensitivity to the predictions of our model) do not reveal a mechanism.

Public firms are required to file annual (Form 10-K) and quarterly (Form 10-Q) reports. In between these regular reports, firms have some discretion about the timing and announcement of new developments disclosed using Form 8-K.²⁸ In Table 5 Panel A, we report the mean 3-day abnormal returns $CAR(-1,1)$, around 8-K filing dates both before and after scheduled grant dates. On average, announcements by firms with CEOs receiving the most options have negative market reactions in the months before the grant and positive reactions in the months afterwards, consistent with the idea of opportunistic disclosures or investment timing. For example, for firms with CEOs receiving above the median number of options (Row 3), the average three-day cumulative abnormal event return is -0.06% if the 8-K was announced in the three months before a CEO grant and a positive 0.23% after. This 0.29% difference is statistically significant with a p -value less than .01. Interestingly, there is no statistically significant difference between pre- and post-grant announcement returns when CEOs receive few scheduled options (Row 2), consistent with the idea that a high number of scheduled options motivates CEOs and affects voluntary disclosures.

[Insert Table 5]

Furthermore, as predicted by our model, this return difference increases when the cost of CEO opportunism is low. The first row in Table 5 includes all scheduled grants and the difference is only 0.18%. For grants with a high number of options at hard-to-value firms (Row 4), the difference increases to 0.72% (p -value = 0.001).

²⁸ As a consequence of Sarbanes-Oxley Act, in August 2004 the SEC increased the number of events requiring Form 8-K disclosure and shortened the reporting period to four days after any material event. However, for some events, discretion is still needed to determine what events are “material” and exactly when they become “material.” See <http://www.sec.gov/rules/final/33-8400.htm> for details.

Table 5, Panel B reports the 3-day abnormal returns surrounding quarterly earnings announcements that occur within three months of a CEO option grant. Although the average 3-day event returns for CEOs receiving more than the median number of options (Panel B, Row 3) in the months prior to the grant is positive (0.0003) they are significantly smaller than after the grant date and the difference is statistically significant and, as predicted by the model, increases when the firm is hard to value. Row 4 of Panel B indicates that CEOs with the highest number of options at hard-to-value firms have negative pre-grant earnings-announcement abnormal returns (-0.22%) and positive post-grant earnings-announcement abnormal returns (0.53%), a difference of 0.75% (p -value = 0.095). Again, we see no such difference when CEOs receive few scheduled options (Panel B, Row 2). Thus, earnings announcement surprises or news tend to be perceived by the market as more positive after the CEO's option strike price is set.

Panel C in Table 5 reports similar findings for company-issued guidance that tends to be associated with negative event returns before the grant date and positive returns after, particularly when the number of options is high and the firm is hard to value. As before, there are no significant differences for CEOs who receive few scheduled options (Panel C, Row 2).

The pattern is consistent: In the three event studies, CEOs motivated by high numbers of scheduled options tend to release bad news (or news that is perceived as bad) before the scheduled grant and good news afterwards. This effect is larger on average when CEOs face lower manipulation costs (the firm is hard to value). There is no reason to think that these three events are the only possible mechanisms CEOs might use to create the abnormal returns documented in Tables 2 – 4. The fact that we observe statistically significant differences for all three news events (and that these differences are larger where CEOs have the strongest incentives) suggests that the disclosures are strategic and related to CEOs' option compensation.

The patterns shown Table 5 are based on the average of individual companies in our sample. CEOs cannot turn their firms' stock prices on a dime; rather, the aggregate pattern we find is more likely the result of the average firm in our sample experiencing one or more extra bad return days before the scheduled grant or one or more extra good return days after, consistent with the idea that CEO self-interest affects disclosure decisions.

4.2 Post-grant returns following previous earnings-depressing events

To identify possible mechanisms, we also look for evidence that pre-grant bad news (such as earnings-depressing accounting choices, negative earnings guidance, or earnings management) is linked to higher post-grant returns. Following the literature on post-earnings announcement drift, one would typically expect that negative earnings surprises would lead to negative abnormal returns. However, we find the opposite with scheduled grants: bad news (before the grant) presages abnormal and *positive* near-term returns (after the grant). This reversal suggests that the firm's disclosures caused the firm's stock price to be artificially low at the time of the grant, leading to later positive returns.

We examine whether post-grant returns are a function of five specific disclosures that the CEO can influence (in timing and/or content) and that could be used to portray negative news to the market. The five disclosures include measures of accruals-based (negative) earnings management, negative earnings guidance, negative earnings announcement surprises, negative real-earnings management, and negative 8-K filings in the months before the scheduled grant dates.²⁹ The five measures we use for identifying manipulation-related activities in the prior quarter are described below:

Emgt: accruals (-) is an indicator variable for firms with evidence of negative accruals management in the quarter immediately before the scheduled option grant. McAnally, et al. (2008) find that firms with upcoming CEO option grants are more likely to be in the bottom quartile of accruals using an annual measure based on the difference between earnings and cash flow. We use Collins and Hribar's (2000) quarterly version of this measure to identify firms in the bottom quartile of abnormal industry-adjusted total accruals measured as $(\text{net income} - \text{operating cash flows}) / \text{assets}$, where we subtract the industry median total accrual from the firm's total accrual measure.

Guidance(-) is an indicator variable for firms with negative company-issued earnings guidance revisions in the three months prior to the scheduled options grant. Negative earnings guidance events are identified using managerial guidance releases recorded in First Call's Company Issued Guidance (CIG) and are identified as any management guidance event that results in the consensus First Call earnings estimate being lowered.³⁰

²⁹ Cohen, et al. (2008) show that real earnings management began to partially replace accruals management after the passage of SOX and that the prevalence of earnings management is associated with managements' stock option incentives.

³⁰ See Chuk, et al. (2013) for a description of the First Call's CIG data including coverage limitations. This dataset was discontinued after December 2011.

Esurprise(-) is an indicator variable for firms that have a negative quarterly earnings surprise in the earnings quarter before the scheduled option grant. Following the general approaches in Hirshleifer, et al. (2009) and Dellavigna and Pollet (2009), we identify negative earnings surprises as quarterly earnings where the (actual quarterly EPS - expected quarterly EPS) is negative.

8-K CARs is an indicator variable for firms that release bad news before the scheduled grant date and is equal to one for firms with negative mean 3-day cumulative abnormal returns around 8-K filing dates that occur within the three-month period prior to the grant date. The CARs are measured from one day before to one day following the filing dates.

Real Emgt is an indicator variable for earnings-depressing real earnings management. Firms can show low quarterly earnings by temporarily spiking R&D and SG&A or lowering production to increase costs per unit. Following Gunny (2010), but at the quarterly level, we estimate separate regression models for normal levels of R&D, SG&A, and production, all scaled by assets. We add fiscal quarter controls to these models and then use the residuals from the regressions as measures of abnormal levels of each of these items. Following Gunny (2010), we sum the residuals from these three models to form an aggregate measure of real earnings management. The indicator is set to 1 for the firms whose sums are in the upper half of the distribution. See Gunny (2010) for a detailed description of these models.

In related research, others have noted that certain accounting choices are more likely preceding CEO grants. For example, Baker, et al. (2009), Cohen, et al. (2008) and McAnally, et al. (2008), find a positive correlation between the number of pending CEO options and the likelihood or magnitude of accounting actions that would produce a decline in stock price prior to the option grants. We extend this work by taking the next logical step—testing whether these actions actually result in a payoff to the CEO as measured by significant positive abnormal post-grant returns. That is, prior research using pre-2006 data indicated that some CEOs *try* to increase option-based compensation via accounting decisions; we now ask whether they succeed or whether markets are efficient with respect to the misaligned incentives around option grant anniversaries.

Table 6 shows evidence consistent with CEOs succeeding in their efforts to temporarily lower prices using negative accruals, negative guidance, missing earnings, and, to a lesser extent, real earnings management when the incentives are strong (Panel A for high N and H) but not when the incentives are weak (Panel B for low N and not H). The analysis in Table 6 tests whether (1) the post-grant abnormal returns are statistically positive following the five negative news events described above, and (2) whether these returns are different when a scheduled grant soon follows the bad news. Finding positive abnormal

returns for CEOs that have scheduled grants following these price-depressing events is consistent with CEOs using these events to temporarily lower stock prices. Finding evidence that the post-event returns are, on average, positive and larger when a scheduled grant follows these same negative events further suggests that these events are being used strategically to achieve lower strike prices by CEOs with upcoming scheduled grants.

The columns in Table 6 report the average post-grant abnormal returns for the 30-, 60-, 90-, and 120- day windows following actual and pseudo-grant dates. As discussed in Section 3.3.2, the pseudo-grant dates occur six months after the scheduled grant dates and tend to occur the same number of days following prior quarterly earnings announcements as the actual grant dates. The pseudo-dates provide benchmark returns. If opportunism explains the positive post-grant returns following price-depressing mechanisms, we would not expect similar returns following the pseudo-dates associated with the same types of mechanisms since no grant is involved. The “Actual” (“Pseudo”) column headers indicate the average post-grant abnormal returns pertain to actual (versus pseudo) grant dates. The significance in these columns is based on *t*-tests relative to zero. The analysis in each row of Table 6 is limited to the subset of grant (and pseudo-grant) observations that occur within three months of the presence of each of the respective price-depressing events listed in the far-left column of Table 6. The columns labeled as differences test whether the average post-grant returns following scheduled grants are larger than the post-grant returns for pseudo- grant dates for each of the five price-depressing events. Consistent with the motivation described in Sections 1 and 2, the prediction is that the actual post-grant returns will be positive and larger than the comparison post-pseudo-grant returns if CEOs are indeed successfully acting opportunistically with their disclosure choices leading up to the grant dates.

[Insert Table 6]

Focusing on Panel A and the 90-day results (Column 7) consistent with earlier tables, three of the five mean abnormal post-grant returns are positive and statistically significant at the 5 percent level or stronger. CEOs tend to experience positive post-grant abnormal stock returns when these price-reducing events occur before the scheduled option grant. In contrast, when focusing on the 90-day results (Column

8) following the pseudo-grant dates, there is no evidence that firms experience positive abnormal returns following these same types of price-depressing events.³¹ A comparison of the Column 7 with Column 8 results reveals that price-depressing events are only followed by statistically significant positive abnormal returns when CEOs also have scheduled grants. For example, when negative earnings guidance precedes a CEO grant, the post-grant abnormal 90-day stock return is 7.3%. When this same negative guidance precedes a pseudo-grant date, the post-grant abnormal return is only 0.8%. The difference between these two 90-day CARs is significant at the 5% level.

The return patterns, as measured at various time horizons, are generally consistent with negative accruals, lowered guidance, and negative earnings surprise events being used as mechanisms. Columns 3, 6, 9, and 12 indicate the differences between actual and pseudo post-event abnormal returns are generally significant following these price-depressing events if CEOs have high numbers of scheduled grants. The 8-K results are consistent with opportunism, but are significant only at the 30-day horizon. In Panel A real earnings management does not appear to be a mechanism that leads to post-grant CEO payoffs. By comparison, in Table 6, Panel B when the CEO incentives are low, there is little evidence of significant post-grant positive returns following these same negative events although some of the differences are positive and significant suggesting opportunistic behavior even in the group of CEOs with relatively lower incentives.

In untabulated results, we explore whether negative pre-grant accruals management and earnings surprises are used opportunistically before scheduled grants that occur specifically following the 4th-quarter audited earnings announcement. If auditors dissuade management from using the earnings-depressing mechanisms described above then we would not expect to see the same abnormal returns around the scheduled grants that occur in the first quarter as seen in the full sample. However, if auditors are mainly focused on preventing overstated rather than understated earnings (e.g., see discussion in Nelson, Elliott,

³¹ Coles, et al. (2006) study several hundred reissued and repriced options from 1999-2002 and, like us, find evidence of negative discretionary accruals in the period before the grant date. In their paper, they do not find that negative accruals are related to stock returns around the reissue date whereas we do find positive CARs after grant dates.

and Tarpley (2002)) then auditors may not affect the opportunism we document in this paper.³² We find significant abnormal returns around scheduled grants in the first quarter consistent with the idea that managers use negative 4th-quarter accruals and earnings surprises to temporally lower the stock price before a stock option grant.

Thus, the overall Table 6 evidence is consistent with the predictions that CEOs with the most incentives and lowest manipulation costs are the most likely to engage in opportunistic behavior around scheduled grant dates. The evidence shows that these CEOs experience positive abnormal returns following negative accruals, negative guidance, and negative earnings surprise events whereas CEOs at the same types of firms (i.e., firms with scheduled grants) do not experience as large or as positive returns following the same types of negative events when the CEOs are not scheduled to receive grants in the subsequent weeks or months.

5. Conclusion

Prior research found evidence of unusual stock price changes in the 1990s shortly before or after a CEO was granted stock options. Lie (2005), Heron and Lie (2007, 2009), and Narayanan and Seyhun (2008) argued that these abnormal returns were an artifact of executives backdating the grant dates in order to receive options with lower strike prices.

Encouraged by governance professionals and accounting firms, many firms switched to fixed-award dates after 2006 in order to reduce such opportunism. Other legal reforms made stock-grant opportunism more difficult: Regulation Fair Disclosure made news dissemination more transparent; SOX shortened the grant reporting period to two days; public scrutiny of compensation practices increased; and the SEC required firms to disclose much more information about compensation practices post-2006.

³² Nelson, Elliott, and Tarpley (2002) show that auditor incentives and regulatory concerns encourage more vigilance towards overstatements than understatements. They find that "...auditors are relatively less likely to adjust current-period-income-decreasing attempts [than income-increasing attempts], even though such attempts may allow managers to increase income in a future period..."

These changes were thought to have eliminated abnormal returns around CEO grants. For example, Lie (2005), Heron and Lie (2006, 2007, and 2009), and Sen (2009) each report that opportunism around CEO grants decreased over time and found little or no evidence of price manipulation around scheduled grants after the various regulatory changes.

Our paper revisits the question of CEO opportunism around scheduled CEO option grants and makes three contributions. First, we find evidence of recent and ongoing stock price manipulation around scheduled CEO stock option grants, even in the post-2006 period after regulatory reforms were implemented. We document significant negative abnormal returns before scheduled option grants and significant positive abnormal returns after the grants. These abnormal returns suggest that CEOs manipulate the firm's disclosures in order to depress the firm's stock price at the time they are given stock options and the exercise price is set. In the overall sample, this produces the same V-shaped abnormal returns observed in the backdating scandal.

Second, we find that CEO grant-related abnormal returns are largest when price manipulation would be most beneficial and least costly to CEOs. We show that CEOs of hard-to-value firms that stand to receive the highest number of option grants are the CEOs that experience the most favorable return movements around grant dates. These returns are even higher when the CFO receives options at the same time as the CEO. Furthermore, we find evidence of a structural break, the relationship between the number of options awarded and the associated abnormal returns around scheduled grant dates grew significantly stronger after 2006. Thus, we not only find that abnormal returns around CEO stock option grants have made a comeback despite significant regulatory changes, but also that they are largest exactly when managers have the strongest incentives to manipulate the firm's disclosures and stock price.

Third, we provide event study and return-based evidence on the mechanisms executives use to manufacture these abnormal returns. Not only do they adjust the timing of disclosures (spring loading and bullet dodging), but also manage earnings, accruals, and guidance to increase their stock option-based compensation. Importantly, such pre-grant price manipulation is significantly correlated with positive

abnormal returns after the grant. Thus, executives not only try to manipulate the price using a variety of mechanisms, but in fact succeed.

Our findings highlight an unintended consequence of reform. In the wake of the backdating scandal in 2005, accountants and governance experts encouraged firms to move to scheduled options to avoid possible backdating. But while backdating may have opaquely transferred wealth from stockholders to CEOs, the returns and mechanisms we document around scheduled options may be worse: they not only transfer wealth, but also distort stock prices and may dissipate firm value. The distortions in stock price we observe on average persist for several months.

One obstacle to eliminating this behavior is the difficulty of detecting the behavior at individual firms, even if the opportunism is clear in the aggregate. Executives might use one mechanism one year (e.g., strategic disclosures), a different mechanism the following year (e.g., earnings guidance), and may do nothing when simple opportunities are not available (e.g., no pending good or bad news). Moreover, CEOs can plausibly rationalize their behavior as simple prudence and caution: isn't it best to quickly alert investors about potential risks? Isn't it better to wait and confirm possible good news before releasing it? Legal remedies may prove difficult since Section 10(b) of the Securities and Exchange Act of 1934 requires that plaintiffs alleging securities fraud must prove that defendants intended to deceive. The timing and substance of any one decision is likely easy to defend; only in the aggregate is it difficult to defend a pattern of abnormal returns that dovetail so neatly with self-interest.

Given this, what can directors, shareholders and other monitors do to reduce the risk of this distortion in executive pay or stock price? First, boards can reduce executives' incentives to engage in this behavior. Boards might stagger CEO option grants as a series of small scheduled at-the-money periodic grants rather than one large grant or stagger executive option grants so that the CEO, CFO, and board members receive options at different times. Alternatively, the board could allow executives to sell stock only in the month when options are granted. In theory, boards could also sever the link between the exercise price and the grant-day price; however, this solution would require changes to the accounting treatment of stock options which currently favor at-the-money options.

In any event, board members, analysts, and investors should be alert to the perverse incentives created by scheduled options and carefully monitor disclosures before and after scheduled grant dates; disclosure strategies that sound like caution may simply be self-interest.

Appendix

The paper makes reference to a formal model. The discussion below presents a model where a CEO chooses the optimal amount of manipulation given the associated benefits and costs. The CEO chooses the optimal amount of stock price manipulation (M) around the grant date to maximize the CEO's profit function: $\text{profit}(M) = \text{benefits}(M) - \text{costs}(M)$, where both the benefits and costs to the CEO for manipulation are a function of M , the percent change in stock price due to manipulation, $(P - P_m)/P$, where P_m and P are the manipulated and non-manipulated prices, respectively. N represents the number of options being granted and the product MP represents the change in stock price (and hence strike prices) as a result of manipulation. Without vesting requirements and blackout periods, the monetary benefit to the CEO for manipulation would be the product NMP ; with vesting and blackout requirements the ultimate benefit to the CEO is some fraction (δ) of NMP .

We assume that the number of scheduled options the board grants the CEO is a function of the average long-term stock price consistent with the board having a target dollar value for the CEO's stock option grant award, perhaps based on peer comparison and incentive considerations, and then selecting the number of options to create this award. If the stock price is persistently low, other things equal, the board needs to grant more options to reach the target amount.³³ Hence, $\frac{\partial N}{\partial P} < 0$.

The cost to the CEO for manipulation (C) is a function of the how much the price is manipulated (M) and how hard the firm is to value (H). With regard to the first cost component, we assume that manipulation costs increase with each percentage change in the stock price (M) rather than the price level, since it is easier, for example, to move the stock price down by \$3 if the price is \$100 (a 3% drop) than if the price is \$10 (a 30% drop). We assume that the cost function is convex; that is, moving a stock price

³³ Hall (1999) documents that some firms award the same number of options each year for several years in a row rather than target a specific dollar award each year (i.e., "fixed-number plans" vs "fixed-value plans"). Even in the fixed number cases, we assume that the number of options being awarded is a function of the stock price at the time the award number was determined. Empirically, we find supporting evidence of this assumption given that the correlation coefficient between the observed number of options awarded and the stock price is negative and statistically significant at the 1% level.

down the first percent is easier than moving it down the second percent. Hence, $\frac{\partial C(M,H)}{\partial M} > 0$ and $\frac{\partial^2 C(M,H)}{\partial M^2} > 0$. With regard to H, we assume that the effort needed to change investor perception and the likelihood of detection decreases if the firm is hard-to-value. In the model, $\frac{\partial C(M,H)}{\partial H} < 0$, consistent with the cost of manipulation being less for hard-to-value firms.

The profit function that the CEO maximizes when choosing M can be written as:

$$\pi(M) = \delta N(P)MP - C(M, H). \quad (A1)$$

Differentiating with respect to M and then setting the first-order condition equal to zero yields:

$$\frac{\partial \pi(M)}{\partial M} = \delta N(P)P - \frac{\partial C(M, H)}{\partial M} = 0. \quad (A2)$$

This first-order condition is an implicit choice function where the M that satisfies the condition is a function of the primitive variables N, H, and P. Replacing the M in the first-order condition with its optimal value, M^* , yields the following identity:

$$\delta N(P)P - \frac{\partial C(M^*[N(P), H, P], H)}{\partial M^*} \equiv 0. \quad (A3)$$

Differentiating the identity with respect to N yields: $\delta P - C_{MM}(\cdot) \frac{\partial M^*}{\partial N} = 0$, where $C_{MM}(\cdot)$ represents the second derivative of the cost function, $\frac{\partial^2 C(\cdot)}{\partial M^2}$. Consistent with the second-order condition of a maximum, as well as increasing marginal manipulation costs, $C_{MM}(\cdot) > 0$. Rearranging terms leads to $\frac{\partial M^*}{\partial N} = \frac{\delta P}{C_{MM}(\cdot)} > 0$, since both P and $C_{MM}(\cdot)$ are positive. Thus, our first testable implication is that evidence of manipulation is increasing in N.

Differentiating the identity with respect to H yields: $-\frac{dC_M(\cdot)}{dH} = -C_{MM}(\cdot) \frac{\partial M^*}{\partial H} - C_{MH}(\cdot) = 0$, or $\frac{\partial M^*}{\partial H} = \frac{-C_{MH}(\cdot)}{C_{MM}(\cdot)}$, where $C_{MH}(\cdot)$ is the partial derivative of $\frac{\partial C(\cdot)}{\partial M}$ with respect to H. Hence $C_{MH}(\cdot)$ represents the direct effect changes in H have on $\frac{\partial C(\cdot)}{\partial M}$. The cost of manipulation is decreasing in H, $C_{MH}(\cdot) < 0$,

implying that $\frac{\partial M^*}{\partial H} > 0$. Thus, our second testable implication is that evidence of manipulation is increasing in H.

Differentiating the identity with respect to P yields: $\frac{\partial N}{\partial P} \delta P + \delta N - C_{MM}(\cdot) \frac{dM^*}{dP} = 0$,

where $\frac{dM^*}{dP} = \left(M_N^* \frac{\partial N}{\partial P} + M_P^* \right)$, which leads to $\frac{dM^*}{dP} = \frac{\frac{\partial N}{\partial P} \delta P + \delta N}{C_{MM}(\cdot)}$. $C_{MM}(\cdot)$ is positive but depending on the relative size of $\frac{\partial N}{\partial P} P$ and N the numerator in this expression could be positive or negative ($\frac{\partial N}{\partial P} \delta P$ is negative, δN is positive). Hence the sign of $\frac{dM^*}{dP}$ is indeterminate.

References

- Abodiy, D., and Kasznik, R. 2000. CEO stock option awards and the timing of corporate voluntary disclosures. *Journal of Accounting and Economics* 29, 73-100.
- American College of Trial Lawyers. 2008, Recommended Practices for Companies and Their Counsel in Conducting Internal Investigations, 46 *American Criminal Law Review* 73, 105.
- Baker, T., Collins, D., and Reitenga, A. 2009. Incentives and opportunities to manage earnings around option grants. *Contemporary Accounting Research* 26, 649-672.
- Bebchuk, L., and Fried, J. 2010. Paying for long-term performance. *University of Pennsylvania Law Review* 159, 1915-1959.
- Bebchuk, L., Grinstein, Y., and Peyer, U. 2010. Lucky CEOs and lucky directors. *Journal of Finance* 65, 2363-2401.
- Bickley, J. and Shorter, G. 2009. Stock options: The backdating issue, February 03, 2009, Congressional Research Service, Report No. RL33926.
- Carhart, M. 1997. On persistence in mutual fund performance. *Journal of Finance* 52, 57-82.
- Chatterjee, S., John, K and Yan, A. 2011. Takeovers and Divergence of Investor Opinion, *Review of Financial Studies* 25, 227-277.
- Chauvin, K., and Shenoy, C. 2001. Stock price decreases prior to executive stock-option grants. *Journal of Corporate Finance* 7, 53-76.
- Chuk, E., Matsumoto, D., and Miller, G. 2013. Assessing methods of identifying management forecasts: CIG vs. researcher collected. *Journal of Accounting and Economics* 55, 23-42.
- Coles, J., Hertz, M., and Kalpathy, S. 2006. Earnings management around employee stock option reissues. *Journal of Accounting and Economic* 41, 173-200.
- Cohen, D., Dey, A., and Lys, T. 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review* 83, 757-787.
- Collins, D., and Hribar, P. 2000. Earnings-based and accrual-based market anomalies: one effect or two? *Journal of Accounting and Economics* 29, 101-123.
- Curtis, Q., and Myers, M. 2015. Do the merits matter? Evidence from options backdating litigation. *University of Pennsylvania Law Review* (forthcoming).
- Dellavigna, S., and Pollet, J. 2009. Investor inattention and Friday earnings announcements. *Journal of Finance* 64, 709-749.

- Devos, E., W. Elliott, and R. Warr. 2015. CEO opportunism?: Option grants and stock trades around stock splits. *Journal of Accounting and Economics* 60, 18-25.
- Duru, A., D. Reeb. 2002. International diversification and analysts' forecast accuracy and bias. *The Accounting Review* 77, 415-433.
- Fama, E., and French, K. 1993. Common risk factors in the returns on stocks and bonds. *Journal of Finance* 33, 3-56.
- Edmans, A., Goncalves-Pinto, L., Wang, Y., and Xu, W. 2014. Strategic news releases in equity vesting months. European Corporate Governance Institute Working Paper.
- Fich, E., Cai, J., and Tran, A. 2011. Stock option grants to target CEOs during private merger negotiations. *Journal of Financial Economics* 101, 413-430.
- Frydman, C., and Jenter, D. 2010. CEO compensation. *Annual Review of Financial Economics* 2, 75-102.
- Gao, H., and Mahmudi, H. 2008. Backdating executive stock option grants: An agency problem or just efficient contracting? 2008 Western Finance Association Conference papers.
- Gunny, K. 2010. The relation between earning management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research* 27, 855-888.
- Hall, B. 1999. The design of multi-year stock options plans. *Journal of Applied Corporate Finance* 12, 97-106.
- Hayes, R., Lemmon, M., and Qui, M. 2012. Stock options and managerial incentives for risk taking: Evidence from FAS 123R. *Journal of Financial Economics* 105, 174-190.
- Heron, R., and Lie, E. 2007. Does backdating explain the stock price pattern around executive stock option grants? *Journal of Financial Economics* 83, 271-295.
- Heron, R., and Lie, E. 2009. What fraction of stock option grants to top executives have been backdated or manipulated? *Management Science* 55, 513-525.
- Hirshleifer, D., Lim, S., and Teoh, S. 2009. Driven to distraction: Extraneous events and underreaction to earnings news. *Journal of Finance* 64, 2289-2325.
- Huang, W., and Lu, H. 2012. New evidence on the CEO's stock option timing behaviors: Do the Sarbanes-Oxley act and new compensation disclosure rules matter? University of Toronto, working paper.
- Lie, E. 2005. On the timing of CEO stock option awards. *Management Science* 51, 802-812.
- Liu, L., Liu, H., and Yin, J. 2014. Stock Option Schedules and Managerial Opportunism. *Journal of Business Finance and Accounting* 41, 652-684.
- McAnally, M., Srivastava, A., and Weaver, C. 2008. Executive stock options, missed earnings targets, and earnings management. *The Accounting Review* 83, 185-216.

- Nelson, M., Elliott, J., and Tarpley, R. 2002. Evidence from auditors about managers' and auditors' earnings management decisions. *The Accounting Review* 77, 175-202.
- Narayanan, M., and Seyhun, H. 2008. The dating game: Do managers designate option grant dates to increase their compensation? *Review of Financial Studies* 21, 1907-1945.
- Sen, R. 2009. The returns to spring-loading. New York University, working paper.
- Shue, K., and Townsend, R. 2016a. Growth through rigidity: An explanation for the rise in CEO pay. *Journal of Financial Economics*, forthcoming.
- Shue, K., and Townsend, R. 2016b. How do quasi-random option grants affect CEO risk-taking? University of Chicago, working paper.
- Zhang, X. 2006. Information uncertainty and stock returns. *Journal of Finance* 61, 105-136.

Table 1 – Number of CEO option grants by year and type

The sample is the intersection of firm years in Equilar and CRSP where the CEO received stock options between January 2003 and December 2011. Column 2 reports the number of firms making CEO options grants. Columns 3 and 5 report the number of scheduled and unscheduled CEO option grants (some firms make more than one grant to the CEO each year). Scheduled grants are identified relative to the anniversary dates of grants to CEOs at the same firm in the prior/following year. Scheduled grants are within seven days and unscheduled grants occur more than 15 days from the anniversary date.

Year	# of firms granting CEO options	# of option grants scheduled within +/- 7 days of anniversary	% of option grants that are scheduled within +/- 7 days	# of unscheduled option grants
Panel A				
2003	1,674	1,051	51.3%	789
2004	1,847	1,123	48.8%	936
2005	1,617	908	45.4%	923
2006	1,418	804	48.8%	664
	6,556	3,886		3,312
Panel B				
2007	1,511	940	52.3%	649
2008	1,574	1,012	55.5%	637
2009	1,317	956	63.0%	424
2010	1,366	1,028	65.9%	391
2011	1,235	916	64.1%	414
	7,003	4,852		2,515

Table 2 – Statistical tests of CARs for various event windows around scheduled CEO option grants

The numbers in Columns 1-5 are mean cumulative abnormal returns (CARs) in Panels A and B, and are the mean differences between pre- and post-grant CARs in Panel C for firms with scheduled CEO stock option grants between January 2007 and December 2011. Event windows are defined relative to the scheduled CEO option grant date. Columns 1 and 2 are for firms below and above the median number of CEO options (N), respectively, based on a comparison of all CEO option grants across firms in the same year. Columns 3 and 4 separate hard-to-value (H) firms from non-hard-to-value firms. Hard-to-value firms are those firms in the top half of grant-giving firms in terms of idiosyncratic volatility (standard deviation of daily market-adjusted returns over the prior year). Column 5 is for firms with above median number of CEO option awards that are also hard to value. In Panels A and B, asterisks show the significance from t-tests of whether the mean CARs are equal to zero. In Panel C, asterisks show the significance of t-tests for whether the differences in mean CARs (post-grant returns minus pre-grant returns) are equal to zero. Each CAR for each event window is calculated using a 4-factor model including momentum, where the model parameters are estimated over the year ending 120 days before the option grant date. Returns are winsorized at the 1% level. Significance is shown at the 10%, 5%, and 1% levels using *, **, and ***, respectively.

Event Window	Sample:	Number of options (N)		Hard-to-value (H)		High N, H (5)
		Low N (1)	High N (2)	Not H (3)	H (4)	
<i>Panel A</i>						
(-120,0)		-0.009**	-0.022***	-0.009***	-0.030***	-0.035***
(-90,0)		-0.010***	-0.019***	-0.009***	-0.026***	-0.027**
(-60,0)		-0.011***	-0.017***	-0.009***	-0.026***	-0.031***
(-30,0)		-0.004**	-0.011***	-0.003*	-0.018***	-0.023***
(+1,+30)		-0.001	0.003*	-0.001	0.006*	0.016***
(+1,+60)		-0.006	0.006**	0.000	0.000	0.017**
(+1,+90)		-0.004	0.011**	0.003	0.003	0.023**
(+1,+120)		-0.002	0.012**	0.002	0.012	0.034**
<i>Panel B</i>						
(-120,-90)		-0.001	-0.004**	-0.001	-0.006*	-0.009
(-90,-60)		0.000	-0.005**	-0.001	-0.005*	-0.005
(-60,-30)		-0.008***	-0.007***	-0.006***	-0.011***	-0.012**
(-30,0)		-0.004**	-0.011***	-0.003*	-0.018***	-0.023***
(+1,+30)		-0.001	0.003*	-0.001	0.006*	0.016***
(+30,+60)		-0.006	0.004*	0.000	-0.005	0.005
(+60,+90)		-0.002	0.001	0.001	-0.003	-0.001
(+90,+120)		-0.001	-0.001	-0.002	0.002	0.004
<i>Panel C</i>						
Ha: CAR(1,120) > CAR(-120,0)		0.007	0.034***	0.011***	0.041***	0.070***
Ha: CAR(1,90) > CAR(-90,0)		0.006	0.030***	0.012***	0.029***	0.050***
Ha: CAR(1,60) > CAR(-60,0)		0.005	0.023***	0.009***	0.025***	0.048***
Ha: CAR(1,30) > CAR(-30,0)		0.004	0.014***	0.002	0.024***	0.038***

Quarter controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,045	4,045	4,045	4,045	4,045	4,045
R-squared	0.033	0.029	0.034	0.027	0.025	0.038

Table 4 – Identification and robustness of key coefficients from a regression of CEO option grant abnormal returns on measures of CEO incentives and control variables

The coefficients are from regressions of cumulative abnormal returns on measures related to the benefits and costs to the CEO for manipulating the stock price around the grant dates as well as the control variables used in Table 3. The dependent variable is the “90-day round-trip return” (90-day post-grant CAR minus 90-day pre-grant CAR), except where noted otherwise. We report only the coefficients for the two key predictions regarding N and H except where noted otherwise. Row 1 shows the same coefficients as in Column 3 from Table 3 and is shown for comparison purposes. In Rows 2-32, we perturb one or two aspects of the base-case regression as noted in the last column. The robustness tests are categorized as perturbing either the dependent variable (“Alt dep var” column), the proxy for low manipulation costs (“Alt H” column), or the sample (“Restricted or different sample” column). Returns are winsorized at the 1% level. Significance is shown at the 10%, 5%, and 1% levels using *, **, and ***, respectively. Errors clustered by firm.

	Coefficient	Coefficient on hard-to-value (H) or other proxies related to the cost of manipulation	# of obs	Alt dep var	Restricted or different sample	Description of Robustness Test
1	0.028***	0.023*	4,045			Base model - Column 3 Table 3
2	0.023***	0.000	1,863		X	Number of options granted less than or equal to prior year's number
3	0.013**	0.015	4,045	X		Scheduled grants, new dependent variable: CAR(1, 90)
4	-0.015***	-0.008	4,045	X		Scheduled grants, new dependent variable: CAR(-90, 0)
5	0.028***	0.030**	2,850		X	Grant date is not close to quarterly earnings announcement
6	0.002	-0.023**	4,037		X	6 months after scheduled grant dates (pseudo-grant date test)
7	-0.013*	-0.026*	1,807	X	X	Unscheduled grants, new dependent variable: CAR(-90, 0)
8	0.011	0.009	1,808	X	X	Unscheduled grants, new dependent variable: CAR(1, 90)
9	0.007*	0.014	3,408		X	Scheduled grants, new sample years 2003 - 2006 period
10	0.034***	0.052***	2,559		X	CFO receives options in same week
11	0.032***	0.022*	3,706		X	Other directors or officers receive grants in same week
12	0.027***	-0.005	2,427		X	Grants scheduled within +/- 1 day
13	0.029***	0.022*	4,688		X	Grants scheduled within +/- 15 days
14	0.032***	0.029**	4,430		X	Stock price required to be at least \$1
15	0.028***	0.025**	3,973		X	Stock price required to be less than \$100
16	0.036***	0.026*	2,831		X	Sample limited to S&P 1500 firms
17	0.031***	0.024*	3,526		X	Form 4 filed within two days of grant
18	0.031***	0.023*	3,731		X	Strike price is set close to market price
19	0.029***	0.016	1,419		X	Base model using ExecuComp sample

20	0.035**	0.041**	890		X	Base model using ExecuComp sample, Form 4 filed within two days
21	0.027***	0.028**	4,143		X	Base model using Thomson Reuters sample
22	0.026***	0.031**	3,903		X	Base model using Thomson Reuters sample, Form 4 filed within two days
23	0.034***	0.030**	4,045	X		Scheduled grants, new dependent variable: Cumulative round-trip raw returns
24	0.029***	0.022*	4,045		X	Base model with additional control variable for shares sold
25	0.027***	0.022*	3,680		X	Base model without obs. where CEOs sold shares within 3 months of grant
26	0.029***	0.023**	4,045	X		Base model using CEO buying as alternative proxy for cost of manipulation
27	0.028***	0.031**	4,045	X		Base model using company buying as alternative proxy for cost of manipulation
28	0.029***	0.023*	4,045	X		Base model using idiosyncratic volatility as proxy for cost of manipulation
29	0.032***	0.002	3,881	X		Base model using standard deviation of analyst forecasts as proxy for cost
30	0.030***	0.020*	4,045	X		Base model using an indicator for international operations as proxy for cost
31	0.035***	0.019	1,848		X	Base model focused only on subset of grants made in 1st quarter
32	0.024***	0.021	2,197		X	Base model focused on subset of grants made in 2nd, 3rd, and 4th quarter

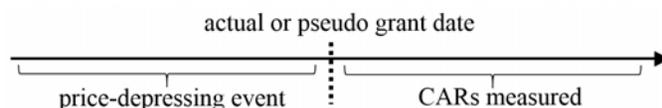
Table 5 – Announcement returns around 8-K filings, quarterly earnings announcements, and company-issued guidance in the three months before and after scheduled CEO stock option grants

The table reports the number of events, the mean 3–day announcement abnormal returns around the event, and the difference between the returns for events occurring in the three months before and after scheduled CEO option grants. Three events are considered: 8-K filings in Panel A, quarterly earnings announcements in Panel B, and company issued earnings guidance announcements in Panel C. The 3–day announcement returns are calculated as cumulative abnormal returns (CARs) from one business day before the event date to one day after using a 4–factor model. Hard-to-value firms are those firms in the top half of grant-giving firms in terms of idiosyncratic returns over the prior year. Consistent with the motivation in the paper one-sided p -values are reported in the last column for t -tests where the alternative hypothesis is that the mean event CAR before the grant is less than the mean event CAR after the grant. Returns are winsorized at the 1% level. Significance is shown at the 10%, 5%, and 1% levels using *, **, and ***, respectively.

Sample	# of event dates before grant	# of event dates after grant	mean CAR before	mean CAR after	difference (after- before)	p -value
<i>Panel A: CARs measured around 8-K filing dates for the following samples:</i>						
(1) All scheduled CEO options	14,955	13,658	0.0003	0.0021	0.0018***	0.007
(2) Low number of options (N)	6,827	6,216	0.0013	0.0019	0.0006	0.310
(3) High number of options (N)	8,128	7,442	-0.0006	0.0023	0.0029***	0.002
(4) High number of options and hard-to-value (N, H)	2,512	2,361	-0.0025	0.0046	0.0072***	0.001
<i>Panel B: CARs measured around quarterly earnings announcement dates for the following samples:</i>						
(1) All scheduled CEO options	4,388	4,171	0.0012	0.0046	0.0035**	0.026
(2) Low number of options (N)	2,210	2,081	0.0020	0.0039	0.0019	0.236
(3) High number of options (N)	2,178	2,090	0.0003	0.0053	0.0050**	0.017
(4) High number of options and hard-to-value (N, H)	668	628	-0.0022	0.0053	0.0075*	0.095
<i>Panel C: CARs measured around managerial guidance dates for the following samples:</i>						
(1) All scheduled CEO options	2,995	2,979	0.0017	0.0066	0.0049***	0.005
(2) Low number of options (N)	1,259	1,236	0.0049	0.0075	0.0025	0.220
(3) High number of options (N)	1,736	1,743	-0.0007	0.0059	0.0066***	0.002
(4) High number of options and hard-to-value (N, H)	286	272	-0.0001	0.0169	0.0170**	0.033

Table 6: Testing whether stock price-depressing mechanisms before the CEO stock option grant dates are associated with positive subsequent abnormal returns

Mean cumulative abnormal returns (CARs) are reported in Columns 1, 2, 4, 5, 7, 8, 10, and 11 for the 30, 60, 90, and 120-day windows following scheduled and pseudo-grant dates. Pseudo dates occur 6 months after scheduled grant dates. As shown in the timeline, the CARs are measured following the grant dates which occur after a price-depressing event in the prior three months. The price-depressing events are listed in the left column (e.g., negative accruals, guidance, etc.)



The column headers indicate whether the negative events and CARs are measured around actual versus pseudo grant dates. The differences in mean CARs are reported in Columns 3, 6, 9, and 12. The analysis in each row focuses on the subset of observations where the indicated price-depressing mechanism occurred in the prior quarter relative to the actual and pseudo dates. *Emgt: accruals (-)* focuses on firms in the bottom quartile of industry-adjusted total accruals in the quarter prior to the scheduled (or pseudo) grant date. *Guide (-)* identifies firms with negative managerial earnings guidance revisions in the three months before the scheduled (or pseudo) grant date. *Esurprise (-)* identifies firms that have a negative quarterly earnings surprise in the earnings quarter immediately before the scheduled (or pseudo) grant date. *8-K CAR (-)* identifies firms that announce bad news in the three months before the scheduled (or pseudo) grant date, where bad news is identified as a negative mean CAR(-1,1) around 8-K filing dates in those months. *Real Emgt(-)* identifies firms in the upper half of firms in terms of a measure for earnings-depressing real earnings management calculated as the sum of residuals from separate models of normal levels of scaled R&D, SG&A, and production in the quarter before the scheduled (or pseudo) grant date. Returns are winsorized at the 1% level. Significance is shown at the 10%, 5%, and 1% levels using *, **, and ***, respectively. The tests of significance in the table are based on one-sided *p*-values. The significance reported in columns 1, 2, 4, 5, 7, 8, 10, and 11 (3, 6, 9, and 12) comes from *t*-tests for whether the mean returns (differences in returns) are equal to 0.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	CAR(1,30)			CAR(1,60)			CAR(1,90)			CAR(1,120)		
	Actual	Pseudo	Dif (1-2)	Actual	Pseudo	Dif (4-5)	Actual	Pseudo	Dif (7-8)	Actual	Pseudo	Dif (10-11)
Panel A: Higher number of options and hard-to-value												
Emgt: accruals(-)	0.042**	-0.018	0.060**	0.050*	-0.013	0.063*	0.073**	0.023	0.050	0.104**	0.004	0.099*
Guide (-)	0.022*	0.008	0.014	0.039**	-0.003	0.042*	0.073**	0.008	0.064*	0.092***	-0.014	0.107**
Esurprise (-)	0.039***	-0.002	0.041***	0.048***	-0.013	0.060***	0.066***	-0.006	0.071**	0.078***	-0.023	0.102***
Real Emgt(-)	0.007	0.005	0.002	-0.009	-0.012	0.003	-0.016	-0.015	-0.001	-0.008	-0.034	0.026
8-K CARs(-)	0.024**	-0.007	0.031*	0.018	-0.027	0.046	0.022	-0.016	0.038	0.032	-0.018	0.051
Panel B: Lower number of options and not hard-to-value												
Emgt: accruals(-)	-0.001	0.000	-0.001	-0.007	0.006	-0.013	0.014	0.027*	-0.013	0.024	0.041**	-0.017
Guide (-)	-0.004	-0.002	-0.002	-0.011	-0.014	0.003	-0.003	-0.003	0.001	-0.002	0.001	-0.003
Esurprise (-)	0.006	-0.001	0.007	-0.002	-0.004	0.002	0.003	0.013	-0.010	0.008	0.022*	-0.014
Real Emgt(-)	0.002	-0.004	0.006	0.006	-0.018	0.024**	0.013	-0.021	0.034**	0.022*	-0.033	0.055***
8-K CARs(-)	-0.002	0.013*	-0.015	-0.007	0.005	-0.013	-0.004	0.016	-0.020	-0.002	0.025	-0.027

Figure 1: Cumulative abnormal returns around scheduled CEO stock option grants 2007 - 2011

Figure 1 shows the mean cumulative abnormal returns from a Fama-French four-factor model including momentum in the months surrounding 4,852 scheduled CEO stock option grants from 2007 to 2011. The factor model was estimated over the year ending four months prior to the option grant dates. CEO and grant information are from Equilar. Scheduled grants are identified as those that occur within +/- 7 days of the anniversary of a grant to the CEO. The top line (pluses) shows the cumulative abnormal stock returns for the CEOs awarded a relatively low number of options (lower half of overall number of option grants for that year). The middle (circles) line is for all CEOs with scheduled stock option grants in the sample. The third line (solid) is based on the upper half of CEOs in terms of the number of options awarded. The bottom line (x's) is for the CEOs facing the strongest incentives to act opportunistically (CEOs receiving high numbers of options at hard-to-value firms that are not selling shares of stock around the grant date).

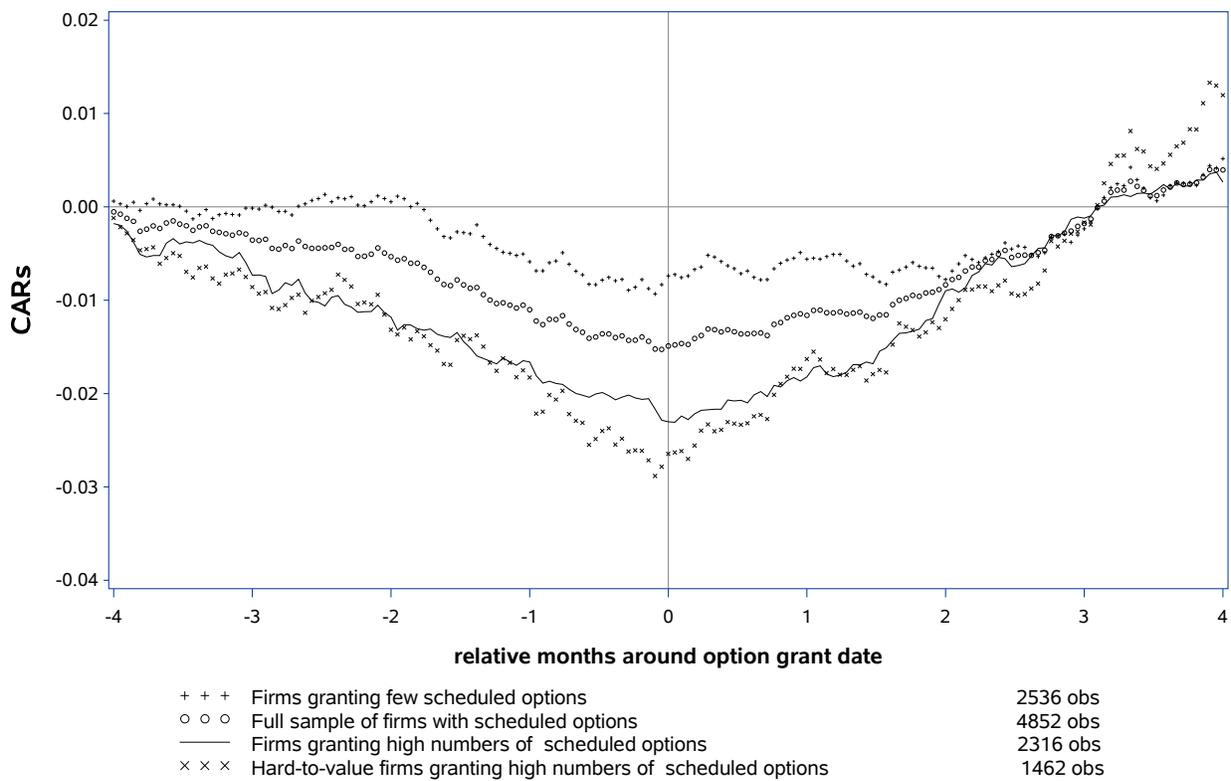


Figure 2: Distribution of scheduled CEO stock option grants relative to the nearest earnings announcement

Figure 2 shows the distribution of scheduled CEO stock option grant dates in time around the nearest quarterly earnings announcement dates. Day 0 represents the date of the earnings announcement. The figure is based on the sample of firms using scheduled CEO grants from 2007 to 2011. Data on executive option grants comes from Equilar and data on earnings come from Compustat.

