What fraction of stock option grants to top executives have been backdated or manipulated?*

Randall A. Heron
Kelley School of Business
Indiana University
Indianapolis, IN 46202
Tel: 317-274-4984
Email: rheron@iupui.edu

Erik Lie
Henry B. Tippie College of Business
University of Iowa
Iowa City, IA 52242
Tel: 319-335-0846
Email: erik-lie@uiowa.edu

November 1, 2006

Abstract

We estimate that 18.9% of unscheduled, at-the-money option grants to top executives during the period 1996-2005 were backdated or otherwise manipulated. The fraction is 23.0% before the new two-day filing requirement took effect on August 29, 2002, and 10.0% afterward. For the minority of grants that are not filed within the required two-day window, the fraction backdated remains as high as 19.9%. We further find a higher frequency of backdating among tech firms, small firms, and firms with high stock price volatility. In addition, firms that use smaller (non-big-five) auditing firms are more likely to file their grants late. Finally, at the firm level, we estimate that 29.2% of firms manipulated grants to top executives at some point between 1996 and 2005.

JEL classification: J33; M52
Keywords: Executive stock option grants; Backdating

* We thank Dave Denis, Tod Perry, Anand Vijh, and David Yermack for helpful comments.

What fraction of stock option grants to top executives have been backdated or manipulated?

Abstract

We estimate that 18.9% of unscheduled, at-the-money option grants to top executives during the period 1996-2005 were backdated or otherwise manipulated. The fraction is 23.0% before the new two-day filing requirement took effect on August 29, 2002, and 10.0% afterward. For the minority of grants that are not filed within the required two-day window, the fraction backdated remains as high as 19.9%. We further find a higher frequency of backdating among tech firms, small firms, and firms with high stock price volatility. In addition, firms that use smaller (non-big-five) auditing firms are more likely to file their grants late. Finally, at the firm level, we estimate that 29.2% of firms manipulated grants to top executives at some point between 1996 and 2005.

.

1. Introduction

Yermack (1997) finds that firms' stock returns are abnormally high immediately after executive stock option grants, and Aboody and Kasznik (2000), Chauvin and Shenoy (2001), Collins, Gong, and Li (2005a, 2005b), Lie (2005), Heron and Lie (2005), and Narayanan and Seyhun (2006) also find that the returns are abnormally low before the grants. The latter four studies find evidence that backdating, i.e., picking a past date on which the stock price was particularly low to be the grant date, contributes to this stock price pattern. Heron and Lie (2005) conclude that "backdating is the major source of the abnormal stock return patterns around executive stock option grants" and that it can explain "most, if not all, of the pattern" in stock returns around grants.

However, the extant research does not specifically attempt to discern the fraction of grants that are backdated. What we do know is that the media, principally starting with a *Wall Street Journal* article dated March 18, 2006, has identified dozens of suspect firms, firms under formal investigation, and firms that have admitted irregularities in the accounting of their option grant dates. For example, at the end of October, 2006, *The Wall Street Journal Online* reported that at least 120 firms have come under scrutiny for past option grants. Further, Derek Meisner, a former branch chief in enforcement division of the Securities and Exchange Commission (SEC), recently stated that he is "not aware of a corporate practice that has come under such scrutiny by the SEC" (Bloomberg News, May 26, 2006). Clearly, the magnitude of the backdating problem is of great interest to both the investment community and regulators, and it is the subject of frequent speculation in the media. This study provides some estimates on the fraction of grants to top executives that have been backdated or manipulated in some fashion.

Another important contribution is that we examine the effects of firm characteristics and the identity of the auditor on the decision to manipulate grant dates.

Our estimation methodology rests on the assumption that in the absence of backdating or other types of grant date manipulation, the distributions of stock returns during the month before and after grant dates should be roughly the same, implying that the distribution of return differences should be centered on zero. This allows us to infer the fraction of grants that must have been backdated or otherwise manipulated by contrasting the distribution of the observed return differences with what the distribution should be in the absence of grant timing. One might argue that firms might merely grant options after stock price declines, e.g., a negative macroeconomic shock. However, the empirical evidence in Heron and Lie (2005) does not support this conjecture, as the negative abnormal returns before option grants are absent for the subset of their sample that reported option grants immediately. We explain our estimation procedure along with potential bias in further detail later.

Our sample consists of 39,888 stock option grants to top executives that were dated between January 1, 1996 and December 1, 2005. We estimate that 13.6% of these grants were backdated or manipulated. However, there are significant differences across time periods, company types, grant characteristics, and even auditors.

Accounting convention and tax rules provide incentives for companies to price the majority of their option grants to be at-the-money (i.e., to set the exercise price to be equal to the market price) on the purported grant date (see Heron and Lie (2005) for further discussion). If companies choose not to grant the options at-the-money, the incentive to backdate is muted. Moreover, if grants are scheduled to occur on a certain

date every year, the opportunity for backdating is absent. Thus, the remainder of our analysis focuses on unscheduled, at-the-money option grants, for which we estimate the fraction backdated to be 18.9%.

Before August 29, 2002, we estimate that 23.0% of unscheduled, at-the-money grants were backdated. After the SEC tightened the reporting regulations on August 29, 2002 to require executives to report stock option grants they receive within two business days (see Heron and Lie (2005) for further details), 10.0% of unscheduled, at-the-money grants were backdated. For grants filed within the required two business day window in this later period, the incidence of backdating drops to 7.0%, a stark contrast to our estimate of 19.9% for grants filed late.

Because many of the companies that have been singled out as suspects of having backdated options are technology companies and/or companies with volatile stock prices (which increases the potential gains from backdating), we also partition our sample according to stock price volatility and whether firms operate in the tech sector. Not surprisingly, we find that tech firms and firms with high stock price volatility are significantly more likely to backdate grants. Even when controlling for these features, we also find that small firms are more likely to engage in backdating.

According to a *Reuters News* article dated June 7, 2006, "the SEC is exploring what auditors knew about questionable practices; what information, if any, was withheld from them; and whether they may have signed off on practices such as backdating and spring-loading." We utilize auditor data to identify whether there exists any significant associations between the practice of backdating and auditor affiliation. After controlling for other factors, we find that PricewaterhouseCoopers is associated with a lower fraction

of backdated grants, whereas non-big-five auditing firms are associated with a higher fraction of both late filings and unscheduled grants, both of which are positively related to the likelihood of backdating.

In our final set of tests, we extend our analysis from the grant level to the firm level. After aggregating the grants in each firm, we estimate that 29.2% of 7,774 firms in the sample backdated or manipulated grants to top executives at some point between 1996 and 2005. Overall, our results suggest that backdated or otherwise manipulated grants are spread across a remarkable number of firms, although these firms did not manipulate all of their grants.

The remainder of the paper proceeds as follows. The next section describes the sample and the methodology. Section 3 presents empirical results. Finally, section 4 summarizes and concludes.

2. Sample and methodology

2.1 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 restrict our sample to transactions that occurred before 12/1/2005 (so that a month of subsequent returns is available in the 2005 CRSP database). We further require stock returns to be available from 20 trading days before to 20 trading days after the grant date. Finally, we only include grants to the CEO, President, or Chairman of the Board. We include all three categories because we have observed many instances in which top executive officers (typically referred to as the

CEO) identify themselves by an alternate title (such as the President) in their SEC filings. We eliminate any duplicate grants that occur on a given grant date, so that there is only one grant for a given date and company combination.[1] Our final sample consists of 39,888 grants across 7,774 companies.

The Insider Filing database provides the official grant date and the exercise price. The exercise price equals the closing price on this date for half of the grants.[2] For 12% of the grants, the exercise price is the closing price on the prior day. For the purposes of estimating returns around grant dates, we define the grant date to be the day on which the exercise price equals the stock price. For the remainder 38% of the grants, we cannot match the exercise price with the closing price on the official grant date or the prior day. There are several possible reasons for this. First, it is possible that some alternative to the closing price, e.g., the average of several prices leading up to the close of the grant date, was used as the exercise price. Second, the options might deliberately have been granted out-of-the money. For example, the exercise price might have been set to equal 110% of the market price. Third, a price adjustment, e.g., due to a stock-split, might have been made to the data that we did not uncover. Fourth, the database might contain errors.

Table 1 presents the sample distribution by year. The number of grants peaks in 1998, which includes 11.8% of all grants in our sample. In the years thereafter, especially from 2001 to 2005, the number of grants steadily drifts downward. When adjusting the number of grants in 2005 for the exclusion of December of that year, the

[1] Because numerous top executives often receive options on the same date, our estimates really capture the fraction of grant dates involving top executives that are backdated, rather than the fraction of grants to top executives that are backdated. We show later that grants are more likely to be backdated when there are more recipients, suggesting that our estimates would be higher if we did not eliminate duplicate grants on a given grant date.

decline from 1998 to 2005 is about 30%. There are many possible reasons for this decline, including new accounting rules requiring stock options to be expensed even if the options are not in-the-money at the time of the grant and new filing rules effective August 29, 2002, requiring grants to be filed with the SEC within two business days. The latter rule in particular curtails the benefits from backdating option grants.

The table also provides the fraction of grants that were filed within two business days for each year since August 29, 2002. From August 29, 2002, to the end of that year, only 66% of the grants were filed on time. By 2005, the fraction filed on time had increased to 87%. We find it surprising and unnecessary that so many grants continue to be filed late, especially since the SEC unveiled on May 5, 2003 its website to simplify the filing of Forms 3, 4, and 5. Perhaps the apparent late filings reflect a widespread practice of backdating grants more than two days back.

2.2 Methodology for estimating the fraction of grants that are backdated

In the absence of opportunistic grant timing or opportunistic timing of information flows around grants, the returns before and after grant dates should be similar. Consequently, if opportunistic timing is absent, the distribution of the difference between the returns for a given number of days after the grants and the returns for the same number of days before the grants should be centered roughly at zero. We use this logic to develop an estimate of the fraction of grants that are backdated or otherwise manipulated.

---

[2] If a stock split has occurred between the grant date and the filing date, the exercise price in the filing is often adjusted to account for this split. If so, we try to unadjust the given exercise price to make it comparable to the market price on the grant date.

Our estimate encapsulates the extent to which various manipulative practices, including backdating and springloading (i.e., granting options before predicted price increases), contribute to the abnormal stock price patterns around declared option grant dates. It further captures any tendency for firms to simply grant options after stock price declines. However, the empirical evidence in Heron and Lie (2005) suggests that the majority of the abnormal returns before and after purported grant dates are attributable to backdating. Thus, we believe that the effects of manipulative practices other than backdating and the practice of granting options after stock price declines on our estimates are minor. This is further corroborated by our estimates for certain subsamples of grants reported later.

Because prior studies suggest that most of the abnormal stock returns around grants occur during the month before and after the grants, we focus on the difference between the stock returns during the 20 trading days after the grants and those during the 20 trading days before the grants. Table 2 presents the distribution of this difference and Table 3 presents summary statistics for the difference. The mean and median differences in returns are 6.3% and 2.8%, respectively. Furthermore, 57% of the differences are positive. These statistics suggest that the distribution is not centered at zero, but rather that the whole distribution has been shifted upward. Importantly, this is not driven by just a few outliers.[3]

[3] We also develop a benchmark distribution intended to reveal what the distribution of the return differences would look like in the absence of opportunistic timing. The benchmark distribution is based on the same companies as the original sample of grants, but where the grant dates have been replaced with a random date from either the period from six months before to three months before the grant date or the period from three months after to six months after the grant date. For the benchmark sample, the mean and median difference in returns are -0.2% and -0.6%, respectively, and the fraction of differences that are positive is 48%. On the basis of these statistics, the distribution appears to be centered roughly at zero, or perhaps slightly less. Thus, our assumption that the distribution of return differences around grant dates is

Based on the assumption that half of the return differences should be negative in the absence of timing, we infer the proportion of grants that have been opportunistically timed. We estimate the fraction of grants that are backdated as follows:

$$\text{Fraction of backdated grants} = \frac{P - A}{P} \tag{1}$$

where

A = Actual number of negative return differences.

P = Predicted number of negative return differences, calculated as the sum of the number of negative and positive return differences divided by two.

The intuition for the estimate is simple. If there is no backdating and the decision to grant options is actually made on the grant date, one does not know *ex ante* what the return difference will be. In any event, backdating will typically inflate the return difference. We conjecture that some of the return differences that would have been negative in the absence of backdating will turn positive because of backdating. Further, return differences that would have been positive in the absence of backdating will remain positive and sometimes get larger because of backdating. Because we have no reason to believe that the extent of backdating differs across grants that *ex post facto* turn out to have negative return differences in the absence of backdating versus grants that *ex post facto* turn out to have positive return differences in the absence of backdating, we focus on the effect of backdating on the former group.

The predicted number of negative return differences in our estimate of the fraction of grants backdated rests on the notion that half of the return differences should be negative in the absence of backdating. If less than half of the return differences are

---

centered on zero in the absence of opportunistic timing seems reasonable and perhaps even slightly

actually negative, it is assumed to be because the "missing" grants with negative return differences have been backdated. Our estimate scales these "missing" grants by the number of grants that should have been negative in the absence of backdating to yield a fraction of backdated grants among grants that otherwise would have had negative return differences. Given our discussion above, we extrapolate this such that it is also the fraction of backdated grants in the entire population.

A natural question is whether our estimate is biased in some manner. We believe that our estimate might actually understate the prevalence of backdating and similar manipulative practices for several reasons. First, we might not have made the correct adjustments to the grant dates in all cases. As we note earlier, we compare the given exercise price to the closing price on the day of the official grant date and to the closing price on the previous day, and define the grant day to be the day when the closing price equals the exercise price. However, in 38% of the cases, we are unable to match the exercise price with a market price, in which cases it remains unclear exactly what day we should have defined to be the grant date. If we somehow use the incorrect date, the true backdating effect is partially obscured. Consistent with this argument (as well as other explanations), we show later that our estimate of the fraction of backdated grants is higher if we remove the grants for which we cannot match the exercise price with a market price.

A second reason why our estimate might understate the frequency of backdating is that we might not have used the correct period for contrasting stock returns. This will introduce noise that can disguise some backdating. For example, some media articles suggest that grants have been backdated to the date from the prior month with the lowest

---

conservative.

price. If the price has steadily increased during the prior two months, but less so in the most recent month, the purported grant date would be one month prior to the decision date. However, the return difference would be negative, and we would not count it as a backdated grant in our analysis. Consistent with this argument, we show later that our estimate of the fraction of grants that are backdated increases for a sub-sample of grants for which we are able to refine the return period.

3. Empirical results

3.1 Estimates of backdating frequency

Table 3 reveals that our estimate of the fraction of manipulated grants in our entire population of grants is 13.6%. As noted earlier, our estimate captures various manipulative practices, including backdating, as well as the possibility that grants simply occur after declines in stock prices. To assess the magnitude of effects other than backdating, we also report our estimate for the subsample of grants that are filed within one day. These grants could not have been backdated (at least not more than one day), but could still have been manipulated in other ways (e.g., springloaded) or timed to occur after price declines. Our estimated fraction of manipulation is only 0.3% for this subset of grants, suggesting that practices other than backdating play, at best, a minor role in our results.

Lie (2005) and Heron and Lie (2005) discuss the motivations for backdating in detail, which include that grants historically receive more beneficial accounting and tax treatment when the options are granted at-the-money (or out-of-the-money) as opposed to being in-the-money. This explains why companies usually choose the exercise price to

equal the market price on the declared day of the grant, which again gives rise to the benefits of backdating. Naturally, if the exercise price is not chosen in this way, the incentive to backdate is diminished.[4] Thus, we initially partition our sample of grants into those that are at-the-money versus others, and report estimates for both groups in Table 4. Of the grants that are at-the-money, we estimate 16.4% to be backdated, compared to 9.0% of grants that are not at-the-money. These results suggest that grants are almost twice as likely to be backdated if they are at-the-money, but a substantial portion of grants that we classify as not being at-the-money are also backdated. We recognize that there likely is some classification error due to possible misclassification of at-the-money grants as not being at-the-money because of undetected stock splits after the grant dates were chosen. Consequently, the only definite conclusion we can make from our estimates is that at-the-money option grants are much more likely to be backdated than other grants.

If the grants are scheduled in advance, there is no opportunity to opportunistically time them. Unfortunately, in a large sample setting, it is difficult to gauge whether grants truly are scheduled. Following Aboody and Kasznik (2000), Lie (2005), and Heron and Lie (2005), we assume that grants are scheduled if they occur at the same time every year. Based on this assumption, we adopt two classification schemes. First, we classify a grant as scheduled if it is dated within one day of the one-year anniversary of a prior

[4] In the special case where the exercise price is set to be the average market price across numerous recent days, the price pattern leading up to the grants is likely to be the opposite of that for backdated at-the-money option grants. If the price has drifted downward in recent days, it is better to postpone the grant so that the higher prices in the beginning of the downward drift are excluded from the calculation of the exercise price. On the other hand, if the price has increased recently, it makes sense to hurry the grant so that the earlier low prices are included in the calculation of the exercise price. By this reasoning, the prices are likely to increase leading up to the grant whose exercise price is based on average past prices.

grant. This is the classification that Heron and Lie (2005) use.[5] However, this classification would not capture (a) the first of a string of scheduled grants and (b) a scheduled grant if grant data are missing for the previous year. Second, we classify a grant as scheduled if it is followed by a grant that is dated within one day of the one-year anniversary, given that it is not already classified as scheduled using our first classification criterion. This second classification scheme might capture some truly scheduled grants that our first classification scheme misses, at the risk of including unscheduled grants after which subsequent scheduled grants are merely patterned. Irrespective of our classification scheme, we will undoubtedly misclassify a number of grants. We believe that most of the grants that are classified as scheduled using the first scheme are truly scheduled, and most of the grants that are classified as unscheduled by both schemes are truly unscheduled.

Table 4 shows that 15.8% of the grants that are classified as unscheduled are estimated to be backdated or otherwise manipulated. For grants that are classified as scheduled using the first classification scheme, the fraction is only 0.9%. For grants that are classified as scheduled using the second classification scheme, the fraction is 6.7%, consistent with the notion that this classification scheme incorrectly classifies many unscheduled grants as scheduled. Finally, 18.9% of grants that are both at-the-money and classified as unscheduled are estimated to be backdated. In the remainder of our analysis, we focus on this sample of grants that are at-the-money (such that the motivation for opportunistic timing clearly exists) and unscheduled (such that opportunistic timing is feasible). This sub-sample represents 51% of our total sample of grants.

[5] In comparison, Aboody and Kasznik (2000) classify a grant as scheduled if is dated within one *week* of the one-year anniversary of a prior grant. However, Lie (2005) shows results that indicate that this

Panel A of Table 5 shows our estimates before August 29, 2002, when the new two-day filing requirement took effect, and Panel B shows the estimates afterward. In the earlier period, we estimate that 23.0% of the unscheduled, at-the-money grants were backdated. The new filing requirements appear to have greatly curbed the frequency of backdating. Our estimate under the new regulatory era is 10.0%. However, as we noted earlier, a substantial fraction of grants violate the two-day filing requirements. Panel B shows the estimates for those grants that are filed on time versus those that are not. About 19.9% of unscheduled, at-the-money grants that are filed late are backdated, compared to only 7.0% of grants that are filed in time. Thus, the new filing requirements did not eliminate the backdating of grants for two reasons. First, many firms simply ignore the two-day filing requirements, in which case the incidence of backdating appears to be roughly the same as it was before these requirements took effect. Second, the two-day gap between the official grant date and the filing date still provides sufficient gains from backdating for firms to adopt such practices.

Our results suggest that the two-day filing requirement has roughly halved the incidence of backdating. Furthermore, Heron and Lie (2005) suggest that "the new reporting requirements appear to have reduced the average abnormal return by almost 80% on the post-grant day." The combined results suggests that the reduced abnormal return documented by Heron and Lie is due to both a reduction in the incidence of backdating and a reduced gain (manifested in lower abnormal returns) when backdating occurs, especially if backdating is practiced only within the two-day filing window.

Panel A partitions our sample of grants dated before August 29, 2002 by industry, size, and stock return volatility. First, we compare grants by low-tech firms versus grants

---

classification captures too many grants that are not strictly scheduled.

by high-tech firms, because a disproportionate number of technology firms appear to have come under scrutiny for possible backdating. A *Reuters News* article dated June 12, 2006, stated that "technology companies, which have relied heavily on options packages to boost executive and employee salaries, have been the most vulnerable to such probes to date." A *Fortune* article dated November 28, 2005, quotes a Silicon Valley lawyer as saying "I'd be surprised if there was even one public tech company that did not employ this practice in those [bubble] years." The estimated fraction of unscheduled, at-the-money grants that are backdated is 20.1% among low tech firms and 32.0% among high-tech firms. Evidently, technology firms are more likely to backdate option grants than other firms, consistent with the media's general depiction of this issue.

We further compare grants by small (market capitalization 20 days before grant < $100 million), medium ($100 million < market capitalization < $1 billion), and large (market capitalization > $1 billion) firms. We conjecture that large firms have better governance mechanisms and routines in place that will mitigate grant timing. Consistent with this conjecture, we estimate the fraction of unscheduled, at-the-money grants that are backdated to be 23.1% among small firms, 27.0% among medium-sized firms, and 15.4% among large firms.

Finally, we partition the grants roughly into terciles based on the volatility of the underlying stock returns. If the stock prices are stable, there is little to gain from timing the grant dates. Thus, we expect that the frequency of grant timing is greater for firms whose stock prices are volatile. Consistent with this line of reasoning, we estimate the fraction of unscheduled, at-the-money grants that are backdated to be 13.6% among firms

with low volatility, 26.2% among firms with medium volatility, and 29.0% among firms with high volatility.

3.2 Bias from using the wrong return period

As discussed earlier, our estimated fraction of grants that were backdated might be understated to the extent that we used the incorrect period for examining stock returns. The proper period to use depends on how far back the options can be backdated, which likely varies from case to case. By looking at a subsample of grants for which we can better gauge this period, we assess the magnitude of the bias in our estimates. In particular, we focus on at-the-money grants that are filed with the SEC two days after the official grant date. As we showed evidence of earlier, a non-trivial fraction of these grants have been backdated, but they can only have been backdated two days. Thus, we can say with a high degree of certainty that we should focus on the two-day returns. Our estimate of the proportion of backdated grants is then based on the difference between the two-day returns after the grants and the two-day returns before the grants. Looking at the difference in returns is still critical, because we need a proper benchmark against which the post-grant returns can be compared.

Table 6 reports our estimates of the fraction of grants backdated based on both the two-day returns and the 20-day returns for the sample of unscheduled, at-the-money grants. The estimates based on the two-day and 20-day periods are 11.8% and 9.9%, respectively, for grants that are filed two days after the declared grant date. Thus, for this sub-sample of grants, our estimate based on the 20-day period appears to understate the true fraction by about 20%. The estimates are higher using the two-day period even for

grants that are not filed two days after the purported grant date, suggesting that while the 20-day period captures most of the underlying effect, it also captures considerable noise that contributes to an understatement of the estimate of the proportion of grants that involve backdating.

3.3 The role of the auditor

The media has speculated that auditors might have played a role in the backdating of option grants. An *Investor's Business Daily* article dated May 22, 2006 states that "Federal prosecutors launched a criminal probe into the options practices of pharmacy benefits manager Caremark" and goes on to say that "CareMark has dismissed its auditor KPMG." A *Wall Street Journal* article dated June 1, 2006 discusses the case of Micrel Inc.:

> "In a lawsuit filed in 2003, Micrel Inc. alleges Deloitte [& Touche LLP], its former auditor, signed off on an arrangement in which the company would set the strike price for employee stock options at the stock's lowest price during the 30 days after the grant of options was approved. … Micrel's lawsuit raises the question of 'how many companies may have been backdating their employee stock options with the full blessing of their independent auditors,' according to a note this week from research firm Glass Lewis & Co."

Reuters News follows up with an article dated June 7, 2006:

> "The U.S. investigation into corporate stock option timing abuses is expanding to look at the role of outside auditors, said sources close to the probe. Authorities

were said to be looking at what auditors knew about company manipulation of options' grant dates and exercise prices to boost their value to executives who got them. … In the options probe, sources said, the SEC is exploring what auditors knew about questionable practices; what information, if any, was withheld from them; and whether they may have signed off on practices such as backdating and spring-loading. … 'As these cases shake out, I wouldn't be surprised if we saw that there were auditors who were familiar with some of the details of this,' said George Stamboulidis, partner at the law firm of Baker Hostetler and a former federal prosecutor."

Finally, A *Wall Street Journal* article dated June 23, 2006 entitled "Backdating Woes Beg the Question of Auditors' Role" raises the possibility that auditors "didn't live up to their watchdog role" and states that "the big accounting firms haven't said whether they believe there was a problem on their end." To investigate formally whether certain auditors have contributed to backdating more than others, we identify the auditor of the firms in our sample at the time of the grants. We obtain the auditor information from Audit Analytics, which contains such data for each of the years since 2000. Table 7 reports our estimates of the fraction of grants that are backdated for each of the "big five" auditing firms and for smaller auditing firms as a group. For all auditors, the estimates decrease from the period before August 29, 2002, to the period afterward. There are also some differences in the estimates across the auditors. Small auditors are associated with more backdating than big five firms after August 29, 2002. Among big five firms, PricewaterhouseCoopers and KPMG are associated with less backdating before August 29, 2002, and PricewaterhouseCoopers is also associated with less backdating after

August 29, 2002. However, we should be careful when interpreting these differences in backdating estimates, as they might reflect differences in the characteristics of audited firms. Thus, we refine our analysis by examining the effect of auditors in a multivariate context, in which we control for a number of variables that might be correlated with both the incidence of backdating and the auditor.

3.4 Multivariate analysis

In our multivariate analysis, we regress both the return difference (i.e., the difference between stock returns in the 20 days after the grant and the stock returns in the 20 days before the grant) and an indicator variable for whether the return difference is positive against various independent variables. Following the earlier univariate analysis, the independent variables include indicator variables for whether the grant was dated on or after August 29, 2002, whether it was filed early, whether it was filed late, and whether the granting firm was in the technology sector, and continuous variables for the logarithm of market capitalization and stock return volatility. In addition, we include the logarithm of the number of executives and directors who received options on the given grant date, a variable that indicates whether any of the recipients were outside directors, and the total number of shares underlying the options granted. We predict that larger grants are more likely to be manipulated, and speculate that the presence of other recipients, especially outside directors, might affect manipulation practices. In a separate set of regressions based on the sample of grants for which we could identify the auditor, we introduce auditor indicator variables as independent variables one at a time. Thus, the auditor coefficients should be interpreted as the effect from the given auditor relative to all other

auditors. To control for temporal effects, we include indicator variables for the year of the grant in all regressions.

Panel A of Table 8 shows the results based on the entire sample of unscheduled, at-the-money grants, and Panel B shows the results for the sample of unscheduled, at-the-money grants for which we could identify the auditor. Consistent with earlier univariate analysis, grant manipulation is more prevalent among firms that are small, operate in the tech sector, and have high stock return volatility. Furthermore, manipulation is more likely when large numbers of options are granted and there are numerous recipients. The results regarding return volatility and grant size both suggest that manipulation is more likely when there is relatively more to gain.

The coefficients on PricewaterhouseCoopers are negative, with a p-value of 0.092 in the regression of return differences and a p-value of 0.014 in the logistic regression of whether the return difference is positive. None of the other auditor coefficients differ statistically from zero at the ten percent level. Our results suggest that PricewaterhouseCoopers is associated with a lower fraction of grants that are backdated. One possible explanation for this is that PricewaterhouseCoopers does a better auditing job. On the other hand, there is no evidence to suggest a particular auditor is to be blamed for the high frequency of backdating in our aggregate sample.

The regressions in Table 8 control for whether the grants are filed late. It is possible that certain auditors are associated with more late filers, which in turn could lead to a greater fraction of backdated grants. Because this indirect effect would not show up in Table 8, we examine the relation between late filing and auditor directly. Table 9 shows results from regressing whether a grant was filed late against control variables and

auditor indicator variables. The most important determinant of late filing is firm size. Small firms are significantly more likely to file late than large firms. After controlling for firm size, grants of firms audited by non-big-five firms are significantly more likely to be filed late. This likely explains the relatively high incident of backdating among these firms in Table 7 after August 29, 2002.

The combination of the results in Tables 7 through 9 suggests that there are some small differences in the fraction of backdated grants among the firms covered by various auditors. PricewaterhouseCoopers is associated with a lower fraction of backdating, whereas non-big-five auditing firms are associated with a higher fraction of late filings, which are positively associated with backdating.

Most of our analysis has focused on unscheduled grants, because scheduled grants do not permit the grant date to be manipulated. Collins, Gong, and Li (2005a) suggest that firms might choose grants to be unscheduled so that they can more easily be manipulated. Thus, we also estimate a regression of whether a grant is scheduled based on our two earlier classification schemes. The results are reported in Table 10. Consistent with Collins, Gong, and Li (2005a), large firms are more likely to grant options on a scheduled basis. Furthermore, scheduled grants are more common among low-tech firms and for firms with low stock return volatility. The latter result suggests that firms choose to grant options on an unscheduled basis when the potential benefits from manipulating the grant date are large. Finally, Ernst & Young is associated with relatively more scheduled grants, whereas the non-big-five audit firms are associated with relatively more unscheduled grants. This is another piece of indirect evidence that non-big five audit firms are associated with more manipulation of grant dates.

3.5 The fraction of firms engaged in backdating

Our analysis thus far has focused on the fraction of grants that are backdated. This does not translate directly into the fraction of firms that have engaged in backdating for several reasons. Firms might have backdated only some of their grants during a period. Moreover, firms that backdated grants in the early years of the sample period might have ended this practice when the new two-day filing requirement became effective. Both of these scenarios suggest that the backdated grants are not concentrated among certain firms, but are spread across a large number of firms, such that the fraction of firms that have backdated grants is likely higher than the fraction of grants that have been backdated. Further complicating the issue is that the number of grants varies across companies combined with the possibility that this number is related to the incidence of backdating. That is, the backdated grants could be spread across a small set of firms with many grants or a large set of firms with few grants.

To gauge the fraction of firms that have backdated grants, we first average the 20-day return differences at the firm level. Then we apply the same estimation method as earlier on the firm level averages. For the whole sample period, we have average return differences for 7,774 firms. We estimate that 29.2% of these firms engaged in backdating or similar manipulation of grants to top executives at some point between 1996 and 2005.[6] We also replicate our analysis for the period before and after August 29, 2002. Based on a sample of 6,868 firms, we estimate that 30.1% engaged in backdating at some point between 1996 and August 28, 2002. Further, based on a sample of 4,098

firms, we estimate that 16.1% engaged in backdating at some point between August 29, 2002 and 2005. Collectively, one might interpret these estimates to mean that about one half of the firms that backdated grants before August 29, 2002 continued to do so afterward, but that very few firms initiated the practice after August 29, 2002. In any event, the high fractions underscore how widespread the practice of grant backdating and similar practices must have been. Furthermore, the alleged incidents of backdating that have surfaced in the media appear to represent merely the tip of the iceberg.

3.6 An alternative approach

The "look-back period," i.e., the period from which the grant date is chosen, varies substantially across backdated grants. In some cases, e.g., option grants in Microsoft Corp. between 1992 and 1999, the look-back period was a certain calendar month. In other cases, the look-back period was longer (e.g., a fiscal quarter) or shorter (e.g., two days for many backdated grants since 2002). We believe that our estimate tends to capture backdating irrespective of the look-back period, but it will also capture a lot of noise, which could disguise some backdating. In this section, we take a simplified approach. In particular, we assume that the look-back period is a calendar month. Then we rank the closing price on the grant date relative to all other closing prices in the same month. The ranks will give a sense for the prevalence of backdating grants to a low price for a given month.

Figure 1 displays the distributions of the ranks for the periods before and after August 29, 2002. We further estimate the abnormal fraction of grants with a rank of one

[6] To the extent that we are missing grants for some of the firms in our sample, the estimates at the firm

as the difference between grants with a rank of one and the average number of grants with a rank between 5 and 15, scaled by the total number of grants. This estimate is 8.7% before August 29, 2002 and 3.6% afterward. These fractions can be interpreted as the fractions of grants that are backdated to the date in a given month with the lowest price. As such, they provide some further insight into the practice of backdating, even though the assumptions on which they are based limit their indications of the prevalence of backdating across all look-back periods.

4. Summary and conclusion

Past studies have revealed that stock prices decrease before grants to top executives and increase immediately afterward. Heron and Lie (2005) attribute the vast majority of this pattern to backdating of grants. This study extends prior studies by estimating the fraction of grants that are backdated or otherwise manipulated. We also relate this fraction to time period, grant characteristics, firm characteristics, and auditing firms.

We estimate that 13.6% of grants between 1996 and 2005 have been backdated or manipulated in some fashion. This fraction is highest for unscheduled, at-the-money grants, and among firms that are small, operate in the tech sector, and have high stock price volatility. The incidence of backdating was more than halved as a result of the two-day filing requirement that took effect on August 29, 2002, but it remains high for grants that are filed late. Controlling for these factors, the auditor also seems to play a role. Non-big-five auditors are associated with a larger proportion of late filings and unscheduled grants, which likely leads to more backdating and manipulative practices,

---

level might be biased downward.

whereas PricewaterhouseCoopers is associated with a lower proportion of manipulation. Finally, we extend our analysis to the firm level, and estimate that 29.2% of firms at some point engaged in manipulation of grants to top executives between 1996 and 2005.

Despite the prevalence of backdating and related manipulations, we believe that only a minority of the firms that have engaged in this practice will be identified. It can be difficult to identify backdating with certainty for individual firms for a variety of reasons. First, it is not clear what look-back period firms use when backdating grants, making it unclear what period to examine when assessing whether the grant date had the lowest price. Second, if the lowest price during the look-back period occurs at the beginning or end, the typical "V" pattern in stock prices around the grant date that is associated with backdating might be absent. Third, firms might have several stock option plans in place, some of which might not permit backdating. Fourth, the people responsible for the backdating might try to disguise this practice, e.g., by choosing the second-lowest price during the look-back period. In any event, regulators will likely improve and enforce the disclosure requirements, such that the incidence of backdating will decline further.

References

Aboody, D., and R. Kasznik, 2000, CEO stock option awards and the timing of corporate voluntary disclosures, *Journal of Accounting and Economics* 29, 73-100.

Chauvin, K. W., and C. Shenoy, 2001, Stock price decreases prior to executive stock option grants, *Journal of Corporate Finance* 7, 53-76.

Collins, D. W., G. Gong, and H. Li, 2005a, The timing of CEO stock option grants: scheduled versus unscheduled awards, working paper, University of Iowa.

Collins, D. W., G. Gong, and H. Li, 2005b, The effect of the Sarbanes-Oxley Act on the timing manipulation of CEO stock option awards, working paper, University of Iowa.

Fama, E. F., and K. R. French, 1997, Industry costs of equity, *Journal of Financial Economics* 43, 153-193.

Heron, R. A., and E. Lie, 2005, Does backdating explain the stock price pattern around executive stock option grants? *Journal of Financial Economics*, forthcoming.

Lie, E., 2005, On the timing of CEO stock option awards, *Management Science* 51, 802-812.

Narayanan, M. P., and H. N. Seyhun, 2006, The dating game: do managers designate option grant dates to increase their compensation? working paper, University of Michigan.

Yermack, D., 1997, Good timing: CEO stock option awards and company news announcements, *Journal of Finance* 52, 449-476.

Table 1
Distribution of grants across time

The table presents the distribution of the sample of 39,888 executive stock option grants across time. The grant data are taken from SEC filings. *Fraction filed on time* is the fraction of grants that are filed by the second business day of the grant date.

Period	Number of grants	Fraction of sample	Fraction filed on time
1996	3,255	8.2%	
1997	4,442	11.1%	
1998	4,726	11.8%	
1999	4,399	11.0%	
2000	4,433	11.1%	
2001	4,513	11.3%	
2002	3,932	9.9%	
Before August 29	2,835	7.1%	
On or after August 29	1,097	2.8%	66.1%
2003	3,619	9.1%	71.1%
2004	3,558	8.9%	81.0%
2005 (excl. December)	3,011	7.5%	87.2%

Table 2
Distribution of stock return differential for the sample of grants

The table presents the distribution of the difference between the stock return during the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days -19 through 0 relative to the grant date).

Stock return differential	Number	Fraction of sample
≤-50%	805	2.0%
<-50%,-45%]	222	0.6%
<-45%,-40%]	318	0.8%
<-40%,-35%]	407	1.0%
<-35%,-30%]	535	1.3%
<-30%,-25%]	854	2.1%
<-25%,-20%]	1,217	3.1%
<-20%,-15%]	1,829	4.6%
<-15%,-10%]	2,718	6.8%
<-10%,-5%]	3,672	9.2%
<-5%,0%>	4,645	11.6%
0%	43	0.1%
<0%,5%]	4,703	11.8%
<5%,10%]	3,924	9.8%
<10%,15%]	2,997	7.5%
<15%,20%]	2,308	5.8%
<20%,25%]	1,787	4.5%
<25%,30%]	1,351	3.4%
<30%,35%]	1,045	2.6%
<35%,40%]	794	2.0%
<40%,45%]	660	1.7%
<45%,50%]	475	1.2%
≥50%	2,579	6.5%
Total	39,888	100.0%

Table 3
Stock return statistics for the sample of grants

The table presents statistics for the difference between the stock return during the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days –19 through 0 relative to the grant date). The columns titled *Sample of grant dates* show statistics for the sample of 39,888 executive stock option grants. The columns titled *Sample of grants filed within one day* show statistics for the subsample of grants that were filed with the SEC within one business day of the grant. The predicted number that is negative is simply the average of the number that is negative and the number that is positive.

	Sample of grant dates	Sample of grants filed within one day
Mean	6.3%	0.8%
Median	2.8%	0.0%
Number that is negative	17,222	1,340
Number that is positive	22,623	1,347
Predicted number that is negative	19,923	1,344
(Predicted number that is negative – Number that is negative) / Predicted number that is negative	13.6%	0.3%

Table 4
Estimates of the fraction of backdated grants

The table presents estimates of the fraction of grants that were backdated. The return difference is the difference between the stock return during the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days –19 through 0 relative to the grant date). The estimate is then defined as (*Predicted number of negative differences – Number of negative differences*) / *Predicted number of negative differences*, where *Predicted number of negative differences* is simply the average of the number of negative differences and the number of positive differences. A grant is defined to be at-the-money if the exercise price equals the price on the grant date. A grant is defined to be scheduled if it occurs at the same time in each year. To classify grants as scheduled, we examine the relative timing of grants made during the prior and subsequent years. *Scheduled 1* means that a grant is dated within one day of the one-year anniversary of a prior grant. *Scheduled 2* means that a grant does not meet the condition for *Scheduled 1*, but is followed by a grant that is dated within one day of the one-year anniversary of the grant in question. All other grants are classified as unscheduled.

	Grants at-the-money		Grants not at-the-money		All grants	
	N	Estimated fraction backdated	N	Estimated fraction backdated	N	Estimated fraction backdated
Unscheduled	20,322	18.9%	12,396	10.7%	32,718	15.8%
Scheduled 1	2,468	2.8%	1,666	-1.9%	4,134	0.9%
Scheduled 2	1,857	7.1%	1,179	6.2%	3,036	6.7%
All grants	24,647	16.4%	15,241	9.0%	39,888	13.6%

Table 5
Estimates of unscheduled, at-the-money grants that were backdated

The table presents estimates of the fraction of unscheduled, at-the-money grants that were backdated. The return difference is the difference between the stock return during the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days –19 through 0 relative to the grant date). The estimate is then defined as (*Predicted number of negative differences – Number of negative differences*) / *Predicted number of negative differences*, where *Predicted number of negative differences* is simply the average of the number of negative differences and the number of positive differences. A grant is classified as scheduled if it is either (i) dated within one day of the one-year anniversary of a prior grant or (ii) followed by a grant that is dated within one day of the one-year anniversary of the grant in question, and unscheduled otherwise. A grant is defined to be filed on time during this period if it is filed within two trading days of the grant date. A grant is defined to be at-the-money if the exercise price equals the price on the grant date. Pre-SOX grants are grants dated before August 29, 2002, and post-SOX grants are grants dated on or after August 29, 2002. High-tech firms are those that are in the Computers, Electronic Equipment, or Measuring and Control Equipment industries based on the classifications of Fama and French (1997) or have a SIC code between 7370 and 7379 (computer programming companies, which are part of the *Business Services* in Fama and French (1997)). Low-tech firms are all other firms. Small firms are those with market capitalization less than $100 million, medium-sized firms are those with market capitalization between $100 million and $1 billion, and large firms are those with market capitalization in excess of $1 billion. Market capitalization is calculated 20 days before the grants. Stock return volatility is the standard deviation of daily stock returns for the year ending 20 days before the grant date, provided that at least 50 daily stock returns are available. Low stock return volatility is less than 3%, and high stock return volatility is more than 5%.

	N	Estimated fraction backdated
Panel A: Pre-SOX grants		
All grants	13,828	23.0%
Grants by low-tech firms	10,410	20.1%
Grants by high-tech firms	3,418	32.0%
Grants by small firms	4,113	23.1%
Grants by medium-sized firms	6,407	27.0%
Grants by large firms	3,308	15.4%
Grants by firms with low stock return volatility	4,493	13.6%
Grants by firms with medium stock return volatility	4,743	26.2%
Grants by firms with high stock return volatility	4,434	29.0%
Panel B: Post-SOX grants		
All grants	6,494	10.0%
Grants filed within two business days	5,002	7.0%
Grants filed more than two business days after grant date	1,492	19.9%

Table 6
Estimates of the fraction of grants backdated based on alternative return periods

The table presents estimates of the fraction of unscheduled, at-the-money grants that were backdated based on alternative return periods. The return difference is the difference between the stock return during either the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days –19 through 0 relative to the grant date), or the 2 days after the grant (days 1 through 2 relative to the grant date) and the stock return during the 2 days before the grant (days –1 through 0 relative to the grant date). The estimate is then defined as (*Predicted number of negative differences – Number of negative differences*) / *Predicted number of negative differences*, where *Predicted number of negative differences* is simply the average of the number of negative differences and the number of positive differences. Grants filed two days after grant date are filed with the SEC two business days after the grant date and have an exercise price equal to the closing price on the given grant date (and not to the market price on the day before the grant date).

		Estimated fraction backdated	
	Number of grants	Based on returns 2 days before and after grants	Based on returns 20 days before and after grants
Grants filed two days after grant date	2,866	**11.8%**	**9.9%**
Other grants	17,456	21.4%	20.3%

Table 7
Estimates of the fraction of backdated grants by auditor

The table presents estimates of the fraction of unscheduled, at-the-money grants that were backdated. The return difference is calculated as the difference between the stock return during the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days –19 through 0 relative to the grant date). The estimate is then defined as (*Predicted number of negative differences – Number of negative differences*) / *Predicted number of negative differences*, where *Predicted number of negative differences* is simply the average of the number of negative differences and the number of positive differences. A grant is defined to be at-the-money if the exercise price equals the price on the grant date. A grant is classified as scheduled if it is either (i) dated within one day of the one-year anniversary of a prior grant or (ii) followed by a grant that is dated within one day of the one-year anniversary of the grant in question, and unscheduled otherwise.

	Pre-SOX grants		Post-SOX grants	
	N	Estimated fraction backdated	N	Estimated fraction backdated
PricewaterhouseCoopers LLP	833	17.4%	1,128	3.7%
Ernst & Young LLP	1,022	19.5%	1,444	9.9%
Deloitte & Touche LLP	579	23.7%	882	10.9%
KPMG LLP	681	17.5%	954	8.6%
Arthur Andersen LLP	455	24.0%		
Other auditors	284	20.4%	819	13.2%

Table 8
Regressions of return differences for unscheduled, at-the-money grants

The table presents coefficients from either OLS regressions of stock return differences or logistic regressions of whether the return differences are positive. The return difference is the difference between the stock return during the 20 trading days after the grant (days 1 through 20 relative to the grant date) and the stock return during the 20 days before the grant (days –19 through 0 relative to the grant date). A grant is defined to be at-the-money if the exercise price equals the price on the grant date. A grant is classified as scheduled if it is either (i) dated within one day of the one-year anniversary of a prior grant or (ii) followed by a grant that is dated within one day of the one-year anniversary of the grant in question, and unscheduled otherwise. Pre-SOX grants are grants dated before August 29, 2002, and post-SOX grants are grants dated on or after August 29, 2002. A grant is defined to be filed early if it is dated on or after August 29, 2002, and it was filed within one business day with the SEC. A grant is defined to be filed late if it is dated on or after August 29, 2002, and it was filed more than two business days after the grant date. Market capitalization is calculated 20 days before the grants. High-tech firms are those that are in the Computers, Electronic Equipment, or Measuring and Control Equipment industries based on the classifications of Fama and French (1997) or have a SIC code between 7370 and 7379 (computer programming companies, which are part of the *Business Services* in Fama and French (1997)). Stock return volatility is the standard deviation of daily stock returns for the year ending 20 days before the grant date, provided that at least 50 daily stock returns are available. The number of option recipients captures the total number of executives and directors who received options on the given grant date. Outside director(s) granted options indicates that at least one non-executive director received options on the given grant date. The total number of underlying shares is the total number of shares underlying options granted on the given grant date. In panel B, the regressions are first run without the auditor indicator variables. The coefficients below come from those regressions. The auditor indicator variables are then included *one at a time*, so the coefficient on each auditor indicator variable should be interpreted as the effect from that auditor relative to all other auditors.

Table 8 continued

	Regression of return difference		Logistic regression of whether return difference is positive	
	Coeffic.	p-value	Coeffic.	p-value
Panel A: Unscheduled, at-the-money option grants (N = 20,102)				
Intercept	-0.165	0.000	-0.283	0.068
Post-SOX	-0.053	0.001	-0.269	0.011
Filed early	-0.004	0.684	-0.093	0.145
Filed late	0.043	0.000	0.185	0.004
Log of market capitalization	-0.001	0.477	-0.045	0.000
High-tech firm	0.046	0.000	0.170	0.000
Stock return volatility	1.530	0.000	2.004	0.013
Log of the number of option recipients	0.005	0.236	0.063	0.018
Outside director(s) granted options	-0.002	0.778	-0.034	0.364
Log of total number of underlying shares	0.017	0.000	0.101	0.000
Year 1997	-0.008	0.473	-0.069	0.325
Year 1998	0.020	0.055	0.018	0.797
Year 1999	-0.010	0.373	-0.102	0.144
Year 2000	0.031	0.004	-0.033	0.636
Year 2001	-0.010	0.344	-0.230	0.001
Year 2002	-0.045	0.000	-0.317	0.000
Year 2003	-0.009	0.644	0.041	0.741
Year 2004	-0.019	0.330	-0.194	0.118
Year 2005	-0.014	0.456	-0.135	0.280
Panel B: Unscheduled, at-the-money option grants with auditor information (N = 8,998)				
Intercept	-0.113	0.001	-0.119	0.615
Post-SOX	-0.040	0.030	-0.214	0.082
Filed early	-0.006	0.576	-0.115	0.099
Filed late	0.040	0.000	0.183	0.012
Log of market capitalization.	-0.001	0.595	-0.043	0.001
High-tech firm	0.036	0.000	0.171	0.002
Stock return volatility	1.420	0.000	1.841	0.133
Log of the number of option recipients	0.002	0.763	0.062	0.114
Outside director(s) granted options	-0.002	0.829	-0.034	0.554
Log of total number of underlying shares	0.015	0.000	0.079	0.000
Year 2001	-0.012	0.298	-0.119	0.134
Year 2002	-0.058	0.000	-0.229	0.009
Year 2003	-0.041	0.057	0.080	0.579
Year 2004	-0.051	0.018	-0.181	0.208
Year 2005	-0.042	0.056	-0.112	0.445
Auditor				
PricewaterhouseCoopers LLP	-0.013	0.092	-0.129	0.014
Ernst & Young LLP	0.004	0.545	0.053	0.281
Deloitte & Touche LLP	0.005	0.564	0.088	0.138
KPMG LLP	-0.005	0.544	-0.028	0.618
Arthur Andersen LLP	0.024	0.123	0.067	0.529
Other auditors	0.005	0.664	0.012	0.865

Table 9
Logistic regressions of whether grants are filed late

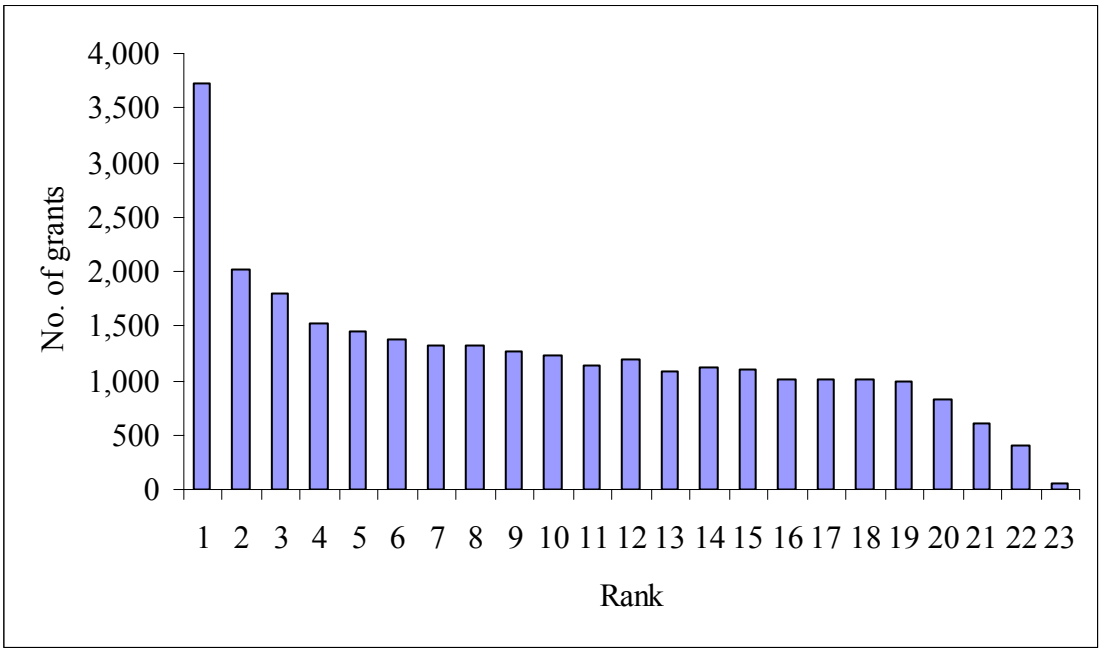
The table presents coefficients from logistic regressions of whether grants are filed late based on the sample of grants dated on or after August 29, 2002. A grant is defined to be filed late if it was filed more than two business days after the grant date. A grant is defined to be at-the-money if the exercise price equals the price on the grant date. A grant is classified as scheduled if it is either (i) dated within one day of the one-year anniversary of a prior grant or (ii) followed by a grant that is dated within one day of the one-year anniversary of the grant in question, and unscheduled otherwise. Market capitalization is calculated 20 days before the grants. High-tech firms are those that are in the Computers, Electronic Equipment, or Measuring and Control Equipment industries based on the classifications of Fama and French (1997) or have a SIC code between 7370 and 7379 (computer programming companies, which are part of the *Business Services* in Fama and French (1997)). The year indicator variables refer to the year of the grant dates. Stock return volatility is the standard deviation of daily stock returns for the year ending 20 days before the grant date, granted that at least 50 daily stock returns are available. In panel B, the regressions are first run without the auditor indicator variables. The coefficients below come from those regressions. The auditor indicator variables are then included *one at a time*, so the coefficient on each auditor indicator variable should be interpreted as the effect from that auditor relative to all other auditors.

	Coeffic.	p-value
Panel A: Unscheduled, at-the-money option grants (N = 6,432)		
Intercept	2.378	0.000
Log of market capitalization.	-0.252	0.000
High-tech firm	-0.124	0.094
Stock return volatility	1.084	0.504
Year 2003	-0.122	0.254
Year 2004	-0.532	0.000
Year 2005	-0.928	0.000
Panel B: Unscheduled, at-the-money option grants with auditor information (N = 5,180)		
Intercept	2.486	0.000
Log of market capitalization.	-0.259	0.000
High-tech firm	-0.124	0.145
Stock return volatility	0.514	0.783
Year 2003	-0.079	0.527
Year 2004	-0.533	0.000
Year 2005	-0.922	0.000
Auditor		
PricewaterhouseCoopers LLP	-0.122	0.168
Ernst & Young LLP	-0.110	0.167
Deloitte & Touche LLP	-0.057	0.555
KPMG LLP	-0.002	0.982
Other auditors	0.386	0.000

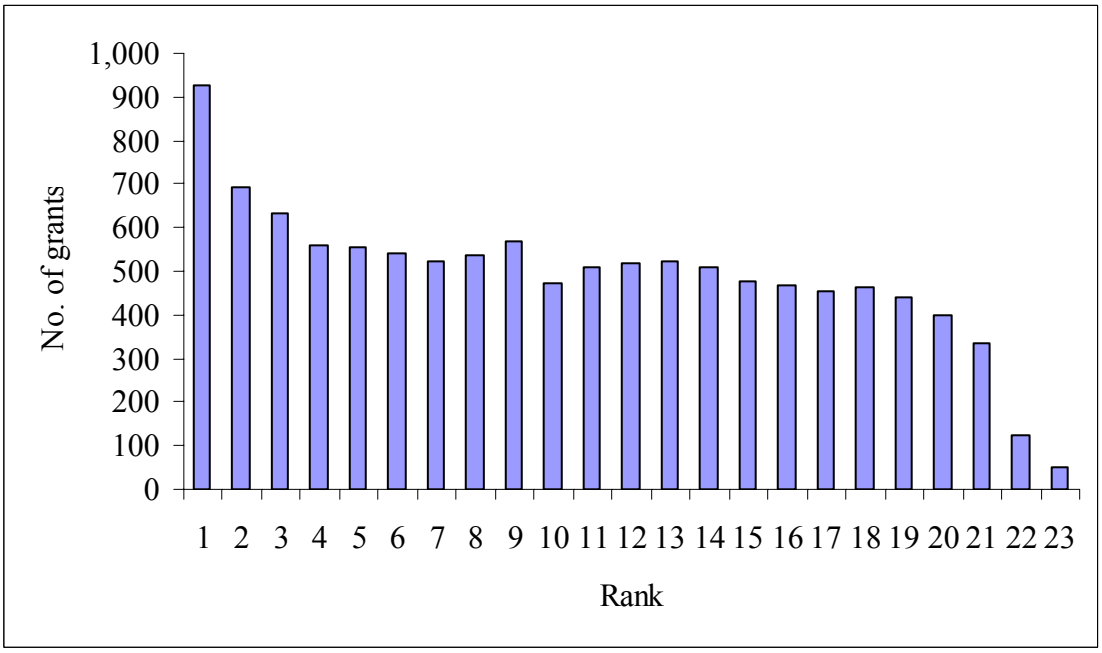
Table 10
Logistic regressions of whether grants are scheduled

The table presents coefficients from logistic regressions of whether at-the-money grants are scheduled. A grant is classified as scheduled if it is either (i) dated within one day of the one-year anniversary of a prior grant or (ii) followed by a grant that is dated within one day of the one-year anniversary of the grant in question, and unscheduled otherwise. A grant is defined to be at-the-money if the exercise price equals the price on the grant date. Market capitalization is calculated 20 days before the grants. High-tech firms are those that are in the Computers, Electronic Equipment, or Measuring and Control Equipment industries based on the classifications of Fama and French (1997) or have a SIC code between 7370 and 7379 (computer programming companies, which are part of the *Business Services* in Fama and French (1997)). The year indicator variables refer to the year of the grant dates. Stock return volatility is the standard deviation of daily stock returns for the year ending 20 days before the grant date, granted that at least 50 daily stock returns are available. In panel B, the regressions are first run without the auditor indicator variables. The coefficients below come from those regressions. The auditor indicator variables are then included *one at a time*, so the coefficient on each auditor indicator variable should be interpreted as the effect from that auditor relative to all other auditors.

	Coeffic.	p-value
Panel A: At-the-money option grants (N = 24,419)		
Intercept	-3.222	0.000
Log of market capitalization.	0.134	0.000
High-tech firm	-0.281	0.000
Stock return volatility	-21.299	0.000
Year 1997	0.635	0.000
Year 1998	0.801	0.000
Year 1999	0.769	0.000
Year 2000	0.720	0.000
Year 2001	1.100	0.000
Year 2002	1.202	0.000
Year 2003	0.990	0.000
Year 2004	0.564	0.000
Year 2005	0.009	0.931
Panel B: At-the-money option grants with auditor information (N=11,292)		
Intercept	-2.427	0.000
Log of market capitalization.	0.149	0.000
High-tech firm	-0.351	0.000
Stock return volatility	-17.463	0.000
Year 2003	-0.022	0.738
Year 2004	-0.472	0.000
Year 2005	-1.100	0.000
Auditor		
PricewaterhouseCoopers LLP	0.024	0.682
Ernst & Young LLP	0.140	0.008
Deloitte & Touche LLP	-0.163	0.014
KPMG LLP	0.066	0.282
Arthur Andersen LLP	-0.140	0.218
Other auditors	-0.229	0.021



a. Before August 29, 2002



b. On or after August 29, 2002

Figure 1
Distribution of ranks of closing prices on grant dates

The graph shows the distribution of ranks of closing prices on the grant dates relative to other closing prices in the same calendar months. For example, a rank of one indicates that the closing price on the grant date was the lowest of all closing prices in the same calendar month.