



# Does backdating explain the stock price pattern around executive stock option grants? ☆

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## Abstract

Extant studies show that stock returns are abnormally negative before executive option grants and abnormally positive afterward. We find that this return pattern is much weaker since August 29, 2002, when the Securities and Exchange Commission requirement that option grants must be reported within two business days took effect. Furthermore, in those cases in which grants are reported within one day of the grant date, the pattern has completely vanished, but it continues to exist for grants reported with longer lags, and its magnitude tends to increase with the reporting delay. We interpret these findings as evidence that most of the abnormal return pattern around option grants is attributable to backdating of option grant dates.

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## 1. Introduction

Yermack (1997), Aboody and Kasznik (2000), Chauvin and Shenoy (2001), Lie (2005), and Narayanan and Seyhun (2005) find that firms' stock returns are abnormally high immediately after executive stock option grants. In addition, the latter three studies find

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that the returns are abnormally low leading up to the grants. Because stock options are generally granted at the money, past researchers attribute the stock return pattern to opportunistic timing of either grants or information releases around grants.

Yermack (1997) shows that the average abnormal stock return during the 50 trading days after 620 stock option grants to chief executive officers (CEOs) between 1992 and 1994 exceeds 2%, and he interprets this as evidence that executives opportunistically time grants to occur before anticipated stock price increases. Aboody and Kasznik (2000) focus on a sample of 2,039 grants to CEOs between 1992 and 1996 that appear to be scheduled in an attempt to remove the effect of opportunistic grant timing. At almost 2%, the average abnormal return is statistically positive even after these grants, which the authors interpret as evidence that executives opportunistically time the release of information around scheduled option grants.

Based on a sample of 5,977 CEO stock option grants from 1992 through 2002, Lie (2005) reports negative abnormal returns before the grants and positive returns afterward, and he finds that this pattern has intensified over time. Even the portion of the stock returns that is predicted by overall market factors is negative before the option grants and positive afterward. This prompts Lie to conclude that “unless executives have an informational advantage that allows them to develop superior forecasts regarding the future market movements that drive these predicted returns, the results suggest that the official grant date must have been set retroactively” (p. 811).

Lie also presents evidence that the two-week window from one week before through one week after the anniversary of a previous grant that Aboody and Kasznik (2000) use to categorize grants as being scheduled still leaves ample room for opportunistic grant backdating. Specifically, he shows that the abnormal return pattern retreats when the definition of scheduled grants is tightened to be those that occur within one day of the one-year anniversary of the prior year’s grant date.

Lie’s backdating hypothesis could potentially explain the bulk of the abnormal stock return pattern around executive stock option grants. Recent anecdotal evidence from the Securities and Exchange Commission (SEC) investigation of Mercury Interactive and other cases supports this contention. However, Lie’s empirical evidence does not rule out alternative theories. Researchers using insider trading data, including Lakonishok and Lee (2001), Seyhun (1988, 1992), and Narayanan and Seyhun (2005), present evidence consistent with the notion that some executives have the ability to forecast future market returns. Thus, the patterns in predicted returns around option grants could be attributable to executives timing grants to occur shortly before they expect upswings in the whole market. Even if one takes the position that insiders’ ability to predict future market returns is too limited to explain Lie’s results, it is difficult to discern from his results the magnitude of the backdating effect relative to other effects.

This study exploits a recent change in the reporting requirements for stock option grants to conduct refined tests of the backdating hypothesis. Effective August 29, 2002 and in response to changes to Section 16 reporting of the Securities and Exchange Act of 1934 mandated by the Sarbanes-Oxley Act, the SEC changed the reporting regulations for stock option grants. Prior to the change, executives receiving stock option grants often reported them to the SEC on Form 5, which was not due until 45 days after the company’s fiscal year-end and also to stockholders in the proxy statement for the following year’s annual stockholder meeting. (Alternatively, option grants could be reported to the SEC on Form 4, which was due on the 10th day of the month following the grant.) Now, following the

legislative change, stock option grant recipients must report them to the SEC on Form 4 and must do so within two business days of receiving the grant.<sup>1</sup> The SEC makes this information available to the public one day after receiving it. Firms with a corporate website are also now required to make the option grant information available on their website on the day following when they disclose the information to the SEC. Given the new regulations, the ability to backdate option grants to coincide with days with low stock prices is greatly diminished. Thus, if backdating produced the abnormal return patterns around executive option grants, we hypothesize that the new reporting requirements should substantially dampen the abnormal return patterns that previously had been intensifying over time.

To test our hypothesis, we gather a sample of 3,735 stock option grants to CEOs between August 29, 2002 and November 30, 2004 from the Thomson Financial Insider Filing database. We exclude grants that are deemed to be scheduled using the definition in Lie (2005). We find that the average abnormal stock return during the month leading up to the grants is about  $-1\%$ , and it is about  $2\%$  during the month after the grants.

Next, we compare the return pattern for our sample with the return pattern for a sample from January 1, 2000 to August 28, 2002, which is a subsample of that used by Lie (2005). To facilitate comparison across the two samples, we focus on firms that are available on the ExecuComp database (which is the source of data in Lie) and exclude grants deemed to be scheduled. Consistent with our expectations, we find that the abnormal return pattern is much more pronounced for the earlier period. Specifically, the magnitude of the average abnormal return during the week before (after) the grants is roughly 6 (5) times larger for the period between January 1, 2000 and August 28, 2002 than for the period between August 29, 2002 and November 30, 2004. These results are consistent with the notion that most of the return pattern for the earlier period is attributable to backdating of option grants.

While the return pattern since the new reporting requirements is much weaker than for the preceding couple of years, it is still present. The remaining return pattern could be the result of conventional grant timing as Yermack (1997) suggests or to timing of information releases around grants as Aboody and Kasznik (2000) suggest. Alternatively, the two day lag between the grant date and the reporting date could still give some leeway to

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<sup>1</sup>The SEC's general instructions regarding when Form 4 must be filed read as follows: "This form must be filed before the end of the second business day following the day on which a transaction resulting in a change in beneficial ownership has been executed." Alan Dye, a renowned expert on Section 16 compliance, notes that in practice "most issuers treat the date of committee approval as the date of an award, and report the award within two business days thereafter." According to Dye, "That practice is based on a number of factors that suggest that the date of committee approval is the date on which the insider acquires 'beneficial ownership' of the award" [excerpt from Alan Dye's Section16.net Blog, September 20, 2005]. The Financial Accounting Standards Board (FASB) provided further guidance on this issue on October 18, 2005, when it issued a staff position (FSP FAS 123(R)-2) in response to inquiries regarding the determination of option grant dates given that FASB Statement No. 123(R) includes the concept of "mutual understanding" in its definition of a grant date. The position reads as follows: "As a practical accommodation, in determining the grant date of an award subject to Statement 123(R), assuming all other criteria in the grant date definition have been met, a mutual understanding of the key terms and conditions of an award to an individual employee shall be presumed to exist at the date the award is approved in accordance with the relevant corporate governance requirements (that is, by the Board or management with the relevant authority) if both of the following conditions are met: (a) The award is a unilateral grant and, therefore, the recipient does not have the ability to negotiate the key terms and conditions of the award with the employer. (b) The key terms and conditions of the award are expected to be communicated to an individual recipient with a relatively short time period from the date of approval."

opportunistically backdate grants. Further, to the extent that executives do not comply with the reporting requirements, they can still backdate the grants. Indeed, most executives in our sample choose to delay the reporting as much as possible (i.e., until the second day after the grant date), and roughly one-fifth violate the 2-day reporting requirements.

To further investigate the effects of backdating since the new reporting requirements, we partition our sample according to the number of days between the transaction date and the SEC filing date and then estimate the abnormal stock returns surrounding the grants for these sample partitions. When the option grant is reported within one day (in which case the decision makers presumably do not have much of an opportunity or desire to backdate the grants), there are no abnormal returns around the option grants. When the option grant is reported two days after the grant, the average abnormal return is negative and statistically different from zero on the grant day and positive and statistically different from zero the day thereafter. The abnormal return pattern is stronger yet when executives fail to report the grant date within the two-day requirement. We interpret these results as evidence that even after the new reporting requirements took effect, some option granters have resorted to backdating to inflate option values.

One might argue that the retreat of the return pattern is the result of intensified investor scrutiny to executives' actions stemming from the failure of major corporations in 2001–2002 (e.g., Enron and WorldCom) and the burst of the Internet bubble. While this could be a contributing factor, it does not explain the differential return pattern across grants that are reported within the two-day requirement versus others since September 2002. In any event, our evidence suggests that the corporate climate in 2001–2002 plays an important role in our study, in that it gave rise to the Sarbanes–Oxley Act, which in turn reduced the potential gain from backdating executive option grants.

The remainder of the paper proceeds as follows. Section 2 describes backdating in further detail and discusses its implication for financial reporting and tax purposes. Section 3 describes the sample. Section 4 presents empirical results. Finally, Section 5 summarizes and concludes.

## **2. Backdating, financial reporting, and taxes**

The crux of the backdating hypothesis as originally proposed by Lie (2005) is that the dates on which options are granted to executives are chosen with the benefit of hindsight to be past dates when the stock price was particularly low. Because most stock option plans limit the number of shares to be awarded during a given year and because options are generally granted at the money, backdating provides a covert method of maximizing the option component value of executives' compensation. There are several explanations for why firms historically have granted options at the money. Accounting Principles Board (APB) Opinion No. 25, Accounting for Stock Issued to Employees, allows companies to expense options according to the intrinsic value method, whereby the expense equals the difference between the fair value of the underlying stock and the exercise price of the option. This expense is obviously zero for option grants when the exercise price equals the prevailing market price and creates incentives for companies to grant options at the money, not in the money.<sup>2</sup> Another benefit of granting options at the money is that they

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<sup>2</sup>The use of backdating to circumvent option expenses under APB No. 25 is likely a violation, as exemplified in the notes to the financial statements in the 2004 10-K of Micrel Inc.: "Beginning in 1996, the Company began to

receive favorable tax treatment under Section 162(m) of the Internal Revenue Code. Finally, incentive stock options, which are often components of broad-based option plans that could qualify for more favorable tax treatment than non-qualified options at the individual level, cannot be in the money on the grant date (see also footnote 5).

Most stock options are non-qualified stock options, in which case the tax implications arise when the options are exercised.<sup>3</sup> At this time, the executive is taxed at their ordinary income tax rate on the spread between the current market price and the exercise price. Thus, the executive's gain from backdating is partially reduced by these additional taxes.<sup>4</sup> The corporation records a compensation expense deduction for tax purposes in the amount of the difference between the market price at exercise and the option's exercise price. Because opportunistic backdating of option grant dates results in lower exercise prices for option grants, it reduces corporate taxes when the options are exercised.<sup>5</sup> Under the assumption that the marginal tax rate of the corporation and the executive are the same, the tax consequences of backdating non-qualified stock option grant dates would effectively net out to zero, as the additional taxes paid by the executive would be offset by the reduced taxes at the corporate level.

However, under Section 162(m) of the Internal Revenue Code, enacted by Congress in the Omnibus Budget Reconciliation Act of 1993, firms are not allowed to deduct for

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*(footnote continued)*

follow a practice of granting employee stock options on the date with the lowest closing price within the thirty-day period subsequent to the employee's date of hire (the "Thirty-Day Method"). The Company continued to utilize this method generally but not uniformly, both for new hires and for replenishment grants to existing employees, until December 20, 2001. At that time, the Company determined that options granted using the Thirty-Day Method were compensatory under APB No 25, and discontinued use of the Thirty-Day Method thereafter." Also, beginning June 15, 2005, FASB Statement No. 123, Accounting for Stock-Based Compensation, requires entities to recognize expenses associated with option grants according to the "fair value" of those awards, which is positive even when options are granted at the money. This might induce firms to grant relatively fewer options at the money.

<sup>3</sup>There are generally no tax implications for non-qualified options at the time they are granted even if they are granted in the money, because of Internal Revenue Service (IRS) guidelines with regard to determining the fair market value of the option. According to IRS publication 525, an option's fair market value can be readily determined if the option trades on an established market. Otherwise, four conditions must be met to identify an option grant's fair market value for tax purposes: (1) the option can be transferred, (2) the option can be exercised, (3) the option has no restrictions that have a significant effect on its fair market value, and (4) the fair market value of the option can be readily determined. Because executive stock options typically do not meet these conditions, there are no tax implications until the options are exercised. The only exception would be if the options are so far in the money at the time of the grant that they are considered to be equivalent to owning shares of the stock.

<sup>4</sup>Ofek and Yermack (2000) report that executives sell nearly all of the shares that they acquire from option exercises. But if executives choose not to sell the shares and the share price subsequently drops, they would still end up with the larger tax bill from backdating the options. As discussed in Sundaram, Brenner, and Yermack (2005), within a given taxable year, rescindable options represent a way to avoid taxes on option exercises that ex post facto prove to be poor decisions.

<sup>5</sup>Incentive stock options, often referred to as qualified stock options, differ in that if the appropriate holding period conditions are met, individual taxes are deferred until the individual sells the stock. Then, the difference between the sales price and the exercise price is taxed at capital gains rates. One drawback, however, is that unless the qualified options are sold within the year and thus converted to "non-qualified" status, the spread between the exercise price and the market price at the time of exercise is considered as income in the computation of the alternative minimum tax. This obviously limits the appeal of incentive stock options to corporate executives. In addition to the complex tax issues for individuals, the corporation receives no tax deduction associated with incentive stock options.

federal income tax purposes non-performance-based annual compensation to top executives in excess of \$1 million. If an option is in the money at the time of the grant, at least some of its value is not performance-based, and it therefore counts against the \$1 million deduction limit for tax purposes (see [Perry and Zenner, 2001](#), for further discussion). Thus, backdating option grants seems to violate the spirit of Section 162(m), because the options are in the money at the time of the decision of the grant date, even though they were set to be at the money at the declared grant date. We are not aware of any Internal Revenue Service (IRS) rulings that clarify its position on this issue or any IRS actions against firms for this specific reason, but it is conceivable that the IRS takes the position that firms that backdate option grants have violated Section 162(m).

Recent evidence suggests that the SEC has adopted the view that backdating violates securities laws and constitutes financial fraud when firms fail to record as compensation expense the amount by which the option grants were in the money at the time the grant decision was made. For instance, in a complaint filed by the SEC against Peregrine Systems Inc. in June 2003, the SEC alleged that Peregrine's option plan administrator used a look-back process between quarterly board meetings to identify the day with the lowest stock price over the interval and then declared this date to be the grant date. The SEC views this as a form of financial fraud because it resulted in the understatement of compensation expenses. Specifically, quoting from the SEC complaint, "Under the applicable accounting rules, any positive difference in the stock price between the exercise price and that on the measurement date (here, the date on which the Stock Administrator looked back) had to be accounted for as compensation expense. By failing to record the compensation expense, Peregrine understated its expenses by approximately \$90 million."

A [Wall Street Journal \(2005\)](#) article provides further evidence of SEC investigations into backdating of option grant dates. As a result of an SEC inquiry launched in November 2004, investigators identified 49 instances at Mercury Interactive Corp. in which option grant dates were determined on a backdated basis between January 1996 and April 2002. The article also notes that Mercury Interactive's new executive believes that the SEC has inquired into the option-accounting practice of 30 to 40 other Silicon Valley firms. A follow-up article on [Forbes.com \(2005\)](#) states that "the SEC, tipped off a year ago that companies were backdating stock option grants, is eager to widen its investigation into what it calls secret executive compensation of the sort that tarred Kozlowski, GE's Jack F. Welch Jr. and Tyson Foods' billionaire founder, Donald Tyson. Lynn Turner, a former SEC chief accountant, suspects it's a fairly common practice and 'bigger than most people realize.' Adds a Silicon Valley lawyer who asked not to be named: 'I'd be surprised if there was even one public tech company that did not employ this practice in those [bubble] years.'"<sup>6</sup>

A related question would be whether executives could benefit from backdating option exercise dates and, if so, what would the corresponding stock price patterns look like if the practice of backdating option exercise dates was widespread? As discussed in [Carpenter and](#)

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<sup>6</sup>In addition to the SEC complaints and ongoing investigations, we found several other incidents of alleged backdating of option grant dates. For example, an article published in the Buffalo News on March 18, 2001 states that the former finance manager at Natural Fuel Gas accused several executives of backdating options on two occasions to occur on days when the stock hit lows for the year. Furthermore, an article in PR Newswire on January 14, 2003 states that shareholders have filed a lawsuit against Idealab in an effort to remove the members of the board of directors. The suit alleged that "one or more of the defendants backdated option grants and altered board minutes, including signature pages, to hide unlawful benefits to themselves such as receiving stock options at illegal prices." These actions supposedly resulted in windfalls of \$2.84 million to three grant recipients.

Remmers (2001), executives attempting to exploit their insider information to time option exercises would ideally sell the acquired stock at its peak to realize the gains from the strategy. Because executives cannot backdate the sale of the exercised shares using a look-back strategy to coincide with the highest stock price, it would be futile for executives to employ a backdating strategy for exercises that selects the highest stock price in the past to be the backdated exercise date. However, there might be a tax argument for backdating exercises to coincide with low stock prices. For non-qualified options, this would lower the amount of the executive's gain (the difference between the stock price and the exercise price on the date of exercise) that is taxed at ordinary income tax rates and subject the remainder to capital gains tax rates, which tend to be lower. In addition, any taxes on capital gains are deferred until the underlying stock is sold. In this process, the company would end up with a larger tax bill, as its compensation expense deduction (the difference between the exercise price and the fair market value on the date of exercise) would be reduced by the decision to backdate the exercise date. We were able to identify a couple of instances in which the exercise dates of executive options were backdated.<sup>7</sup> However, we do not believe the practice is nearly as widespread as the backdating of grant dates for two reasons. First, the potential gains to backdating exercise dates are much smaller than those from backdating grant dates. Second, although backdating exercise dates in the manner we discuss above would give rise to the same underlying stock price pattern surrounding exercise dates as is found for grant dates, Carpenter and Remmers (2001) do not find any evidence of this type of pattern in their analysis of option exercises since the SEC removed the restriction (in May 1991) that insiders hold onto any exercised shares for six months following the exercise. We should note, however, that Brooks, Chance, and Cline (2005) report negative abnormal returns following a more recent sample of executive option exercises.

### 3. Sample

We obtain our sample of stock option grants to CEOs from the Thomson Financial Insider Filing database. This database captures insider transactions reported on SEC Forms 3, 4, 5, and 144. We include only observations with a cleanse indicator of R (“data verified through the cleansing process”), H (“cleansed with a very high level of confidence”), or C (“a record added to nonderivative table or derivative table in order to correspond with a record on the opposing table”). We further restrict our sample to transactions that occurred between August 29, 2002 (the effective date of SEC's new reporting requirements) and November 30, 2004 (so that a month of subsequent returns are available in the 2004 Center for Research in Security Prices database) and filings that occurred before January 1, 2005.<sup>8</sup>

<sup>7</sup>In a complaint filed by the SEC against Symbol Technologies Inc. on June 3, 2004, the SEC alleged that Symbol's former general counsel manipulated stock option exercise dates using a look-back process that enabled the general counsel and other executives to benefit financially at the company's expense. Furthermore, the *Wall Street Journal* (2005) about Mercury Interactive reads: “Mercury also disclosed yesterday that on at least three occasions, exercise dates for options exercised by Mr. Landan seemed to be incorrectly reported and may have reduced his income — meaning the company could face penalties for failing to pay withholding taxes.” Mercury had backdated option grant dates on at least 49 occasions.

<sup>8</sup>Many grants are given with varying vesting dates or maturity dates. For example, on February 12, 2003 Timothy O'Donovan of Wolverine World Wide Inc. was granted 60,000 options at an exercise price of \$15.76 and with an expiration date of February 11, 2013. Because the options vested at four different dates, O'Donovan reported four separate grants of 15,000 options on the Form 4 that was filed with the SEC. In other cases similar to this, the Form 4 might simply report one grant and footnote the varying vesting dates. In either case, Thomson

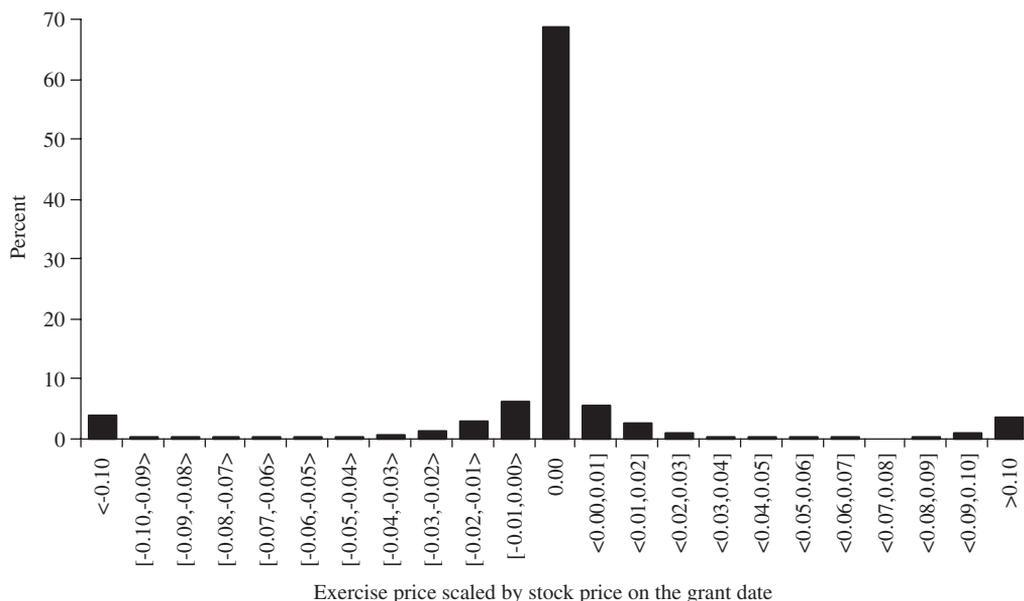


Fig. 1. Distribution of exercise price relative to market price. The figure shows the distribution of the exercise price scaled by the stock price on the grant date less one for 6,104 stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. A value of 0.00 is assigned if the exercise price equals the closing stock price on either the grant date or the day before. The grant data are taken from Securities and Exchange Commission (SEC) filings.

Most of the executive stock options are granted at the money, i.e., the exercise price is set to equal the stock price on the grant date. Fig. 1 displays the distribution of the exercise prices relative to market prices. A value of zero is assigned if the exercise price equals the closing market price on either the grant date provided by Thomson Financial or the day before. In the other cases, we estimate the relative price as the exercise price scaled by the stock price on the provided grant date less one. For example, if the exercise price is \$101 and the stock price is \$100, the relative price in the figure is 0.01, or 1%. About 69% of the 6,104 grants in our preliminary sample are granted at the money, and another 17% of the options are granted with an exercise price within 2% of the stock price on the provided grant date. Following Lie (2005), we exclude all grants that are not issued at the money.

The extant literature generally separates scheduled grants from other grants, because it is unlikely that firms can opportunistically time scheduled grants. Indeed, Lie (2005) shows that the stock price pattern around scheduled grants is weaker. However, it is not clear how to identify a grant that has been scheduled without specific information from the granting firm. Aboody and Kasznik (2000) define a grant to be scheduled if it occurs within one week of the one-year anniversary of a prior grant date. However, even though a grant happens to take place at roughly the same time of the year as a grant in the previous year, this does not ensure that it was scheduled in advance to occur on that particular day.

(footnote continued)

Financial breaks the grant into four separate grants. We collapse all such grants that occur on the same day and that have the same exercise price into one for the purpose of our analysis.

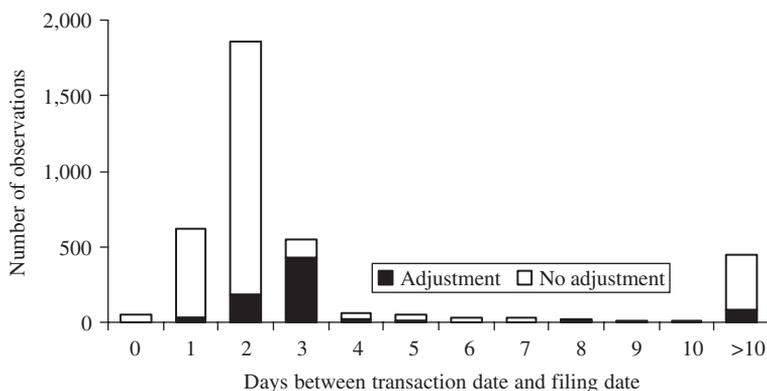


Fig. 2. Distribution of lag between transaction date and Securities and Exchange Commission (SEC) filing date. The figure shows the distribution of the number of days between the transaction date and the filing date for 3,735 unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. The grant data are taken from Securities and Exchange Commission (SEC) filings. The majority of the companies use the closing market price on the transaction date provided in the SEC filing as the exercise price, in which case we make no adjustment to the transaction date. However, some companies use the closing market price on the prior trading day as the exercise price, in which case we adjust the transaction date to be the prior trading day.

Another concern is that if a firm is given a two-week window (i.e., from one week before through one week after the anniversary) in which to make a grant, there still exists ample opportunity to opportunistically time the grants via backdating. Lie (2005) finds an abnormal return pattern around grants that Aboody and Kasznik define to be scheduled, but then shows that this pattern is no longer discernible when the definition of scheduled grants is tightened to be those that occur within one day of the one-year anniversary of the prior year's grant date. Given this evidence, we use Lie's tightened definition to categorize the scheduled grants that we exclude from further analysis. Finally, we exclude grants for which we have insufficient stock price data to estimate abnormal stock returns around the grant date. Our final sample consists of 3,735 stock option grants to CEOs.

Fig. 2 displays the distribution of the number of days between the transaction date and the filing date. We include only grants for which the exercise price equals the stock price on either the provided transaction date or the prior day. If the firm uses the stock price on the prior day as the exercise price, it is this date that becomes relevant from a timing perspective. For our purposes, we therefore define the transaction date to be the day on which the exercise price equals the stock price. For 79% of the grants, we define the transaction date to be the provided transaction date, and for 21% we define the transaction date to be the day before the provided transaction date. Because the latter category entails an adjustment to the provided transaction date, it is labeled as such in Fig. 2.<sup>9</sup>

It is evident from the figure that most of the grants were reported two days after the transaction date. In particular, 50% of the grants were reported two days after the

<sup>9</sup>One might suspect that backdating is more likely to have occurred in those grants in which the stock price on the day prior to the provided transaction date is used as the exercise price. That is, the prior day's stock price might have been used because it was lower than the price on the provided transaction date. If so, the stock return pattern around such grants should be stronger than for other grants. However, we find no statistical difference at the 0.05 level between the average returns immediately around grants in which the prior day's stock price is used as the exercise price versus other grants (not tabulated).

transaction date, 17% were reported one day after the transaction date, and 15% were reported three days after the transaction date. About three-quarters of those that are reported three days after our definition of the transaction date are reported within two days of the provided transaction date and were therefore not technically in violation of SEC's reporting requirement. In total, 21% of the observations violated the SEC's two-day reporting requirements.

Filling out Form 4 and submitting it to the SEC should not take long, especially since the SEC unveiled on May 5, 2003 its website to simplify the creation and submission of Forms 3, 4, and 5. Beginning June 30, 2003, all of the forms in question must be filed electronically via the website. Yet our statistics show that most executives wait until the second day after the grant date, and a nontrivial fraction wait even longer despite the two-day reporting requirements. One interpretation is that the executives simply procrastinate or are not notified immediately of the option grant. Another interpretation is that there are benefits to reporting late and that executives act in manners to maximize those benefits. This must especially be the case when executives report more than two days after the grant date, because the benefit presumably outweighs the cost of potentially getting them in trouble with the SEC. What we do know is that the potential value gained from backdating option grants increases with the reporting lags. Thus, the statistics on the number of days between the grant date and the filing date can be interpreted as tentative evidence that some insiders continue to backdate option grants. Our investigation of stock price returns around the grants sheds further light on this issue.

#### 4. Empirical results

In this section, we discuss the empirical results of our study.

##### 4.1. *Abnormal returns around option grants*

Fig. 3 displays the average cumulative abnormal returns from 30 trading days before through 30 trading days after the 3,735 option grants in our sample. Following Lie (2005), we calculate abnormal returns as the difference between the stock returns of the granting firm and the returns predicted by the Fama and French (1993) three-factor model, in which the estimation period is the year ending 50 days before the grant date. The average stock prices (after controlling for the predicted effect from the three-factor model) start to decline slowly at least 30 trading days before the grants. The decline becomes more rapid about a week before the grants. The average cumulative abnormal return from day -30 through day -5 is -0.73%, or -0.03% day, and from day -4 through day 0 it is -0.61%, or -0.12% day. The prices tend to increase immediately after the grants, first quickly, then more gradually. The average cumulative abnormal return from day 1 through day +5 is 1.55%, or 0.31% day, and from day +5 through day +30 it is 1.06%, or 0.04% day.

The results reported here suggest that SEC's new reporting requirement, at least at its current level of enforcement, did not entirely eliminate the abnormal return patterns around executive option grants. However, when compared with Lie's (2005) results, which show that the pattern had intensified over time, it appears at first glance that the new requirement at least moderated the pattern. To compare more formally the abnormal return pattern before and after the new reporting requirement, we contrast our results with those for Lie's (2005) subsample of CEO option grants between January 1, 2000 and

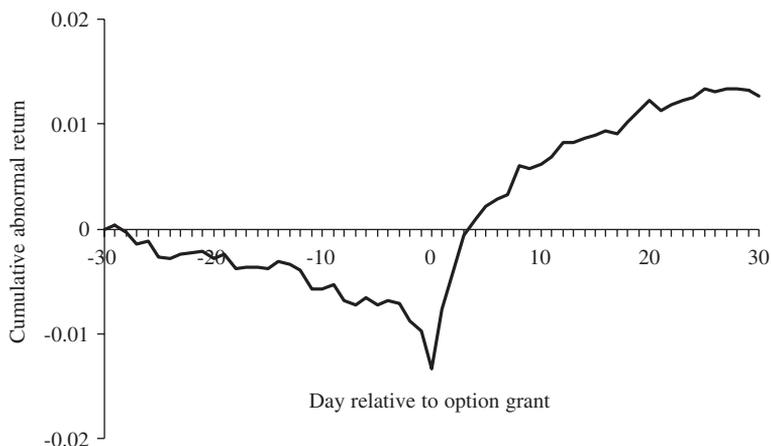


Fig. 3. Cumulative abnormal stock returns around stock option grants. The figure shows the cumulative abnormal stock returns from 30 days before through 30 days after unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. A grant is classified as scheduled if it occurred within one day of the one-year anniversary a prior grant date and unscheduled otherwise. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The data are taken from Securities and Exchange Commission (SEC) filings.

August 28, 2002. As we did with our sample, we exclude grants that are deemed to be scheduled based on our tight definition of scheduled grants.

One potential concern regarding this comparison is that Lie acquired his sample from a different source than we did. In particular, he acquired his sample from the Standard & Poor's (S&P) ExecuComp database. ExecuComp includes information about stock option grants from proxy statements for more than 2,000 large companies, which are or were members of the S&P 1500 (S&P 500, S&P 400 MidCap, and S&P 600 SmallCap). As a result, Lie's sample covers only relatively large firms, whereas our sample covers all public firms. This could be problematic to the extent that the abnormal return pattern differs for small firms. To alleviate this concern, we partition our sample into two groups: firms that are available on ExecuComp and firms that are not available on ExecuComp. We then compare the abnormal return pattern for the first group to the pattern for the subsample obtained from Lie (2005).

Fig. 4 shows the cumulative abnormal return for the sample from Lie, for our subsample of firms that are available on ExecuComp, and for our subsample of firms that are not available on ExecuComp. The return pattern is clearly most pronounced for the sample from Lie that covers the period before the new reporting requirement. It is further evident that the pattern following the change in reporting requirements is stronger for firms not on ExecuComp than it is for firms covered on ExecuComp. This result might be an artifact of greater return volatility among small firms. The greater the return volatility, the larger is the reward from backdating, which in turn manifests itself in a stronger abnormal return pattern.

While Fig. 4 gives a good sense of the economic significance for the return patterns and the difference in return patterns, it does not provide the statistical significance. We provide this information in Table 1, where we present the average abnormal returns for various

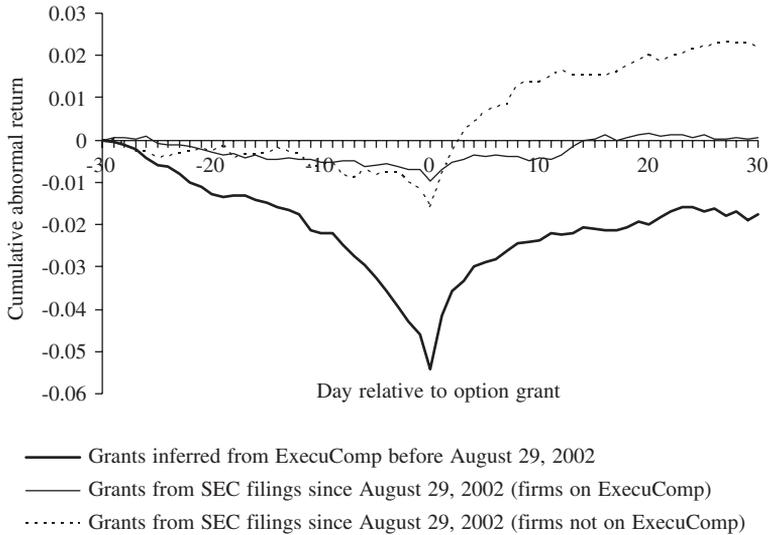


Fig. 4. Cumulative abnormal stock returns around stock option grants before and after August 29, 2002. The figure shows the cumulative abnormal stock returns from 30 days before through 30 days after unscheduled stock option grants to chief executive officers. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The grant data are taken from either ExecuComp (for grants prior to August 29, 2002) or from Securities and Exchange Commission (SEC) filings (for grants after August 29, 2002). The grants from SEC filings have been partitioned into firms that are included in the ExecuComp database and firms that are not included in the ExecuComp database.

periods around the grants along with the associated  $P$ -values for the null hypothesis that the averages equal zero. The periods in the table include the month from 30 to 11 trading days before the grant, the week from ten to six days before, each of the days from five days before to five days after the grant, the week from six to ten days after the grant, and the month from 11 to 30 days after the grant. In addition, we have combined several of these periods into the 30, 10, and 5 days before the grant and the 5, 10, and 30 days after the grant to get a better sense for the overall magnitude of the returns. Perhaps most important, the next-to-last column of the table gives the differences in returns between the sample from Lie (2005) and our subsample of firms that are available on ExecuComp, with the last column providing the  $P$ -values for these differences. These last two columns therefore provide evidence on whether backdating contributes to the return patterns in past studies and, if so, whether the reporting requirement that took effect in 2002 curbed such backdating. If the difference in returns is not statistically different, there is no evidence of backdating, and hence the new reporting requirement could not possibly have any effect on such behavior. Conversely, if the returns are significantly muted in the later period, it can be interpreted as evidence that backdating contributes to the abnormal returns and that the new reporting requirement curbed such behavior.

For the subsample from Lie (2005) based on ExecuComp firms before the new reporting requirements, the vast majority of the average daily abnormal returns differ statistically from zero at the 1% level. It is further noteworthy that the signs of the abnormal returns are all negative preceding the grants and positive thereafter. As is shown at the bottom of

Table 1

Abnormal stock returns around stock option grants before and after August 29, 2002

The table presents the abnormal stock returns around unscheduled stock option grants to chief executive officers. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The grant data are taken from either ExecuComp (for grants prior to August 29, 2002) or from Securities and Exchange Commission (SEC) filings (for grants after August 29, 2002). The grants from SEC filings have been partitioned into firms that are included in the ExecuComp database and firms that are not included in the ExecuComp database. Numbers that are significantly different from zero at the 1% level are boldfaced.

Day(s) relative to grant date	Grants inferred from ExecuComp before August 29, 2002 [a]			Grants from SEC filings since August 29, 2002 (firms on ExecuComp) [b]			Grants from SEC filings since August 29, 2002 (firms not on ExecuComp) [c]			[a] minus [b]		
	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N
-30 - -11	-0.0234	0.000	1,647	-0.0054	0.091	1,578	-0.0087	0.031	2,158	-0.0180	0.001	2,158
-10 - -6	-0.0083	0.001	1,647	-0.0015	0.287	1,578	-0.0002	0.921	2,158	-0.0068	0.016	2,158
-5	-0.0028	0.004	1,647	0.0001	0.861	1,578	-0.0013	0.207	2,158	-0.0029	0.013	2,158
-4	-0.0031	0.003	1,647	0.0005	0.434	1,578	0.0005	0.629	2,159	-0.0036	0.003	2,159
-3	-0.0037	0.001	1,647	-0.0007	0.322	1,578	0.0001	0.934	2,159	-0.0030	0.022	2,159
-2	-0.0036	0.000	1,647	-0.0007	0.379	1,578	-0.0025	0.008	2,159	-0.0029	0.026	2,159
-1	-0.0033	0.001	1,647	0.0000	0.958	1,578	-0.0018	0.044	2,158	-0.0032	0.018	2,158
0	-0.0080	0.000	1,647	-0.0026	0.000	1,578	-0.0043	0.000	2,159	-0.0054	0.000	2,159
1	0.0126	0.000	1,647	0.0027	0.000	1,578	0.0082	0.000	2,157	0.0099	0.000	2,157
2	0.0058	0.000	1,647	0.0015	0.045	1,578	0.0053	0.000	2,156	0.0043	0.001	2,156
3	0.0025	0.013	1,647	0.0008	0.225	1,578	0.0052	0.000	2,156	0.0016	0.178	2,156
4	0.0034	0.003	1,647	0.0009	0.188	1,578	0.0020	0.052	2,155	0.0025	0.059	2,155
5	0.0009	0.336	1,647	-0.0003	0.652	1,578	0.0023	0.015	2,156	0.0012	0.298	2,156
6-10	0.0051	0.009	1,647	-0.0001	0.958	1,577	0.0071	0.002	2,156	0.0052	0.033	2,156
11-30	0.0064	0.124	1,647	0.0043	0.110	1,568	0.0087	0.034	2,128	0.0021	0.682	2,128
-30-0	-0.0561	0.000	1,647	-0.0103	0.009	1,578	-0.0179	0.001	2,157	-0.0458	0.000	2,157
-10-0	-0.0327	0.000	1,647	-0.0049	0.026	1,578	-0.0094	0.002	2,157	-0.0278	0.000	2,157
-5-0	-0.0244	0.000	1,647	-0.0034	0.036	1,578	-0.0092	0.000	2,157	-0.0209	0.000	2,157
1-5	0.0252	0.000	1,647	0.0056	0.000	1,578	0.0229	0.000	2,155	0.0196	0.000	2,155
1-10	0.0303	0.000	1,647	0.0055	0.009	1,577	0.0299	0.000	2,155	0.0248	0.000	2,155
1-30	0.0367	0.000	1,647	0.0099	0.006	1,568	0.0385	0.000	2,127	0.0268	0.000	2,127

the table, the abnormal returns cumulate to  $-5.61\%$  in the 30 days prior to the grant date and to  $3.67\%$  in the 30 days following the grant. In contrast, for our sample of ExecuComp firms after the new reporting requirements, only the average abnormal returns on days 0 ( $-0.26\%$ ) and +1 relative to the grant date ( $0.27\%$ ) differ statistically from zero at the 1% level. Thus, the new reporting requirements appear to have substantially muted the abnormal returns around option grants. This is further supported by the difference in the averages for the ExecuComp firms across the two periods. These differences are statistically significant at the 1% level for the month ending 11 days before the grant and for days  $-4$ , 0, +1, and +2 relative to the grant and at the 5% level for the week ending six days before the grant, for days  $-5$ ,  $-3$ ,  $-2$ , and  $-1$  and for the week beginning six days after the grant. The differences also appear to be economically significant. For example, on the day after the grant, the average abnormal return before the new reporting requirements is  $1.26\%$ , and after the new requirements it is  $0.27\%$ , giving a difference of  $0.99\%$ . Thus, the new reporting requirements appear to have reduced the average abnormal return by almost 80% on the post-grant day. This is also evident in the longer cumulative abnormal return windows at the bottom of the table.

We interpret these results as evidence that backdating produces most of the abnormal returns patterns around grants shown in past studies. If the patterns were attributable to either timing of grants relative to future anticipated stock returns or strategic information releases around grants, there is no reason for the patterns to weaken after SEC's new reporting requirements took effect in 2002. Instead, one might have expected that the patterns would continue to strengthen over time as Lie (2005) shows in his sample of option grants that preceded when executives were required to reveal option grants in a timely manner.

Finally, though it is of less interest for the purposes of our study, for our sample of non-ExecuComp firms after the new reporting requirements, Table 1 reports that five of the daily average abnormal returns (not including the longer intervals at the bottom of the table) differ statistically from zero. While not tabulated, the difference between these returns and those for ExecuComp firms after the new reporting requirements are statistically significant at the 1% level for days +1, +2, and +3 relative to the grant date. Thus, corroborating the patterns apparent in Fig. 4, visibility to investors (as proxied by inclusion in the S&P 1500) seems to affect the magnitude of the abnormal returns.

#### 4.2. *Return for subsamples based on the reporting lag*

In Section 4.1, we show that the SEC's new reporting requirement removed most of the abnormal return patterns around grants, consistent with the notion that backdating was responsible for the majority of the return patterns before the new requirements became effective. Can backdating also explain the remaining pattern? While the SEC's reporting requirements should greatly curb such behavior, with a lag of two days between the grant date and the reporting date it is still possible to gain from backdating. Further, for the nontrivial fraction of firms that violate the reporting requirements, backdating can generate substantial gains.

To examine this further, we exploit the cross-sectional differences in the lag between the grant date and the reporting date. The statistics we reported earlier suggest that about one-fifth of the insiders report the grant at least a day before the deadline and another fifth report after the deadline. Insiders that report before the deadline remove at least part of

the potential gain from backdating. By contrast, insiders who postpone reporting the grants until the day of the deadline or later might do so because they seek to add value to the options by backdating the grants.<sup>10</sup> Thus, if backdating still occurs, we conjecture that the abnormal return patterns are stronger for observations with longer lags between the grant day and the reporting day. In fact, if backdating is the only source of the abnormal return patterns, we expect the pattern to be completely absent for grants that are reported immediately. Conversely, if the abnormal return pattern is attributable to either timing of grants relative to future anticipated stock returns or opportunistic information releases around grants, the abnormal return pattern should be unrelated to the reporting lag.

In a contemporaneous study, Narayanan and Seyhun (2005) also examine the effect of the reporting lag. They split their sample of executive option grants between 1992 and 2002 into three groups based on the reporting lag. The average lag for their whole sample is 170 days. Their first group, making up 22% of their sample, has a reporting lag of 25 days or less; their second group, making up 38% of their sample, has a reporting lag between 26 and 125 days; and their last group, making up 40% of their sample, has a reporting lag above 125 days. Narayanan and Seyhun argue that the gain from backdating is smaller for the group with the shorter reporting lag. Consistent with their argument, they find that the incidence of return reversal (defined as negative abnormal return during the ten days before the grants followed by positive abnormal return during the subsequent ten days) is 28% for the group with the shortest lags, 32% for the middle group, and 34% for the group with the longest lags.

Fig. 5 shows the cumulative abnormal returns for four subsamples based on the reporting lag: (1) grants that are reported within a day of the transaction date, (2) grants that are reported two days after the transaction date, (3) grants that are reported three days after the transaction date, and (4) grants that are reported four days or more after the transaction date. The abnormal return pattern clearly strengthens with the reporting lag. For grants that are reported before the deadline, there is hardly any apparent pattern at all. This suggests that effects other than the backdating effect are weak or absent. For grants that are reported within two or three days, the pattern is perceptible, but, as expected, limited to the days immediately around the grants. For grants that are reported at least four days after, the pattern is strongest and stretches from at least a couple of weeks before the grants through at least a couple of weeks after the grants.

Table 2 presents the average abnormal returns for various periods around the four groups of grants along with *P*-values for the null hypothesis that the averages equal zero. None of the averages (daily or cumulatively) differs significantly from zero for grants that are reported within a day, consistent with the weak or lacking pattern for this group

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<sup>10</sup>Although the filing requirement is two days after the insider has acquired beneficial ownership of the grant, the SEC appears to have generously allowed for “hardship exceptions” in cases in which, for example, the grant recipient did not receive notification of the grant in a timely manner. We were unable to uncover any formal criteria used by the SEC to materially reprimand late filers other than providing an Item 405 disclosure in the issuer’s proxy statement and 10-K indicating late Section 16 filings. Thus, to this point, any penalties associated with filing late appear to be trivial, if anything. For instance, in response to a recent inquiry on Romeo and Dye’s Section16.net (a website devoted to Section 16 compliance issues) regarding the consequences of late filings, Alan Dye responded: “The two potential consequences of a late filing are (i) proxy statement disclosure under Item 405 and (ii) an SEC enforcement action based on violation of Section 16(a). The latter risk is extremely remote. The SEC hasn’t brought an enforcement action against a late filer since 2001, other than where the Section 16(a) violation was incident to other, more serious violations of the securities laws.”

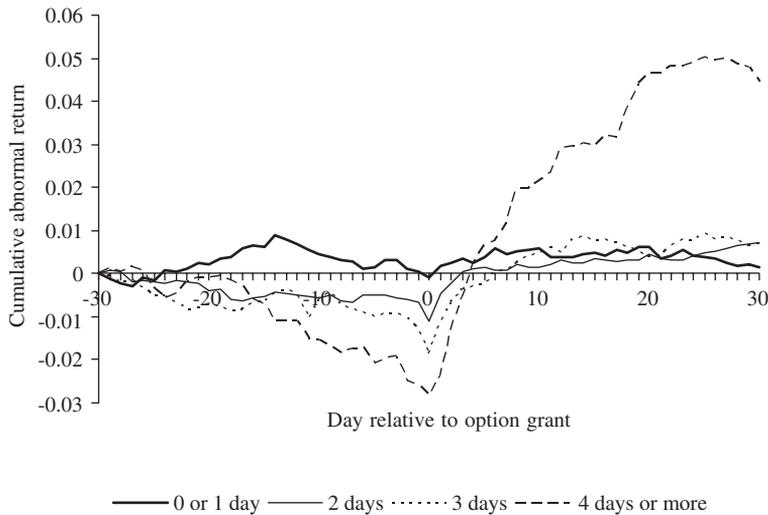


Fig. 5. Cumulative abnormal stock returns around stock option grants for subsamples based on the number of days between the transaction date and the Securities and Exchange Commission (SEC) filing date. The figure shows the cumulative abnormal stock returns from 30 days before through 30 days after unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The grant data are taken from SEC filings. The sample has been partitioned into subsamples based on the number of days between the transaction date and the SEC filing date.

displayed in Fig. 5. For grants that are reported two trading days after the transaction date, the average abnormal return is negative ( $-0.42\%$ ) and statistically significant at the 1% level on day 0 and positive and statistically significant on days +1 ( $0.69\%$ ) and +3 ( $0.26\%$ ). The finding that the averages are statistically significant on days 0 and +1 for this group but not for the grants reported before the deadline suggests that the abnormal returns are attributable to backdating. However, the significantly positive average on day +3 cannot be attributable to backdating, because the grants are reported before this day. We explore this issue in further detail and provide a plausible explanation in Section 4.3. Although the cumulative abnormal return over the period from day one to 30 days after the grant date ( $1.85\%$ ) is significantly different from zero, it is apparent that the bulk of this abnormal return can be traced directly back to the days immediately surrounding the grant date, as the cumulative abnormal returns over the intervals from six to ten and 11 to 30 after the grant date do not significantly differ from zero.

For grants that are reported three days after the transaction date, the average abnormal return is negative and statistically significant on day 0 and positive and statistically significant on days +1 and +2. None of the abnormal returns on the individual days subsequent to the reporting date is statistically significant at the 1% level, again suggesting that backdating is the dominant source of the abnormal returns. Though the abnormal returns for this group cumulate to  $2.57\%$  after 30 days, once again, the significance is attributable to the few individual days immediately following the grant date. Lastly, for grants that are reported at least four days after the transaction date, the average abnormal returns differ statistically from zero for the month that ends 11 days before the grants, for days  $-2$ ,  $+2$ ,  $+3$ , and  $+4$  relative to the grants, for the week that begins six days after the

Table 2  
 Abnormal stock returns around stock option grants for subsamples based on the number of days between the transaction date and the Securities and Exchange Commission (SEC) filing date

The table presents the abnormal stock returns around unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The grant data are taken from SEC filings. The sample has been partitioned into subsamples based on the number of days between the transaction date and the SEC filing date. Numbers that are significantly different from zero at the 1% level are boldfaced.

Day(s) relative to grant date	Filed within one trading day of the transaction date			Filed two trading days after the transaction date			Filed three trading days after the transaction date			Filed more than three trading days after the transaction date		
	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N
-30 - -11	0.0031	0.614	670	-0.0064	0.100	1,857	-0.0096	0.112	546	<b>-0.0182</b>	0.007	663
-10 - -6	-0.0044	0.069	670	0.0005	0.825	1,857	0.0013	0.710	546	-0.0021	0.532	663
-5	0.0001	0.920	670	0.0001	0.913	1,857	-0.0009	0.486	546	-0.0035	0.016	663
-4	0.0020	0.171	670	-0.0001	0.928	1,858	0.0005	0.750	546	0.0007	0.700	663
-3	-0.0001	0.932	670	-0.0007	0.421	1,858	0.0000	0.998	546	0.0007	0.700	663
-2	-0.0021	0.111	670	-0.0004	0.647	1,858	-0.0011	0.476	546	<b>-0.0055</b>	0.000	663
-1	-0.0007	0.591	670	-0.0008	0.371	1,857	-0.0026	0.088	546	-0.0010	0.613	663
0	-0.0014	0.275	670	<b>-0.0042</b>	0.000	1,858	<b>-0.0056</b>	0.000	546	-0.0024	0.189	663
1	0.0028	0.055	669	<b>0.0069</b>	0.000	1,857	<b>0.0078</b>	0.000	546	0.0046	0.021	663
2	0.0008	0.603	669	0.0021	0.025	1,856	<b>0.0043</b>	0.008	546	<b>0.0104</b>	0.000	663
3	0.0010	0.487	669	<b>0.0026</b>	0.002	1,856	0.0031	0.069	546	<b>0.0080</b>	0.000	663
4	-0.0009	0.460	669	0.0006	0.434	1,855	0.0006	0.707	546	<b>0.0071</b>	0.002	663
5	0.0011	0.386	669	0.0004	0.626	1,856	0.0003	0.841	546	0.0044	0.026	663
6-10	0.0019	0.549	669	-0.0001	0.961	1,855	0.0073	0.016	546	<b>0.0151</b>	0.003	663
11-30	-0.0042	0.479	664	0.0066	0.062	1,837	0.0023	0.720	540	<b>0.0226</b>	0.003	655
-30-0	-0.0035	0.650	670	-0.0118	0.020	1,856	-0.0181	0.031	546	<b>-0.0314</b>	0.000	663
-10-0	-0.0066	0.097	670	-0.0056	0.064	1,856	-0.0085	0.089	546	<b>-0.0132</b>	0.008	663
-5-0	-0.0022	0.492	670	<b>-0.0060</b>	0.004	1,856	<b>-0.0098</b>	0.010	546	<b>-0.0110</b>	0.004	663
1-5	0.0049	0.101	669	<b>0.0125</b>	0.000	1,855	<b>0.0161</b>	0.000	546	<b>0.0345</b>	0.000	663
1-10	0.0068	0.119	669	<b>0.0124</b>	0.000	1,854	<b>0.0234</b>	0.000	546	<b>0.0496</b>	0.000	663
1-30	0.0027	0.724	664	<b>0.0185</b>	0.000	1,836	<b>0.0257</b>	0.001	540	<b>0.0731</b>	0.000	655

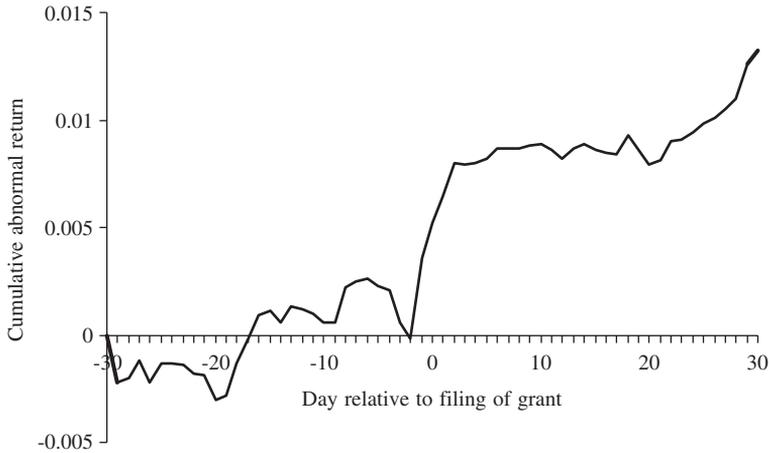


Fig. 6. Cumulative abnormal stock returns around the Securities and Exchange Commission (SEC) filing of stock option grants. The figure shows the cumulative abnormal stock returns from 30 days before through 30 days after the filing date of unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the filing date. The grant data are taken from SEC filings.

grants and for the month that starts 11 days after the grants. The abnormal returns cumulate to  $-3.14\%$  in the 30 days prior to the grant date and to  $7.31\%$  in the 30 days subsequent to the grant date. Given the delayed reporting, it is likely that these abnormal returns are possibly all the result of backdating.

#### 4.3. Abnormal returns around the filing date of option grants

In sum, the results presented in Fig. 5 and Table 2 are consistent with the notion that backdating explains a large portion of the remaining abnormal stock return pattern after SEC's reporting requirement took effect in 2002. However, we also find traces of a different effect. In particular, the average abnormal return the day after the reporting date was positive and statistically different from zero for the subset of grants that were reported to the SEC two days after the transaction date. In this section, we investigate this issue more formally. In particular, we examine the abnormal returns around the day that the grants were reported to the SEC. While these returns can be inferred for the middle two groups in Table 2 based on the data we present there, they cannot be inferred for the first and last groups for which the exact reporting day relative to the grant day varies. Another benefit of this analysis is that it might reveal whether a trading strategy of buying stocks on the day that information regarding executive option grants becomes publicly available can generate excess returns.

Fig. 6 displays the cumulative abnormal return around the filing date for the entire sample. A couple of observations are worth noting. First, the magnitudes of the returns are much smaller here than in previous graphs. Second, only modest evidence exists of positive abnormal returns strictly after the SEC filing date.

Table 3 presents the average abnormal returns from day  $-3$  to day  $+3$  relative to the filing date for all grants and for the four subsets of grants based on the reporting lag used

Table 3

Abnormal stock returns around the Securities and Exchange Commission (SEC) filing of stock option grants

The table presents the abnormal stock returns around the filing date of unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the filing date. The grant data are taken from SEC filings. Numbers that are significantly different from zero at the 1% level are boldfaced.

Day(s) relative to filing date	All			Filed within one trading day of the transaction date			Filed two trading days after the transaction date			Filed three trading days after the transaction date			Filed more than three trading days after the transaction date		
	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N	Mean	P-value	N
-3	-0.0016	0.007	3,738	-0.0018	0.183	669	-0.0008	0.362	1,855	-0.0056	0.000	547	-0.0006	0.716	667
-2	-0.0006	0.322	3,739	-0.0003	0.839	669	-0.0042	0.000	1,856	0.0079	0.000	547	0.0018	0.400	667
-1	0.0038	0.000	3,739	-0.0018	0.169	669	0.0069	0.000	1,856	0.0043	0.007	547	0.0005	0.756	667
0	0.0015	0.020	3,739	0.0024	0.096	669	0.0021	0.024	1,856	0.0031	0.068	547	-0.0024	0.111	667
1	0.0012	0.061	3,739	0.0005	0.752	669	0.0026	0.002	1,856	0.0006	0.710	547	-0.0014	0.471	667
2	0.0017	0.046	3,738	0.0027	0.066	669	0.0006	0.423	1,855	0.0003	0.809	547	0.0046	0.216	667
3	0.0000	0.953	3,738	-0.0021	0.094	669	0.0004	0.592	1,856	0.0032	0.033	547	-0.0015	0.334	666

in Section 4.2. We focus here on the statistics for days 0 to +3. The only average that differs significantly from zero at the 1% level is the one that follows one day after the filing date for the subset of grants that are reported with a two-day lag. This is the same that we already observed in Table 2. One interpretation of this significant average is as follows. The SEC now makes all Form 4 filings available to the public on the day following the filing date. In addition, the SEC's new regulations require firms that maintain a corporate website to also make this information available on their website by the end of the business day after the filing. Presumably, some market participants are aware of the extant pre-Sarbanes–Oxley Act evidence that stock returns have historically been abnormally positive following executive option grants. Consequently, they might buy the stocks of firms on the day that recent option grants to executives are revealed, thereby giving rise to the slight uptick in the stock price.

There are no other traces of abnormal returns following the filing date, and hence no further evidence that effects other than those stemming from backdating can explain the abnormal returns around executive option grants. In fact, only one of 16 averages for days 0 to +3 for the four subgroups differs from zero, suggesting that random chance might have produced the lone significant average. Moreover, given that all of the average abnormal returns during the three days after the filing date for the whole sample are below 0.2% and statistically insignificant at the 1% level, it seems reasonable to conclude that a trading strategy of purchasing the stock of companies on the days when options grants to their executives are publicly revealed is unlikely to be very profitable.

#### 4.4. *The effect of coinciding grants to non-CEO executives*

We also collect grants for executives other than the CEO. In 80% of the grants in our base sample between August 29, 2002 and November 30, 2004, at least one other executive receives options on the same date as the CEO. Furthermore, 59% of all grants to non-CEO executives occur on the same date as grants to CEOs. In those cases in which at least one other executive receives options on the same date as the CEO, the average (median) number of other executives who receive options is 5.2 (5.0). Evidently, there is substantial overlap between grants to CEOs and other executives.

When non-CEO executives receive options on the same date as the CEO, they file the grant with the SEC on the same date as the CEO in 91% of the cases. Even in the cases in which the CEO files at least three (ten) days after the grant date, other executives who receive options on the same date file the grant at the same date as the CEO in 85% (78%) of the cases. This suggests that the filings for grants awarded on the same date are generally coordinated. When non-CEO executives receive options on the same date as the CEO but at least one of the non-CEO executives files on a different date (539 cases, or 14.5% of all CEO grants), at least one non-CEO executive files earlier than the CEO in 216 cases. In 134 of these 216 cases, the non-CEO executive files the trading day immediately before the CEO, and the average number of trading days between the earlier filing date and the filing date of the CEO is 9.65 days. Using the earlier filing date among the executive group does not qualitatively alter the results when we partition our sample on the basis of the number of days between the transaction and filing dates.

When CEOs are the only ones to receive grants (20% of the CEO grants), 66% of the filings occur within two days of the grant date, and the median and mean number of days between the grant date and the filing date are two and 12.5, respectively. When other

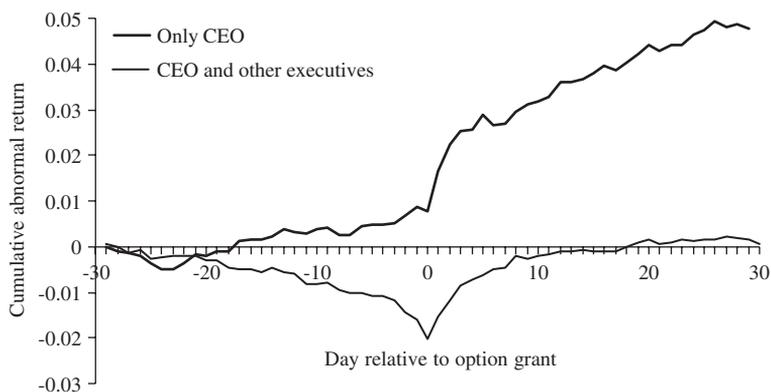


Fig. 7. Cumulative abnormal stock returns around stock option grants for subsamples based on whether other executives receive options on the same date. The figure shows the cumulative abnormal stock returns from 30 days before through 30 days after unscheduled stock option grants to chief executive officers between August 29, 2002 and November 30, 2004. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The grant data are taken from Securities and Exchange Commission (SEC) filings. The sample has been partitioned into subsamples based on whether the CEO is the only executive to receive options on the grant date or whether other executives also receive options on the same date.

executives also receive grants (80% of the CEO grants), 67% of the filings occur within two days of the grant date, and the median and mean number of days between the grant date and the filing date are two and 9.3, respectively. Fig. 7 displays the abnormal returns around the grants for these two subgroups. There is some evidence that the abnormal returns after the grants are more pronounced when the CEOs are the only ones to receive grants. For example, the average abnormal return during the three days after the grants is 1.79% when CEOs are the only ones to receive grants and 1.20% when other executives also receive grants, giving a difference of 0.59% (with a  $P$ -value of 0.06), and the difference approaches 2% for the 30 days after the grants. One interpretation of these results is that backdating is more prevalent when CEOs are the only executives to receive grants, but that backdating occurs even when other executives also receive grants.

#### 4.5. Scheduled grants

Our analysis so far has excluded grants we deem to be scheduled, because grants that are scheduled to occur *ex ante* cannot be backdated. Thus, the backdating hypothesis predicts that the abnormal stock return pattern around scheduled grants is weak or nonexistent. To test this, Fig. 8 reproduces Fig. 4 using our set of scheduled grants that has hitherto been excluded. Any return pattern in Fig. 8 for scheduled grants is weak, and certainly much weaker than the patterns in Fig. 4 for unscheduled grants. In fact, the only average returns immediately around the scheduled grants that differ significantly from zero at the 0.05 level is that for day 0 for grants from ExecuComp before August 29, 2002, which is  $-0.6\%$  ( $P$ -value = 0.01), and those for days  $-2$  and  $+1$  for grants since August 29, 2002 for firms not covered by ExecuComp, which are  $-0.5\%$  ( $P$ -value = 0.02) and  $0.8\%$  ( $P$ -value = 0.05), respectively. These significant returns could be attributable to imperfect classification

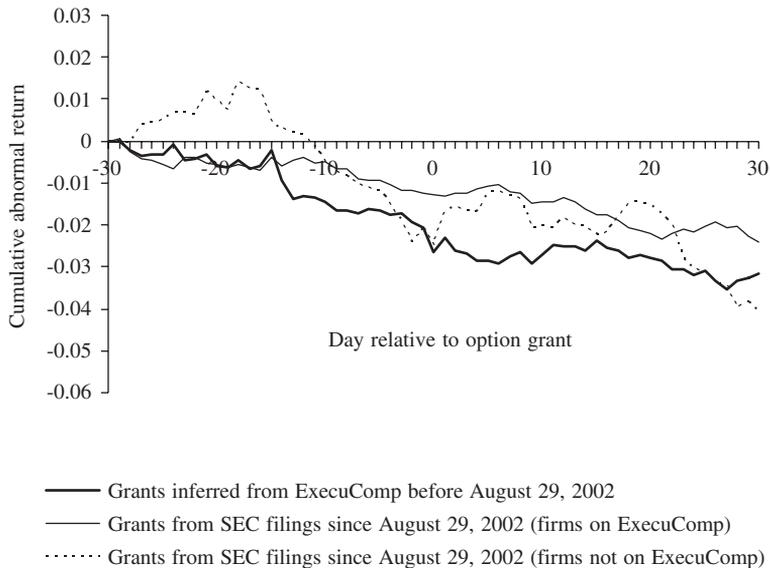


Fig. 8. Cumulative abnormal stock returns around scheduled stock option grants before and after August 29, 2002. The figure shows the cumulative abnormal stock returns from 30 days before through 30 days after *scheduled* stock option grants to chief executive officers. Abnormal stock returns are estimated using the three-factor model described in Fama and French (1993), in which the estimation period is the year ending 50 days before the grant date. The grant data are taken from either ExecuComp (for grants prior to August 29, 2002) or from Securities and Exchange Commission (SEC) filings (for grants after August 29, 2002). The grants from SEC filings are partitioned into firms that are included in the ExecuComp database and firms that are not included in the ExecuComp database.

of scheduled versus unscheduled grants. In any event, the results for scheduled grants corroborate the backdating hypothesis.

#### 4.6. Trading volume around grants and SEC filings

As our final analysis, we examine the abnormal trading volume around the grant and filing dates. In particular, we regress the logarithm of daily trading volume against indicator variables for the grant date, the day after the grant date, the filing date, and the day after the filing date. Following Yermack (1997), the control variables include the logarithm of total market volume, lagged volume variables, indicator variables for the weekday, indicator variables for the day before and after holiday weekends, and indicator variables for earnings and dividend announcements. We ran the regression separately for each observation, using daily data from 200 trading days before the grant date through 50 trading days after the filing date.

Table 4 reports average regression coefficients for the grant and filing date indicator variables for three subsamples based on the number of trading days between the grant date and the filing date: grants that are filed two days after the grant, grants that are filed three days after the grant, and grants that are filed more than three days after the grant. (To avoid singularity problems, we exclude grants that are filed less than two trading days after the grant date.) The average coefficient on the grant date ranges from 8% to 13%,

Table 4

Abnormal trading volume around stock option grants and Securities and Exchange Commission (SEC) filings

The table presents the coefficient estimates for a model of abnormal trading volume around unscheduled option grants to chief executive officers (CEOs) between August 29, 2002 and November 30, 2004. Estimates come from the following model of trading volume:

$$\begin{aligned} \log(v_t) = & \alpha + \beta \log(\text{Market volume}_t) + \lambda_1 \log(v_{t-1}) + \lambda_2 \log(v_{t-2}) + \eta_1 \text{Monday}_t + \eta_2 \text{Tuesday}_t \\ & + \eta_3 \text{Wednesday}_t + \eta_4 \text{Thursday}_t + \phi_1 \text{Holiday}_t + \phi_2 \text{Day after holiday}_t \\ & + \rho \text{Earnings announcement}_t + \delta \text{Dividend announcement}_t \\ & + \gamma_1 \text{Grant date}_t + \gamma_2(\text{Grant date} + 1)_t + \gamma_3(\text{Filing date}_t) + \gamma_4(\text{Filing date} + 1)_t + \varepsilon_t, \end{aligned}$$

$v_t$  is the daily trading volume in the company's stock on day  $t$ .  $\text{Market volume}_t$  is the aggregate volume across all stocks in the Center for Research on Securities Prices (CRSP) database on day  $t$ . The volume data are adjusted for stock splits and stock dividends.  $\text{Holiday}_t$  is an indicator variable that equals one if day  $t$  immediately precedes a three-day holiday weekend or is the Friday following Thanksgiving.  $\text{Day after holiday}_t$  is an indicator variable that equals one if day  $t$  immediately follows a three-day holiday weekend or is the Monday following Thanksgiving.  $\text{Earnings announcement}_t$  and  $\text{Dividend announcement}_t$  are indicator variables that equal one if the company made an earnings or dividend announcement on day  $t$ , respectively.  $\text{Grant date}_t$  is an indicator variable that equals one if the CEO was granted options on day  $t$ .  $(\text{Grant date}+1)_t$  is an indicator variable that equals one if day  $t$  is the day after the CEO was granted option (i.e., the CEO was granted options on day  $t-1$ ).  $\text{Filing date}_t$  is an indicator variable that equals one if the option grant was filed with the SEC on day  $t$ .  $(\text{Filing date}+1)_t$  is an indicator variable that equals one if day  $t$  is the day after the SEC filing (i.e., the option grant was filed with the SEC on day  $t-1$ ). The model is estimated separately for each grant in the sample, using daily data from 200 trading days before the grant through 50 days after the filing. The table reports the means of the individually estimated coefficients for the grant date, grant date + 1, filing date, and filing date + 1 indicator variables. The remainder of the estimated coefficients are not tabulated. Means that differ significantly from zero at the 1% level are boldfaced.

Event	Filed two trading days after the transaction date		Filed three trading days after the transaction date		Filed more than three trading days after the transaction date	
	Mean	<i>P</i> -value	Mean	<i>P</i> -value	Mean	<i>P</i> -value
Grant date	<b>7.8%</b>	0.000	<b>12.1%</b>	0.001	<b>13.1%</b>	0.000
Grant date + 1	<b>11.1%</b>	0.000	<b>10.6%</b>	0.004	5.8%	0.186
Filing date	<b>6.1%</b>	0.005	<b>10.2%</b>	0.003	7.5%	0.085
Filing date + 1	0.4%	0.871	2.8%	0.439	9.2%	0.029

and all *P*-values are less than 0.01. The average coefficient on the day after the grant date ranges from 6% to 11%, and it is statistically significant at the 0.01 level when the filing occurs two or three days after the grant. Thus, the trading volume is about 10% higher than normal on both the grant date and the day thereafter. This does not necessarily imply that the grant gives rise to abnormal trading. Instead, it is likely that the abnormal trading gives rise to large price changes, which decision makers exploit when they backdate options. The average coefficient on the filing date ranges from 6% to 10%, and it is statistically significant at the 0.01 level when the filing occurs two or three days after the grant. Finally, the average coefficient on the day after the filing date is not statistically for any of the subsamples. We speculated earlier that the abnormal price increase on the post-filing day for grants that are filed two days after the grant date might be attributable to investors becoming aware that the grant occurred, interpreting this as a bullish signal, and

then buying the stock on that day. If so, the buying is not sufficiently strong to be evident in the volume data.

## **5. Summary and conclusion**

Past studies reveal abnormal stock price patterns around option grants to executives. These returns are attributed to insiders timing grants to occur before expected future price increases and strategic timing of information releases around grants. However, Lie (2005) suggests that the patterns are too strong and precise to be explained by only these behaviors. Instead, he proposes that insiders might backdate the grants, whereby insiders choose a past date on which the stock price was particularly low to be the grant date. He reports that the abnormal stock returns are high after grants, as are the predicted component of the returns that is driven by the whole market. This suggests that either backdating occurs or executives can predict with reasonable success the future direction of the market. Because the extant literature cannot distinguish between these alternatives, and because Lie's results cannot tell much about what fraction of the abnormal stock returns might be attributable to backdating, we revisit the issue of backdating in the context of executive option grants.

Effective August 29, 2002, the SEC implemented changes mandated by the Sarbanes–Oxley Act and tightened the reporting regulations such that executives are required to report stock option grants they receive within two days. This dramatic change creates a natural laboratory to test the backdating hypothesis. If backdating was prevalent under the relaxed requirements before August 29, 2002 and therefore was a major contributor to the abnormal stock returns around option grants, we hypothesize that the pattern should significantly weaken after the change in reporting requirements. Comparing the abnormal stock price pattern for a sample of grants from January 1, 2000 to August 28, 2002 to that for a sample from August 29, 2002 to November 30, 2004, we find that this is the case. In particular, about 80% of the abnormal returns disappear from the earlier to the later period. This suggests that most, if not all, of the pattern before August 29, 2002 is attributable to the effects of backdating.

Next, we recognize that backdating could take place even in the new regulatory environment (especially if firms violate the new requirements), though the gains from such behavior and thus the effect on the abnormal stock return patterns would be more modest. To examine this possibility, we partition our sample into subsets of grants based on the reporting lag. When grants are reported within one day, the pattern is imperceptible. When grants are reported on the day of the deadline, the pattern is perceptible but, as expected if backdating were the cause, limited to the days immediately surrounding the grant date. Finally, when grants are reported after the deadline, the pattern is strongest and stretches from weeks before to weeks after the grants. These results suggest that backdating, although significantly curtailed, continues to be evident even after the new reporting requirements took effect.

Overall, we find evidence suggesting that backdating is the major source of the abnormal stock return patterns around executive stock option grants. Our evidence further suggests that the new reporting requirements have greatly curbed backdating but have not eliminated it. To eliminate backdating, it appears that the requirements need to be tightened further, such that grants have to be reported on the grant day or, at the latest, on the day thereafter. In addition, the SEC naturally has to enforce the requirements.

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