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ABSTRACT

Using a database of 605,106 option grant filings by insiders between 1992 and 2002, we find significant abnormal stock return reversals around the grant date. Consistent with the hypothesis that managers influence their pay, the reversals are positively related to grant size and the seniority of the manager, and negatively related to the firm size. The reversals are also more pronounced for grants that are not awarded on a regular schedule. The returns following the grant date are negatively correlated to the returns prior to the grant date, indicating that some firms are attempting to influence the grant date stock price by more than just timing the grant date or timing information releases around the grant date. We find that the extent of reversals are positively related to the magnitude of the time interval between the grant date and the date the grants are reported to the SEC, suggesting that some firms are setting the grant date on a back-date basis, i.e., picking a date in the past with a lower stock price compared to that on the decision date.

1. Introduction

The subject of executive compensation has attracted considerable attention recently from academics, the general public, as well as several regulatory and law enforcement agencies. While several aspects of executive compensation have been subjected to careful scrutiny, executive stock options have garnered the lion's share of the publicity, mainly because of the explosion of option grants which increased nine-fold between 1992 and 2000 (Hall and Murphy (2003)).

A standard feature of executive stock options is the uniformity of their design. Murphy and Hall (2002) finds that 94 percent of the options to CEOs of S&P 500 companies in 1998 were granted at-the-money. The exercise price of these options is set to the stock price on the grant date. Both academics and investor advocates have pointed out recently that such at-the-money options offer managers the opportunity to enhance the value of their option grants through strategic timing. Bebchuk and Fried (2004), for example, argue that executive compensation setting is not an arms-length transaction and that senior executives have the power to influence the grant day stock price, and hence the exercise price of the options, in their favor by controlling both the timing of the grants and the timing of corporate information disclosures. Patrick McGurn, senior vice-president at Institutional Shareholder Services, a proxy-voting firm that advises institutional investors, is quoted as saying that the concern is that companies are gaming the process and managing the information flow to put options out at the best possible time for (executives).[1] In fact, it was recently reported that the Securities and Exchange Commission (SEC) is investigating whether some companies have been granting stock options to executives just before releasing market-moving information that boosts stock price (see Solomon (2004) and Morgenson (2004)).

[1] See Solomon (2004).

In this paper, we investigate the hypothesis that managers reap a windfall by influencing the exercise price of their stock option grants using a comprehensive database that includes 605,106 option grants reported by insiders receiving the grants during 1992 – 2002. This data set is compiled from the filings insiders are required to make to meet the disclosure requirements of Section 16(a) of the Securities and Exchange Act of 1934. Figure 1 offers some preliminary evidence regarding managerial influence of the exercise price of their option grants. The figure plots the cumulative average raw and value-weighted market-adjusted stock returns (details of the calculations are provided in a subsequent section) of the firms in our sample 90 trading days prior to and 90 days after the grant date (date 0). For the purposes of this figure, each option grant is treated as an event. As can be seen from the figure, the cumulative returns (both raw and market-adjusted) are negative prior to the grant date and positive subsequent to the grant date. The cumulative average raw return is –4.4% over the interval [–90, 0] and 8.7% over the interval (0, +90]. The corresponding cumulative average market-adjusted returns are –3.5% and 9.4%, respectively. As we show later, these returns are significantly different from zero.

The evidence presented in Figure 1 is compelling: the lowest average stock price during the period of 180 days straddling the grant date occurs exactly on the grant date. One reason this result is compelling is that the grant date is usually not publicly known when it is set. The earliest any information about the grant date and grant details can be obtained by investors is either from company proxy statements which are usually filed about three months after the fiscal year of the option award, or from the filings of insiders who, for most of our sample period, were required to disclose option grants within 10 days of the month following the month of the grant.[2] Moreover, there is hardly any investor reaction at all when the option grants are actually made public. This essentially rules out investor reaction to grant

[2] While firms are not required to report the grant dates, many voluntarily disclose this information; even if they do not, one can infer the grant date from other reported option characteristics.

announcements as the reason for stock price behavior around the grant date, leaving the possibility that the evidence in Figure 1 is a result of managerial influence of the stock price on the grant date.

Our comprehensive data yield several important new findings consistent with the influence hypothesis. The abnormal stock return reversals on the grant date are (a) positively related to the size of the grant, suggesting that managers who have more at stake are more likely to attempt to influence the grant date stock price; (b) negatively related to firm size as measured by market capitalization, suggesting that the practice is more prevalent in firms with weaker corporate governance and investor scrutiny; (c) more pronounced when the grants are made to top executives such as CEOs and CFOs as opposed to more junior executives, consistent with the managerial power hypothesis as more senior executives have the ability and information to influence the stock price; and, (d) more pronounced in the case of grants not awarded on a regular schedule which allow managers greater flexibility to time the grant date to take advantage of stock return variations. We also find that stock returns during the 10 days following the grant date are negatively correlated to the stock returns 10 days prior to the grant date, suggesting sharp reversals of stock returns and that some of the grants are indeed made when the stock price is at its lowest.

Previous researchers have suggested that firms might be timing the release of information around scheduled grant dates and timing unscheduled grant dates around release of information to reap a windfall from their option grants by lowering the exercise price. While the evidence in our paper is also consistent with such influencing behavior, it is rather surprising that some executives are able to influence the stock price so precisely that the lowest stock price in a 181-day window occurs on the grant date. In order to do this, executives have to release unfavorable news before the grant date and then provide favorable news or reverse the earlier unfavorable news after the grant. We offer another explanation for the stock return

reversals in Figure 1: that grant dates are set on a "back-date" basis, that is, in many cases, the lowest stock price during a window is picked as the grant date ex-post. While it is difficult to provide direct support to the hypothesis that the back-date method is used to influence the grant date stock price, we offer corroborating evidence that is consistent with the hypothesis.

The evidence consistent with the back-date method of influencing the grant date stock price comes from the relationship between stock price reversals on the grant date and reporting lags. As stated earlier, for most of our sample period, Section 16(a) of the Securities and Exchange Act requires that option grants be disclosed within 10 days of the month following the month of the grant. About two-thirds of the awards in our database are reported after this deadline. We define the number of days elapsed between the grant date and the reporting date the "reporting lag." If indeed in some cases the grant date is set on a back-date basis, the reporting period is extended automatically by an amount equal to the elapsed time between the reported grant date and the date on which the grant decision was made. Therefore, if the stock return reversals of Figure 1 are caused partly by awards being given on a back-date basis, the reversals should be more pronounced (i.e., the drop before and the rise after the grant date should both be steeper) in those cases where the reporting lag is greater. This is exactly what we find.

Several studies (Yermack (1997), Aboody and Kasznik (2000), Chauvin and Shenoy (2000), and Lie (2004)) have investigated the stock price behavior around CEO option grant dates based on data from company proxy statements. Our data on option grants is more comprehensive than all of the previous studies as it covers not only a longer period of 11 years but also the period during which both the number and size of option grants increased dramatically. Our data also includes all insiders (not just CEOs) who are required to disclose option grants. The extended (and recent) time period covered and the comprehensiveness of the

data enable us to conduct a more detailed investigation and, thereby, provide a much stronger support for the influence hypothesis.

The paper is organized as follows. Section 2 summarizes the implications of the influence hypothesis in general and explores the implications of the back-date method. Section 3 describes the data and provides the summary statistics. Section 4 reports the stock price performance around grant dates and compares our results with previous results. Section 5 explores the determinants of the abnormal stock return reversals around the grant date. Section 6 investigates the implications of the back-date method of influencing the stock price. Section 7 explores alternative hypotheses that might explain the stock return reversals around the grant date. Section 8 concludes.

2. The influence hypothesis and its implications

Incentive compensation contracts for top managers have long been considered a solution to agency problems between managers and shareholders. This view is being challenged recently by both practitioners and researchers who claim that while compensation contracts may provide some alignment of the interests of managers and shareholders, they create their own set of agency problems (see Crystal (1991), Bertrand and Mullainathan (2000), and Bebchuk (2004)). They argue that agency problems arise in incentive compensation primarily because of the power managers can potentially exert over corporate boards that are responsible for setting their pay. Such power enables managers to influence their own compensation contracts and extract rents because boards have been presumably ineffectual in their oversight of managers.[3] It is also likely that boards and compensation committees are sympathetic to managers and are influenced by them. Influencing compensation might also

[3] Bertrand and Mullainathan (2001) find evidence consistent with CEOs having captured the pay-setting process and show that such "skimming" is less in better-governed firms.

occur with the covert approval of the board if it holds the view that the manager deserves more compensation.

One of the most popular forms of executive pay for the last decade or so has been stock options. While managers may use their power to influence boards to award them more stock options, a subtler way of enhancing their compensation is to influence the option parameters, in particular, the exercise price. It is a well-documented fact that an overwhelming majority of executive stock options are granted at the money with the exercise price set at the stock price on the grant date. Even in cases where out-of-the-money options are granted, the grant date stock price is used as the benchmark in setting the exercise price.[4] If the number of options to be granted is fixed, managers receiving the options benefit from any temporary drop in stock price just before the grant date. Boards might find it expedient to allow managers to receive the additional compensation through such camouflaged means as influencing the stock price, rather than increase the size of the option award, in order to avoid public shareholder outrage.[5] The stock return reversals on the grant date reported in Figure 1 are consistent with the hypothesis that some managers attempt to increase the value of their option compensation by influencing the stock price of their option grants.

a. Methods employed to influence the stock price

If one holds the view that influencing leads to rent extraction by managers, knowing the channels through which managers influence the stock price will enable shareholders, boards,

[4] There are two possible reasons why in-the-money options are not typically granted. First, FASB rules prevailing during our sample period require that the difference between the stock price and the exercise price of in-the-money options be charged against earnings. Second, in-the-money options are not considered "performance-based compensation" under Section 162(m) of the Internal Revenue Code and therefore are not deductible if an executive's total nonperformance-based compensation exceeds $1 million a year.

[5] Dechow, Hutton, and Sloan (1996) find evidence that camouflaging executive pay is the reason companies oppose expensing of executive stock options. As tighter disclosure requirements increase the scrutiny of executive pay, 'stealth' compensation has shifted to other components of compensation such as post-retirement benefits, deferred compensation, below-market rate loans, etc (see, for example, Lublin (2002)).

and regulators to understand and, hence, prevent or mitigate the problem by streamlining the pay-setting process and requiring enhanced disclosures. One can conceive of three methods through which the stock price on the grant date can be influenced. While the employment of two of these methods to influence the stock price has been investigated in earlier work by Yermack (1997) and Aboody and Kasznik (2000), not much attention has been paid to the third channel of influence.

The first method applies to grants that are awarded on a regular schedule. Many companies award options on a regular schedule, approximately at the same time each year ("scheduled awards"). Since managers know the grant date in advance, they can influence their pay by managing the release of information around the grant date so that the stock price is at a temporary low on that date. In particular, managers can influence the stock price by delaying the release of good news after the grant date and advancing the announcement of bad news before the grant date. Aboody and Kasznik (2000) find evidence that is consistent with CEOs timing the release of earnings information. They find that analyst forecasts, largely based on guidance provided by management, are less optimistically biased during the three months prior to scheduled awards when compared to forecasts issued for the same firms during other months. They also find that CEOs who receive their grants prior to an earnings announcement (when they have an informational advantage and can therefore influence the stock price) are more likely to issue negative forecasts, and less likely to issue positive forecasts, when compared to CEOs who receive their grants after the announcement. Baker, Collins, and Reitenga (2003) find more direct evidence that managers may be manipulating stock prices through reported earnings. They find that managers who receive large option awards appear to make income-decreasing accrual choices when public earnings announcements are made before option grant dates.

The second method of influencing the stock price applies to unscheduled awards. Managers can influence the grant date stock price by timing the grant date such that the stock

price is lower on that date. The grant date can be set after the announcement of bad news (and the resultant drop in the stock price) or before the announcement of a good news (and the resultant expected rise in the stock price). Obviously, it is not possible to influence the stock price on the grant date in this manner for scheduled grants. The empirical evidence is suggestive of grant date timing by managers. Yermack (1997) finds positive abnormal stock returns following the grant date (but no significant abnormal returns prior to the grant date) in a sample that contains both scheduled and unscheduled CEO awards. He also finds that CEOs receive stock option awards in advance of good earnings news. Similar evidence consistent with stock price influencing through managing information release is also found in the case of repriced options.[6] Callaghan, Saly, and Subramaniam (2004) find that repricing dates precede the release of positive earnings announcements and follow the release of negative earnings announcements. Since their sample does not separate repricings done on scheduled option award dates from those on unscheduled dates, their result should be interpreted as consistent with either of the two methods of influencing (timing of earnings announcement or timing of repricing dates). A similar interpretation is appropriate for Yermack's results as well since his sample also does not differentiate between scheduled and unscheduled awards.

The third method by which managers might influence the exercise of their option grant that is consistent with stock return reversals around the grant rate is by the ex-post timing of the grant date. In other words, some managers, or some compensation committees, might select the grant date as a date in the recent past at which the stock price was lower than that on the day they actually made the compensation decision. We call this the 'back-date' method of influencing the exercise price. If managers pick a date at which the stock price was a local

[6] Options are typically repriced when they are deep in-the-money following severe stock price declines. While repricings may involve changes in exercise price and/or changes in maturity, only repricings involving changes in exercise price are reported since SEC disclosure rules do not seem to apply to just changes in maturity. Brenner, Sundaram, and Yermack (2000) report that the new exercise price is lowered to the stock price on the repricing date in 79% of their sample while it is lowered to a price greater than the stock price on the repricing date in about 19% of their sample.

minimum, we call this aggressive back-dating. There is no SEC regulation that we are aware of that is violated by setting the grant date on a back-date basis.[7] While the grant date is clearly specified in proxy statements, it is generally difficult to determine the date when the grant date was decided.

In order to determine the importance of each of these channels of influence, we develop implications of the three methods below.

b. Implications of different methods of influencing the grant date stock price

The timing of both the earnings information release and the grant date requires that managers possess private information and pick the appropriate time to release it. In the case of timing the release of earnings information, the evidence presented earlier indicates that it is prevalent in the case of scheduled grants.[8] Managers may receive good or bad news ahead of the scheduled grant date. When the news is favorable, presumably they delay it till after the grant date; if the news is unfavorable, they release it before the grant date. If managers behaved in this manner, the stock return behavior around the grant date reported in Figure 1 will be the aggregation of two independent sets of stock return patterns around the grant date. For grants that followed the receipt of favorable news by managers (but released after the grant date) the CAR before the grant date should be not significantly different from zero while the CAR following the grant date should be significantly positive. In contrast, for grants that followed the receipt of unfavorable news by managers (and released before the grant date) the CAR before the grant date should be significantly negative while the CAR following the grant date

[7] The only regulation that specifies what a grant date is (to our knowledge) is Section 1.421-1 of Internal Revenue Code. It states that "…'the date of the granting of the option' and 'the time such option is granted,' and similar phrases refer to the date or time when the granting corporation completes the corporate action constituting an offer of stock for sale to an individual under the terms and conditions of a statutory option. A corporate action constituting an offer of stock for sale is not considered complete until the date on which the maximum number of shares that can be purchased under the option and the minimum option price are fixed or determinable.

[8] Aboody and Kasznik (2000) do not find evidence in support of timing earnings information releases for unscheduled awards.

should not be significantly from zero. The same argument holds if managers are timing the grant date instead of release of earnings information: the stock return behavior around the grant date in Figure 1 will be the aggregation of two independent sets of stock return patterns around the grant date.

One might argue that the stock return reversals in Figure 1 could very well be the result of managers first releasing bad news to drive the share price down and then releasing good news to reverse the trend. While such managed reversals are possible in theory, in practice it seems unlikely for a variety of reasons. First, it is difficult to conceive of sufficiently large number of instances when both good and bad news arrive in a short interval prior to the grant date to allow managers to selectively release the news to influence the stock price. In addition, attempts to first decrease the stock price and then to raise it after ten days might easily attract regulatory scrutiny. For instance, if managers attempt to drive the share price down before the grant date by selling shares of the firm that they own and then release favorable earnings information after the grant date, it will be most likely in violation of the anti-fraud provisions of the Securities and Exchange Act of 1934 [Section 10(b)-5]. For these reasons, it appears farfetched that managers are influencing the stock price with such precision to obtain options at a reduced exercise price.

Thus, if there is a negative correlation between the stock returns before and after the grant date, it implies that managers are using other channel(s) in addition to timing of earnings announcements and grant dates to influence the stock price. If managers are employing the back-date method aggressively by picking the date in the recent past at which the stock price reached a minimum on the grant date, then by definition, there will be negative returns before the grant date and positive returns after the grant date. Consequently, we should expect to observe a negative correlation between stock returns before and after the grant date.

An implication that is unique to the back-date method of setting the grant date involves the reporting lag, i.e., the number of days between the grant date and the date on which the SEC

received the insider's filing to meet the disclosure requirements of Section 16(*a*). If the grant date is decided on a back-date basis, the reporting lag is the sum of two time intervals: the interval between the grant date on record and the decision date (the day when the grant date was decided), and the interval between the decision date and the date when the SEC receives the filing. Note that the first interval will be zero if the grant date on record coincides with the decision date. Therefore, if there is no backdating, the reporting lag is just the time interval between the decision date (which is also the grant date on record) and the date when the SEC receives the filing. However, if the grant date is set using back-dating in order to influence managerial compensation, the reporting lag will increase as the grant and decision dates diverge. Therefore, if some firms are retroactively choosing the grant date of the options, then the stock price reversals around the grant date should be positively related to the reporting lag.[9]

Lie (2004) also conjectures that some firms may be using the back-date method to pick the grant date and offers as evidence negative *predicted* stock returns prior to the grant date and positive *predicted* stock returns after the grant date of unscheduled awards. Based on the paper's premise that executives do not possess the ability to forecast future market-wide movements that drive these predicted returns, the paper concludes that the results suggest that at least some of the awards are timed retroactively.[10] We argue here that the premise on which the conclusion is based is inconsistent with empirical evidence. Seyhun (1988, 1992, 1998), and Lakonishok and Lee (2001) show that managers do exhibit the ability to forecast future market returns. In further support of this point, we examined 1,316,204 trades by corporate

[9] Our argument implicitly assumes that the time managers take to report the grant to the SEC is independent of whether the grant date is set on a back-date basis or not. The manner in which the grant date is set, though, might affect the reporting strategy of the manager. Even if setting the grant date on a back-date basis may not violate the letter of the regulation, it may be viewed as violating its spirit, which in turn might induce managers to speed up the reporting. If managers behave in this manner, there may be a weaker relation between the reporting lag and the stock return reversals, even when the grant date is set retroactively. Such a behavior would work against our tests and would bias our findings toward detecting no relation.

[10] Lie states "Unless executives possess an extraordinary ability to forecast the future market-wide movements that drive these predicted returns, the results suggest that at least some of the awards are timed retroactively."

managers in their own firms' stock between 1975 and 2000. Using a three-day holding period around managers' stock sales, market returns (a value-weighted index of New York Stock Exchange, American Stock Exchange, and NASDAQ stocks) declined from 0.4% for the three-days before the sale, to 0.2% for the three-days after the sale. This evidence suggests that insider sales imply less positive market returns in a very short time period. For three-day holding periods around managers' purchases, market returns increased from 0.07% to 0.22% which suggests that insider purchases imply more positive market returns in a very short time period. Using a 30-day window further strengthens these results: market returns declined from 3.00% to 1.98% for sales and increased from 1.21% to 2.06% for purchases.[11] These results seem to indicate that managers have some ability to predict market returns. The ability of managers to forecast the market returns most likely arises from the fact that some of the signals managers observe in their own firms are actually due to movements in market-wide factors. Managers typically are not able to distinguish the source of these signals and trade as if these signals are mostly due to firm-specific factors. This behavior causes managers' stock trades in their own firms to 'forecast' the market-wide factors. Therefore, Lie's premise is violated and additional evidence is needed to support the back-date hypothesis.

In this paper, we offer more direct tests consistent with the back-date method of influencing option-based compensation. In particular, we investigate if the positive abnormal return following the grant date is correlated with the negative abnormal return before the grant date, a result that is inconsistent with timing of both earnings releases and the grant date and implies that other methods of influencing might be at work. We follow up by investigating whether the extent of stock return reversals is positively related to the reporting lag.

[11] All differences are statistically significant at the 1%-level.

3. Data and summary statistics

The disclosure of changes in the equity holdings of beneficial owners (defined as director, officer, beneficial owner of more than ten percent of any class of equity securities) is governed by Section 16(a) of the Securities and Exchange Act of 1934. The disclosure rules were amended in 1991, requiring beneficial owners to report derivative transactions separately from equity transactions. Thus, starting in 1992, data is available on all option grants to executives and directors of companies that fall under the purview of the Securities and Exchange Act of 1934. Until recently, Section 16(a) of the Act required beneficial owners to disclose their option awards within the ten calendar days following the end of the month in which the options were granted. On August 27, 2002, in line with Section 403 of the Sarbanes-Oxley Act of 2002, the SEC amended the disclosure rules for beneficiary ownership reports to be filed under Section 16(a) to be reported electronically within two business days of getting notification of the grant.

The option grants data in the study is obtained from a compilation by the SEC of the filings to meet Section 16(a) requirements. The data contains all option grants made by publicly traded firms in the eleven years between January 1992 and December 2002. Since we need stock market data for analysis, data on stock market returns are obtained from CRSP. The final sample contains 605,106 option grants between January 1992 and December 2002 in firms for which stock return data is available in CRSP. Thus most of our sample pre-dates the accelerated reporting requirements of the Sarbanes-Oxley Act.

Table 1 provides the summary statistics regarding the number of option grants, the average grant size in terms of underlying shares, the number of firms granting options, and the average number of options granted per firm in each year of our sample. It can be seen that the number of firms granting options increased dramatically starting from 1996, more than quadrupling from the previous year. It is also interesting to note that the number of firms granting options has reduced by about one-third in the final 5 years of the sample, dropping

from a peak of 4690 firms in 1998 to 3343 firms in 2001. A similar pattern is observed in the grant volume: from a peak of 2.94 billion shares in 1999, to 1.97 billion shares in 2001.[12] The increase in the number of grants with the simultaneous decrease in the underlying shares per grant between 1999 and 2001 indicates that increasingly options have been used to compensate lower level executives as well.

Table 2 summarizes the award characteristics across different firm size groups and seniority of insiders receiving the awards. In Panel A, firms are classified into four groups based on their market capitalization at the end of the calendar year prior to the year the option award was granted (less than $100 million, $100 million to $500 million, $500 million to $3 billion, and greater than $3 billion). If we ignore the lowest size category, the average underlying shares per grant and per firm, and the total shares granted increase with firm size. It is possible that young firms are overrepresented in the lowest size category which explains why the average underlying shares per grant and firm and the total number grants are greater for this group than the next higher size group. The average maturity of option grants is greatest for the largest size category and averages in the range of 7.65 – 8.55 years across firm size groups with an overall average of 8.11 years.[13]

The average time to first exercisable date (often called the vesting period) increases monotonically with firm size, ranging between 1.84 and 2.20 years across firm size groups with an overall average of 1.98 years. The final column of Panel A provides the time lag between the grant date and the date the SEC receives executives' disclosure forms. It is interesting to note that this lag shows a wide variation ranging between 129 – 224 days and is monotonically

[12] The number of grants and the number of shares granted fall further in 2002. However, since the data set was obtained in early 2003, the data for 2002 are understated significantly because of late reporting (up to 6 months on average), shown next.

[13] Murphy (1999) reports that 83% of the option awards made by his sample of 1,000 large companies (on the basis of market capitalization) in 1992 had a maturity of 10 years, while another 13% had maturities less than ten years and 4% had maturities exceeding ten years. We find that the average maturity of the option award is 9.85 years if we limit the sample to first-time awards. The lower average maturity of options for the entire sample is due to the lower maturity of options in the subsequent years of a multi-year compensation plan started earlier.

decreasing in firm size. More significantly, it appears that executives do not report by the reporting deadline on average. Since the regulation before Sarbanes-Oxley Act required executives to report within the first 10 calendars days of the month following the grant date, and the Sarbanes-Oxley Act required reporting within 2 days of the grant, we should expect a reporting lag of no more than 40 days if there was full compliance. As Table 2 shows, however, the overall average reporting lag is 170 days.

Panel B of Table 2 divides the sample on the basis of the insiders' seniority, classifying those with the titles (on the grant date) of Chief Executive Officers (CEO), Chairmen of the Board (CB), Chief Financial Officers (CFO), Presidents (P), Officer-Directors (OD, H), as "top executives" and separating this group from all others in the sample. About 22% of the option grants in our sample were top executives. This group of executives clearly has substantial decision making authority and access to company-specific information. Moreover, they have the ability to manage the disclosure of information to investors. It can be seen from Panel B that top executives are on average given much bigger option grants than other executives. The average number of shares received by top executives per grant is about 2.5 times that received by other executives (49,630 shares versus 19,071 shares). The average maturities of options granted to top executives and others are not significantly different though the vesting periods of grants to top executives is slightly shorter (1.78 years versus 2.01 years for others). Finally, top executives appear more in violation of SEC reporting requirements: they report their grants to the SEC with a greater average lag than other executives (192 days versus 169 days for others).

4. Stock price reversals around option grant dates

The next set of evidence we present consistent with the hypothesis that managers reap a windfall by influencing the exercise price of at-the-money stock option grants is the stock price behavior around the grant date. As stated earlier, the grant date is usually unknown to investors until the details of the option grant is reported by either the company or the executives

receiving the grant. Companies usually report option grants in proxy statements typically issued several months after the grant. Executives deemed as insiders are required to report option grants by the end of the tenth day of the month following the award, which implies an average reporting lag of about twenty days. In fact, the average reporting lag is as high as 170 days, as seen from Panel B of Table 2.[14] Therefore, the null hypothesis is that stock prices exhibit no unusual behavior on the grant date.

We measure stock return behavior using the cumulative market-adjusted abnormal daily stock returns (CAR) starting from the grant date (date 0) for a holding period of T days:

$$CAR_{i,T} = \sum_{t=1}^{T} (r_{i,t} - r_{m,t}),$$

where $r_{i.t}$ is the with-dividend return to stock i for day t, and $r_{m,t}$ is the with-dividend return to value-weighted portfolio of all New York Stock Exchange, American Stock Exchange and NASDAQ stocks for day t. The mean raw returns, and the mean and median CAR are reported for holding periods $[T^-,0]$ for T^- = –10, –20, –30, –40, –50, and –90, and for holding periods $[1,T^+]$ for T^+ = +10, +20, +30, +40, +50, and +90 in Table 3. Figure 1 plots the mean CAR and the mean raw returns. For all summary statistics and figures, the unit of observation is the individual grant and, therefore, all means and medians are computed across all 605,106 grants.[15] We compute the raw returns because it could be argued that in the short-term market movements are less important in influencing the exercise price of the option grant. It can be seen from Table 3 that the mean and median CAR are negative and decreasing for all holding periods prior to the grant date and positive and increasing for all holding periods subsequent to the grant date. The raw returns follow a similar pattern. Standard errors of returns are computed by averaging all returns across all events and then taking into account serial correlation of average abnormal returns. Consequently, we do not assume either cross-sectional independence

[14] Even in cases in which the grant dates are known in advance because the companies have a fixed award schedule, the grant dates should reveal no information as the details of the award are not known.
[15] As explained later, we group all grants by one firm on a given day as a single event for regression analysis.

or time-series independence of the residuals. As indicated by the *p*-values in Table 3, all returns are significantly different from zero. The differences between adjacent holding periods (unreported) are also significant for all three variables. These results are consistent with the hypothesis that managers influence the exercise price of their option grants.

Table 3 indicates that the mean CAR for 90 days prior to the grant date is –3.26% and 90 days subsequent to the grant date is 8.85%. The corresponding raw returns are –2.40% and 9.59%, respectively. While these results are somewhat similar to that obtained by previous researchers (Yermack (1997) and Aboody and Kasznik (2000), for example) they differ significantly in two important dimensions. Yermack (1997) and Aboody and Kasznik (2000) find no significant abnormal returns prior to option grants while we find a significant negative return.[16] The magnitude of the stock returns is also substantially different. Yermack (1997) finds a 100-day abnormal return following the grant date of 2.56% and Aboody and Kasznik (2000) report a 30-day abnormal return of 1.67% following the grant date.[17] By contrast, the mean CAR in Table 3 for the holding period of [1, 90] is 8.85% and for the holding period of [1, 30] is 6.12%.

We attribute these differences to several factors. First, the sample period covered by both these papers is short (1992-94 by Yermack (1997) and 1992-96 by Aboody and Kasznik (2000)) while our sample period extends from 1992 to 2002. As can be seen from Table 1, the bulk of the option grants were made after 1995. Second, the number of firms in our sample is significantly greater (more than 5,000 firms compared to 500 firms in Yermack (1997) and 1,304 firms in Aboody and Kasznik (2000)). In particular, the earlier studies have focused on larger firms while we include all firms. As we show later, the stock price behavior exhibited in

[16] Aboody and Kasznik (2000) find a significant negative abnormal return for 30 days preceding the option grant date (–1.78%) for their sub sample of unscheduled awards.
[17] Yermack (1997) computes abnormal returns using a market model while Aboody and Kasznik (2000) use the same method as in our paper.

Figure 1 is much stronger for smaller firms. Finally, their results are based only on CEO awards while our database includes all managerial awards.[18]

In order to check the consistency of our results with that of earlier studies, we investigated the stock price behavior around option grants over different time periods. Figure 2 shows the stock price behavior for the sub-periods of 1992-94, 1995-96, and 1997-2002. The magnitude of the mean CAR following the option grant is much lower and more in line with that of earlier studies. The 90-day mean CAR following the grant date is about 4.4% during the 1992-94 sub-period, and the 30-day mean CAR following the grant date is about 4.19% for the 1995-96 sub-period. These figures are still greater than the corresponding from the previous papers, and the differences are probably due to the presence of smaller firms in our sample. The mean CAR twenty days prior to the grant date is not significantly different from zero during the 1992-94 sub-period, as reported in Yermack (1997). Overall, it appears that our results are consistent with that of earlier studies for the time periods covered by those studies.

Table 4 presents the frequency of abnormal stock return reversals (ASRR) on the grant dates and compares it to ASRR on randomly chosen dates for the same firms. To qualify as an ASRR, both the CAR in the interval [–9, 0] and the CAR in the interval [1, 10] should exceed specified thresholds. We use three different definitions of ASRR based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant CAR. For example, to qualify as an ASRR with a threshold of ±2%, the CAR in the interval [–9, 0] must be less than –2% and the CAR in the interval [1, 10] must be greater than or equal to +2%.

It can be seen from Panel A of Table 4 that the frequencies of ASRR for the whole sample are 0.318, 0.241, and 0.150 for thresholds ±0%, ±2%, and ±5%, respectively. These frequencies of ASRR are substantially greater than the corresponding expected values of 0.257, 0.139 and 0.057 from randomly chosen dates for the same firms. We have also bootstrapped the

[18] Our results are generally in line with those of Lie (2004) whose data covers only CEO awards during the same period as ours. He finds a CAR of approximately –2.5% prior to the grant date and +2.5% after the grant date.

significance of these differences by randomly generating 1,000 samples of 605,106 random dates using a uniform distribution across all dates with valid stock returns. The ASRR for the grant dates exceed their corresponding ASRR for random dates at the 0.001 level. The same pattern holds for all four size groups regardless of the threshold.

Panel B of Table 4 presents the ASRR frequency for different industry groups, in ascending order of the ASRR frequency for the ±0% threshold. It can be seen that about 44% of the option grants in our sample come from two industry groups, technology and healthcare. The industry group with the highest frequency of ASRR is technology, which also leads in the number of options granted. If we use the ±0% threshold, the frequency of ASRR for the technology industry at 38% is significantly greater compared to the expected frequency of 25.7% from randomly chosen dates in the same firms. The technology industry is not unique in this regard: as can be seen from the table, several industries exhibit significantly greater frequency of ASRR compared to the expected frequency. The only industry that does not exhibit any evidence of stock price influencing around the grant date is the public utility industry: the frequency of ASRR for this industry is effectively the same as the expected frequency based on randomly chosen dates.

To summarize, in contrast to most of the previous evidence, we find abnormal stock return reversals around the option grant date. This pattern of stock price behavior is prima facie consistent with the influence hypothesis. In the two sections that follow, we provide more formal support for the influence hypothesis.

5. Factors that affect stock return reversals

Before we investigate the implications of the different methods of influencing the stock price on the grant date, we provide a brief discussion of some factors that affect the incentive and the ability to influence the stock price on the grant date and provide evidence on how the stock return reversals around the grant date are affected by these factors.

First and foremost, managerial influence of grant date stock price should be more pronounced for larger grants since greater potential benefits are at stake for the managers. Figure 3 presents the CAR around the grant date for five different groups based on grant size (less than 1,000 shares, 1,001 to 10,000 shares, 10,001 to 100,000 shares, 100,001 to 500,000 shares, and greater than 500,000 shares). It can be seen that generally the stock return reversals are starker for larger grants. For the largest grants, the 90-day pre-grant date return is –7% and the 90-day post-grant date return is 12.7%. In fact, if firms are back-dating even by twenty days, it increases the manager's compensation by 10% for the largest grants.[19]

Secondly, the seniority of the manager receiving the grant should affect the stock return reversals. It is the senior-most managers who are better equipped to influence the stock price as they possess more company-specific information, have the ability to manage the disclosure of this information, and have greater decision-making authority. Moreover, top executives such as CEOs also wield greater power with the board as they usually play a major role in the appointment of board members, in the formation of the compensation committee, and sometimes even serve on their own compensation committees. In addition, given that the average size of top executives' grants is likely to be significantly greater than that of other executives, their incentive to influence the stock price is also likely to be greater. For all these reasons, we expect a higher incidence of stock return reversals around grant dates involving top executives. Figure 4 presents the CAR around the grant date for top executives (Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors) and others. As can be seen from the figure, the stock return reversal around the grant date is more pronounced when top executives are receiving the option grants. Both the fall in

[19] We can get an approximate idea of the windfall from such back-dating by calculating the value of the average at-the-money option grant using the following parameters: average stock price = $30; risk-free rate = 5%; volatility = 30%; maturity = 8 years (from Table 2). This gives an option value of $14 which translates to $7 million for 500,000 shares granted. By back-dating for twenty days this value is increased by, 10%, i.e., $0.7 million.

stock price before the grant date and the subsequent rise are more pronounced in the case of top executives.

Under the influence hypothesis, the third factor that is likely to affect the stock return behavior around the grant date is the firm size. Managers of smaller firms are more likely to engage in influencing behavior because smaller firms are likely to be subject to less scrutiny than larger firms, as evidenced by the fact that they have less analyst coverage (see Bhushan (1989) and Lang and Lundholm (1993), for example), and have lower institutional ownership (see Gompers and Metrick (2000), for example) making it easier to influence the stock price. Smaller firms are also weaker on corporate governance and transparency (Durnev and Kim (2004)), and there is evidence that managers are more likely to capture the pay-setting process in firms with weaker governance (Bertrand and Mullainathan (2001)). It is also well-documented that managers in small firms are able to better exploit their informational advantage to earn larger profits on insider trades (Seyhun (1998)). Therefore, we should expect the stock return reversals around grant dates to be starker for smaller firms.

Figure 5 presents the CAR around the grant date for four different firm size groups (less than $100 million, $100 million to $500 million, $500 million to $3 billion, and greater than $3 billion) based on the market capitalization at the end of the calendar year prior to the one when the option award was granted. Evidence in Figure 5 suggests that the subsequent rise in stock price is strongly negatively related to firm size. In the smallest firm size group, the 90 day up-drift is about 17%. In the largest firm size group, the 90 day up-drift is about 4%. Hence, managerial gain from subsequent stock price rise is inversely related to firm size which is consistent with our conjectures about corporate governance.

Examining the pre-grant stock price behavior also provides some interesting insights. Stock prices decline (and thereby exhibit reversals) for the three larger firm size groups, but not for the smallest firm size group. Under the information disclosure channel, this evidence suggests that managers mostly postpone good news until after the option grant date. Under the

back-dating channel, this evidence suggests that managers choose a past date as the option grant date with a stock price that is lower than the current stock price. However, the lower stock price does not represent a local minimum.

Finally, managers' ability to influence the grant date stock price is somewhat limited for regularly scheduled awards. Managers can influence the stock price of scheduled awards only if they possess timely and relevant information before the scheduled date. They can then time the release of this information to their advantage (releasing favorable information after the grant date and unfavorable information before). However, their ability to time the grant date or employ the back-date method is limited in the case of scheduled awards. For example, if option awards are scheduled to be granted in a particular week of a given month, the extent of timing flexibility is limited to a week. By contrast, managers can influence the stock price around the grant date of unscheduled awards by simply timing the grant date (scheduling it just before the release of good news and just after the release of bad news) whenever they obtain material information that would affect the stock price, or by employing the back-date method. Since unscheduled awards provide managers who wish to influence the stock price more opportunities to do so, one would expect greater probability of reversals around unscheduled awards. We classify an option grant as a scheduled one if at least one manager has been granted options in the same calendar month the previous year. According to this classification, there 193,275 scheduled and 411,831 unscheduled awards. Note that, with this definition, even scheduled grant dates may be timed (ex-ante or ex-post) over a range of 30 days. Figure 6 presents the CAR around the grant date for both scheduled and unscheduled awards. It can be seen from the figure that only unscheduled awards exhibit abnormal stock return reversals around the grant date. While scheduled awards exhibit a positive return on average after the grant date, there is no drop in the stock price on average before the grant date. The stock return behavior reported in Figure 6 is consistent with the influence hypothesis.

Table 5 presents joint tests of the effects of the four variables discussed above on the probability of ASRR on the grant date by means of a probit analysis with the probability of the ASRR as the dependent variable. We use the same three thresholds for ASRR as before (±0%, ±2%, and ±5%). To avoid counting option awards to different executives of the same firm on a given day as independent observations, all options awarded to executives of the same firm on a given day are grouped as a single grant. This adjustment reduces the number of observations to 65,760 event dates.

The independent variables are the four variables discussed above, namely grant volume, firm size, executive rank dummy (top executives = 1; others = 0), and schedule dummy (scheduled grants = 1, unscheduled = 0). If at least one manager has been granted options in the same calendar month the previous year, then the schedule dummy is set to one, otherwise, it equals zero. Since we are considering all grants on a given day by a firm as a single event, we need to redefine some of the independent variables to take into account this adjustment. The grant volume is now defined as total volume of grants to all executives of a firm on a given day. If at least one top executive of a firm receives an option grant on a given day, all grants by that executive's firm on that day are classified as top executive grants (the definition of top executive is the same as before). If no top executive of a firm receives an option grant on a given day, all grants by that firm on that day are classified as received by other executives. Such a classification is consistent with the influence hypothesis that top executives are more likely to influence the exercise price: as long as at least one top executive receives an option grant, we can expect to see a stronger attempt to influence the exercise price.

It can be seen from Table 5 that signs of coefficients for grant volume, firm size, rank dummy, and schedule dummy are as predicted and significant ($p < 0.0001$, from Wald χ^2 statistics) for the ±0% threshold of ASRR, implying that the probability of ASRR increases with grant volume and executive seniority, decreases with firm size, and is greater for unscheduled grants. The coefficients for grant volume, firm size, and rank dummy are

significant with $p < 0.0001$ for the other two thresholds of ASRR as well. The schedule dummy for the other two thresholds is significant at the 10% level. Overall, these results are consistent with the influence hypothesis.

6. Evidence on the back-date method of influencing compensation

The evidence presented above is consistent with the hypothesis that managers influence their compensation by influencing the exercise price of their option grants. We now explore more formally whether one of the channels employed to influence their compensation is the backdating of the grant date so as to minimize the exercise price of the options, thereby increasing the value of the options granted. As discussed in Section 2, if managers are influencing the grant date stock price through timing of the release of earnings information or timing the grant date, the stock price behavior around the grant date in Figure 1 should be the aggregation of two independent sets of stock price behavior patterns around the grant date and we should not observe any correlation between the cumulative abnormal returns before and after the grant date. Table 6 provides evidence of the relation between the stock price behavior before and after the grant date. The table provides the results of the regression with the CAR after the grant date as the dependent variable and the CAR before the grant date as independent variable, with the log of the shares granted, log of the firm size, and a dummy for the rank of the executive, and a dummy for scheduled awards as control variables. Results of nine regressions are reported, with CAR for three different time intervals after the grant date ([1, 10], [1, 50], [1, 90]) as the dependent variable and CAR for three different time intervals before the grant date ([−90, −81], [−60, −51], [−10, −1]) as an independent variable. As in Table 5, we count all grants by a firm on a single date as a single observation for this regression and all variable definitions are as for Table 5.

It can be seen that the coefficients of pre-grant CAR are statistically significant ($p < 0.0001$) when the closest interval before the grant date, [−10, −1], is used as the independent

variable. The signs of these coefficients are consistent with Figure 1, indicating that greater pre-grant stock price drops imply greater post-grant stock price rises. Several of the coefficients of pre-grant CAR are not significant when the other two intervals are used for past CAR. The contrast between the results for the closest pre-grant interval and others is stronger when the sample is limited to unscheduled awards (not reported). These results imply that, on average, firms whose stock prices drop just before the grant date are the ones that are likely to see their stock prices rise after the grant date. Such short-term reversals are highly unlikely under the information release hypothesis and would likely subject the executives to anti-fraud and price manipulation provisions of the securities laws. On the other hand, if some managers back-date aggressively (pick a minimum stock price in the past) then these short term reversals occur by necessity under the back-dating hypothesis. An implication of the evidence presented in Table 6 is that, if managers are influencing the exercise price, at least some of them are employing methods other than the ones discussed above, i.e., timing the release of earnings information and timing the grant date to ensure that the grant date follows the release of unfavorable information or precedes the release of favorable information. As discussed in Section 2, if the back-date method is employed aggressively to pick the grant date, one would expect to observe a stock return reversal around the grant date as shown in Figure 1. Also, by definition, the use of the back-date method implies a greater reporting lag as discussed in Section 2. Moreover, if managers back-date aggressively, namely, try to find a past stock price that is a local minimum, they would in general need to go back further. The longer the time period over which they search the more likely that they will be able to pick a date in which stock price forms a local minimum. This implication follows directly from the properties of extreme statistics. Therefore, another implication of the back-date hypothesis is that there should be a positive relation between the probability of abnormal stock price reversals around the grant date and the reporting lag. Under the other two hypotheses, there is no reason to expect a positive relation between abnormal stock return reversals around the grant date and the reporting lags.

Table 7 provides the frequency of ASRR on the grant date for different reporting lags. In this table, each option grant is viewed as a separate event. The table divides the grants into three groups based on reporting lag: grants that are reported in 25 days or earlier, between 26 and 125 days, and after 125 days. For each group, ASRR on the grant date is computed for each of the three threshold returns (±0%, ±2%, ±5%), as before. Results are reported for the entire sample and for the subsamples of scheduled and unscheduled grants. It can be seen from the table that, for the whole sample, the frequency of ASRR increases with reporting lag for all three thresholds, consistent with the back-date method of influencing compensation. We also estimated the significance of the differences in reporting lags using dummy variable regressions. The two greater reporting lag dummies are both significant at the 0.001 level. Hence, greater reporting lags are significantly associated with greater likelihood of abnormal stock return reversals.

Table 7 also shows that the frequency of ASRR in the case of unscheduled awards is consistently higher than the corresponding figure for scheduled awards for all three thresholds. This is expected since the likelihood and extent of back-dating will be greater with unscheduled grants. If grants are regularly scheduled on a specific day, back-dating is impossible. Since our definition of scheduled grants includes grants scheduled in the same month as the previous year's grants, the extent of back-dating is limited to a month in the scheduled awards subsample. It is also worth noting that while the frequency of ASRR monotonically increases with reporting lag in the subsample of unscheduled awards, this is not the case with the subsample of scheduled awards.

The probit regressions reported in Table 8 provide more formal evidence of the relationship between the reporting lag and the stock price reversals on the grant date. Table 8 repeats the probit analysis of Table 5 with the probability of an ASRR as the dependent variable and with the reporting lags added to the set of independent variables. We add two reporting lag dummies, with Report Lag_2 dummy set to 1 if the reporting lag, measured in

calendar days, is in the interval [26, 125] and Report Lag_3 dummy set to 1 if the reporting lag is greater than 125 calendar days. For reporting lag, we use the shortest of the reporting lags for option grants by a firm on a given day. Such a specification biases the analysis against finding any significance for reporting lags. We expect that if the public finds out about any of the grants on a given day, then they typically infer that others also might be getting options on the same day. We report the results for the whole sample with a schedule dummy (scheduled grants = 1, unscheduled = 0) and for the subsamples of scheduled (N = 14,369) and unscheduled (N = 51,391) awards. All other variables are defined as in Table 5. It can be seen from Table 8 that all the variables are generally significant for the whole sample with the only exception being the schedule dummy for the ±2% threshold of ASRR. In particular, both reporting lag dummy coefficients have the predicted sign and are significant ($p < 0.0001$) for all three ASRR thresholds implying that the greater the reporting lag the greater the probability of a stock return reversal around the grant date. For the sample of unscheduled awards, both reporting lag dummy coefficients have the predicted sign and are significant ($p < 0.0001$) for all three ASRR thresholds While the reporting lag dummy coefficients have the predicted sign for the scheduled sample as well, they are not as significant. This result is consistent with the aggressive back-date method of setting the grant date.

7. Alternative hypotheses

Until now we have focused on the implications of the influence hypothesis. In this section we discuss some alternative hypotheses and the consistency of the previous section's results with these hypotheses. To this end, we examine three alternative hypotheses, namely, better alignment of managers' interest, insider trading hypothesis, and repricing hypothesis.

An alternative explanation for the increase in stock price following the stock option awards is that investors expect managers to create value because of the better alignment of managers' interests with those of shareholders resulting from increased option ownership. The

fact that the grant volume and executive seniority are directly related to the steepness of the stock price rise following the grant date is consistent with the alignment hypothesis as well, since one can argue that more grants increase the managers' incentive to create value and that more senior executives have more control over decisions affecting firm value. The fact that the stock price rise following the grant date is steeper for unscheduled awards is also consistent with the alignment hypothesis. Since both the timing and the volume of grants are surprises in the case of unscheduled awards the stock price impact is greater than in the case of scheduled awards in which the only surprise is the volume of the grant. However, some of evidence presented in the previous section is inconsistent with the alignment hypothesis. The first inconsistent evidence concerns the timing of the stock price increase. As indicated earlier, information about the grant date is not released immediately. In fact, as Table 2 shows, the average reporting lag is 170 days. In addition to the reporting lag, there are dissemination lags by the SEC and the listing exchange. For most of the sample period, the dissemination lags are typically about a month [Seyhun (1998)]. Therefore, it is unlikely that investors are reacting favorably to option grants. As can be seen from Figure 7, the stock returns around the day SEC receives the filing do not exhibit stock return reversals. Hence, there is no obvious market reaction around the public release of managerial compensation information. This finding is inconsistent with the alignment hypothesis. The second empirical fact that the alignment hypothesis cannot explain is the relationship between the reporting lag and the stock price reversals.

Another potential explanation for the observed stock price behavior on the grant date is that there are some insiders other than the executives receiving grants (such as compensation committee members) who know the grant date as soon as it is decided and their trading is causing the stock price to rise following the grant date. The implicit assumption behind this argument is that these insiders believe that other investors will view the information about the option award as favorable news. Therefore, using the same line of reasoning as in the case of

the alignment hypothesis, it follows that the results reported earlier involving grant volume, executive seniority, and award scheduling are consistent with the insider trading hypothesis as well. Insiders have to sell before the grant date to produce the pre-grant stock price drop and buy after the grant date to produce the subsequent stock price increase. However, Section 16-b of the Securities and Exchange Act in fact prohibits these types of short-swing profits (from selling high and buying low within 180 days). Therefore, insider trading hypothesis cannot explain the relationship between the reporting lag and the stock price reversals.

Finally, executive stock options are sometimes repriced. This means that if the stock price drops substantially, firms can lower the exercise price of old options and/or cancel old options and issue new options. Brenner, Sundaram, and Yermack (2000) report that the new exercise price is lowered to the stock price on the repricing date in 79% of their sample. Therefore, it is quite natural that stock prices would drop before the grant date of repriced options. The stock price might rise after the grant date if the market viewed the repricing as good news because it provides better incentives to the managers to create shareholder value. Indeed, Callaghan, Saly, and Subramaniam (2004) find negative abnormal stock returns before and positive abnormal stock returns after the repricing date. To test if our results are due to the presence of repriced options, we removed from our sample any observation which showed a stock price drop during one, two, or three-year period immediately before the 90 days prior to the option grant date. Our findings were unchanged. Using only options which showed stock priced increases during long periods prior to the option grants, we can still establish strong stock price reversals, a negative relation between 10-day returns before and after the grant date, and a positive relation between stock price reversals and reporting lags.

In summary, it appears that these alternative hypotheses cannot satisfactorily explain our findings, including the stock return reversals in Figure 1, leaving us to conclude that the return reversals in Figure 1 are suggestive of influencing behavior.

8. Conclusions

We analyze the extent of managerial influence on their compensation by using a comprehensive database of 605,106 option grants reported by all managers in all publicly listed companies during 1992-2002. Our overall evidence is consistent with substantial managerial influence on their compensation. Stock price fall significantly prior to option grant dates and rise significantly following option grant dates, thereby producing sharp reversals of abnormal returns. The market-adjusted return for the 90 days preceding the grant date is about −3.6% and the return for the 90 days following the grant date is about 9.4%. In small firms, the 90-day post-grant date average abnormal rise in stock price is about 17%. These patterns are significantly larger than any that has been documented in previous literature.

We find that the abnormal stock return reversals are more pronounced for larger grants which increase the incentive to influence the grant date stock price. Managerial influence is also more pronounced on average for smaller firms that are likely to be subject to less investor scrutiny and are also likely to be weaker in corporate governance and transparency. The abnormal stock return reversals are more pronounced on average when the grants involve top executives such as CEOs, Chairmen of the Board, Presidents, and CFOs, who possess more company specific information, have the ability to manage information disclosure, and wield greater influence with the board. Finally, abnormal stock return reversals are greater for unscheduled grants as it gives managers more flexibility in setting the grant date.

The abnormal stock return reversals are found in most industries with the technology industry leading the list. The frequency of abnormal stock return reversals on option grant dates in this industry is about 38%, which is significantly greater than the expected frequency of reversals of 25.7% based on randomly chosen dates for the same firms. The public utility industry is the only industry that exhibits return reversals on the grant dates with a frequency indistinguishable from that based on randomly chosen dates.

We argue that while the stock return reversals are consistent with both opportunistic timing of information releases by firms and opportunistic timing of grant dates, these two methods of influencing do not completely explain the observed stock return reversals. In particular, we argue that the correlation between post-grant and pre-grant abnormal returns cannot be easily explained by these two methods of influencing alone. We propose that some firms may be setting the grant date on a back-date basis, i.e., choosing a grant date in the recent past with a lower stock price than the price on the day of the grant decision is made. If back-date method is employed by some firms, the stock return reversals should be positively related to the reporting lag (the time interval between the grant date and the date on which the SEC receives the grant disclosure forms from the executive). We find this is indeed the case.

The magnitude of the gains for large grants from back-dating can be significant. Our results show that if grant date is back-dated by 20 days, executives receiving large grants (500,000 shares or greater) increase the value their option compensation by about 10%. By conservative estimates, this is equivalent to a windfall of $0.7 million per grant.

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Table 1

Evolution of option grant volume during 1992-2002

Year	Number of grants	Average shares per grant	Total shares granted	Number of firms	Average shares per firm
1992	940	18,409	17,304,359	126	137,336
1993	1,656	39,107	64,761,676	195	332,111
1994	2,447	33,073	80,930,643	319	253,701
1995	6,378	121,368	774,087,963	840	921,533
1996	38,775	25,805	1,000,602,029	3,521	284,181
1997	58,282	42,378	2,469,874,866	4,568	540,691
1998	58,910	38,314	2,257,102,708	4,690	481,259
1999	72,617	40,420	2,935,161,965	4,595	638,773
2000	81,541	35,217	2,871,637,746	3,826	750,559
2001	163,135	12,091	1,972,435,653	3,343	590,020
2002	120,425	10,379	1,249,847,575	2,543	491,485
Total	605,106	25,936	15,693,747,183		

The table provides the summary statistics of 605,106 option grants reported by insiders to meet disclosure requirements of Section 16(a) of the Securities and Exchanges Act in firms whose returns are available in CRSP database. Total shares granted are the shares that the insiders will receive upon exercise of the options. Number of firms indicates the firms that awarded options.

Table 2

Award structure and reporting behavior by firm size and seniority of executive

Panel A: By firm size

	Award size, per grant and per firm					Award parameters		Reporting behavior
Market capitalization	Number of grants	Average shares per grant	Number of firms	Average shares per firm	Total shares granted	Average maturity (years)	Average time to first exerciseable date (years)	Average time from grant date to SEC receipt (calendar days)
< $100 million	160,845	23,423	7,676	490,803	3,767,403,546	7.65	1.84	224
Between $100 and $500 million	168,818	14,953	6,143	410,919	2,524,276,370	8.17	1.99	165
Between $500 and $3000 million	157,510	27,384	3,952	1,091,397	4,313,201,314	8.16	2.03	153
> $3000 million	117,933	43,150	1,444	3,524,145	5,088,865,953	8.55	2.20	129
Whole sample	605,106	25,936			15,693,747,183	8.11	1.98	170

Panel B: By seniority of executive

Top executives	135,917	49,630	8,538	790,069	6,745,609,850	8.57	1.78	172
Other officers	469,189	19,071	10,677	838,076	8,948,137,333	7.97	2.01	170
Whole sample	605,106	25,936			15,693,747,183	8.11	1.98	170

Table 2 (continued)

Panel A of the table reports the award sizes, average maturity, average time to first exercise, and average reporting lag for different firm size groups as measured by the market capitalization at the end of the year prior to the grant year. The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). Total shares granted are the shares that the insiders will receive upon exercise of the options. Number of firms indicates the firms that awarded options. The last column provides the average duration between the grant date and the date on which the SEC receives the filing of grant details as per the disclosure requirements of Section 16(a) of the Securities and Exchanges Act. Panel B provides the same data for top executives and others. Top executives include those with the titles (on the grant date) of Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors. The reporting lag is measured as the time interval between the grant date and the date on which the SEC receives the insiders' filing of the grant details.

Table 3

Stock returns before and after executive option grants

Holding period	Mean CAR	Median CAR	Mean raw return
[-90, 0]	-3.26%	-2.11%	-2.40%
	(<.0001)	(<.0001)	(<.0001)
[-50, 0]	-2.12%	-1.60%	-1.33%
	(<.0001)	(<.0001)	(<.0001)
[-40, 0]	-1.95%	-1.30%	-1.47%
	(<.0001)	(<.0001)	(<.0001)
[-30, 0]	-1.64%	-1.05%	-1.26%
	(<.0001)	(<.0001)	(<.0001)
[-20, 0]	-1.05%	-0.90%	-0.83%
	(<.0001)	(<.0001)	(<.0001)
[-10, 0]	-0.74%	-0.87%	-0.71%
	(<.0001)	(<.0001)	(<.0001)
[1, 10]	3.82%	1.57%	4.31%
	(<.0001)	(<.0001)	(<.0001)
[1, 20]	4.98%	2.43%	5.66%
	(<.0001)	(<.0001)	(<.0001)
[1, 30]	6.12%	3.06%	6.76%
	(<.0001)	(<.0001)	(<.0001)
[1, 40]	6.85%	3.62%	7.38%
	(<.0001)	(<.0001)	(<.0001)
[1, 50]	7.16%	4.48%	7.61%
	(<.0001)	(<.0001)	(<.0001)
[1, 90]	8.85%	6.63%	9.59%
	(<.0001)	(<.0001)	(<.0001)

The table shows mean and median cumulative abnormal returns and raw returns of stocks around the option grant date (day 0). The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). Each option grant is considered as an observation. Abnormal return is computed as the difference between raw return and the return to value weight index of NYSE, AMEX and NASDAQ stocks. Standard errors of returns are computed by averaging all returns across all events and then taking into account serial correlation of average abnormal returns. In parentheses are the p-values (differences from zero) associated with the returns.

Table 4

Frequency of Abnormal Stock Return Reversals (ASRR) around the grant date

Panel A: By firm size

Market capitalization	Number of grants	Threshold return		
		±0%	±2%	±5%
< $100 million	160,845	0.326 (0.257)	0.258 (0.150)	0.174 (0.071)
Between $100 and $500 million	168,818	0.324 (0.258)	0.247 (0.142)	0.153 (0.061)
Between $500 and $3000 million	157,510	0.312 (0.256)	0.226 (0.133)	0.137 (0.051)
> $3000 million	117,933	0.308 (0.257)	0.227 (0.126)	0.133 (0.043)
Whole sample	605,106	0.318 (0.257)	0.241 (0.139)	0.150 (0.057)

Panel B: By Industry

Industry	Number of grants	Threshold return		
		±0%	±2%	±5%
Technology	162,516	0.379	0.325	0.231
Transportation	7,159	0.335	0.257	0.130
Consumer services	85,792	0.330	0.254	0.163
Other	38,354	0.318	0.224	0.140
Capital goods	34,226	0.297	0.208	0.121
Healthcare	103,843	0.288	0.230	0.150
Consumer nondurable	23,748	0.285	0.188	0.099
Finance	72,229	0.285	0.164	0.067
Basic Industry	23,211	0.280	0.175	0.075
Energy	18,809	0.275	0.180	0.098
Consumer durables	16,852	0.264	0.178	0.087
Public utility	18,367	0.252	0.159	0.068
Whole sample	605,106	0.318	0.241	0.150

Table 4 (continued)

The table presents the frequency of abnormal stock return reversals (ASRR) around the option grant date (day 0) for different firm size groups (Panel A) and for different industries (Panel B). The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). Each option grant is considered as an observation. Firm size is measured by the market capitalization at the end of the year prior to the grant year. To qualify as an ASRR, both the CAR in the interval [−9, 0] and the CAR in the interval [1, 10] should exceed specified thresholds. Three different definitions of ASRR are used based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant CAR. The figures in the brackets in Panel A are estimated expected values of ASRR using a bootstrapping method. The data in Panel B is ordered by the ASRR frequency for the ±0% threshold.

Table 5

Determinants of abnormal stock return reversals (ASRR) around the grant date

$p = a_0 + a_1$ Log(shares granted) $+ a_2$ Log(firm size) $+ a_3$ Rank dummy $+ a_4$ Schedule dummy

Threshold return	Intercept	Log (shares granted)	Log (firm size)	Rank dummy	Schedule dummy
Predicted sign		+	–	+	–
±0%	-0.6150	0.0261	-0.0193	0.0633	-0.0535
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
±2%	-0.8366	0.0502	-0.0420	0.0678	-0.0254
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.063)
±5%	-1.0803	0.0704	-0.0658	0.0790	-0.0422
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.074)

The table provides the results of a probit regression with the dependent variable as the probability of abnormal stock return reversal (ASRR) around the grant date (day 0). The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). All options awarded to executives of the same firm on a given day are grouped as a single grant, resulting in a total of 65,760 observations. To qualify as an ASRR, both the CAR in the interval [–9, 0] and the CAR in the interval [1, 10] should exceed specified thresholds. Three different definitions of ASRR are used based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant CAR. Log (shares granted) is the log of the total number of shares all insiders of the same firm who were awarded options on a given date will receive upon exercise of the options. Log (firm size) is the log of the market capitalization at the end of the year preceding the grant year. The Rank Dummy equals 1 if at least one top executive received an award on a given grant date, and 0 otherwise; top executives include those with the titles (on the grant date) of Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors. The Schedule Dummy equals 1 if at least one insider has been granted options in the same calendar month the previous year (scheduled awards), and 0 otherwise. In parentheses are the p-values (differences from zero) associated with the regression coefficients.

Table 6

Relation between pre- and post- grant returns

Post-grant CAR [1, t+] = a_0 + a_1 Log(shares granted) + a_2 Log(firm size) + a_3 Rank dummy
+ a_4 Schedule dummy + a_5 Pre-grant CAR

Post-grant horizon t+ (days)	Pre-grant interval (days)	Intercept	Log (shares granted)	Log (firm size)	Rank dummy	Schedule dummy	Pre-grant CAR	R^2
10	[-90, -81]	0.0529	0.0050	-0.0060	0.0161	-0.0023	0.0046	1.38%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0394)	(0.1943)	
50	[-90, -81]	0.2119	0.0076	-0.0188	0.0308	0.0107	0.0170	2.00%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.035)	
90	[-90, -81]	0.2993	0.0087	-0.0255	0.0380	0.0179	0.0327	2.06%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0022)	
10	[-50, -41]	0.0529	0.0050	-0.0060	0.0161	-0.0023	0.0012	1.38%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0405)	(0.7014)	
50	[-50, -41]	0.2125	0.0075	-0.0189	0.0308	0.0109	-0.0109	2.00%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0049)	
90	[-50, -41]	0.2998	0.0087	-0.0255	0.0380	0.0180	0.0141	2.05%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.9019)	
10	[-10, -1]	0.0549	0.0049	-0.0061	0.0158	-0.0020	-0.0488	1.57%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(0.0814)	(<0.0001)	
50	[-10, -1]	0.2142	0.0074	-0.0189	0.0305	0.0111	-0.0486	2.04%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	
90	[-10, -1]	0.3022	0.0086	-0.0256	0.0376	0.0185	-0.0539	2.08%
		(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)	

Table 6 (continued)

The table provides the results of a regression with the different post-grant date (day 0) CAR as the dependent variable. The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). All options awarded to executives of the same firm on a given day are grouped as a single grant, resulting in a total of 65,760 observations. Abnormal return is computed as the difference between raw return and the return to value weight index of NYSE, AMEX and NASDAQ stocks. The CAR is measured over three different time intervals: [1, 10], [1, 50], and [1,90], where time is measured in days and Day 0 is the grant date. The independent variables include Log (shares granted), Log (firm size), Rank Dummy, Schedule Dummy, and pre-grant date CAR. Log (shares granted) is the log of the total number of shares all insiders of the same firm who were awarded options on a given date will receive upon exercise of the options. Log (firm size) is the log of the market capitalization at the end of the year preceding the grant year. The Rank Dummy equals 1 if at least one top executive received an award on a given grant date, and 0 otherwise; top executives include those with the titles (on the grant date) of Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors. The Schedule Dummy equals 1 if at least one insider has been granted options in the same calendar month the previous year (scheduled awards), and 0 otherwise. Pre-grant CAR is measured over three different intervals: [−90, −81], [−50, −41], and [−10, −1]. In parentheses are the p-values (differences from zero) associated with the regression coefficients.

Table 7

Frequency of Abnormal Stock Return Reversals (ASRR) for different reporting lags

Reporting lag (calendar days)	Whole sample				Unscheduled awards				Scheduled awards			
	Number of grants	Threshold return			Number of grants	Threshold return			Number of grants	Threshold return		
		±0%	±2%	±5%		±0%	±2%	±5%		±0%	±2%	±5%
0 – 25	135,147	0.283	0.217	0.115	89,030	0.292	0.226	0.120	46,117	0.265	0.200	0.106
26 – 125	228,868	0.319	0.235	0.150	153,939	0.342	0.254	0.161	74,929	0.271	0.197	0.127
> 126	241,091	0.338	0.259	0.170	168,862	0.348	0.268	0.178	72,229	0.313	0.236	0.153
Whole sample	605,106	0.318	0.241	0.150	411,831	0.334	0.254	0.159	193,275	0.285	0.212	0.132

The table presents the frequency of abnormal stock return reversals (ASRR) around the option grant date (date 0) for different reporting lags. The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). Each option grant is considered as an observation. To qualify as an ASRR, both the CAR in the interval [–9, 0] and the CAR in the interval [1, 10] should exceed specified thresholds. Three different definitions of ASRR are used based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant CAR. The reporting lag is the duration in calendar days between the grant date and the date of filing with the SEC. Results for the whole sample and the subsamples of scheduled and unscheduled awards are reported. An award is classified as scheduled if at least one insider has been granted options in the same calendar month the previous year.

Table 8

Effect of reporting lag on probability of abnormal stock return reversals (ASRR) around the grant date

Panel A: Whole sample (N = 65,760)

$p = a_0 + a_1$ Log(shares granted) $+ a_2$ Log(firm size) $+ a_3$ Rank Dummy $+ a_4$ Schedule Dummy $+ a_5$ Report Lag_2 dummy $+ a_6$ Report Lag_3 dummy

Threshold return	Intercept	Log (shares granted)	Log (firm size)	Rank dummy	Schedule dummy	Report Lag_2 dummy	Report Lag_3 dummy
Predicted sign		+	–	+	–	+	+
±0%	-0.7420 (<0.0001)	0.0263 (<0.0001)	-0.0169 (<0.0001)	0.0623 (<0.0001)	-0.0490 (0.0001)	0.0985 (<0.0001)	0.1425 (<0.0001)
±2%	-0.9570 (<0.0001)	0.0503 (<0.0001)	-0.0399 (<0.0001)	0.0667 (<0.0001)	-0.0209 (0.1261)	0.1012 (<0.0001)	0.1348 (<0.0001)
±5%	-1.1950 (<0.0001)	0.0704 (<0.0001)	-0.0642 (<0.0001)	0.0776 (<0.0001)	-0.0381 (0.0156)	0.1147 (<0.0001)	0.1270 (<0.0001)

Panel B: Unscheduled awards only (N = 51,391)

$p = a_0 + a_1$ Log(shares granted) $+ a_2$ Log(firm size) $+ a_3$ Rank Dummy $+ a_4$ Report Lag_2 dummy $+ a_5$ Report Lag_3 dummy

Threshold return	Intercept	Log (shares granted)	Log (firm size)	Rank dummy	Report Lag_2 dummy	Report Lag_3 dummy
Predicted sign		+	–	+	+	+
±0%	-0.7870 (<0.0001)	0.0281 (<0.0001)	-0.0156 (<0.0001)	0.0648 (<0.0001)	0.1106 (<0.0001)	0.1520 (<0.0001)
±2%	-0.9942 (<0.0001)	0.0526 (<0.0001)	-0.0403 (<0.0001)	0.0729 (<0.0001)	0.1122 (<0.0001)	0.1502 (<0.0001)
±5%	-1.2146 (<0.0001)	0.0690 (<0.0001)	-0.0630 (<0.0001)	0.0893 (<0.0001)	0.1094 (<0.0001)	0.1263 (<0.0001)

Table 8 (continued)

Panel C: Scheduled awards only (*N* = 14,369)

$p = a_0 + a_1$ Log(shares granted) + a_2 Log(firm size) + a_3 Rank Dummy
+ a_4 Report Lag_2 dummy + a_5 Report Lag_3 dummy

Threshold return	Intercept	Log (shares granted)	Log (firm size)	Rank dummy	Report Lag_2 dummy	Report Lag_3 dummy
Predicted sign		+	–	+	+	+
±0%	-0.6404	0.0189	-0.0206	0.0556	0.0572	0.1114
	(<0.0001)	(0.0037)	(<0.0001)	(<0.0001)	(0.0586)	(0.0002)
±2%	-0.8529	0.0401	-0.0373	0.0463	0.0662	0.0810
	(<0.0001)	(<0.0001)	(<0.0001)	(0.0005)	(0.0419)	(0.0119)
±5%	-1.1862	0.0774	-0.0676	0.0355	0.1340	0.1290
	(<0.0001)	(<0.0001)	(<0.0001)	(0.0215)	(0.0005)	(0.0007)

Panel A of the table provides the results of a probit regression with the dependent variable as the probability of abnormal stock return reversal (ASRR) around the option grant date (day 0). The sample includes 605,106 grants reported by insiders during 1992-2002 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, in firms whose returns are available in Center for Research in Security Prices (CRSP). All options awarded to executives of the same firm on a given day are grouped as a single grant, resulting in a total of 65,760 observations. To qualify as an ASRR, both the CAR in the interval [–9, 0] and the CAR in the interval [1, 10] should exceed specified thresholds. Three different definitions of ASRR are used based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant CAR. Log (shares granted) is the log of the total number of shares all insiders of the same firm who were awarded options on a given date will receive upon exercise of the options. Log (firm size) is the log of the market capitalization at the end of the year preceding the grant year. The Rank Dummy equals 1 if at least one top executive received an award on a given grant date, and 0 otherwise; top executives include those with the titles (on the grant date) of Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors. The Schedule Dummy equals 1 if at least one insider has been granted options in the same calendar month the previous year (scheduled awards), and 0 otherwise. The reporting lag is the duration in calendar days between the grant date and the date of filing with the SEC. We use the shortest of the reporting lags for grants by a firm on a given day. Report Lag_2 Dummy equals 1 if the reporting lag is in the range [26 days, 125 days] and Report Lag_3 equals 1 if the reporting lag is greater than 125 days. Panels B and C repeat the probit regression for subsamples of unscheduled and scheduled awards, respectively. In parentheses are the p-values (differences from zero) associated with the regression coefficients.

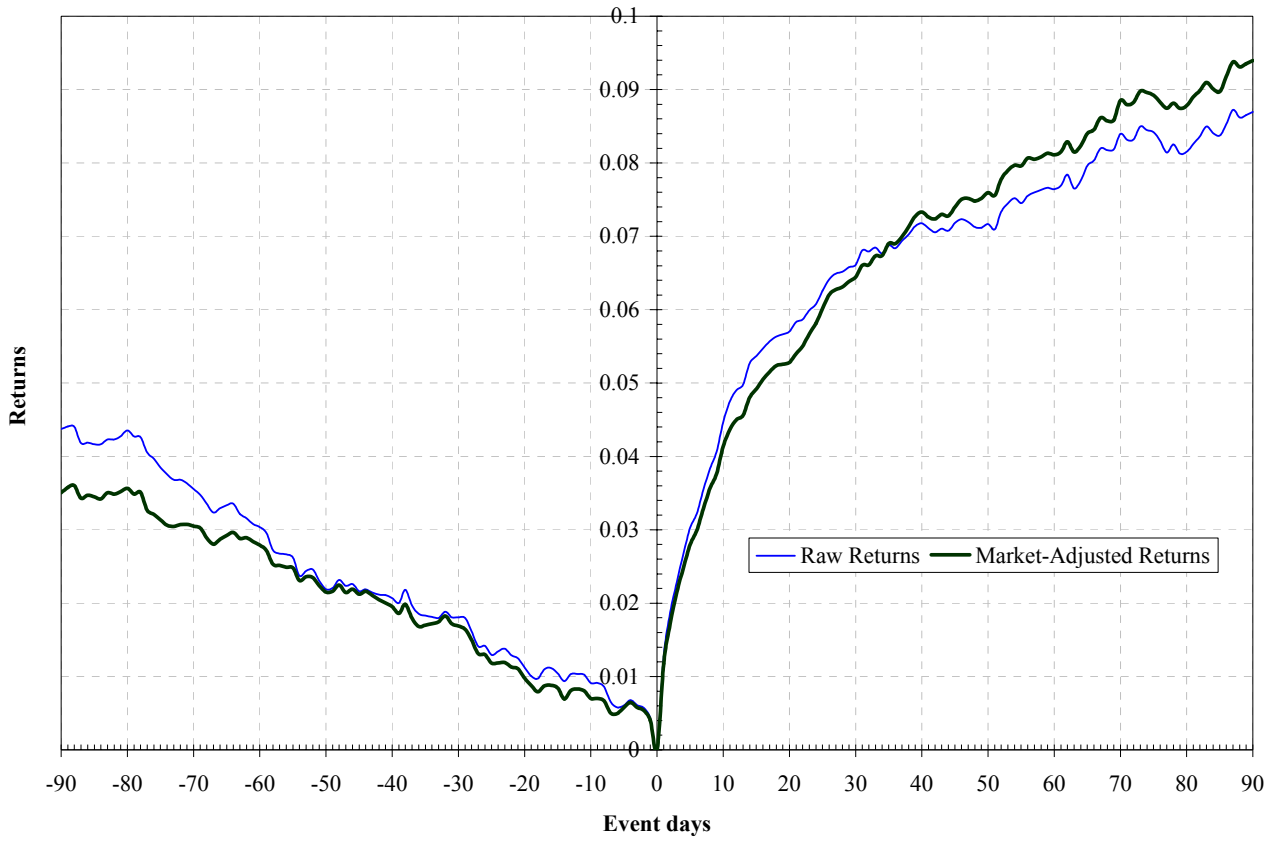

Figure 1

Stock returns around grant date of stock options

The figure plots the both raw and market-adjusted abnormal stock returns around the option grant date (day 0). Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.

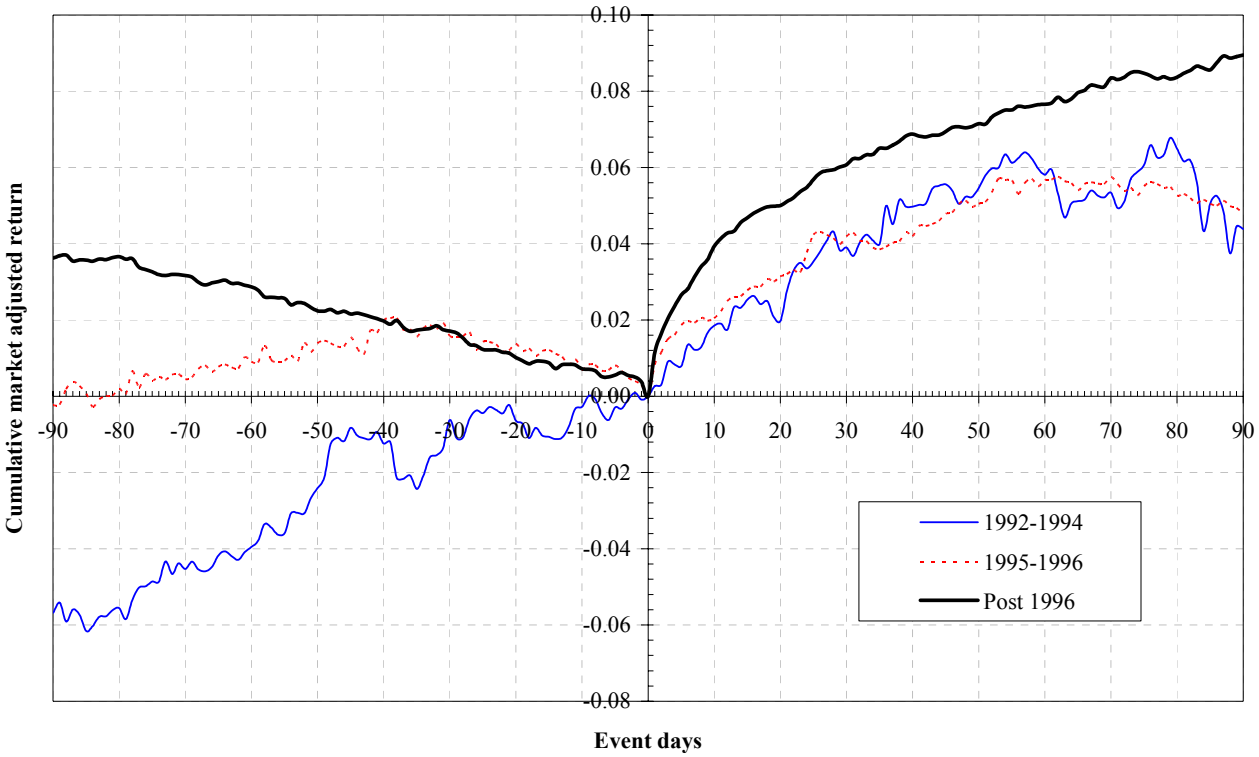

Figure 2

Stock return behavior around grant dates for different sub-periods

The figure plots market-adjusted abnormal stock returns around the option grant date (day 0) for three sub periods: 1992-94 (N = 5,043), 1995-96 (N = 45,153), and post 1996 (N = 554,910). Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.

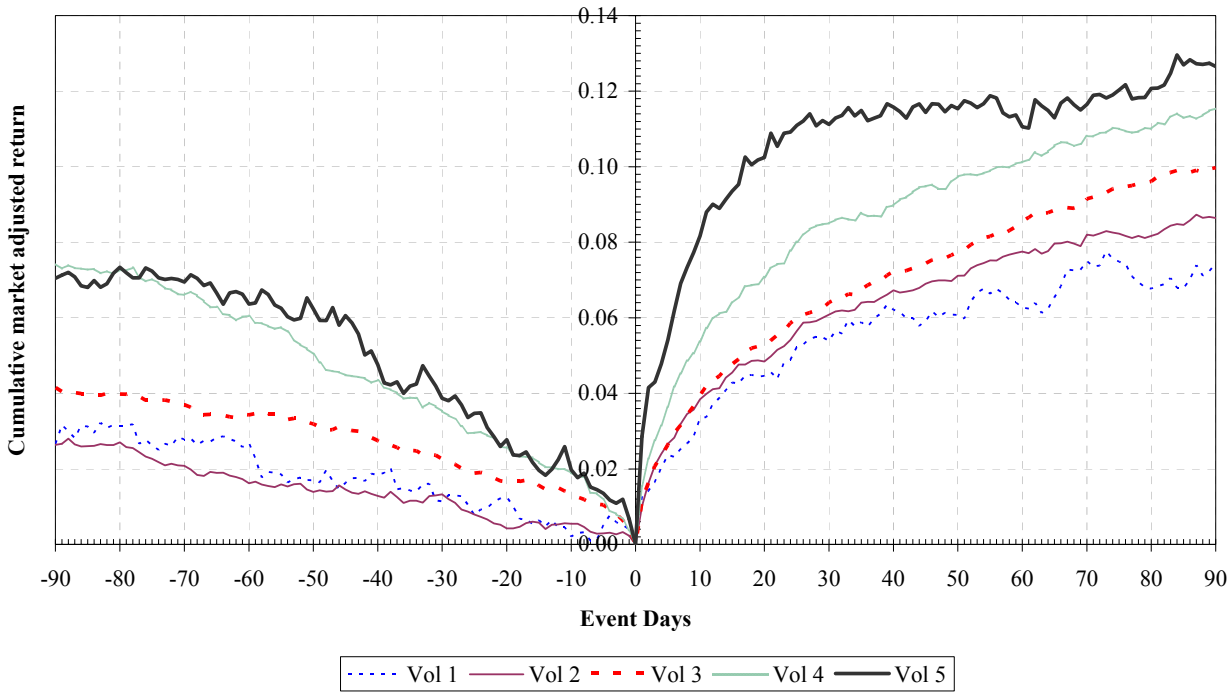

Figure 3

Effect of grant size on stock return behavior around grant dates

The figure plots market-adjusted abnormal stock returns around the option grant date (day 0) for five different groups based on grant size. Vol 1 represents option grants for less than 1000 shares (N = 141,771); Vol 2 represents grants between 1001 and 10,000 shares (N = 270,561); Vol 3 represents grants between 10,001 and 100,000 shares (N = 167,801); Vol 4 represents grants between 100,001 and 500,000 shares (N = 22,398); and Vol 5 represents grants greater than 500,000 shares (N = 2,575). Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.

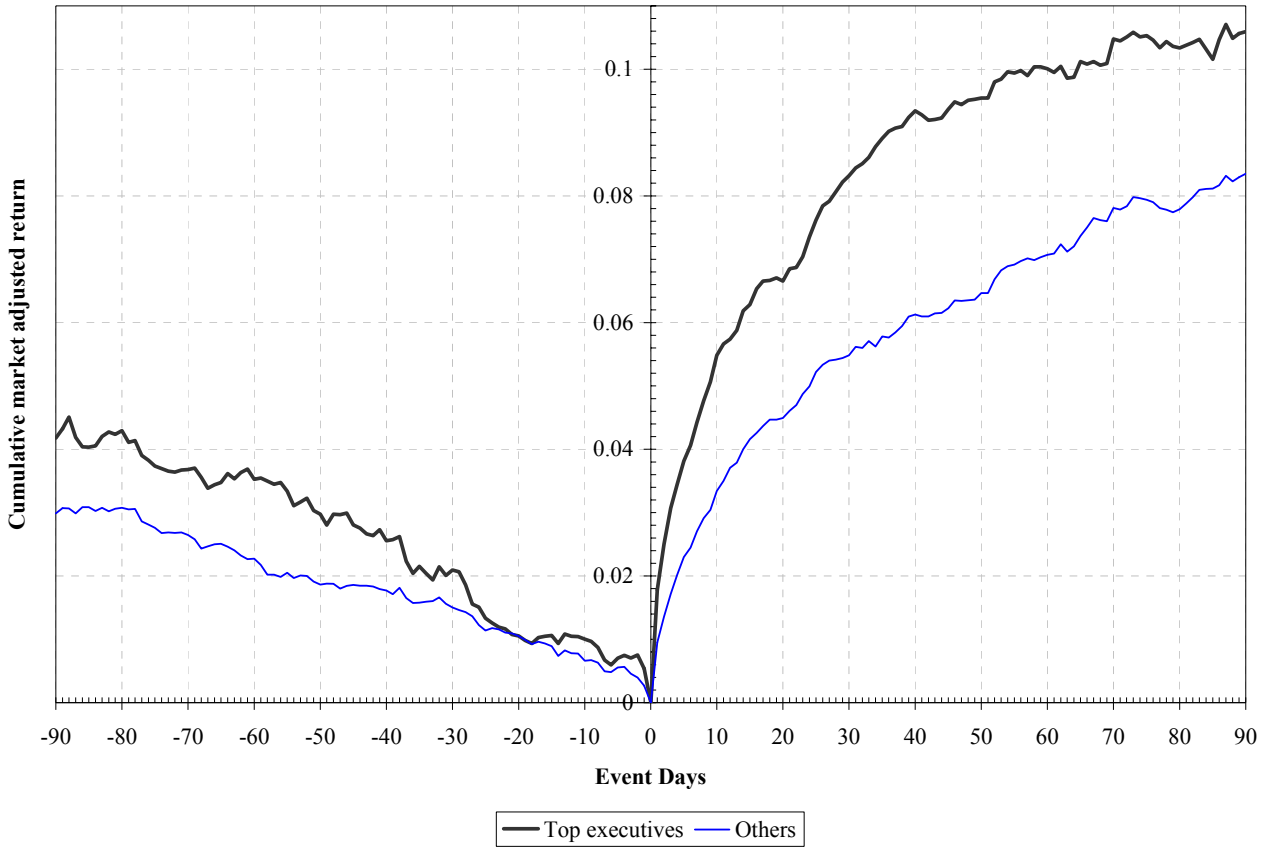

Figure 4

Effect of executive rank on stock return behavior around grant dates

The figure plots market-adjusted abnormal stock returns around the option grant date (day 0) for top executives (N = 135,917) and other executives (N = 469,189). Top executives include those with the titles (on the grant date) of Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors. Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.

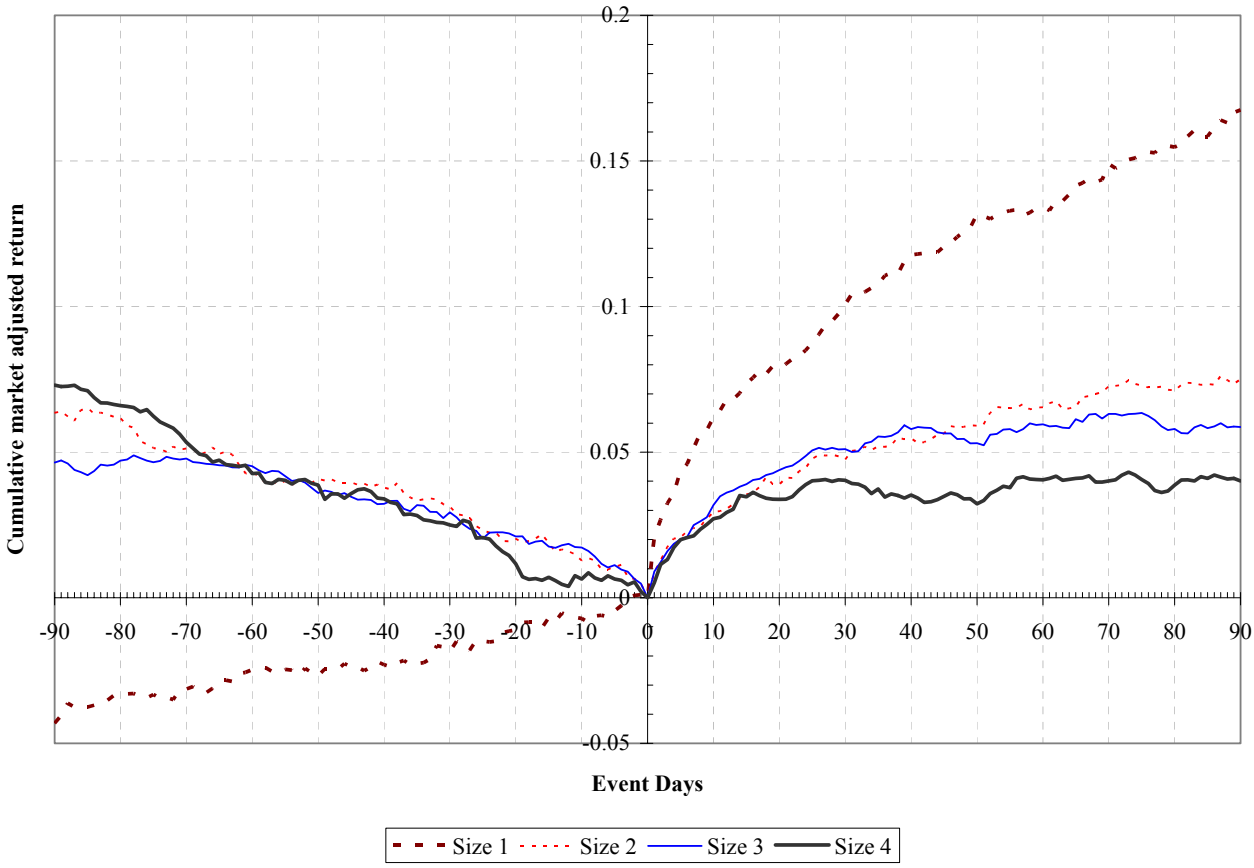

Figure 5

Effect of firm size on stock return behavior around grant dates

The figure plots market-adjusted abnormal stock returns around the option grant date (day 0) for four different groups based on firm size defined as the market capitalization at the end of the year preceding the grant year. Size 1 represents market capitalizations less than $100 million ($N$ = 160,845); Size 2 represents market capitalizations between $100 million and $500 million ($N$ = 168,818); Size 3 represents market capitalizations between $500 million and $3000 million ($N$ = 157,510); and Size 4 represents market capitalizations greater than $3000 million ($N$ = 117,933). Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.

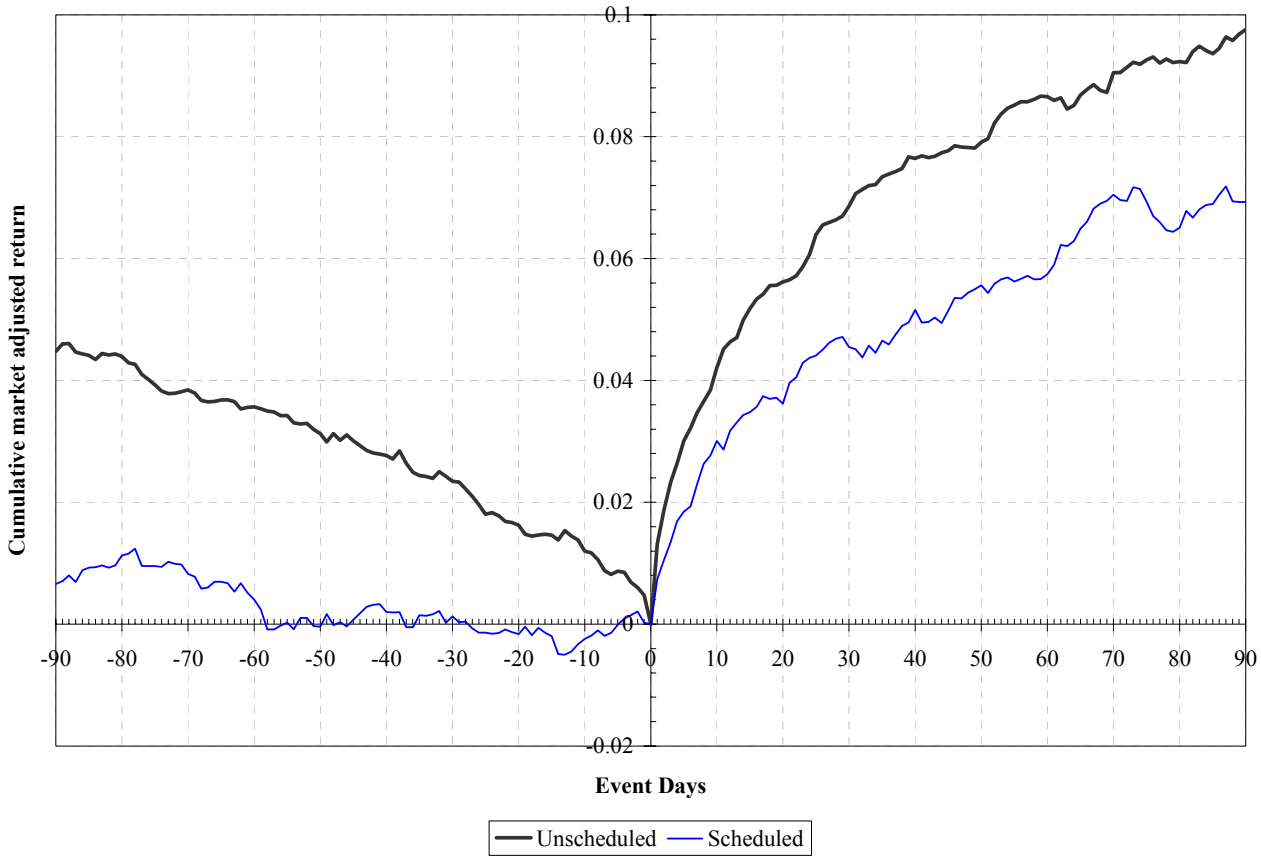

Figure 6

Effect of scheduling awards on stock return behavior around grant dates

The figure plots market-adjusted abnormal stock returns around the option grant date (day 0) for scheduled (N = 193,275) and unscheduled awards (N = 411,831). If at least one manager has been granted options in the same calendar month the previous year, then the award is classified as "Scheduled", otherwise, the award is classified as "Unscheduled." Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.

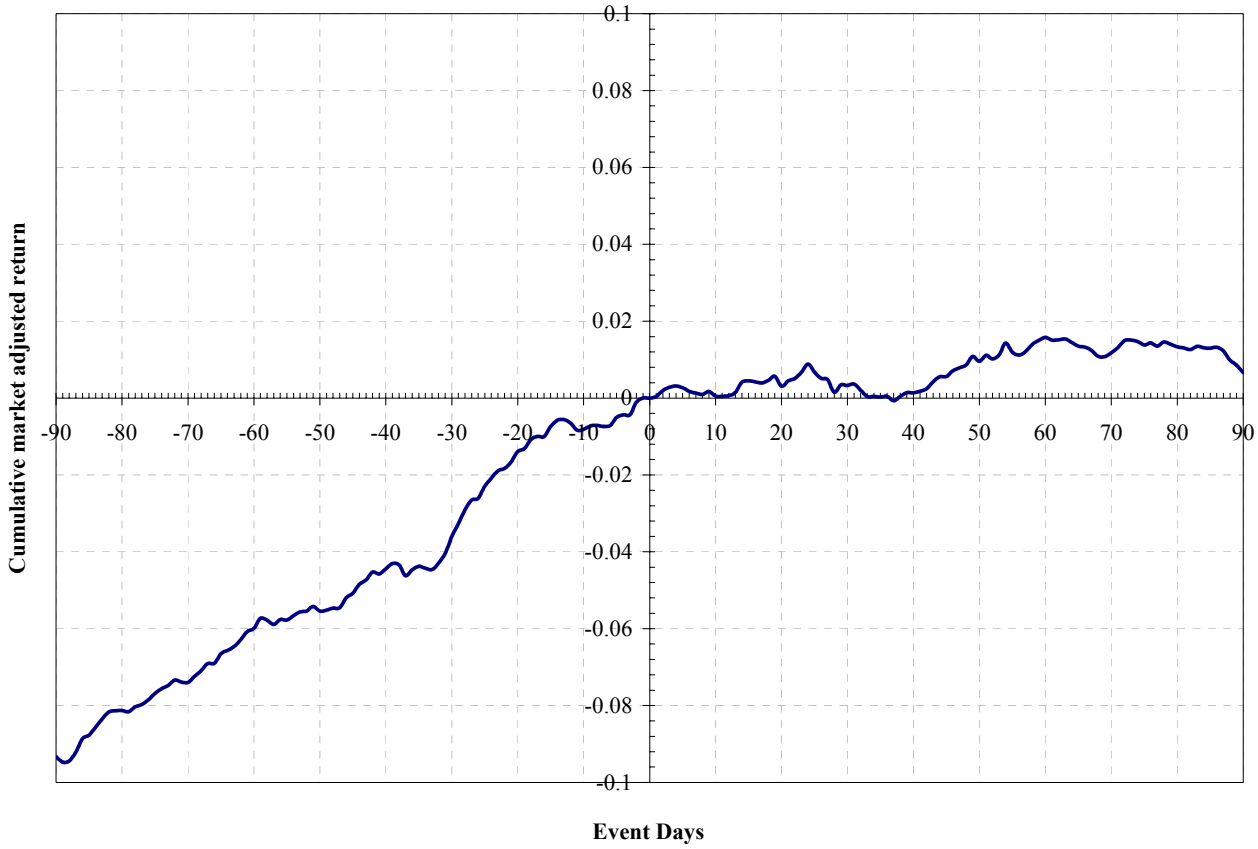

Figure 7

Stock returns around reporting date of stock options

The figure plots market-adjusted abnormal stock returns around the day that the SEC receives the filing of grant information from insiders (day 0). Market-adjusted abnormal return is computed as the difference between raw return and the return to value-weighted index of NYSE, AMEX and NASDAQ stocks.