

Right on Schedule: CEO Option Grants and Opportunism

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Abstract

After the public outcry over backdating, many firms began scheduling option grants. This eliminates backdating but creates other agency problems: Chief executive officers (CEOs) aware of upcoming option grants have an incentive to temporarily depress stock prices to obtain lower strike prices. We show that some CEOs have manipulated stock prices to increase option compensation, documenting negative abnormal returns before scheduled option grants and positive abnormal returns afterward. These returns are explained by measures of CEOs' incentives and ability to influence stock prices. We document several mechanisms used to lower stock price, including changing the substance and timing of disclosures.

I. Introduction

Abnormal stock price movements around the dates of chief executive officer (CEO) option grants in the 1990s resulted in lower strike prices and, consequently, higher CEO compensation. Lie (2005) and Heron and Lie ((2007), p. 294), (2009) show that before 2002, “most, if not all” of these abnormal returns were explained by option backdating: Retroactively and strategically, executives reported 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.

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One such reform was the move to “scheduled” options. To eliminate opportunism, many argue that “firms must be required to schedule their grant dates in advance” (Narayanan and Seyhun ((2008), p. 1910). Bebchuk and Fried ((2010), p. 1958) also urge that the “timing of equity awards to executives should not be discretionary. Rather, such grants should be made only on prespecified dates.” Practitioners concur: The Public Company Accounting Oversight Board urges auditors to watch for “highly variable grant dates,”¹ and Institutional Shareholder Services recommends that directors adopt a fixed schedule for option grants.² One reason for favoring scheduled grants is prior studies’ finding that executives do not earn abnormal returns around scheduled, in contrast to unscheduled, grants (Heron and Lie (2007), Sen (2009)).

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

We disagree. We report new evidence of significant abnormal price movements around scheduled CEO option grant dates after 2006 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 article makes 3 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 scheduled CEO option-grant dates (the line composed of circles). In the absence of opportunistic behavior, CARs should move randomly around 0; clearly, they do not. The V-shaped pattern around grant dates is consistent with some managers having taken action to ensure receipt of option grants with artificially low strike prices.

This new evidence of price manipulation is surprising given i) extensive regulatory changes, ii) consequent public scrutiny and enforcement, and iii) prior empirical findings indicating that the problem of CEO opportunism around grant dates was solved. We discuss each of these points below.

Regulation Fair Disclosure, adopted by the U.S. Securities and Exchange Commission (SEC) in 2000, prohibits managers from privately disclosing material information to analysts. This regulation effectively eliminated a channel

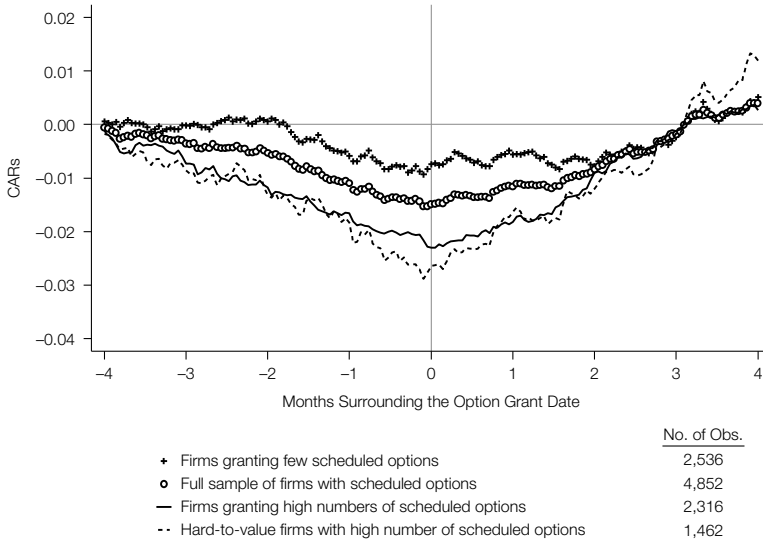
¹Public Company Accounting Oversight Board Staff Audit Practice Alert No. 1, 2006, p. 6.

²See the ISS US Corporate Governance Policy 2007 Updates issued in Nov. 2006.

³For evidence that abnormal returns around CEO grant dates decrease or disappear following changes in regulations and/or reporting, see Lie (2005), Heron and Lie (2007), (2009), Narayanan and Seyhun (2008), Bebchuk, Grinstein, and Peyer (2010), and Liu, Liu, and Yin (2014).

FIGURE 1
CARs around Scheduled CEO Stock-Option Grants, 2007–2011

Figure 1 shows the mean cumulative abnormal returns (CARs) from a Fama–French 4-factor model (Carhart (1997), Fama and French (1993)) including momentum in the months surrounding 4,852 scheduled chief executive officer (CEO) stock-option grants from 2007 through 2011. The factor model is estimated over the year ending 4 months before the option grant dates. CEO and grant information are from Equilar. Scheduled grants are defined as those that occur within ± 7 days of the anniversary of a grant to the CEO. The top line (pluses) shows cumulative abnormal stock returns for CEOs awarded a relatively low number of options (the lower half of the number of option grants in a given year). The middle line (circles) represents all CEOs with scheduled stock-option grants in the sample. The third line (solid) represents the upper half of CEOs in terms of the number of options awarded. The bottom line (dashes) represents CEOs facing the strongest incentives to act opportunistically (those who receive a high number of options at hard-to-value firms that are not selling shares around the grant date).



through which CEOs can quietly release information that might affect analysts' forecasts, as suggested by Aboody and Kasznik (2000) and Chauvin and Shenoy (2001). It forced the CEO instead to publicly release any such news, making the manner and content of an 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 2 business days and to post information about the grant on company Web sites the following day; previously, firms had 1 month to report a grant.⁴ Beginning in 2007, the SEC required management to disclose “the reasons a company selects particular grant dates for awards” and to state whether management granted options “in coordination with the release of material non-public information.”⁵ These rules attempted to restrict managers' ability to coordinate grant and news dates and were enforced by civil and criminal penalties (Bickley and Shorter (2009)).

⁴Before Aug 29, 2002, a firm could report either on the 10th day of the month following a grant on Form 4, or 45 days after its fiscal year-end on Form 5.

⁵SEC press release, “SEC Votes to Adopt Changes to Disclosure Requirements Concerning Executive Compensation and Related Matters,” July 26, 2006 (<https://www.sec.gov/news/press/2006/2006-123.htm>).

There is reason to think that these changes reduced managerial opportunism around grants. Since 2005, the federal government has investigated hundreds of companies, brought dozens of criminal cases against executives, won criminal convictions as well as almost \$1 billion in fines, and barred suspected wrongdoers from serving as officers of public companies. Journalists, academics, and governance advisors all pointed a spotlight at options and firm disclosures, and a wave of shareholder lawsuits alleged that executives manipulated option grants (Curtis and Myers (2016)). The American College of Trial Lawyers (2009) reported that thousands of companies launched internal investigations into their own option practices.

Prior research concluded that these changes were effective and documented that abnormal returns around option grants shrank after 2002 and disappeared after 2006. Heron and Lie (2007), (2009) show that abnormal returns before 2002 were concentrated in unscheduled option grants (grants made at irregular intervals) and decreased after 2002. Narayanan and Seyhun ((2008), p. 1944) argue that the SEC's new rules in 2006 made it even more difficult "to conceal dating games." Sen ((2009), p. 21) finds that spring-loading (delaying good news until after the grant) "completely disappeared." Bebchuk et al. ((2010), p. 2398) 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 at firms with scheduled options. But despite new regulation, scrutiny, enforcement, and empirical findings to the contrary, Figure 1 documents a suspicious recent pattern of abnormal returns around CEO stock-option grants.

Our second contribution is to document that these abnormal returns are larger when managers have the most to gain from manipulating a firm's disclosures and stock price. Prior research examines all CEOs who received option grants and concludes that abnormal returns are no longer a problem. But CEOs' incentives and ability to manage earnings and disclosures are not identical. We predict that CEOs who receive 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 (composed of plus signs) shows the CARs for CEOs receiving less than the median number of options (less incentivized) and the third line (the solid line) shows the CARs for those receiving more than the median number of options. Furthermore, the bottom line (dashes) shows that the greatest post-grant abnormal stock price increases occur precisely when managers have the strongest incentives and the greatest ability to manipulate a firm's stock price (i.e., when CEOs at hard-to-value firms receive a high number of scheduled options). We also find that abnormal returns are higher when a firm's chief financial officer (CFO) receives stock options at the same time as the CEO.

Our third contribution is to document several mechanisms that CEOs appear to have used in recent years to generate abnormal returns around grant dates. We find evidence that managers accelerate bad news before a grant (bullet dodging) and delay good news until after a grant (spring loading). 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 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 before an 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 reduce 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: Backdating may have merely increased CEO compensation; by contrast, 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 a corporate governance standpoint, we urge groups arguing for scheduled options to keep these incentives in mind. In the conclusion, we describe several ways boards can adjust their firms' CEO option grant policies to offset the perverse incentives described above.

Before describing our results, we emphasize that the V-shaped pattern in Figure 1 is the average of abnormal returns for many firms. With backdating, both the average and the individual-company returns tend to exhibit V-shaped price patterns, as each CEO could look backward and pick 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.

The article is organized as follows: Section II motivates the empirical predictions and describes the data used to test them. Section III discusses univariate

⁶Liu et al. (2014) also look at the relation between accruals and CEO option grants. Using a sample that consists of 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 article, they find that "the SOX mandatory stock option disclosure requirement effectively curbs CEO manipulation of stock prices in firms with scheduled option grants" (p. 668). They do not test for evidence of stock-price manipulation in the postbackdating period following the SEC-mandated disclosure changes in 2006. Our results show a relation between accruals management around CEO options and abnormal stock returns.

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

and multivariate evidence for the V-shaped pattern in abnormal returns. Section III also describes our robustness tests and explains our identification strategies to rule out 3 plausible alternative explanations for the abnormal return pattern: a mechanical relation in which firms award more options when the stock price is low, confounding earnings announcements, and optimal contracting practices. Section IV investigates mechanisms that managers could use to depress the stock price before stock option grants. Section V concludes.

II. Empirical Predictions and Data

This section motivates the empirical predictions and describes the data used in the analysis. The following discussion of predictions is based on intuitive arguments that mirror the formal predictions from a partial equilibrium model described in the [Appendix](#).

A. Empirical Predictions

A CEO can personally profit from any news or event that causes the firm's stock price to temporarily drop below its fundamental value before the scheduled option grant date, as each option will then have a lower strike price if, as is standard practice, it is issued at the money using the current stock price. Thus, scheduled CEO option grants create a unique monetary incentive for CEOs to emphasize, hasten, and/or manufacture negative news before the scheduled dates and to underemphasize or delay the reporting of good news until after these dates. The payoff to such price manipulation is proportional to the number of options granted (N) times the amount of the temporary decrease in the strike price. The relation is proportional, rather than exact, for several reasons: The CEO cannot immediately profit from the lower exercise price because of vesting requirements, many option awards specify blackout periods during which they cannot be exercised, it takes time for the stock price to return to its fundamental value, and the fundamental value varies over time. Thus, the benefit of manipulation is neither the overall value of the option grant nor its value relative to, say, salary. Instead, it is directly proportional to the temporary change in stock price times the number of options awarded.

Manipulation is less costly to the CEO when the stock price changes by small amounts and when the firm is hard for investors to value (H). The costs of manipulation, that is, costs associated with effort and 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.

This discussion, and the formal model reported in the [Appendix](#), suggest 2 specific empirical predictions: Among firms that grant scheduled CEO options, manipulation becomes more prevalent i) when the number of options granted is large and ii) when the firm is hard to value (or, more generally, when the costs of manipulation are low).

B. Variable Descriptions

Our empirical tests measure the number of options in 2 ways. The first empirical measure of N is calculated as $\ln(1 + \text{number of CEO options})$. The natural log is intended to deal with the right skew evident in the data, as some firms award large numbers of options. The measure is standardized such that a 1-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 idiosyncratic volatility. We measure idiosyncratic volatility as the standard deviation of daily market-adjusted returns, using the Center for Research in Security Prices (CRSP) value-weighted index over the 365-day period ending on the day of the grant. Chatterjee, John, and Yan ((2012), p. 245) argue that a high level of idiosyncratic volatility "indicates a larger degree of divergence of opinion" about firm value. In robustness tests, described in Section III, we explore alternative ways of identifying hard-to-value firms, as well as several alternative measures of costs that reduce the CEO's incentives to manipulate the stock price; we find results qualitatively similar to those obtained when using our main hard-to-value proxy.⁹

C. Data Sources and Measures

Our empirical tests focus on CEOs who received 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 for two reasons: i) its broad coverage: Equilar covers approximately 4,000 firms during each year in our sample period, whereas ExecuComp focuses only on Standard & Poor's (S&P) 1500 firms, and ii) its detailed information about CEO tenure, CEO ownership, insiders on the board, and CEO options, whereas Thomson Reuters lacks some of this information. Our analysis is limited to around 1,500 of the 4,000 firms because many firms do not grant CEO options and some firms covered by Equilar are not covered by 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 that the highest paid individual at the firm is the CEO. If a CEO received more than 1 option grant on the same day (e.g., several grants

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

⁹An additional cost of manipulation occurs if a CEO sells shares near the option grant date because of, for example, 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 (SEO)) 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.

with varying vesting periods), we consider them as 1 event and sum the number of grants.¹⁰

Following Aboody and Kasznik (2000), we consider a grant as scheduled if it occurs within 7 days of the prior-year grant's anniversary.¹¹ For robustness, we alternatively consider grants made within 1 business day (as in Heron and Lie (2007), (2009)) and within 15 days (similar to Fich, Cai, and Tran (2011), Sen (2009)) of the anniversary as scheduled. Unscheduled grants are defined as those that occur outside the 15-day anniversary window. To ensure that the analysis is based on typical public firms, we also require the stock price to be at least \$5 as of 90 days before the grant. Our results are qualitatively similar if we instead require a stock price of at least \$1.

We examine option grants made after the backdating scandal, after the subsequent enhanced SEC reporting requirements, and after the Financial Accounting Standards Board (FASB) 123(R) requirement to expense options at their fair value. Thus, our primary data set runs from Jan. 2007 to Dec. 2011, when the Thomson Reuters Company Issued Guidance (CIG) database was discontinued. We also consider pre-2007 grant data for comparative purposes.¹² Table 1 reports the number of firms making CEO option grants and the number of CEO option grants awarded each year that are categorized as scheduled (within ± 7 days of the anniversary) and unscheduled (more than ± 15 days of the anniversary).

Two trends deserve comment. First, the proportion of grants that are scheduled grew significantly since the 2005 backdating scandal: from 45.4% in 2005 to almost 65.9% in 2010.¹³ The growth in scheduled option grants reflects the advice of many governance advisors and of the Public Company Accounting Oversight Board that unscheduled options create a risk of backdating. The second trend worth noting in Table 1 is the decreasing overall reliance on CEO stock option grants over time. This trend is consistent with Hayes, Lemmon, and Qui (2012), who find that the adoption of FASB 123(R) in 2005 increased the cost of option grants. Some firms have replaced stock option grants with stock grants (typically time restricted or performance based), as documented by Frydman and Jenter (2010).

¹⁰Because of possible backdating, researchers using pre-2007 data allow 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 2 business days. In 2011, for example, more than 95% of scheduled grants were reported on time; approximately 97% were reported within 3 business days. Many of the apparently late reports were either i) contingent grants (grants conditionally promised but earned and then awarded in the future) or ii) amendments to a timely SEC filing, such as a corrected vesting period.

¹¹Most of the grants in our sample are categorized as scheduled if they fall near the anniversary of a grant in the prior year. However, this approach miscategorizes a grant during the first year 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 7 days of the grant date in the following year.

¹²Our early sample period begins in Jan. 2003, just after SOX.

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

TABLE 1
Number of CEO Option Grants by Year and Type

Table 1 presents the number of scheduled and unscheduled chief executive officer (CEO) option grants at sample firms. The sample consists of firms whose CEO received stock options between Jan. 2003 and Dec. 2011 and about which data were available in both Equilar and the Center for Research in Security Prices (CRSP). Column 2 reports the number of firms making CEO option grants, column 3 reports the number of scheduled grants, and column 5 reports the number of unscheduled grants. Scheduled grants are made within 7 days of the anniversary date of grants to the CEO in the prior year. Unscheduled grants occur more than 15 days from the anniversary date. Some firms make more than one grant to the CEO in a given year.

	No. of Firms Granting CEO Options	No. of Option Grants Scheduled within ± 7 Days of Anniversary	% of Option Grants Scheduled within ± 7 Days of Anniversary	No. of Unscheduled Option Grants
<i>Panel A. Comparison Period</i>				
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
Total	6,556	3,886		3,312
<i>Panel B. Sample Period</i>				
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
Total	7,003	4,852		2,515

Though stock option grants occur across all months in our sample, approximately 44% occur in January or February. Our main sample, described in Panel B of Table 1, consists of 7,003 firm-years characterized by 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 option grant dates, we look for evidence of abnormal price movements around the grant date using CARs as our dependent variable, measured as the cumulative difference between actual daily returns and the predictions of a Fama–French 4-factor model that includes momentum (Carhart (1997), Fama and French (1993)). The parameters of the 4-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 market reactions to news over whose timing or substance the CEO has some influence, including earnings guidance announcements, 8-K filings, and quarterly earnings announcements. The number of analysts and expected earnings per share (EPS) come from the Institutional Brokers' Estimate

¹⁴We winsorize the estimated 4-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 and 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.

System (IBES). The control variables in the regressions, including firm assets, net income, operating cash flow, research and development (R&D), and selling, general, and administrative (SG&A) expenditures, and actual EPS and earnings announcement dates, are from the Compustat database.

Data on management's earnings guidance comes from the Thomson Reuters First Call CIG database. We gather Form 8-K filing dates from the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) Web site (<https://www.sec.gov/edgar/searchedgar/companysearch.html>). We use Securities Data Company (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 who sell and buy shares in the open market, and on the presence of a large stockholder (defined as controlling 30% or more of the shares).

III. CEO Opportunism

This section discusses evidence of abnormal returns using univariate and multivariate tests. We use several identification strategies to rule out alternative explanations and document the robustness of our main findings.

A. Univariate CARs

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

Column 1 in Panel A of Table 2 reports mean abnormal returns and their statistical significance for the CEOs receiving the fewest options (below median); column 2 reports the same results for CEOs receiving the most options (above median). The CEOs represented in columns 1 and 2 both have incentives to manipulate prices around grant dates, but those who receive more option grants clearly have stronger incentives. The abnormal returns reflect these absolute and relative incentives. CEOs with the most options experience negative abnormal returns before the grant and positive abnormal returns after the grant. For example, above-median firms experience on average -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 < 0.01 and 0.05 ,

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

¹⁶Figure 1 and Panel B of Table 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 observations after requiring prices greater than \$5 and data from Compustat, IBES, and Thomson Reuters.

TABLE 2
Statistical Tests of CARs for Various Event Windows around Scheduled CEO Option Grants

Table 2 presents cumulative abnormal returns (CARs) for firms with scheduled chief executive officer (CEO) stock option grants between Jan. 2007 and Dec. 2011. Panels A and B report mean CARs for various event windows; Panel C reports differences between pre- and post-grant CARs. Event windows are defined relative to the scheduled CEO option grant date. Columns 1 and 2 represent 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 distinguish hard-to-value (H) firms from non-hard-to-value firms. Hard-to-value firms are those 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 represents hard-to-value firms with above-median numbers of CEO option awards. In Panels A and B, asterisks represent statistical significance from t -tests for whether the mean CARs are equal to 0; in Panel C, asterisks represent the significance of t -tests for whether the differences in mean CARs (post-grant returns minus pre-grant returns) are equal to 0. 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. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Event Window	Number of Options (N)		Hard-to-Value (H)		High N, H
	Low N	High N	Not H	H	
	1	2	3	4	5
<i>Panel A. Event Windows</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. 30-Day Event Windows</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. Post-Grant Minus Pre-Grant Returns</i>					
CAR(1, 120) > CAR(-120, 0)	0.007	0.034***	0.011***	0.041***	0.070***
CAR(1, 90) > CAR(-90, 0)	0.006	0.030***	0.012***	0.029***	0.050***
CAR(1, 60) > CAR(-60, 0)	0.005	0.023***	0.009***	0.025***	0.048***
CAR(1, 30) > CAR(-30, 0)	0.004	0.014***	0.002	0.024***	0.038***

respectively). For all 8 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 CEOs receiving above-median numbers of grants (column 2) than for those receiving relatively few grants (column 1). Abnormal returns are thus greater for CEOs with the most to gain from pre-grant declines or from post-grant increases in stock price.

Columns 3 and 4 in Table 2 present data on firms that are and are not hard to value (H). Hard-to-value firms exhibit larger significant negative CARs before the grant date than non-hard-to-value firms, and positive CARs afterward. The rightmost column in Table 2 reports pre- and post-grant CARs for the subset of firms whose CEOs receive a high number of options and manage hard-to-value firms. This is the subset that we predict will show the strongest evidence of manipulation; it 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, CAR(-120, 0) is -3.5% and CAR(1, 120) is 3.4%.

Panel B of Table 2 provides evidence of manipulation in nonoverlapping 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 appear in the 60 days before and 30 days after the grant; there is also some evidence of abnormal returns 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-, and 120-day horizons.

Panel C of Table 2 presents evidence that returns are significantly lower before scheduled grants than after, as would be expected if CEOs depress the stock price before a scheduled grant. For instance, we find that for the most incentivized CEOs (column 5), the difference between $CAR(1, 90)$ and $CAR(-90, 0) = 0.023 - (-0.027) = 0.050$; this 5% swing in abnormal returns is statistically significant (p -value < 0.01).¹⁷ This pattern is strongest for the motivated subsets in columns 2, 4, and 5.

In short, the striking abnormal returns in Figure 1 are consistent with self-interested, rather than value-maximizing, disclosure choices. Table 2 confirms that these returns are statistically significant, exhibit 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.

B. Multivariate CARs

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 afterward. If CEOs delay good news, for example, their stock will exhibit positive abnormal cumulative returns following the grant. But if CEOs simply accelerate the reporting of bad news, their stock prices will fall before the grant but will not necessarily exhibit positive CARs after the grant. Thus, in testing for the round-trip abnormal return, we account for both scenarios.

The basic form of the regression is:

$$\begin{aligned}
 (1) \quad \text{ROUND_TRIP_CAR}_i &= \alpha + \beta_1(\text{CEO_OPTIONS}_i) \\
 &+ \beta_2(\text{HARD_TO_VALUE}_i) \\
 &+ \sum_{k=3}^8 \beta_k x_{i,k} + \sum_{l=2}^{48} \delta_l \text{IND}_{i,l} \\
 &+ \sum_{y=2}^4 \gamma_y Y_{i,y} + \sum_{q=2}^4 \theta_q Q_{i,q} + \varepsilon_i,
 \end{aligned}$$

Our focus is on the first two variables: CEO_OPTIONS and HARD_TO_VALUE.

¹⁷Huang 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.

The two main independent variables are described earlier; x_i represents 6 additional control variables that may affect a CEO's willingness or ability to engage in self-interested behavior: percentage 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 two reasons. First, governance and monitoring efforts often focus on preventing managers from reporting inflated measures of firm performance; in our application, by contrast, managers have an incentive to deflate earnings and to be conservative before the grant date. Second, analysts may dissuade CEOs from such strategic disclosures or, alternatively, may unwittingly help propagate whatever news and information the CEO strategically releases over time. IND, Y and Q are a series of indicator variables that control for industry, year, and quarter fixed effects, respectively. We use Fama and French's (1993) 48 industry classifications.

The results in column 1 of Table 3 are consistent with our first prediction. For example, a 1-standard-deviation increase in the underlying variable for CEO_OPTIONS_N is associated with a statistically significant 3.0% larger swing in CARs. To facilitate interpretation of the relation between higher numbers of options and abnormal returns, column 2 reestimates the regression with an indicator for whether the award is higher than the median. Moving from the low group to the high group is associated with a 2.7% increase in the round-trip 90-day CAR.

The results in columns 3–6 of Table 3 provide support for our prediction that increasing costs of manipulation discourage opportunism. Abnormal returns should be larger if a firm is hard to value, as 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 at hard-to-value firms.

In column 3 of Table 3, when we include N and H , both effects remain statistically significant, consistent with our predictions.¹⁸ Whereas columns 1–3 use a ± 90 -day cumulative abnormal-return window, columns 4–6 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 begins several months before and ends several months after the option grant date; the pattern tends to be strongest when CEOs have both the incentives and 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 impact on CEO wealth, we take the mean number of options received by CEOs in our sample who receive more than the median number (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

¹⁸Table 3 reports that the control variables are generally not significant in explaining returns. Collectively, the independent variables, all of which are publicly known at time 0, explain 2%–4% of the variation in CARs around stock grants.

TABLE 3
CARs around Scheduled CEO Option Grants as a Function of CEO Incentives

Table 3 reports the relation between the chief executive officer's (CEO) incentive to manipulate stock price and the abnormal returns around scheduled grants. The sample consists of firms with scheduled CEO stock option grants between 2007 and 2011. Coefficients are from ordinary least squares regressions. The dependent variable in columns 1–3 is the cumulative abnormal return (CAR) for the 90-day period after the scheduled CEO option grant date minus the CAR in the 90 days before the grant; the dependent variables in columns 4–6 use 30, 60, and 120 days, respectively, instead of 90 days. The CARs are 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. CEO_OPTIONS_N is the natural log of 1 + the number of options awarded to the CEO standardized such that a 1-unit increase is associated with a standard-deviation increase in the underlying variable. CEO_OPTIONS_HIGH_N is an indicator that the number of CEO options in a given grant is in the top half of numbers of CEO options granted by firms in the same year. Hard-to-value firms are those in the top half of grant-giving firms in terms of idiosyncratic return volatility over the prior year. %INSIDER is the percentage of board members identified as insiders by Equilar. #ANALYSTS is the number of analysts who follow the firm, as measured by the Institutional Brokers' Estimate System (IBES) using the statistical period ending closest to the middle of the calendar year in which the option grant is awarded. LARGE_SHAREHOLDER indicates the presence of a shareholder possessing 30% or more of the stock. CEO_TENURE is the number of years the CEO has been in office. CEO_OWNERSHIP is the percentage of outstanding shares owned by the CEO. FIRM_SIZE is the natural logarithm of 1 + total assets. Returns are winsorized at the 1% level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Errors are clustered by firm. *p*-values appear in parentheses below coefficients.

	90-Day			30-Day	60-Day	120-Day
	1	2	3	4	5	6
CEO_OPTIONS_N	0.030*** (<0.001)		0.028*** (<0.001)	0.015*** (<0.001)	0.020*** (<0.001)	0.033*** (<0.001)
CEO_OPTIONS_HIGH_N		0.027** (0.012)				
HARD_TO_VALUE_H			0.023* (0.067)	0.029*** (<0.001)	0.025** (0.014)	0.039** (0.012)
%INSIDER	0.003 (0.661)	0.003 (0.692)	0.002 (0.728)	0.005 (0.180)	0.002 (0.710)	<−0.001 (0.991)
#ANALYSTS	−0.001 (0.122)	−0.001 (0.140)	−0.001 (0.141)	<−0.001 (0.437)	<−0.001 (0.763)	−0.001 (0.512)
LARGE_SHAREHOLDER	−0.004 (0.909)	−0.014 (0.703)	−0.007 (0.838)	−0.015 (0.441)	−0.021 (0.409)	−0.025 (0.569)
CEO_TENURE	0.001 (0.333)	0.001 (0.408)	0.001 (0.330)	0.001*** (0.002)	0.001 (0.176)	0.001 (0.434)
CEO_OWNERSHIP	0.004 (0.697)	0.007 (0.534)	0.004 (0.727)	−0.003 (0.698)	0.005 (0.679)	0.007 (0.465)
FIRM_SIZE	<−0.001 (0.965)	0.003 (0.506)	0.002 (0.623)	0.002 (0.530)	0.001 (0.812)	<−0.001 (0.959)
Constant	−0.022 (0.659)	−0.056 (0.232)	−0.049 (0.340)	−0.045* (0.080)	−0.030 (0.454)	−0.057 (0.383)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Quarter fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of obs.	4,045	4,045	4,045	4,045	4,045	4,045
R ²	0.033	0.029	0.034	0.027	0.025	0.038

Tables 2 and 3 for incentivized CEOs. This rough calculation suggests that the mean CEO in this group will receive \$292,174 more each year by achieving slightly lower strike prices on their options.

This \$292,174 payoff for incentivized CEOs is a “paper” profit, because the calculation implicitly assumes that the CEO could 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 is some fraction of this value. 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 (1973) valuation of a 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

These estimates are conservative for the subset of CEOs who actually try to manipulate the stock price around grants because the calculations treat all incentivized CEOs as if they are 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 fraction of scheduled option grants since 2006 involve stock-price manipulation, the subset of CEOs who engage in this strategy would earn a multiple of the amount we estimate above using an average of all CEOs in our sample.

C. Alternative Explanations and Identification Strategies

The average abnormal returns shown in Figure 1 are striking and statistically significant, and they exhibit 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 grant dates. This section considers 3 alternative explanations for the results and additional robustness tests.

The results related to the alternative explanations and robustness tests appear in Table 4. Most of those results, unless otherwise noted, come from regressions like the one in column 3 of Table 3, but each row changes 1 or 2 of the assumptions to show the robustness of our results. Because of space limitations, we report only the coefficients directly related to our main empirical predictions about the costs and benefits to the CEO of manipulation (i.e., β_1 and β_2 from equation (1)). The 2 coefficients from column 3 of Table 3 appear in row 1 of Table 4 for purposes of comparison.

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: Boards grant more options in response to drops in the stock price shortly before the grant date. Hall (1999) shows that some firms follow a “fixed-value” multiyear compensation strategy, suggesting a possible mechanical relation between N and negative return movements before the grant. For these fixed-value firms, some of the correlation we document between the number of options granted and the pre-grant returns (left half of Figure 1) could then be mechanically driven rather than evidence of manipulation.

We rule out this alternative explanation using 2 identification strategies. First, like Shue and Townsend (2017a), (2017b), we show that the relation between abnormal returns and the number of options granted exists even after eliminating any mechanical relation. Specifically, we document V-shaped returns around the scheduled grant dates even in the subset of observations where 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 in Table 4 documents a significant correlation between N and the round-trip abnormal return in this subset of

¹⁹Edmans, Goncalves-Pinto, Wang, and Xu (2014) report a gain of \$14,504 to the average CEO who strategically discloses 1 discretionary news item around the vesting, as opposed to the granting, of options.

TABLE 4
Identification and Robustness of Key Regression Coefficients

Table 4 presents the robustness of our main result. The coefficients are derived from regressions of cumulative abnormal returns (CARs) on measures related to the benefits and costs to the chief executive officer (CEO) of 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. For comparative purposes, row 1 shows the coefficients from column 3 in Table 3. In rows 2–31, we perturb 1 or 2 aspects of the base-case regression as noted in the last column. Returns are winsorized at the 1% level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. Errors are clustered by firm.

	Coefficient for CEO Options (N)	Coefficient on Hard-to-Value (H) or Other Proxies Related to the Cost of Manipulation	No. of Obs.	Description of Robustness Test
1	0.028***	0.023*	4,045	Base model: Column 3 of Table 3
2	0.023***	0.000	1,863	Number of options granted less than or equal to prior year's number
3	0.013**	0.015	4,045	Scheduled grants, new dependent variable: CAR(1,90)
4	-0.015***	-0.008	4,045	Scheduled grants, new dependent variable: CAR(-90,0)
5	0.028***	0.030**	2,850	Grant date is not close to quarterly earnings announcement
6	0.002	-0.023**	4,037	6 months after scheduled grant dates (pseudo grant date test)
7	-0.013*	-0.026*	1,807	Unscheduled grants, new dependent variable: CAR(-90,0)
8	0.011	0.009	1,808	Unscheduled grants, new dependent variable: CAR(1,90)
9	0.007*	0.014	3,408	Scheduled grants, new sample 2003–2006 period
10	0.034***	0.052***	2,559	CFO receives options in same week
11	0.032***	0.022*	3,706	Other directors or officers receive grants in same week
12	0.027***	-0.005	2,427	Grants scheduled within ± 1 day
13	0.029***	0.022*	4,688	Grants scheduled within ± 15 days
14	0.032***	0.029**	4,430	Stock price required to be at least \$1
15	0.028***	0.025**	3,973	Stock price required to be less than \$100
16	0.036***	0.026*	2,831	Sample limited to S&P 1500 firms
17	0.031***	0.024*	3,526	Form 4 filed within 2 days of grant
18	0.031***	0.023*	3,731	Strike price is set close to market price
19	0.029***	0.016	1,419	Base model: Column 3 of Table 3, using ExecuComp sample
20	0.035**	0.041**	890	Base model: Column 3 of Table 3, using ExecuComp sample, Form 4 filed within 2 days
21	0.027***	0.028**	4,143	Base model: Column 3 of Table 3, using Thomson Reuters sample
22	0.026***	0.031**	3,903	Base model: Column 3 of Table 3, using Thomson Reuters sample, Form 4 filed within 2 days
23	0.034***	0.030**	4,045	Scheduled grants, new dependent variable: Cumulative round-trip raw returns
24	0.029***	0.022*	4,045	Base model with additional control variable for shares sold
25	0.027***	0.022*	3,680	Base model without observations where CEOs sold shares within 3 months of grant
26	0.029***	0.023**	4,045	Base model using CEO buying to capture the cost of manipulation
27	0.028***	0.031**	4,045	Base model using company buying to capture the cost of manipulation
28	0.029***	0.023*	4,045	Base model using idiosyncratic volatility to capture the cost of manipulation
29	0.032***	0.002	3,881	Base model using standard deviation of analysts' forecasts to capture the cost of manipulation
30	0.035***	0.019	1,848	Base model focused only on subset of grants made in 1st quarter
31	0.024***	0.021	2,197	Base model focused on subset of grants made in 2nd, 3rd, and 4th quarters

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 relation between N and price drops by focusing only on the post-grant returns, CAR(1,90) (i.e., right half of Figure 1). That is, if our results are due to boards increasing N after the price drops, any potential mechanical relation would occur before the grant date and not afterward. In the absence of manipulation, and given the scheduled nature of the grants, it is difficult to imagine that a board could anticipate the timing of a stock price increase a year

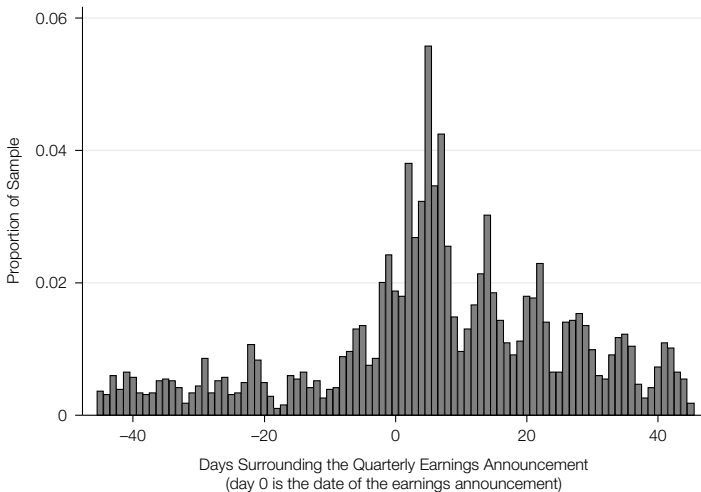
in advance. In row 3, we show that higher N is correlated with higher post-grant abnormal returns and that this relation is significant at the 5% level. That is, after conditioning on a date known a year in advance, we still find positive abnormal post-grant returns; furthermore, the magnitude of the returns is consistent with the CEO's incentives to manipulate the stock price.

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 opportunism.²⁰ However, these announcements also offer a convenient

FIGURE 2
Distribution of Scheduled CEO Stock Option Grants
Relative to the Nearest Earnings Announcement

Figure 2 shows the distribution in time of scheduled chief executive officer (CEO) stock-option grant dates around the nearest quarterly earnings announcement dates. Day 0 represents the date of the earnings announcement. The figure is based on a sample of firms using scheduled CEO grants between 2007 and 2011. Data on executive option grants are from Equilar; data on earnings are from Compustat.



²⁰As an example, consider Alcoa's 2009 definitive proxy 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 (<https://www.sec.gov/Archives/edgar/data/4281/000119312509054514/ddef14a.htm>).

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 to CEO option grant dates allows for the possibility that the pattern of returns illustrated in Figure 1 is driven by earnings announcements rather than scheduled grants.

We use 2 identification strategies to eliminate the potential confounding influences of earnings announcements. First, we reestimate the results in Table 3 after eliminating grants within 7 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 row 5 of Table 4). In untabulated tests, when we further eliminate grants within 15 days of a potential confounding earnings announcement, we get results qualitatively similar to those reported in Table 3. Second, as reported in row 6 of Table 4, we document that the firms that experience abnormal returns around scheduled option grant dates do not experience abnormal returns around “pseudo grant dates” that occur 6 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 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 is, making it a test of whether such 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 returns on the pseudo dates, which is the opposite of what our model predicts for the actual event dates. We note that quarterly controls are included in the Table 3 specifications and in the robustness specifications in Table 4.

It is also worth comparing our results with the post-earnings-announcement drift literature. According to that literature, a negative drift in returns is expected to follow a negative earnings surprise, and the inflection point in returns occurs at the time of the earnings announcement. In contrast, we find that i) the inflection point in our sample lines up with the option grant date, not the earnings announcement date, and ii) as discussed in Section IV.B, negative earnings surprises before a grant lead to positive abnormal post-grant returns, the exact opposite of the documented negative drift after weak earnings news. This result further confirms that our results are not driven by their proximity in time to earnings announcements and that in fact they are at odds with what is expected from the post-earnings announcement drift literature.

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 sub-optimal, and the new stock-option grants corrected this problem, 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 implausible because it requires the market to 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, to gradually reward firms for having better incentives. Such a predictable pattern and gradual reaction seems unlikely. Our identification strategy to rule out this alternative involves testing whether abnormal returns are associated with both scheduled and unscheduled grants in recent years and whether they are associated with scheduled grants in both 2003–2006 and 2007–2011. Under improved contracting, both unscheduled and scheduled grants would incentivize CEOs, but as Table 4 shows, 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. But in our 2003–2006 sample (row 9), we find a much smaller relation between N and returns (β_1 drops from 0.028 to 0.007), and the significance of the relation is much weaker 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, and recent changes in regulations, suggest a temporal break if an unintended consequence of the elimination of backdating is an increase in the manipulation of scheduled grants.

D. 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.

1. Other Officers Receiving Grants, Alternative Definitions of Scheduled Grants, and Different Samples

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

In row 10 of Table 4, 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, both key coefficients increase. The row 11 subsample consists of CEO grant dates when at least one other officer or director receives options, with little change to the base-case results.

In our base case, we define scheduled grants as those that occur within ± 7 days of the date of the prior year's grant, and we eliminate stocks with a price below \$5 per share 90 days before the CEO option grant. Rows 12 and 13 of Table 4 define scheduled grants as within ± 1 and ± 15 days of the anniversary. Using these alternative definitions results in qualitatively similar conclusions, though H becomes insignificant in one specification when using the smaller sample; our

conclusions remain qualitatively unchanged. The results become stronger when we lower the stock price cutoff to \$1 rather than \$5, and when we exclude stock prices above \$100 (see rows 14 and 15).

If we limit the results to S&P 1500 firms (row 16 of Table 4), our basic finding with regard to N and H is stronger. More than 70% of our firm-year observations are from S&P 1500 firms; opportunistic use of option grants is not just a small-firm phenomenon.

2. Backdating and at-the-Money Options

We also confirm that our key results are not attributable to continued backdating. In our analysis, the stated grant date is treated as the actual grant date under the assumption that it was promptly reported to the SEC. In some cases, however, the firm took longer than the mandated 2 days to report to the SEC. In those cases, backdating rather than price manipulation could be causing part of the V pattern. Row 17 of Table 4 excludes all late filers, eliminating 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 et al. (2010), we identify prior backdating firms (those with so-called “lucky CEOs”) as those that reported pre-2007 CEO option grants on dates when the lowest stock price within a month of the reported award date was posted. We find no 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

Internal Revenue Code Section 162(m) encourages issuance of at-the-money option grants (see Heron and Lie (2007)). Hence, in row 18 of Table 4, we limit our sample to options whose strike price is i) within 1% of the closing price on the grant date, ii) within 1% of the closing price on any of the prior 5 days, or iii) within 1% of the average closing price over the prior week, and we continue to find coefficients similar to our main specification.

3. Different Data Sources and Raw Returns

In rows 19–22 of Table 4, we use CEO option grant information from Thomson Reuters and ExecuComp rather than Equilar.²³ The Thomson Reuters sample does not provide information on CEO tenure, ownership, or board insiders; thus, these controls are dropped from the regressions. The ExecuComp sample uses ExecuComp information to identify the CEO, grant dates, CEO ownership, and tenure. Our main findings remain consistent whether the data are drawn from

²¹To 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 the inability to match some firms in the Equilar sample with firm identifiers in the Thomson Reuters data.

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

²³As 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 on the prior quarter's earnings surprise be available. The data filters we use with the Thomson Reuters data are similar to earlier backdating papers (see, e.g., Heron and Lie (2007), Narayanan and Seyhun (2008)).

Equilar, Thomson Reuters, or ExecuComp, though the H coefficient loses significance when using the smaller ExecuComp sample in one specification.

In row 23 of Table 4, 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 1- or 3-factor model yields results similar to those of the 4-factor model in our row 1 base case.

4. Controlling for Confounding Sales Events

Although a 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 the same time. Row 24 of Table 4 therefore adds 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. Row 25 eliminates all observations where the CEO sold stock within 3 months of the grant dates, and our main results remain significant.

5. Alternative Measures for the Costs Associated with CEO Opportunism

Rows 1–25 of Table 4 use a hard-to-value measure (H) to identify CEOs who face relatively low costs of manipulation. Rows 26–29 use alternative approaches to identify firms with low manipulation costs.

In Rows 26 and 27 of Table 4 we use CEO_BUYING and COMPANY_BUYING in lieu of the hard-to-value proxy. CEOs who sell 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 were temporarily low. We therefore examine whether abnormal returns around grant dates are related to the CEO's stock sales or purchases.

Column 2 in row 26 of Table 4 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 for CEOs who neither purchase nor sell shares and for the handful of cases in which the CEO has mixed incentives because of simultaneous buying and selling. As row 26 reports, 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 row 27 of Table 4, we examine COMPANY_BUYING as a proxy for manipulation costs. If a company's stock price were temporarily low, shareholders (including managers who own shares) would be harmed by an SEO and benefited 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 equal to -1 for companies issuing new shares in a 3-month window of the grant, $+1$ for companies repurchasing shares during that period, 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

In rows 28 and 29 of Table 4, the coefficients reported in column 2 are again based on measures of the difficulty of valuing the firm. 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 in the case of 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 analysts' earnings forecasts. The coefficients for H using both of these alternative measures are positive, but in the second case the coefficient is not significant. Focusing on the results across rows 26–29, in 3 of the 4 robustness tests the coefficient on the variable intended to capture decreasing costs of manipulation is 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 idiosyncratic return times the share price and number of options $[(STD)(P)(N)]$; second, we calculate the difference between the high and low closing stock prices times the number of options awarded $(P_H - P_L)(N)$. These proxies combine a measure of the potential payoff with a measure of 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 is estimated using the residuals from a 4-factor model estimated over this period using daily data. Using either of these alternative proxies for the costs and benefits of manipulation yields results similar to those reported in Tables 2, 3, and 4.

6. Impact of Auditors

Tables 3 and 4 include quarterly fixed effects; thus, our main conclusions are net of quarterly effects. As Sections I and II demonstrate, CEOs are incentivized to temporarily lower their stock price before an option grant. Section IV provides evidence that the mechanisms used to accomplish this are earnings management, guidance, and surprises. However, manipulating earnings during the fourth quarter may be more difficult than in 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 fourth quarter, CEO option grants made during the first quarter should have "fairer" strike prices and thus show less evidence of abnormal returns than grants made in the other three quarters.

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

Rows 30 and 31 of Table 4 compare grants made in the first quarter to those made in the remaining 3 quarters. Both samples show evidence of opportunism.²⁵ The results for N are statistically significant and the coefficients for H are positive, as predicted, but not statistically significant, perhaps because of the loss of power from splitting the sample. Section IV follows up on this finding and suggests 2 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 earnings guidance. That is, the opportunism we find may not require any fourth-quarter financial-statement manipulation. Second, although we find evidence consistent with some accruals management, even in the audited fourth-quarter statements, the accruals management that occurs before scheduled grants understates rather than overstates earnings. Nelson, Elliott, and Tarpley (2002) note that auditors have greater incentives to prevent overstatements than understatements and thus are more likely to require changes to reported earnings if managers are using earnings management to overstate rather than understate earnings.

IV. Mechanisms

This section investigates several mechanisms that CEOs could use to achieve lower strike prices on scheduled grants: To do so, 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 empirical approaches: i) an event study, to determine whether company news tends to generate negative market reactions before and positive market reactions after the grant dates, and ii) 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 the period in question. Sections IV.A and IV.B describe these tests in more detail.

A. Event Studies of News around the Grant Dates

We examine investor reactions to 3 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 after the grant as grant dates are scheduled a year in advance.²⁶ Investor reactions to these disclosures

²⁵Because we are interested in how earnings announcements may be used to temporarily lower a strike price, we define the fourth quarter as the time between the third- and fourth-quarter earnings announcements, rather than the end-of-quarter dates.

²⁶Our documentation that some firms time news releases around the granting of stock options complements Edmans et al. (2014), who document news manipulation around the vesting of stock options.

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 whose timing, content, and/or tone the CEO has some control. Doing so allows us to focus on mechanisms: CARs around specific news releases are easily attributable to their content and tone, whereas the multimonth CARs used in the earlier tests (though 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. Between these regular reports, firms have some discretion about the timing and announcement of new developments disclosed using Form 8-K.²⁷ Panel A of Table 5 reports 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 whose CEOs receive the most options elicit negative market reactions in the months before the grant and positive reactions in the subsequent months, consistent with opportunistic disclosures or investment timing.

TABLE 5
Announcement Returns around 8-K Filings, Quarterly Earnings Announcements, and Company-Issued Guidance

Table 5 examines possible mechanisms for the cumulative abnormal returns (CARs) we observe. 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 3 months before and after scheduled chief executive officer (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 CARs from 1 business day before the event date to 1 day after, using a 4-factor model. Hard-to-value firms are those in the top half of grant-giving firms in terms of idiosyncratic returns over the prior year. One-sided p -values are reported in the rightmost 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. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Sample	No. of Event Dates before Grant	No. 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

²⁷ As a consequence of SOX, in 2004, the SEC increased the number of events requiring Form 8-K disclosure and shortened the reporting period to 4 days after any material event. In some cases, 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.

For example, for firms with CEOs who receive more than the median number of options (row 3), the average 3-day cumulative abnormal event return is -0.06% if the 8-K was announced within the 3 months before a CEO grant and a positive 0.23% after such a grant. 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.

Furthermore, as predicted by our model, this return difference increases when the cost of CEO opportunism is low. Row 1 of 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).

Panel B of Table 5 reports the 3-day abnormal returns surrounding quarterly earnings announcements that occur within 3 months of a CEO option grant. Although the average 3-day event returns for CEOs' receipt of more than the median number of options (row 3 in Panel B) in the months before the grant are positive (0.03%), they are significantly smaller than after the grant date; the difference is statistically significant and, as predicted by the model, it increases when the firm is hard to value. Row 4 in 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 (row 2 in Panel B). 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 of Table 5 reports similar findings for company-issued guidance, which tends to be associated with negative event returns before the grant date and positive returns afterward, 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 (row 2 in Panel C).

The pattern is consistent: In the 3 event studies, CEOs motivated by high numbers of scheduled options tend to release bad news (or news that is perceived as bad) before a scheduled grant and good news afterward. This effect is larger on average when CEOs face lower manipulation costs (when the firm is hard to value). There is no reason to think that these 3 events are the only possible mechanisms that CEOs might use to create the abnormal returns documented in Tables 2–4. The fact that we observe statistically significant differences for all 3 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 in 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 to be the result of the average firm in our sample experiencing 1 or more extra bad-return days before the scheduled grant or 1 or more extra good-return days afterward, consistent with the idea that CEO self-interest affects disclosure decisions.

B. Post-Grant Returns after Previous Earnings-Depressing Events

To identify possible mechanisms, we also look for evidence that pre-grant bad news (e.g., earnings-depressing accounting choices, negative earnings guidance, or earnings management) is linked to higher post-grant returns. The literature on post-earnings-announcement drift typically suggests one would expect negative earnings surprises to 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 5 specific disclosures whose timing and/or content the CEO can influence, and that could be used to deliver negative news to the market in the months before the scheduled grant dates. The 5 disclosures are measures of accruals-based (negative) earnings management, negative earnings guidance, negative earnings announcement surprises, negative real-earnings management, and negative 8-K filings.²⁸ The 5 measures we use to identify manipulation-related activities in the prior quarter are as follows:

EMGT_ACCRUALS (–) is an indicator variable for firms with evidence of negative accruals management in the quarter immediately before the scheduled option grant. McAnally, Srivastava, and Weaver (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.

GUIDE (–) is an indicator variable for firms with negative company-issued earnings guidance revisions in the 3 months before the scheduled options grant. Negative earnings guidance events are identified using managerial guidance releases recorded in First Call's CIG database and are identified as any management guidance event that results in the consensus First Call earnings estimate being lowered.²⁹

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, Lim, and Teoh (2009) and Dellavigna and Pollet (2009), we identify negative earnings surprises as quarterly earnings where the $(\text{actual quarterly EPS} - \text{expected quarterly EPS})$ is negative.

²⁸Cohen, Dey, and Lys (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.

²⁹See Chuk, Matsumoto, and Miller (2013) for a description of First Call's CIG data, including coverage limitations. This data set was discontinued after Dec. 2011.

8_K_CAR (–) is an indicator variable for firms that release bad news before the scheduled grant date. It is equal to 1 for firms with negative mean 3-day CARs around 8-K filing dates that occur within the 3-month period before the grant date. CARs are measured from 1 day before to 1 day after a filing date.

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 3 models to form an aggregate measure of real-earnings management. The indicator is set to 1 for firms whose sums are in the upper half of the distribution. See Gunny for a detailed description of these models.

Others have noted that certain accounting choices are more likely preceding CEO grants. For example, Baker, Collins, and Reitenga (2009), Cohen et al. (2008), and McAnally et al. (2008) all 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 before 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 positive and significant abnormal post-grant returns. That is, prior research using pre-2006 data has indicated that some CEOs try to increase their 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 presents evidence consistent with success in CEOs' 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 they are weak (Panel B for low N and not H). The analysis in Table 6 tests: i) whether post-grant abnormal returns are statistically positive following the 5 negative news events described above and ii) whether these returns differ when a scheduled grant soon follows the bad news. Finding positive abnormal returns for CEOs who have scheduled grants following these price-depressing events is consistent with CEOs using these events to temporarily lower stock prices. Finding evidence that the postevent returns are, on average, positive and larger when a scheduled grant follows the same negative events further suggests that these events are being used strategically by CEOs to achieve lower strike prices with upcoming scheduled grants.

Table 6 reports average post-grant abnormal returns for the 30-, 60-, 90-, and 120-day windows following actual and pseudo grant dates. As Section III.C.2 points out, the pseudo grant dates occur 6 months after the scheduled grant dates and tend to occur the same number of days after quarterly earnings announcements as do the actual grant dates. The pseudo dates provide benchmark returns. If opportunism explains the positive post-grant returns following price-depressing

TABLE 6
Tests of Whether Stock-Price-Depressing Mechanisms before the CEO Stock-Option Grant Dates Are Associated with Positive Abnormal Returns Following Those Dates

Table 6 reports the relation between pre-grant price-depressing mechanisms and post-grant cumulative abnormal returns (CARs). Mean CARs are reported in columns 1, 2, 4, 5, 7, 8, 10, and 11 for the 30-, 60-, 90-, and 120-day windows following actual and pseudo scheduled grant dates. Each pseudo date occurs 6 months after an actual scheduled grant date. The differences in the mean abnormal returns are reported for the various time horizons 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 quarter before the real or pseudo grant date. EMGT_ACCRUALS (–) focuses on firms in the bottom quartile of industry-adjusted total accruals in the quarter before the grant date, where accruals are measured as (net income – operating cash flows)/assets. GUIDE (–) identifies firms with negative managerial earnings-guidance revisions in the 3 months before the scheduled options grant. 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 3 months before the grant date, where bad news is defined as a negative mean CAR(–1, 1) around 8-K filing dates in those months. REAL_EMGT (–) identifies firms in the upper half of all 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 research and development, selling, general, and administrative expense, and production in the quarter before the grant date. Returns are winsorized at the 1% level. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, 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 comes from *t*-tests for whether the mean returns are equal to 0; the significance reported in columns 3, 6, 9, and 12 comes from *t*-tests for whether the differences in returns are equal to 0.

	CAR(1,30)			CAR(1,60)			CAR(1,90)			CAR(1,120)		
	Real	Pseudo	Diff.	Real	Pseudo	Diff.	Real	Pseudo	Diff.	Real	Pseudo	Diff.
			(1 – 2)			(4 – 5)			(7 – 8)			(10 – 11)
	1	2	3	4	5	6	7	8	9	10	11	12
<i>Panel A. Higher Number of Options and Hard to Value</i>												
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_CAR (–)	0.024**	–0.007	0.031*	0.018	–0.027	0.046	0.022	–0.016	0.038	0.032	–0.018	0.051
<i>Panel B. Lower Number of Options and Not Hard to Value</i>												
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_CAR (–)	–0.002	0.013*	–0.015	–0.007	0.005	–0.013	–0.004	0.016	–0.020	–0.002	0.025	–0.027

mechanisms, we would not expect similar returns following pseudo dates associated with the same types of mechanisms as no grant is involved. The “Real” and “Pseudo” column heads indicate whether the average post-grant abnormal returns pertain to actual or pseudo grant dates. The significance in these columns is based on *t*-tests relative to 0. The analysis in each row is limited to the subset of grant (and pseudo grant) observations that occur within 3 months of the specific price-depressing event listed in the leftmost column in Table 6. The columns labeled “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 5 price-depressing events. Consistent with the motivation described in Sections I and II, the prediction is that the actual post-grant returns will be positive and larger than the corresponding post-pseudo-grant returns if CEOs are indeed successfully acting opportunistically.

Focusing on the 90-day results in Panel A of Table 6 (column 7), consistent with earlier tables, 3 of the 5 mean abnormal post-grant returns are positive and statistically significant at the 5% 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, the 90-day results following the pseudo grant dates (column 8) offer no evidence that firms experience

positive abnormal returns following these same types of price-depressing events.³⁰ A comparison of columns 7 and 8 reveals that price-depressing events are followed by statistically significant positive abnormal returns only 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 the 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 the use of negative accruals, lowered guidance, and negative earnings surprise events as mechanisms. Columns 3, 6, 9, and 12 in Table 6 indicate that the differences between actual and pseudo postevent 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. In Panel B, by contrast, where the CEO incentives are low, there is little evidence of significant post-grant positive returns following the same negative events; some of the differences are positive and significant, however, suggesting opportunistic behavior even among 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 fourth-quarter audited earnings announcement. If auditors dissuade management from using the earnings-depressing mechanisms described above, we would not expect to see the same abnormal returns around scheduled grants in the first quarter as seen in the full sample. But if auditors are mainly focused on preventing overstated rather than understated earnings, auditors may not affect the opportunism we document here.³¹ We find significant abnormal returns around scheduled grants in the first quarter consistent with the idea that managers use negative fourth-quarter accruals and earnings surprises to temporarily lower the stock price before a stock-option grant.

Thus, the evidence in Table 6 is consistent with the predictions that CEOs with the strongest 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) who are not scheduled to receive grants in the subsequent weeks or months do not experience as large or as positive returns following the same types of negative events.

³⁰Coles, Hertz, and Kalpathy (2006) study several hundred reissued and repriced options from 1999 to 2002. Like us, they find evidence of negative discretionary accruals in the period before the grant date. 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.

³¹For example, Nelson et al. ((2002), p. 198) show that auditor incentives and regulatory concerns encourage more vigilance about overstatements than understatements: “[A]uditors 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.”

V. 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 having backdated 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 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 2 days, public scrutiny of compensation practices increased, and the SEC required firms to disclose much more information about compensation practices post-2006.

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

We revisit the question of CEO opportunism around scheduled CEO option grants and make 3 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 afterward. These abnormal returns suggest that CEOs manipulate firms' disclosures to depress the stock price at the time they are given stock options and the exercise price is set. In the overall sample, this behavior produces the same V-shaped abnormal returns observed in the backdating scandal.

Second, we find that grant-related abnormal returns are largest when price manipulation would be most beneficial and least costly to CEOs. We show that the CEOs of hard-to-value firms who stand to receive the highest number of option grants are precisely those who 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 relation between the number of options awarded and the associated abnormal returns around scheduled grant dates grew significantly stronger after 2006. Thus, we find not only 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 firms' disclosures and stock price.

Third, we provide event-study and return-based evidence on the mechanisms that executives use to manufacture these abnormal returns. Not only do they adjust the timing of disclosures (spring loading and bullet dodging), but they 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 shift to scheduled options to avoid possible backdating. But although 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 persist on average for several months.

One obstacle to eliminating this behavior is the difficulty of detecting it at individual firms, even if the opportunism is clear in the aggregate. Executives might use one mechanism in a given year (e.g., strategic disclosures) and a different mechanism the following year (e.g., earnings guidance), and then 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: Is it not best to quickly alert investors about potential risks? Is it not better to wait and confirm possible good news before releasing it? Legal remedies may prove difficult, as Section 10(b) of the Securities Exchange Act of 1934 requires plaintiffs alleging securities fraud to prove that defendants intended to deceive. The timing and substance of any one decision is likely to be easy to defend; only in the aggregate is it difficult to defend a pattern of abnormal returns that dovetail neatly with self-interest.

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 such behavior. Boards might structure 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 during the month the 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 favors at-the-money options.

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

Appendix. Partial Equilibrium Model and Empirical Predictions

This article refers 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. Specifically, the CEO chooses the optimal amount of stock price manipulation (M) around the grant date to maximize his or her profit function, $\text{PROFIT}(M) = \text{BENEFITS}(M) - \text{COSTS}(M)$, where both the benefits and the costs to the CEO for manipulation are a function of M , the percentage change in stock price due to manipulation, $(P - P_m)/P$, where P_m and P are the manipulated and nonmanipulated 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 that the board grants the CEO is a function of the average long-term stock price, consistent with the board having determined 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.³² Hence, $\partial N/\partial P < 0$.

The cost to the CEO for manipulation (C) is a function of 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, as 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 down the first percent is easier than moving it down the second percent. Hence, $\partial C(M, H)/\partial M > 0$ and $\partial^2 C(M, H)/\partial M^2 > 0$. With regard to H , we assume that the effort needed to change both investor perception and the likelihood of detection decreases if the firm is hard to value. In the model, $\partial C(M, H)/\partial H < 0$, 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:

$$(A-1) \quad \pi(M) = \delta N(P)MP - C(M, H).$$

Differentiating with respect to M and then setting the first-order condition equal to 0 yields:

$$(A-2) \quad \frac{\partial \pi(M)}{\partial M} = \delta N(P)P - \frac{\partial C(M, H)}{\partial M} = 0.$$

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:

$$(A-3) \quad \delta N(P)P - \frac{\partial C(M^*[N(P), H, P], H)}{\partial M^*} \equiv 0.$$

Differentiating the identity with respect to N yields $\delta P - C_{MM}(\cdot)\partial M^*/\partial N = 0$, where $C_{MM}(\cdot)$ represents the second derivative of the cost function, $\partial(\partial C(\cdot)/\partial M)/\partial M$. Consistent with the second-order condition of a maximum, as well as increasing marginal manipulation costs, $C_{MM}(\cdot) > 0$. Rearranging terms leads to $\partial M^*/\partial N = \delta P/C_{MM}(\cdot) > 0$, as 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 $-dC_M(\cdot)/dH = -C_{MH}(\cdot)\partial M^*/\partial H - C_{MH}(\cdot) = 0$, or $\partial M^*/\partial H = -C_{MH}(\cdot)/C_{MM}(\cdot)$, where $C_{MH}(\cdot)$ is the partial derivative of $\partial C(\cdot)/\partial M$ with respect to H . Hence $C_{MH}(\cdot)$ represents the direct effect changes in H have on $\partial C(\cdot)/\partial M$. The cost of manipulation is decreasing in H , $C_{MH}(\cdot) < 0$, implying that $\partial M^*/\partial H > 0$. Thus, our second testable implication is that evidence of manipulation is increasing in H .

³²Hall (1999) documents that some firms award the same number of options each year for several years in a row, rather than targeting 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 evidence supporting 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.

Differentiating the identity with respect to P yields

$$(\partial N / \partial P) \delta P + \delta N - C_{MM}(\cdot) dM^* / dP = 0,$$

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

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