# The Dating Game: Do Managers Designate Option Grant Dates to Increase Their Compensation?

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## ABSTRACT

We provide evidence of a dating game that entails picking a grant date ex-post, i.e., after the board's compensation decision is made. We suggest two variants of the dating game. Back-dating (picking a date in the past with a lower stock price compared to board decision date) if the stock price has been rising prior to the board date, and forward-dating (waiting after the board decision date to observe the stock price behavior) if the stock price has been falling prior to the board date. Using a database of 638,757 option grant filings by insiders between August 29, 2002, and December 31, 2004 we find evidence consistent with both types of dating games. Specifically, we find stock price behavior around the grant date to be positively related to reporting lag, consistent with back-dating. In the promptly reported sample, we find stock return behavior around the grant date and the pattern of reporting lags consistent with forward-dating. Our calculations show that managers can obtain economically significant benefits by playing the dating game.

## 1. Introduction

A large body of previous research has found evidence consistent with the influencing of the stock price on the date of executive option grants. By influencing the grant date stock price in their favor, managers can lower the exercise price of their stock option grants since most option grants set the exercise price as the stock price on the grant date. The earlier work (see Yermack (1997) and Aboody and Kasznik (2000), among others) had focused on managers influencing their stock option compensation by controlling both the timing of the grants and the timing of corporate information disclosures.[1]

More recently, however, a form of ex-post grant date stock price influencing has surfaced. Lie (2005) suggests that some managers might be engaged in back-dating their grant dates to obtain lower strike prices for their options. If stock prices have been rising just before the board decision date to grant options, managers can designate a date prior to the board decision date as the grant date, thereby obtaining option grants at lower strike prices. Recently, several articles in the financial media have suggested that some managers might be doing just that. A Wall Street Journal article on March 18, 2006, reports that executives of six firms obtained option grants on multiple dates all exactly at a local minimum, and suggests that this cannot be explained by chance (see Forelle and Bandler (2006)). Several firms are reportedly under scrutiny by the SEC regarding backdating of their stock options (see Maremont (2005).

In this paper, we investigate a broader set of ex-post grant date selection we call "dating games," that includes back-dating.[2] We suggest that managers can play two types of dating games: back-dating and forward-dating. If the stock price has been rising prior to the board decision date, they have the opportunity to back-date (pick a date before the board decision

[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)).

[2] In an earlier version dated January 2005, we presented evidence consistent with back-dating, which to our knowledge, was the first time reporting lags were used to investigate back-dating. This version considers a broader set of option grant mis-dating.

date). However, if the stock price has been falling prior to the board decision date, back-dating is clearly unprofitable. In this case, managers may wait to see how the stock price behaves afterwards. If it continues to fall, they may designate a date in the future as the grant date, trading off the benefit from even lower exercise prices, against the risk of getting caught. If the stock price falls and rises again within a reasonable time period, managers may pick a date between the board decision date and their own decision date that maximizes the value of their options (most likely the date at which the stock price is the lowest). In either of these cases, managers are picking a date after the board decision date. We term this form of the dating game as forward-dating.

We use two types of tests to provide evidence consistent with the dating game hypothesis. The first set of tests involves the reporting lag, the period between the designated grant date and the reporting date. If the grant date is before the manager's decision date (the day they picked the grant date), which can happen with both back-dating and forward-dating, managers will typically be unable to report to the SEC within two business days after the grant date, as required under the Sarbanes-Oxley Act of 2002 (SOX). In other words, if a date before the manager's decision day is chosen as the grant date, there is a high probability of a reporting delay. The farther back the manager goes to pick a grant date (presumably to further lower the strike price of the option grant) the longer the reporting lag.

While almost all back-dating and some forward-dating will result in a reporting delay, the dating game can be played without necessarily resulting in a reporting delay. Managers may forward-date (i.e., pick a grant date after the board decision date) but report within two days. For instance, consider the case in which the stock price was falling on the board decision date but starts reversing some time later. Managers may wait to see if the reversal continues for two days and, if it does, designate the reversal date as the grant date and report immediately which

will result in a reporting lag of two days. One implication of this practice is that negative pre-grant stock returns should not be followed by negative post-grant returns.

We test the dating game hypotheses using a comprehensive database that includes 638,757 option grants reported by insiders receiving the grants during the post-SOX period of August 29, 2002 through December 31, 2004. 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. We find that post-grant date returns are positively correlated with reporting lags. We also find that stock return reversals around the grant date are also positively correlated with reporting lags.[3] Both these results are consistent with back-dating. Furthermore, we find evidence consistent with forward-dating even within the promptly reported sample. We also find that dating games are more likely in smaller firms, for large or unscheduled grants, and when senior managers are the recipients.

Our results are not only statistically significant, but also economically significant. We find that executives can increase their compensation even in the post-SOX era by playing the dating-game and reporting their options late. Our findings indicate that a manager receiving a large grant of 1,000,000 shares of a typical company's stock can increase the value of their grant by about $1.23 million, or 8%, by reporting 30 days late.

Our findings have implications for both public policy and corporate governance. From a public policy perspective, our findings suggest that, while SOX has succeeded in reducing dating games, it has not eliminated them for two reasons. First, our findings show that compliance with SOX executive stock option reporting requirements is still less than perfect: more than 20% of executives still report their options late in spite of potential legal sanctions with about ten percent reporting more than a month late. Enforcement of reporting

[3] In a contemporaneous paper, Heron and Lie (2006) find similar evidence that links reporting lags and stock returns around the grant date.

requirements needs to be tightened to mitigate back-dating. Second, we show that dating games are possible even with prompt reporting. To prevent these dating games, firms must be required to schedule their grant dates in advance. Only when the executives have no discretion to change these dates will they be prevented from playing these dating games. From a corporate governance perspective, our findings are consistent with the hypothesis of camouflaged compensation (see Bebchuk and Fried (2004)). The findings lend credence to the view that executive compensation setting is not an arms-length transaction between the board and the manager and that senior managers have the power to influence their own compensation. Discovery of dating games is likely to lead to sudden loss of confidence in the firm's management team and lead to potential legal problems for both the firm and the executives involved. For example, upon revelation of back-dating by the top three executives of Mercury Interactive (Maremont (2005)), the stock price of the firm dropped by 27% in a day. It is imperative, therefore, to improve corporate governance by putting in place effective checks and balances to prevent these dating games.

The paper is organized as follows. Section 2 develops the implications of the dating game hypothesis. Section 3 describes the data and provides the summary statistics. Section 4 reports the stock price performance around grant dates. Section 5 explores the determinants of the abnormal stock return reversals around the grant date. Section 6 provides evidence related to the dating game. Section 7 explores alternative hypotheses that might explain the stock return reversals around the grant date. Section 8 presents the characteristics of firms involved in late reporting. Section 9 concludes.

## 2. The dating game 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.[4] It is also likely that boards and compensation committees are sympathetic to managers and are influenced by them. Influencing compensation might also 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 during 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 (see Murphy and Hall (2002)). 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.[5] If the number of options to be granted is fixed, ceteris paribus, managers receiving the options benefit from a lower stock price on the grant date. Some boards might also find it expedient to allow managers to receive the additional compensation through such

[4] 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.

[5] 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.

camouflaged means as influencing the stock price, rather than increase the size of the option award, in order to avoid public shareholder outrage.[6]

*a. Dating game hypothesis*

The hypothesis we advance in this study is that managers can influence their compensation by designating a grant date that may differ from the date on which the board of directors approved the option grants.[7] We call this the dating game hypothesis. The choice of the grant date will depend on the stock price behavior around the board decision date. Figure 1 illustrates how the dating game can be played. In this figure, we assume for simplicity that managers report the grant the same day they make their decision about the grant date since they have no incentive to delay the reporting.

Figures 1A and 1B illustrate the cases in which the stock price is rising before the board decision date (labeled BD). In Figure 1A, the stock price first decreases and then increases up to BD. Assuming managers have no private information about likely future stock movements, they can play the dating game by back-dating, i.e., designating a past date (e.g., either date $GD_1$ or date $GD_2$) as the grant date and reporting on the board decision date (report date RD = BD). Managers now have to trade-off between obtaining the lowest possible strike price and delaying the report to SEC (which might trigger an investigation). If managers choose $GD_1$ (aggressive backdating with longer reporting lags), we will observe the stock price falling before the designated grant date and rising thereafter. If managers are less aggressive and

[6] 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)).

[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.

choose $GD_2$, observed stock prices will rise both before and after the designated grant date. In either case, there may be a delay in reporting the grant to the SEC (if the gap between RD and $GD_1$ or $GD_2$ is greater than two business days). In addition, there will be a stock price reversal on the grant date if the manager designates $GD_1$ as the grant date. If the manager chooses $GD_2$, or if the stock price does not exhibit any significant reversal prior to BD (Figure 1B), there will be no stock price reversal on the designated grant date, only a post-grant date run up in stock prices.

Figures 1C and 1D consider cases in which stock prices fall prior to the board date. In these cases, there is no opportunity to backdate, since the price on the board date is lower than any price during the preceding period. In such situations, managers intending to play the dating game may wait to observe future stock price movements ("forward-dating"). In Figure 1C, the manager waits till the stock price completes its decline and rises (until RD). Now the manager may designate either $GD_1$ or $GD_2$ as the grant date depending on how aggressive he/she wishes to be. Since we do not observe the board award date, the stock price and reporting delay implications of this case are similar to that of Figure 1A.

Figure 1D deals with forward-dating when managers desire to report promptly. If stock prices continue to decline for a while after the board date, managers may stop playing the game at some point and designate their decision date as the grant date and report promptly ($GD_1 \cong RD_1$). There will be no reporting delay in this case and observed stock prices will be declining before the designated grant date, and on average, flat thereafter. If, on the other hand, the stock price reverses within a reasonable period of time after the board date, managers wait to see if the reversal continues. Since they wish to report promptly, they cannot wait for more than two days. If the reversal continues for two days, they pick the "trough" as the grant date ($GD_2$) and report the same day ($RD_2$), resulting in a reporting lag of two days.

In summary, therefore, managers may sometimes engage in backdating (the grant date precedes the board date), as in Figures 1A and 1B, and sometimes engage in forward-dating

(the grant date comes after the board date), as in Figures 1C and 1D. The dating game hypothesis predicts that sometimes there will be long reporting delays (if the reporting lag is large enough in figures 1A, 1B, and 1C) and sometimes no reporting delays (Figure 1D). Reporting delays are more likely when prices rise after the grant date (Figures 1A, 1B, and 1C), and less likely if stock prices are flat or declining after the grant date (Figure 1D). In addition, the dating game hypothesis does not predict a strong relation between the stock price pattern before the grant date and reporting delays. Stock prices before the grant date can be falling (Figures 1A or 1C) or rising (Figure 1B) with long reporting delays. Figure 1D suggests that stock price drops before the grant date can also be associated with short or no reporting delays.

*b. The timing hypotheses*

There are two possible ways managers can influence the grant date stock price through timing. They can either time an unscheduled grant date to precede or follow an information event or time the information event to precede or follow a scheduled grant date. These methods have been suggested earlier in the literature and evidence consistent with both types of timing has been documented (see Yermack (1997), Aboody and Kasznik (2000), Chauvin and Shenoy (2001), and Baker, Collins, and Reitenga (2003)).

*c. Implications of different methods of influencing the grant date stock price*

A definitive test of the backdating or forward-dating can be obtained by simply comparing the grant date and the board decision date. If the grant date precedes the board date, this is definitive evidence of backdating and inconsistent with all other hypotheses. If the grant date follows the board date, then this is definitive evidence of forward dating. Unfortunately, the minutes of corporate board meetings are not easily accessible and, hence, this direct test is not possible. Since the appropriate board date is unobservable, we form our testable implications around the observed grant date.

It is important to note that the dating game hypothesis suggests that stock price patterns around the grant date should be stronger using *raw* returns rather than using market adjusted returns. This is because managers designate the grant date ex-post, only after the stock price patterns are revealed, regardless of the reason behind the patterns.[8] We therefore typically use raw returns, and also replicate our tests using market-adjusted returns.[9]

Implication 1: The dating game hypothesis suggests that there should be a positive relation between reporting lags and raw returns following the grant date. Figures 1A, 1B, and 1C show that longer reporting lags will be associated with larger post-grant raw returns, while Figure 1D shows that smaller reporting delays will accompany flat or negative post-grant raw returns. The timing hypotheses do not have a prediction based on reporting delays.

A related implication of the dating game hypothesis is that raw stock price patterns should not exhibit a local maximum on the grant date (i.e., stock prices rising before the grant date and falling after). This is because managers could have obtained a better price either by back-dating or forward-dating even by a few days. Under timing hypotheses, such raw price patterns are possible if stock prices do not react to information releases or if price movements are dominated by market movements.

Implication 2: The aggressive version of the dating game hypothesis predicts that the likelihood of finding stock price reversals around the grant date should increase with reporting delays (Figures 1A, and 1C). Under timing hypotheses, finding price reversals around the grant date is very unlikely since managers must first disclose bad news immediately before the grant date, and then disclose good news immediately after the grant date. These contradictory news releases within a very short period of time could lead to potential investigations and legal

[8] Lie (2005), offers as evidence of back-dating 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.

[9] By contrast, Heron and Lie (2006) provide evidence based on abnormal returns in their paper.

problems. Consequently, we do not expect systematic reversals under timing hypothesis, and thus there should be no relation between the randomly occurring reversals and reporting delays.

Implication 3: The dating game hypothesis predicts that, dating games are possible even in the sample with no apparent reporting delay. In this sub sample, we expect some managers to play the forward-dating game. As shown in Figure 1D, if prompt-reporting managers decide to stop playing the game while the stock price is falling and pick a grant date, stock prices will be falling before the designated grant date but will be flat on average after. In the aggressive version of the game, managers will prefer to wait until after the stock prices have turned positive for two days before they designate the day of the minimum stock price as the grant date. Consequently, on average, falling stock prices prior to the designated grant date should not be followed by falling stock prices after the grant date. Furthermore, there is an increased likelihood of observing two-day reporting delays instead of zero-day reporting delays following stock price falls prior to the designated grant date.

**3. Data and summary statistics**

The option grants data in the study are obtained from a compilation by the SEC of the filings to meet Section 16(a) requirements of the Securities and Exchange Act of 1934 and purchased from Thompson Financial. The data contains all option grants by publicly traded firms reported on Form 4 from August 29, 2002 (the date SOX disclosure requirements became effective) till the end of December 2004. In line with Section 403 of SOX, 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.[10] Data on stock market returns are obtained from the Center for Research in Security Prices (CRSP). We

[10] Before SOX, Section 16(a) of the Securities and Exchange Act of 1934 required officers and directors to disclose their option awards by filing Form 4 within the ten calendar days following the end of the month in which the options were granted. Officers and directors were allowed to report their option grants by filing Form 5 under certain circumstances. The deadline for filing Form 5 was 45 days after the firm's fiscal year end.

also applied two cleansing filters provided by Thompson to eliminate questionable data.[11] The final sample contains 638,757 option grants between August 29, 2002 and December 2004 by firms for which stock return data is available in CRSP.

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 is interesting to note that the average reporting lag has declined from a high of 17.69 days in 2002 to a low of 8.34 days in 2004. Managers appear to be complying more closely with SOX requirements over time. 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 beginning of the grant year (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 does not vary significantly across size-groups with an overall average of 9.50 years.[12]

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 24% of the option

[11] We eliminated all data with cleanse indicator codes of S and A. These data are identified because they did not meet Thompson's collection requirements, or numerous data elements were missing or invalid, or reasonable assumptions about the data could not be made.

[12] 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.

grants in our sample are to top executives. 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 3.4 times that received by other executives (16,015 shares versus 4,734 shares). The average maturities of options granted to top executives and others are not significantly different. 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 (13.23 days versus 11.45 days for others).

Table 3 relates the stock price patterns around the grant date to various grant and firm characteristics. The observation unit for the data presented in the table is the firm-grant date, i.e., all grants by a firm on a given date are viewed as a single observation. Firms that exhibit a local minimum on the grant date, similar to Figures 1A and 1C, are shown in the first row of the table. To qualify for this group, the grant date stock price must be the lowest in the 11-day interval [-5, +5] around the grant date and the cumulative raw return in the interval [-5, 0] must be less than –1% and the cumulative raw return in the interval [0, +5] must be greater than +1%. Firms that exhibit a local maximum on the grant date are shown in the second row of the table. To qualify for this group, the grant date stock price must be the highest in the 11-day interval [-5, +5] around the grant date and the cumulative raw return in the interval [-5, 0] must be greater than +1% and the cumulative raw return in the interval [0, +5]] must be less than –1%. Based on our criteria, stock prices exhibit a local minimum (maximum) at 1,406 (1,151) firm-grant dates in our sample. The third row shows all other firm-grant dates.

Table 3 shows preliminary evidence consistent with the dating game.[13] First, there is a greater number of grant dates when the stock prices form a local minimum rather than a local maximum. Second, the average reporting lag is lower in the group where the price is a local maximum than in the group where the price is a local minimum, consistent with the notion that

[13] The average grant volume and reporting lag in Table 3 are different from Table 2 because the observation unit in Table 1 is the grant while the observation unit in Table 3 is the firm-grant date.

dating games are unlikely in the former group. Third, the proportion of scheduled grants is lower in the group where the price is a local maximum than in the group where the price is a local minimum. This is consistent with the hypothesis that it is difficult to play the dating game if grants are awarded on previously scheduled dates. Finally, average grant volume is lower and firm size is larger in the same group, consistent with our hypothesis that smaller grants reduce the incentive to play the dating game and that it is more difficult to play the game in larger firms.

**4. Stock price reversals around option grant dates**

We first present preliminary evidence consistent with the hypothesis that managers reap a windfall by influencing the exercise price of option grants is the stock price behavior around the grant date. 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.

We measure stock return behavior using both raw and cumulative market-adjusted abnormal daily stock returns (CAR) starting from the grant date (date 0) for a holding period of *T* days. CAR is defined as,

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

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*. For all summary statistics, the unit of observation is the individual grant and, therefore, all means are computed across all 638,757 grants.[14]

Figure 2 shows the mean raw returns and the mean CAR from 90 trading days prior to the grant date (date 0) to 90 days after the grant date. For the purposes of this figure, each option grant is treated as an observation. As can be seen from the figure, there is no discernible

[14] As explained later, we group all grants by one firm on a given day as a single event for regression analysis.

pattern in the market-adjusted returns prior to the grant date. The highest pre-grant market-adjusted return is only about 0.7%, occurring 40 days before the grant date. The mean cumulative returns subsequent to the grant date, however, are significantly positive and increasing over time. The mean cumulative return over the 90-day period following the grant date is 3.28%. The raw returns are steadily increasing from day –90 to day +90, with the 90-day post-grant return being 16.5%. It is important to note the significant increase in the slope of raw returns around the grant date.

The mean raw returns and CAR for a 181-day window surrounding the grant date are reported in Table 4. The mean returns are reported for holding periods $[T^-, 0]$, $T^-$ = –10, –20, –30, –40, –50, and –90 days for the pre-grant period, and for holding periods $[1, T^+]$ for $T^+$ = +10, +20, +30, +40, +50, and +90 days for the post-grant period. It can be seen from the table that the mean 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 during the post-grant period, but with larger magnitudes compared to CAR. In contrast to CAR, pre-grant raw returns are positive. 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 or time-series independence of the residuals. As indicated by the *p*-values in Table 4, all returns are significantly different from zero, except CAR [–50, 0]. The differences between adjacent holding periods (unreported) are also significant for all post-grant returns. These results are consistent with the hypothesis that managers influence the exercise price of their option grants.

Figure 3 presents the stock return behavior treating each grant date by a firm (instead of each grant as in Figure 2) as an observation; in other words, grants awarded to multiple executives of a firm on the same grant date are grouped as a single observation. This change results in 23,052 firm-grant dates. While the stock return behavior in Figure 3 is qualitatively

similar to that in Figure 2, the magnitudes of market-adjusted returns are smaller. The mean CAR for [1, 90] is 1.84%. Magnitudes of mean raw returns are similar to that in Figure 2, with the mean raw return for [1, 90] being 15.1%. The pattern of returns around the grant date in figures 2 and 3 are quite different from the pattern observed using pre-SOX data (see Narayanan and Seyhun (2006), for example). In the pre-SOX period, average market-adjusted stock returns show a return reversal on the grant date while the post-SOX returns show no reversals, just an increase after the grant date. While there is very little qualitative change in the post-grant return behavior after SOX, the magnitude is smaller. Thus, while it appears that SOX has reduced managerial influencing of grant day stock price, it has not eliminated influencing.[15]

The results of figures 2 and 3 are consistent with both dating games and timing. The figures provide us some indication in the aggregate of the relative magnitudes of managerial influencing of grant date stock price through these two tactics. Managers can benefit from timing only through abnormal returns since timing is an ex-ante tactic (managers do not know how the stock market will react to the information release). The dating game, by contrast, is an ex-post tactic, done after observing the stock price pattern. Therefore, the entire raw return is the benefit managers accrue from the dating game. It follows that, in the aggregate, the market return provides us a lower bound of the benefit from dating games. It can be seen from figures 2 and 3 that the market return over 30 days after the grant date is approximately 5% which provides a lower bound in the aggregate of the benefit from dating games.

In what follows, we present evidence that is consistent only with the dating game hypothesis.

[15] The pattern of stock price behavior is similar to that observed by other researchers (see, for example, several studies (Yermack (1997), Aboody and Kasznik (2000), Chauvin and Shenoy (2000), and Lie (2005)).

**5. Factors that affect stock return reversals**

Before we present the evidence related to the dating game, we provide a brief discussion of some factors that affect the incentive and the ability to influence the stock price on the grant date (either through timing or the dating game). These factors are used as control variables in our tests.

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. 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 stock return patterns around grant dates involving top executives to be stronger.

If managers are influencing the grant date stock price, 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 (2005)), 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 patterns around grant dates to be starker for smaller firms.

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 (scheduling it just before the release of good news and just after the release of bad news) or play the dating game is limited in the case of scheduled awards. By contrast, managers can influence the stock price around the grant date of unscheduled awards by simply timing the grant date whenever they obtain material information that would affect the stock price, or by playing the dating game. Since unscheduled awards provide managers wishing to influence the stock price more opportunities to do so, one would expect starker return patterns around unscheduled awards (see Collins, Gong, and Li (2005) for evidence). 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 are 323,948 scheduled and 314,809 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.

## 6. Dating game: Evidence

a. Effect of reporting lags on post-grant date stock returns

Implication 1 suggests that there should be a positive relation between raw stock returns after the grant date and reporting delays. Table 5 reports the distribution of the reporting lags in our sample. The median reporting lag is 2 business days. It can be seen that about 77% of the

option grants are reported within the two-day deadline (491,313 out of 638,757 grants). About 9.5% are delayed beyond 22 business days. The existence of a reporting delay in 23% of the sample suggests the possibility of dating games. Figures 4 and 5 report the stock return behavior for three different reporting lags: less than or equal to 2 business days, greater than 2 business days but less than or equal to 22 business days, and greater than 22 business days. The observation unit is a grant since reporting delays can vary from manager to manager even if they are all awarded options on the same day. Figure 4 shows that the reporting lag has a significant impact on the market-adjusted stock return behavior around the grant date. There is no discernible effect of reporting lag on pre-grant date returns. However, consistent with Implication 1, the post grant day return is positively related to the reporting lag. The 90-day post-grant mean CAR is 2.3% for the promptly-reported sample. For the sample with the intermediate lag, 90-day post-grant mean CAR is 3.6% with a peak mean CAR of 4.8% on the $68^{th}$ day after the grant day. The 90-day post-grant mean CAR is substantially greater at 11.2% for the sample with the largest reporting lag. The differences in the mean CAR for the three sample groups are significant at better than the 1% level.

Figure 5 presents the raw return behavior around the grant date for the three reporting lag sub samples, and the results are qualitatively similar to Figure 4. The 90-day post-grant raw returns for the lowest, intermediate, and highest reporting lag sub samples are, respectively, 15.3%, 18.2, and 25.3%. Thus it appears that SOX has not completely eliminated dating games.

Table 6 presents formal evidence of the relationship between stock returns around the grant date and the reporting lag. The dependent variables in Table 6 are the post-grant CAR (Panel A) and post-grant raw returns (Panel B). Specifically, the table provides the results of regressing the post-grant date returns (CAR or raw) over four intervals, [1,10], [1,30], [1,50], and [1,90], against dummy variables representing reporting lags and dummy variables representing a set of control variables described earlier, namely, grant volume, executive rank, firm size, and whether the grant was scheduled or not.

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 observation. This adjustment reduces the number of observations to 23,052 firm-grant dates. If all executives of a firm receiving grants on the same day fall into the same reporting lag group, this firm-grant date will be counted as a single observation. If these executives fall into more than one reporting lag group, the same firm-grant date will be counted more than once. This results in 25,273 observations. Grant size is defined as the average number of shares underlying options on a given grant day to executives of a firm who belong to the same reporting lag group. Grant size dummy variables Grantsize2, Grantsize3, Grantsize4, and Grantsize5 equal 1 if the average number of shares underlying all the option grants for an observation is in the range 1,001 to 10,000 shares, 10,001 to 100,000 shares, 100,001 to 500,000 shares, and greater than 500,000 shares, respectively, and equal zero otherwise. Firm size dummy variables Firmsize2, Firmsize3, and Firmsize4 equal 1 if the market capitalizations at the beginning of the grant year are in the ranges 100 million to $500 million, $500 million to $3 billion, and greater than $3 billion, respectively, and zero otherwise. The executive rank dummy TopExecutive is set to 1 if at least one top executive of a firm receives an option grant on a given day, and zero otherwise. We classify a grant as being awarded to a top executive if the position of the executive is stated as Chief Executive Officer, Chairmen of the Board, Chief Financial Officer, President, or Officer-Director in Form 4. 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 notion that stock prices are more likely to be influenced as long as at least one top executive receives an option grant. The schedule dummy Schedule is set to 1 if at least one award has been made in the same calendar month the previous year, and zero otherwise. The reporting lag dummy ReportLag2 is set to 1 if the reporting lag is greater than 2 business days but less than or equal to 22 business

days, and zero otherwise. The reporting lag dummy ReportLag3 is set to 1 if the reporting lag is greater than 22 business days, and zero otherwise.

The results in Table 6 provide several interesting observations. First, both reporting lag dummies are positive and significant in all regressions in both panels. These results confirm the univariate results reported in figures 4 and 5 that stock price behavior around the option grant date is related to reporting lags. In particular, the greater the reporting lag the greater the post-grant date raw and market-adjusted returns. Moreover, reporting lags beyond 22 business days have a much more significant impact on stock return behavior after the grant date. If managers report their options more than 22 business days (one calendar month) late, holding all else constant, CAR increases by 3.3% and raw returns increase by 3.9% after 30 days. These results are consistent with the dating game hypothesis. These magnitudes are large and will lead to substantial increases in the value of option grants. Thus it appears that the dating game persists at least in some firms even after SOX.

Second, Table 6 shows that the schedule dummy is negative and significant, except in regressions for the interval [1, 10]. For scheduled awards, CAR and raw returns are lower by about 1% over a 30-day period compared to unscheduled awards. This result implies that post-grant stock returns of unscheduled awards are greater than that of scheduled awards and is consistent with both the dating game and the timing hypotheses.

Third, it can be seen from Table 6 that the three larger grant sizes have a significant impact on post-grant stock returns. Dummies Grantsize3, Grantsize4, and Grantsize5 are all positive and significant at the 1% level in regressions for the three longer intervals in both panels. These results are consistent with the hypothesis that the larger grants provide more incentive to influence grant-date stock prices. When managers receive 500,000 or more options, both raw and abnormal returns increase by over 9% after 30 days, and over 18% after 90 days. The economic magnitude of these findings is large and they imply a significant amount of camouflaged compensation. We can get an approximate measure of the windfall

from such dating-games by calculating the value of the average at-the-money option grant using the following parameters: average stock price = $30; simple risk-free rate = 5%; volatility = 30%; maturity = 9.5 years (from Table 2), and zero dividends. Using the Black-Scholes formula, these parameters result in an option value of $15.24, which translates to $15.24 million for one million shares granted. Consider grants of 500,000 or more options that are reported later than 22 business days. Evidence in Table 6 indicates that by back-dating for thirty days managers can obtain options with a strike price at 88% of the prevailing stock price (one over the sum of dummy variables Grantsize5 and ReportLag3 in Panel B). This results in an option value of $16.47, an increase of $1.23 million.

Finally, Table 6 shows that firm size is an important predictor of post-grant stock returns. All three firm size dummies are negative and significant at the 1% level in all regressions in both panels. These results are consistent with the hypothesis that stock price influencing is negatively related to firm size. Finally, the TopExecutive dummy is positive in all the regressions in both panels, consistent with the hypothesis that top executives have the incentive and ability to influence grant date stock price, but is significant only in some of the regressions.

b. Reporting lags and stock reversals around the grant date

Implication 2 suggests that there should be a positive relation between raw stock return reversals around the grant date and reporting delays if managers play the aggressive version of the dating game. To test this implication, we define a variable called "raw stock return reversals" (RSRR) as follows. To qualify as an RSRR, the raw returns both in the interval [–9, 0] and the interval [1, 10] should exceed specified thresholds. We use three different definitions of RSRR based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant raw returns. For example, to qualify as an RSRR with a threshold of ±2%, the raw

returns in the interval [–9, 0] must be less than –2% and the raw returns in the interval [1, 10] must be greater than or equal to +2%.

The probit regressions reported in Table 7, with the probability of an RSRR is the dependent variable, provide evidence of the relationship between reporting lag and stock price reversals on the grant date. Observations are defined as in Table 6. The independent variables are the log of grant volume, log of firm size, executive rank dummy (top executives = 1; others = 0), and schedule dummy (scheduled grants = 1, unscheduled = 0). Grant volume is defined as the average volume of grants on a given grant day to executives of a firm who belong to the same reporting lag group. Firm size is defined as the market capitalization at the beginning of the grant year. 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. 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.

It can be seen from Table 7 that ReportLag2 and ReportLag3 dummies are positive in all regressions. ReportLag3 is significant at the 1% level, and ReportLag2 at the 5% level, in regressions for thresholds of ±2% and ±5%. Both dummies are significant at the 5% level for the ±0% threshold. Moreover, coefficients of ReportLag3 dummy are greater than that of ReportLag2 dummy. This result is consistent with Figure 2: if managers play the dating game aggressively to find the lowest stock price, reporting lags will be longer. Grant volume coefficient is positive and significant for the ±2% and ±5% thresholds at the 1% level. Firm size is negative and significant for the ±2% and ±5% thresholds at the 1% level. These results imply that dating games are more likely in smaller firms and when grant volume is larger. The rank dummy is not significant which is explained by the fact that top executives on average

receive larger grants, therefore, including both variables results in multicollinearity.[16] The schedule dummy is not significant in any of the regressions.

c. Dating game with no reporting delay

Implication 3 suggests that the dating game does not necessarily imply a reporting delay. Consider the case in which stock prices are declining before the board decision date (Figure 1D). If managers are forward-dating aggressively, but do not wish to delay reporting the grant, they are likely to wait to designate a grant date till the stock price reverses and starts rising. Let us denote the first day the stock price moves up as Day 1. At this point, managers will view the previous day (Day 0) as a potential date to designate as the grant date. If the stock price continues its rise on the next day (Day 2), remains the same or declines somewhat, managers will designate Day 0 as the grant date. If the stock price drops significantly on Day 2, managers resume waiting. This logic suggests three testable implications. One, since managers wait for two days to observe the direction of stock prices, given negative returns prior to the award date, a reporting lag of zero is less likely. Therefore, negative stock returns prior to the award date should increase the probability that the reporting delay is two days. Two, following stock price declines within the promptly reported sample, Day 1 stock return should be positive. Three, there should be no systematic patterns for returns beyond Day 1: they may be positive, zero or negative.

Panel A of Table 8 examines the likelihood of having zero, one and two day reporting lags within the promptly reported sample. The sample consists of 491,313 promptly reported grants (reporting lag of zero, one, or two business days). If all executives of a firm receiving grants on the same day report on the same day, this firm-grant date will be counted as a single observation. If these executives report on different days, the same firm-grant date will be

[16] We have also repeated these tests excluding grant size. In this case, the coefficient of the top-executive dummy is positive and significant.

counted more than once. This results in 18,819 observations. The dependent variables are $D_0$, $D_1$, and $D_2$, which take on the value one if the reporting lag equals zero, one, or two days respectively, and zero otherwise. The independent variables are PreR1 which takes on the value one if the cumulative pre-grant-day raw return over a specified pre-grant interval is in the range [0, −10%] and zero otherwise, and PreR2 which takes on the value one if the cumulative raw return over the same interval is less than –10%, and zero otherwise. We provide the results for three pre-grant intervals: [−1, −1], [−1, −5], and [−1, −11]. The dating game hypothesis predicts that coefficients of $D_0$ should be negative and coefficients of $D_2$ should be positive, implying an increase in two-day reporting lags when pre-grant returns are substantially negative. Panel A shows that large negative returns prior to the grant day are generally associated with a lower probability of having a reporting lag of zero days. However, these declines attain statistical significance only in the regression with a pre-grant interval of [−1, −1]. Having a large negative return prior to the grant day also increases the probability (between three to five percentage points) of having a reporting lag of two days. These increases are statistically significant at the one-percent level in the regressions with the two longer pre-grant intervals. In the regression with a pre-grant interval of [−1, −1], the coefficient for the one-day reporting lag is statistically significant at the 5% level. These findings are consistent with the forward-dating game hypothesis.

Panel B of Table 8 tests the prediction that within the promptly reported sample, negative-pre-grant raw returns are not to be followed by negative day 1 post-grant returns. In Panel *B*, independent variables are the same as in Panel A, while the dependent variables are dummy variables PostRj, $j = 1, 2, \ldots 5$, that take on the value one if post-grant day $j$ return is positive, and zero otherwise. The regressions for the first two pre-grant intervals in Panel B show that within the promptly reported sample, negative pre-grant returns are followed by significantly positive day 1 returns, as predicted by the forward-dating game. Also as predicted,

day 1 positive returns are special and there is no pattern for the subsequent days. Both of these findings are consistent with the forward-dating hypothesis.

**7. Alternative hypotheses**

We have focused until now on the implications of the dating game hypothesis and offered evidence to differentiate it from the timing hypothesis. In this section we discuss some alternative hypotheses and the consistency of the previous section's results with these hypotheses. Two possible explanations for positive market adjusted returns following the grant date, not involving stock price influencing, are alignment of interests and insider trading. Post-grant stock price increase might be due to the better alignment of managers' interests with those of shareholders resulting from increased option ownership. It could also be a result of trading by some insiders other than the executives receiving grants (such as compensation committee members) who know the grant date as soon as it is decided. The fact that grant volume and executive seniority are directly related to the steepness of the stock price rise following the grant date is consistent with both hypotheses. Consistent with the alignment hypothesis, 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. If other insiders believe that investors will view the information about the option award as favorable news, they may trade on this information as well. However, neither hypothesis can explain the relationship between the reporting lag and post-grant raw stock returns.

We also investigated if the stock price behavior is driven by the granting of repriced options. Repricing occurs usually if the stock price drops substantially; firms then lower the exercise price of old options and/or cancel old options and issue new options (see Brenner, Sundaram, and Yermack (2000) for a study of repriced options). 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.

A modified version of the timing hypotheses can potentially explain the relation between the reporting lag and post-grant raw stock returns. If managers use timing to influence the stock price, they may also wish to report late in order to distance the information event associated with timing from the reporting date. If one believes that investors and regulators react only to salient information, such camouflaging by reporting timed option grants late might enable managers engaging in this practice to escape attention. Managers, of course, are taking the risk of attracting attention by reporting late. Therefore, to act in this manner, they must believe that late reporting is not monitored as closely as near simultaneous announcements of firm-related information and option grants. In this case, we might observe a positive relation between reporting lag and post-grant date market-adjusted return.

We offer the following test to distinguish between camouflaged timing and the dating game hypotheses. For camouflaged timing to work properly, after granting the option award, managers would want to announce the good news first and then report the grant with a long delay, thereby separating the two events in time as much as possible. Hence, with long reporting delays, camouflaged timing hypothesis predicts no difference in the raw returns immediately before and after the reporting date. The dating game hypothesis, on the other hand, predicts no systematic returns after the reporting date, but positive raw returns on average immediately before (Figures 1A, 1B, and, 1C).

To test the camouflaged timing hypothesis, we seek evidence of kinks in returns around the reporting date. Table 9 shows the relationship between reporting lags and the difference in

raw returns just before and just after the report date. Observations are defined as in Table 6. The difference in return is measured for four different intervals around the report date: Return [ $-k$, 0] – Return [1, $k$], $k$ = 5, 10, 20 and 30 days. We use the same three sets of reporting lags as before: less than 2 business days, between 2 and 22 days, and greater than 22 days. It can be seen that the difference in returns is positive and significant for all but one case ($k$ = 5) in the sub sample with the greatest lag, which is consistent with the dating game hypothesis but not with the camouflaged timing hypothesis.

In summary, it appears that these alternative hypotheses cannot satisfactorily explain all our findings, suggesting the prevalence of the dating game at least in some firms to influence grant date stock price, and hence the value of executive compensation.

**8. Who reports late?**

In order to understand the characteristics of firms involved in the dating game, we analyze in this section firms involved in late reporting. Note that this is only a sub sample of firms involved in the dating game since we have shown that the game may be played even if grants are reported promptly. Table 10 shows the grant and firm characteristics grouped by three reporting lags: less than or equal to 2 business days, between 2 and 22 days, and greater than 22 days. Observations are defined as in Table 6. Table 10 shows that, in spite of potential sanctions, 7,695 firm-grants were reported late. In 4,183 such cases (17% of the sample), the reporting lag was between two and 22 business days and in 3,512 cases (14%), the reporting lag exceeded 22 business days. Firms involved in late reporting tend to be somewhat smaller (market capitalization equals $1.3 billion versus $3.7 billion for prompt reporters). In spite of the smaller firm size, late reporting executives receive 48,717 options versus 20,322 options for prompt reporters. Late reporting is more common when the option award is unscheduled (38% scheduled for later reporters versus 48% scheduled for prompt reporters). All these differences

are significant at the 1% level. These findings are consistent with our earlier results that late reporting is more likely to the dating game hypothesis.

In Table 10, we also attempt to determine whether the grant price is unusually attractive (low) relative to the stock prices 90 days before to 90 days after the grant date. To measure whether the stock price is usually low, we compute the probability of observing a low stock price on the grant date, and compare it to a random probability of one-half if no games are being played by managers. We then use these probabilities to compute an odds-ratio (explained below). If the stock price falls prior to the grant date or rises after the grant date, then the designated grant date price will be low relative to surrounding prices.

To compute the odds ratio, we sorted all stock prices for the 181-day window around the grant date. We then assigned percentile ranks to the stock prices, with the lowest prices being assigned the lowest percentile. The percentile assigned to a grant price is defined as the probability of low exercise price. We assigned a probability of one-half to the likelihood of observing a low price under the hypothesis that managers do not play dating games. To compute the odds-ratio, we divide one-half by the probability of the computed low-exercise price. If the grant price is close to the mid-point of surrounding prices, then the odds-ratio will be equal to one. If the grant price is an especially low price, then the odds-ratio will be significantly greater than one.

Table 10 shows that the average odds-ratio for the entire sample is 2.4. This value is significantly greater than one at the one-percent level. On average, regardless of late reporting, executives receive their options at unusually attractive, low prices. Table 10 also shows that the odds-ratio is systematically related to reporting lags. While the odds ratio in the promptly reported sample is 2.30, it increases to 2.95 for the group with the greatest reporting lag. This increase is significant at the one percent level. This finding confirms our previous results that increased reporting delays are associated with increasingly good (low) exercise prices.

We also examine the distribution of late reporters by industry sector (unreported). The biggest late reporters are in public utilities, followed by consumer services sector. Managers in the transportation sector report most promptly, followed by energy. Technology sector accounts for almost one-half of all option awards. Technology also exhibits the largest proportion of price reversals and has the lowest proportion of scheduled option awards (46.8%). These findings suggest that the dating games are the most prevalent in the technology sector.

## 9. Conclusions

Stock price patterns around option grant dates suggest that managers might be influencing their compensation. Previous research had investigated influencing compensation by timing methods, namely, timing the grant date (so that it precedes release of good news or follows release of bad news) or timing information releases around scheduled grant dates (releasing good news before the grant date or releasing bad news before). In this paper, we present evidence of another type of influencing, namely, selecting an advantageous grant date on an ex-post basis. We term this tactic as the dating game and suggest that managers might either back-date or forward-date the grant date to increase their option grant value.

We present evidence consistent with both forms of the dating game by using a comprehensive database of 638,757 option grants reported on Form 4 by all managers in all publicly listed companies between August 29, 2002 (the day the Sarbanes-Oxley Act became effective) and December 31, 2004. We find more than 20% of the grants are reported late, i.e., later than the two business days required by the Act.

Consistent with back-dating, we find that post-grant stock price and stock return reversals around the grant date are positively related to reporting lags. Even in the promptly reported sample, we find evidence consistent with the dating game in the form of forward dating. Specifically we find that when stock returns are negative prior to the grant date, post-

grant date return tends to be positive and managers are more likely to report in the maximum allowed two days.

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 30 days, executives receiving large grants (500,000 shares or greater) increase the value their option compensation by about 8%. By conservative estimates, this is equivalent to a windfall of $1.2 million for a manager receiving a grant of one million options.

We propose two ways to mitigate such dating games. The two-day reporting requirement should be strictly enforced to prevent back-dating. Currently, more than 20% of the option awards are reported late, with about 10% more than one month late. Second, prompt reporting is necessary but not sufficient to eliminate dating games. Even if all executives report their options promptly, there is still room to play forward-dating games. To mitigate forward dating, firms should be required to grant options only on previously scheduled dates such as the fiscal year end date.

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## Table 1

## Sample summary statistics

| Period | Number of grants | Average shares per grant | Total shares granted | Number of firms | Average shares per firm | Average reporting lag (business days) |
|---|---|---|---|---|---|---|
| 8/29/2002-12/31/2002 | 89,387 | 8,799 | 786,495,921 | 2,046 | 384,407 | 17.69 |
| 2003 | 285,054 | 7,667 | 2,185,576,333 | 3,873 | 564,311 | 13.35 |
| 2004 | 264,316 | 6,847 | 1,809,703,888 | 3,406 | 531,328 | 8.34 |
| Total | 638,757 | 7,486 | 4,781,776,142 | | | 11.89 |

The table provides the summary statistics of option grants reported by insiders on Form 4 to meet disclosure requirements of Section 16(a) of the Securities and Exchanges Act and awarded from August 29, 2002 through December 2004. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (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. Reporting lag is the number of business days between the grant date and the date on which the SEC received the filing.

## Table 2

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

Panel A: By firm size

| Market capitalization | Number of grants | Average underlying shares per grant | Number of firms | Average underlying shares per firm | Total shares granted | Average maturity (years) | Average reporting lag (business days) |
|---|---|---|---|---|---|---|---|
| < $100 million | 180,832 | 8,825 | 3,293 | 484,598 | 1,595,780,787 | 9.49 | 18.72 |
| Between $100 and $500 million | 210,687 | 4,538 | 2,452 | 389,942 | 956,137,545 | 9.58 | 11.99 |
| Between $500 and $3000 million | 163,088 | 6,424 | 1,932 | 542,307 | 1,047,736,997 | 9.40 | 7.83 |
| > $3000 million | 84,150 | 14,048 | 938 | 1,260,257 | 1,182,120,813 | 9.48 | 4.82 |
| Whole sample | 638,757 | 7,486 | | | 4,781,776,142 | 9.50 | 11.89 |

Panel B: By seniority of executive

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Top executives | 155,807 | 16,015 | 3,943 | 632,836 | 2,495,270,548 | 9.46 | 13.23 |
| Other officers | 482,950 | 4,734 | 4,672 | 489,406 | 2,286,505,594 | 9.51 | 11.45 |
| Whole sample | 638,757 | 7,486 | | | 4,781,776,142 | 9.50 | 11.89 |

**Table 2 (continued)**

The table provides the summary statistics of option grants reported by insiders on Form 4 to meet disclosure requirements of Section 16(a) of the Securities and Exchanges Act and awarded from August 29, 2002 through December 2004. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (CRSP) database. Panel A reports award sizes, average maturity, and average reporting lags for different firm size groups as measured by the market capitalization of the granting firm at the beginning of the grant year. 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. Reporting lag is the number of business days between the grant date and the date on which the SEC received the filing. Panel B provides the same data grouped by executive rank. Top executives include those with titles (on the grant date) of Chief Executive Officers, Chairmen of the Board, Chief Financial Officers, Presidents, and Officer-Directors.

## Table 3

## Grant and firm characteristics for different stock price patterns around grant date

| Raw stock price pattern on grant date | | Number of grants | Proportion of scheduled grants | Average reporting lag (business days) | Average grant volume (number of shares) | Market capitalization ($ millions) |
|---|---|---|---|---|---|---|
| Pre-grant [0, -5] | Post-grant [0, 5] | | | | | |
| Negative | Positive | 1,406 | 43.7% | 20.8 | 27,878 | 2,634 |
| Positive | Negative | 1,151 | 46.3% | 13.9 | 23,659 | 2,826 |
| Other | | 20,495 | 45.7% | 15.7 | 25,762 | 3,203 |

This table presents grant and firm characteristics when stock prices on the grant date exhibit a local minimum or a maximum. The sample contains 638,757 grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, made by firms during the post-SOX period of August 29, 2002 through December 31, 2004 with daily returns available in the Center for Research in Security Prices (CRSP) database. All options awarded to executives of the same firm on a given day are grouped as a single grant, resulting in a total of 23,052 observations. To be defined as a local minimum, the grant date stock price must be the lowest in the 11-day interval [-5, +5] around the grant date and the cumulative raw return in the interval [-5, 0] must be less than −1% and the cumulative raw return in the interval [0, +5] must be greater than +1%. To be defined as a local maximum, the grant date stock price must be the highest in the 11-day interval [-5, +5] around the grant date and the cumulative raw return in the interval [-5, 0] must be greater than +1% and the cumulative raw return in the interval [0, +5] must be less than −1%. A grant is defined as a scheduled grant if at least one insider has been granted options in the same calendar month the previous year. Reporting lag is the number of business days between the grant date and the date on which the SEC received the filing. Grant volume is the shares that the insiders will receive upon exercise of the options. Market capitalization is that of the granting firm at the beginning of the grant year.

## Table 4

## Stock returns before and after executive option grants

| Holding period | Mean CAR | Mean Raw Returns | Number of observations |
|---|---|---|---|
| [-90, 0] | -0.34% | 11.53% | 621,261 |
| | (<.0001) | (<.0001) | |
| [-50, 0] | -0.04% | 7.42% | 619,843 |
| | (.2313) | (.0001) | |
| [-40, 0] | -0.57% | 5.52% | 619,759 |
| | (<.0001) | (<.0001) | |
| [-30, 0] | -0.14% | 4.52% | 619,178 |
| | (<.0001) | (<.0001) | |
| [-20, 0] | -0.20% | 2.77% | 618,803 |
| | (<.0001) | (<.0001) | |
| [-10, 0] | -0.41% | 1.10% | 618,557 |
| | (<.0001) | (<.0001) | |
| [1, 10] | 1.54% | 3.15% | 618,223 |
| | (<.0001) | (<.0001) | |
| [1, 20] | 2.07% | 5.13% | 618,347 |
| | (<.0001) | (<.0001) | |
| [1, 30] | 2.17% | 6.77% | 618,435 |
| | (<.0001) | (<.0001) | |
| [1, 40] | 2.61% | 8.72% | 618,439 |
| | (<.0001) | (<.0001) | |
| [1, 50] | 2.90% | 10.32% | 618,493 |
| | (<.0001) | (<.0001) | |
| [1, 90] | 3.28% | 16.50% | 618,582 |
| | (<.0001) | (<.0001) | |

The table shows mean and median cumulative abnormal returns of the stocks of firms granting executive stock option around the grant date (day 0). The sample includes grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (CRSP) database and contains 638,757 grants made during the post-SOX period of from August 29, 2002 through December 31, 2004. Each option grant is considered as an observation. Cumulative Abnormal Return (CAR) is computed as the difference between raw return and the return to equally-weighted 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 5

## Distribution of reporting lags

| Quantile | Reporting lag (business days) |
|---|---|
| 100% | 615 |
| 99% | 231 |
| 95% | 61 |
| 90% | 21 |
| 75% | 2 |
| 50% | 2 |
| 25% | 2 |
| 10% | 1 |
| 5% | 1 |
| 1% | 0 |
| 0% | 0 |
| Mean | 12.34 |
| Std. Dev | 39.65 |
| Lag ≤ 2 | 491,313 |
| 2 < Lag ≤ 22 | 86,323 |
| Lag > 22 | 61,121 |
| Total | 638,757 |

The table shows the distribution of the reporting lags. The sample contains 638,757 grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, made by firms during the post-SOX period of August 29, 2002 through December 31, 2004 with daily returns available in the Center for Research in Security Prices (CRSP) database. Each option grant is considered as an observation. Reporting lag is the number of business days between the grant date and the date on which the SEC received the filing.

## Table 6

## Relationship between post-grant returns and reporting lags

Panel A: Dependent variable: post-grant CAR

| Dependent variable | CAR [1,10] | CAR [1,30] | CAR [1,50] | CAR [1,90] |
|---|---|---|---|---|
| Intercept | **0.017** | **0.037** | **0.052** | **0.074** |
| Schedule dummy | -0.002 | -0.007** | -0.008** | -0.009** |
| Grantsize2 dummy | 0.000 | 0.005 | 0.006 | 0.011* |
| Grantsize3 dummy | 0.006** | **0.015** | **0.017** | **0.024** |
| Grantsize4 dummy | **0.021** | **0.054** | **0.066** | **0.116** |
| Grantsize5 dummy | 0.015 | **0.092** | **0.135** | **0.181** |
| Firmsize2 dummy | **-0.019** | **-0.039** | **-0.053** | **-0.087** |
| Firmsize3 dummy | **-0.024** | **-0.055** | **-0.077** | **-0.116** |
| Firmsize4 dummy | **-0.030** | **-0.068** | **-0.095** | **-0.151** |
| TopExecutive dummy | **0.007** | 0.007 | **0.008** | 0.004 |
| ReportLag2 dummy | **0.009** | **0.012** | **0.012** | **0.006** |
| ReportLag3 dummy | **0.017** | **0.033** | **0.040** | **0.044** |

**Table 6 (continued)**

Panel *B*: Dependent variable: post-grant raw returns

| Dependent variable | RAW [1,10] | RAW [1,30] | RAW [1,50] | RAW [1,90] |
|---|---|---|---|---|
| Intercept | **0.034** | **0.082** | **0.126** | **0.197** |
| Schedule dummy | 0.001 | **-0.008** | **-0.014** | **-0.014** |
| Grantsize2 dummy | 0.000 | 0.008* | **0.009** | **0.018** |
| Grantsize3 dummy | 0.005 | **0.017** | **0.021** | **0.031** |
| Grantsize4 dummy | **0.019** | **0.057** | **0.071** | **0.128** |
| Grantsize5 dummy | 0.020 | **0.103** | **0.138** | **0.187** |
| Firmsize2 dummy | **-0.020** | **-0.039** | **-0.054** | **-0.085** |
| Firmsize3 dummy | **-0.025** | **-0.054** | **-0.075** | **-0.113** |
| Firmsize4 dummy | **-0.033** | **-0.068** | **-0.093** | **-0.145** |
| TopExecutive dummy | **0.005** | 0.004 | 0.006 | 0.001 |
| ReportLag2 dummy | **0.010** | **0.017** | **0.019** | **0.021** |
| ReportLag3 dummy | **0.020** | **0.039** | **0.051** | **0.069** |

The table provides the results of a regression with the dependent variable as CAR (Panel A) or RAW, the cumulative raw return (Panel *B*) after grant date (date 0). The sample contains 638,757 grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934, made by firms during the post-SOX period of August 29, 2002 through December 31, 2004 with daily returns available in the Center for Research in Security Prices (CRSP) database. The observation unit is the firm-grant date. If different executives of a firm received grants on the same date but reported it with different lags, the firm-grant date will be counted more than once. This results in 25,273 observations on 23,052 firm-grant dates. The Schedule Dummy equals 1 if at least one insider has been granted options in the same calendar month of the previous year (scheduled awards), and 0 otherwise. Grant size is the average shares underlying the options granted on a given day to all executives of a firm belonging to the same reporting lag group. Grantsize dummies 2 through 5 represent, respectively, option grants for between 1001 and 10,000 shares, grants for between 10,001 and 100,000 shares, grants for between 100,001 and 500,000 shares, and grants for greater than 500,000 shares. Firmsize dummies 2 through 4 represent, respectively, market capitalizations of granting firms between $100 million and $500 million, between $500 million and $3000 million, and greater than $3000 million. Market capitalizations are measured at the end of the year prior to the grant year. The TopExecutive 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. Report Lag2 Dummy equals 1 if the reporting lag is in the range [3 days, 22 days] and Report Lag3 Dummy equals 1 if the reporting lag is greater than 22 days. The reporting lag is the duration in business days between the grant date and the date of filing with the Securities and Exchange Commission (SEC). Significance of coefficients at the 1%, level is indicated by bold lettering; significance at 5%, and 10% levels are indicated by **, and *, respectively.

## Table 7
## Effect of reporting lag on probability of raw stock return reversals (RSRR) around the grant date

$$p = a_0 + a_1 \text{ Log (grant volume)} + a_2 \text{ Log (firm size)} + a_3 \text{ Rank Dummy} + a_4 \text{ Schedule Dummy} + a_5 \text{ ReportLag2 dummy} + a_6 \text{ ReportLag3 dummy}$$

| Threshold return | Intercept | Log (grant volume) | Log (firm size) | Rank dummy | Schedule dummy | Report Lag2 dummy | Report Lag3 dummy |
|---|---|---|---|---|---|---|---|
| Predicted sign | | + | - | + | - | + | + |
| ±0% | -0.900 | 0.001 | 0.015 | 0.059 | 0.006 | 0.054 | 0.062 |
| | <.0001 | 0.805 | 0.000 | 0.003 | 0.713 | 0.022 | 0.014 |
| ±2% | -1.064 | 0.032 | -0.023 | -0.020 | -0.017 | 0.063 | 0.107 |
| | <.0001 | <.0001 | <.0001 | 0.371 | 0.377 | 0.016 | 0.000 |
| ±5% | -1.253 | 0.052 | -0.059 | -0.044 | -0.017 | 0.079 | 0.140 |
| | <.0001 | <.0001 | <.0001 | 0.102 | 0.469 | 0.012 | <.0001 |

The table provides the results of a probit regression with the dependent variable as the probability of raw stock return reversal (RSRR) around the option grant date (day 0). The sample includes 638,757 grants reported by insiders on Form 4 during the post-SOX period of August 29, 2002 through December 31, 2004 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). The observation unit is the firm-grant date. If different executives received grants on the same date but reported it with different lags, the firm will be counted more than once. This results in 25,273 observations on 23,052 firm-grant dates. To qualify as an RSRR, both the cumulative raw return in the interval [–9, 0] and the cumulative raw return in the interval [1, 10] should exceed specified thresholds. Three different definitions of RSRR are used based on three threshold returns (±0%, ±2%, and ±5%) for both the pre-grant and post-grant cumulative raw returns. Log (grant volume) is the log of the total number of shares underlying the options granted on a given date to executives of a firm who belong to the same reporting lag group. 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. Report $\text{Lag}_2$ Dummy equals 1 if the reporting lag is in between 2 and 22 business days and Report $\text{Lag}_3$ equals 1 if the reporting lag is greater than 22 business days. In parentheses are the p-values (differences from zero) associated with the regression coefficients.

**Table 8**
**Relationship between reporting lags/post-grant returns and pre-grant raw returns in the promptly reported sample**

Panel A: Reporting lags

| Dependent variable | $D_0$ | $D_1$ | $D_2$ |
|---|---|---|---|
| Pre-grant interval = [-1, -1] | | | |
| Intercept | 0.064 | 0.334 | 0.602 |
| PreR1 | -0.006* | -0.009 | 0.016** |
| PreR2 | -0.034** | 0.001 | 0.033 |
| Pre-grant interval = [-1, -5] | | | |
| Intercept | 0.062 | 0.333 | 0.605 |
| PreR1 | -0.003 | 0.000 | 0.003 |
| PreR2 | -0.003 | -0.050*** | 0.053*** |
| Pre-grant interval = [-1, -11] | | | |
| Intercept | 0.059 | 0.335 | 0.606 |
| PreR1 | 0.006 | -0.005 | -0.001 |
| PreR2 | -0.008 | -0.033*** | 0.041*** |

**Table 8 (continued)**

Panel *B*: Post-grant returns

| Dependent variable | PostR1 | PostR2 | PostR3 | PostR4 | PostR5 |
|---|---|---|---|---|---|
| | | | Pre-grant interval = [-1, -1] | | |
| Intercept | 0.495 | 0.498 | 0.484 | 0.490 | 0.479 |
| PreR1 | 0.042*** | -0.006 | 0.009 | -0.011 | 0.007 |
| PreR2 | 0.080** | -0.033 | -0.044 | -0.040 | -0.049 |
| | | | Pre-grant interval = [-1, -5] | | |
| Intercept | 0.507 | 0.497 | 0.485 | 0.483 | 0.481 |
| PreR1 | 0.017** | -0.006 | 0.011 | 0.010 | 0.003 |
| PreR2 | 0.034** | 0.000 | -0.018 | -0.024 | -0.009 |
| | | | Pre-grant interval = [-1, -11] | | |
| Intercept | 0.516 | 0.498 | 0.490 | 0.485 | 0.481 |
| PreR1 | -0.008 | -0.002 | 0.001 | 0.005 | 0.005 |
| PreR2 | 0.019 | -0.020 | -0.021 | -0.022* | -0.007 |

Panel A of this table provides the relationship between reporting lags and pre-grant returns and Panel *B* provides the relationship between post-grant returns and pre-grant returns. The sample includes 491,313 grants reported no later than two business days of the grant date by insiders on Form 4 during the post-SOX period of August 29, 2002 through December 31, 2004 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). The observation unit is the firm-grant date. If different executives of a firm received grants on the same date but reported it on different days, the firm-grant date will be counted more than once. This results in 18,819 observations. PreR1 is a dummy variable that takes the value of 1 if the cumulative raw return over a specified pre-grant interval is in the range [−10%, 0], and 0 otherwise. PreR2 is a dummy variable that takes the value of 1 if cumulative raw return over a specified pre-grant interval is less than −10%, and 0 otherwise. $D_j$, $j$ =1, 2, 3, are dummy variables that take the value of 1 if the reporting lag is $j$ days, and 0 otherwise. PostRj $j$ =1, 2,…5, are dummy variables that take the value of 1 if the raw return on post-grant date $j$ is positive, and 0 otherwise. The table provides the results for three pre-grant intervals: [−1, −1], [−1, −5], and [−1, −11]. Significance of coefficients at the 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

**Table 9**
**Relation between reporting lag and difference between raw returns before and after grant date**

| Reporting lag (business days) | Raw return difference before and after report date | | | |
|---|---|---|---|---|
| | Return [-*k*, 0] − Return [1, *k*] | | | |
| | *k* = 5 | *k* = 10 | *k* = 20 | *k* = 30 |
| Lag ≤ 2 | 0.005*** | 0.003** | 0.002 | 0.002 |
| 2 < Lag ≤ 22 | 0.007*** | 0.005** | 0.002 | -0.002 |
| Lag > 22 | 0.002 | 0.006** | 0.010** | 0.026*** |

This table reports the relation between reporting lags and the difference between raw returns before and after the grant date. The sample includes 638,757 grants reported by insiders on Form 4 during the post-SOX period of August 29, 2002 through December 31, 2004 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). The observation unit is the firm-grant date. If different executives of a firm received grants on the same date but reported it with different lags, the firm-grant date will be counted more than once. This results in 25,273 observations on 23,052 firm-grant dates. Reporting lag is the number of business days between the grant date and the date on which the SEC received the filing. The return is cumulative raw return over the specified period. Significance of coefficients at the level is indicated by bold lettering; significance at 1%, 5%, and 10% levels are indicated by ***, **, and *, respectively.

**Table 10**
**Grant characteristics in firms with executives reporting grants late**

| Reporting lag (business days) | Number of firm-grant dates | Market capitalization ($ millions) | Average grant volume (shares granted) | Proportion of scheduled grants | Odds ratio |
|---|---|---|---|---|---|
| Lag ≤ 2 | 17,578 | 3,692 | 20,322 | 48.3% | 2.30 |
| 2 < Lag ≤ 22 | 4,183 | 2,337 | 27,806 | 44.9% | 2.63 |
| Lag > 22 | 3,512 | 1,344 | 48,717 | 37.8% | 2.95 |
| All | 25,273 | 3,142 | 25,506 | 46.3% | 2.44 |

This table reports the characteristics of grants in firms with late-reporting (more than 2 business days) executives. The sample includes 638,757 grants reported by insiders on Form 4 during the post-SOX period of August 29, 2002 through December 31, 2004 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). The observation unit is the firm-grant date. If different executives of firm received grants on the same date but reported it with different lags, the firm-grant date will be counted more than once. This results in 25,273 observations. Reporting lag is the number of business days between the grant date and the date on which the SEC received the filing. Market capitalization is that of the granting firm at the beginning of the grant year. Grant volume is the shares that the insiders will receive upon exercise of the options. A grant is defined as a scheduled grant if at least one insider has been granted options in the same calendar month the previous year. The odds ratio measures the odds of the manager receiving a favorably low strike price.

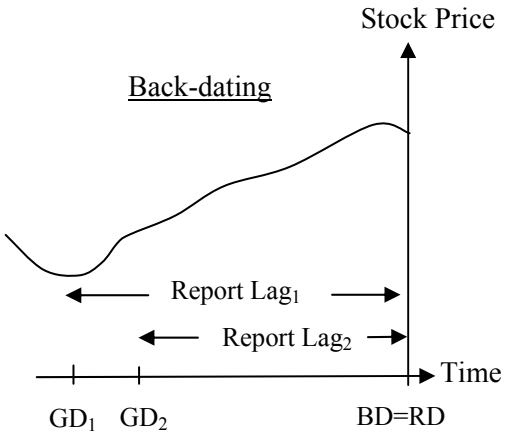



Figure 1A

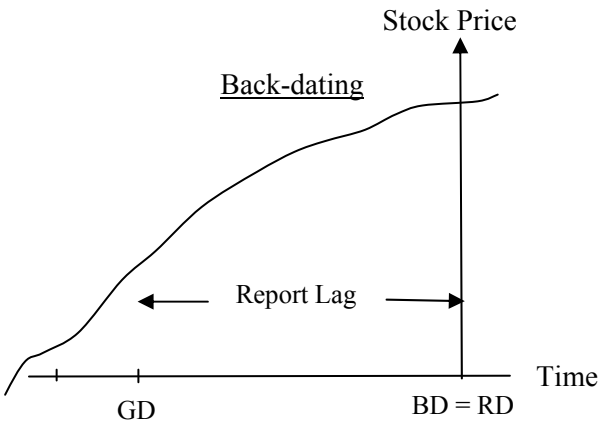



Figure 1B

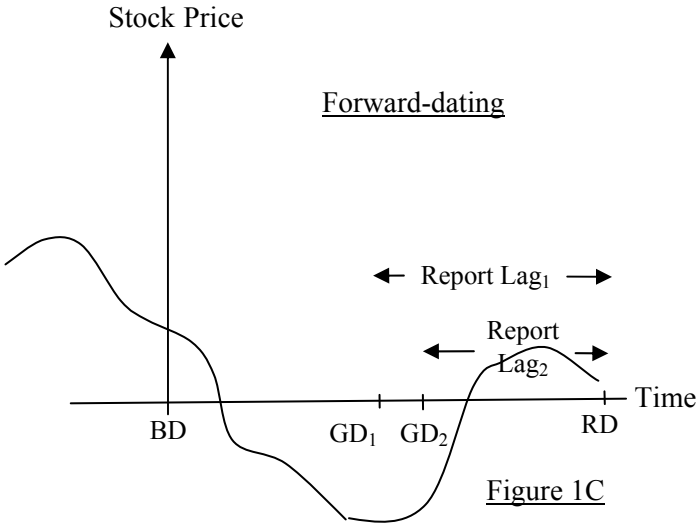



Figure 1C

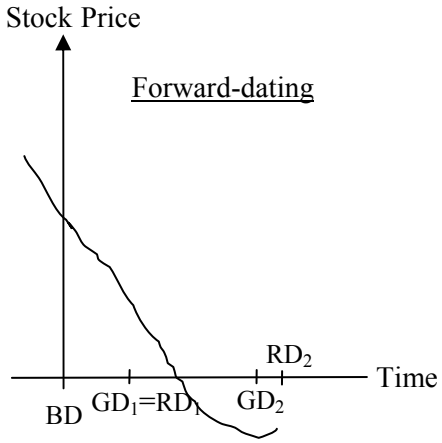
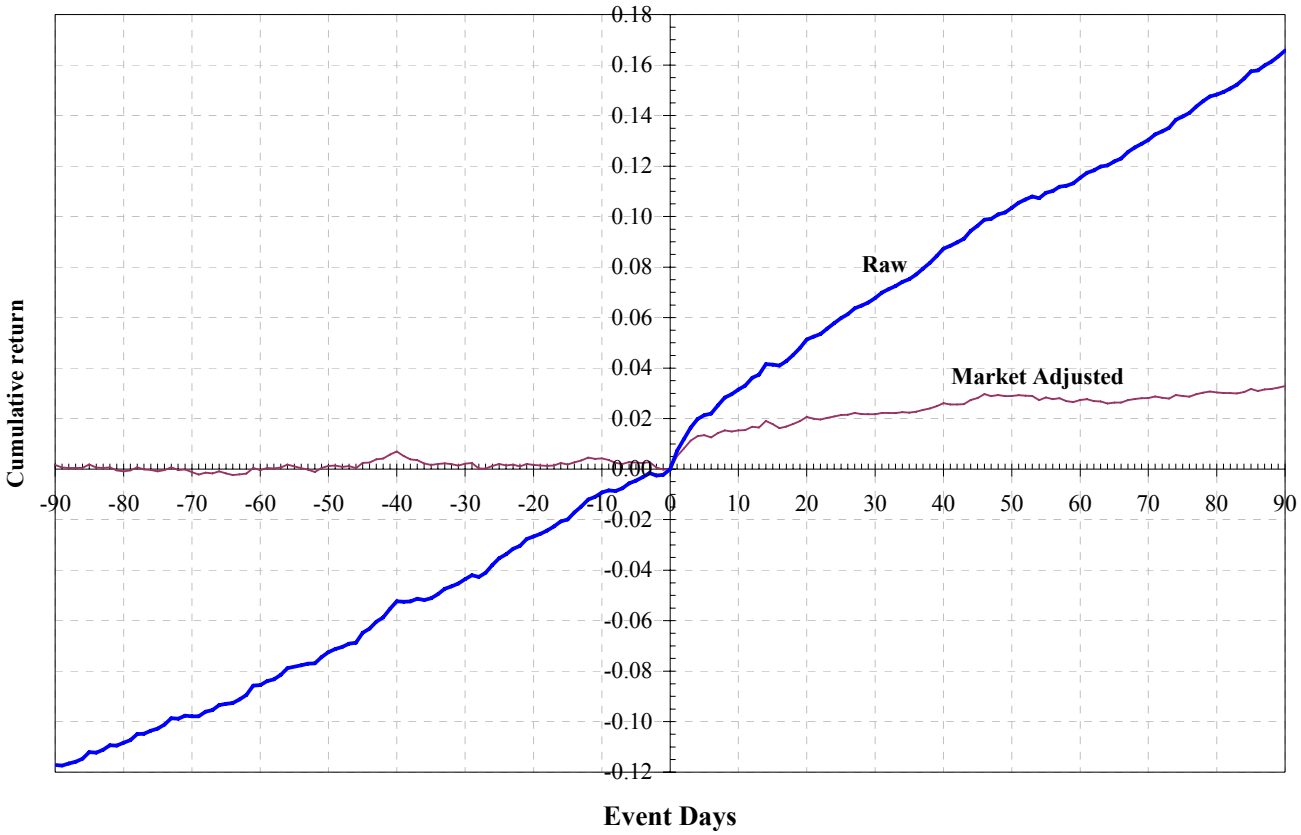



Figure 1D

## Figure 1

## Dating game: Illustrations

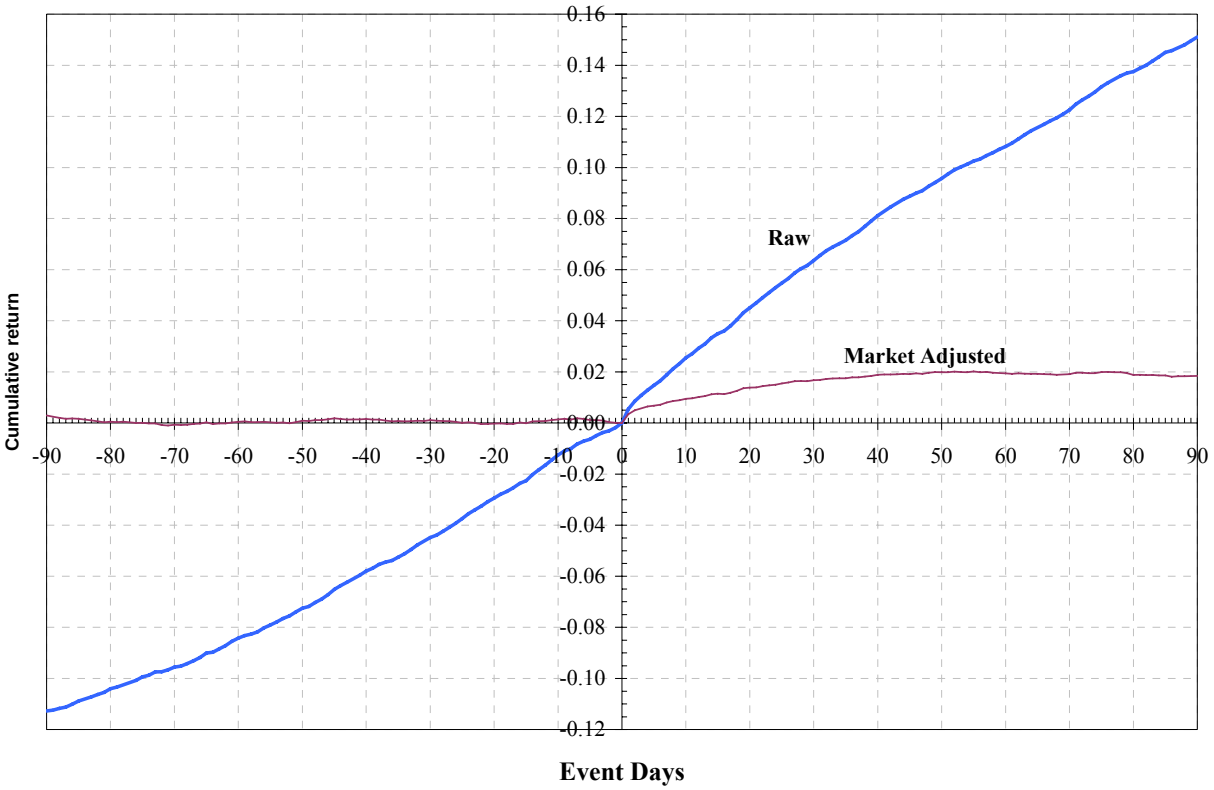
The figure provides some illustrations of how stock option grants may be back-dated or forward-dated. Figures 1A and 1B consider the cases in which the stock price has been rising before the board decision date (BD). Figures 1C and 1D consider the cases in which the stock price has been falling before the board decision date. GD indicates grant date and RD indicated reporting date.




## Figure 2

## Stock returns around grant date of stock options (observation unit: individual grant)

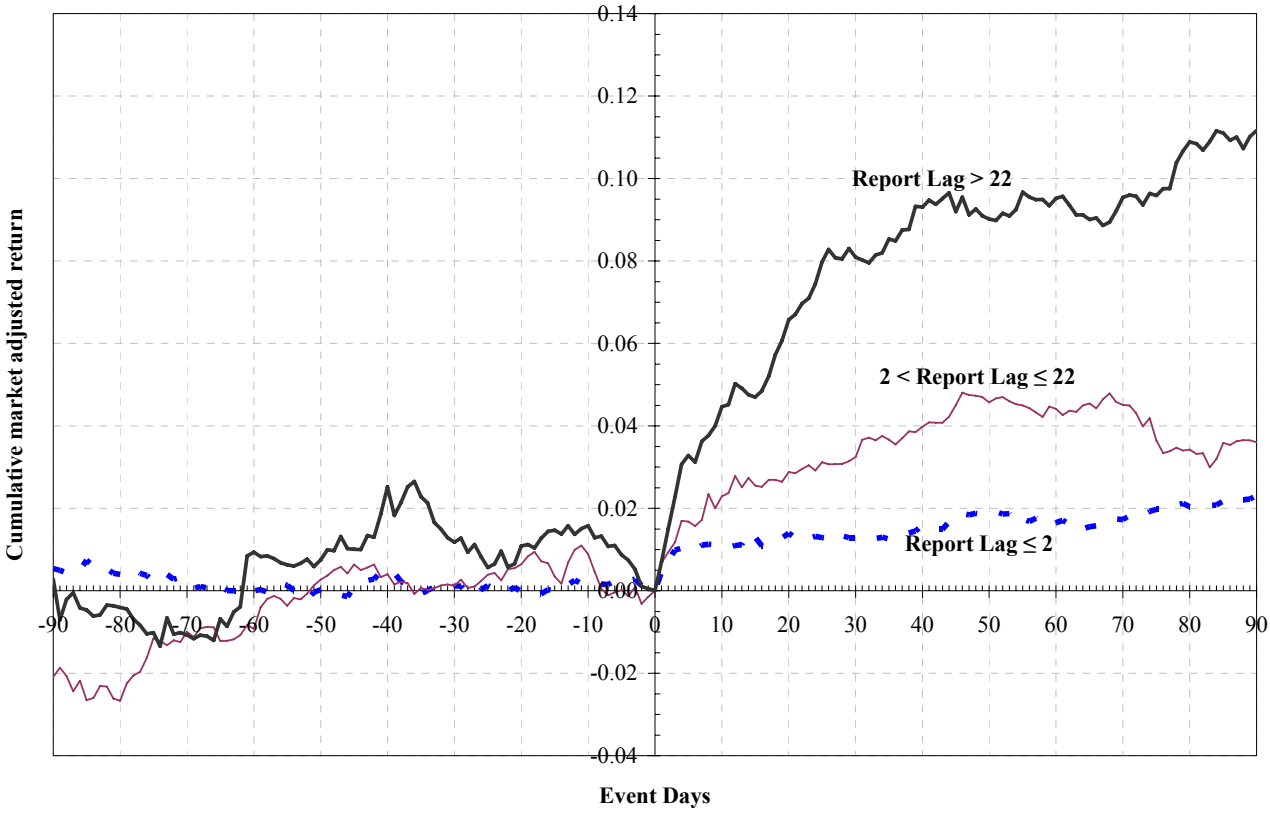
The figure plots cumulative raw and market-adjusted abnormal stock returns around the option grant date (day 0). The sample includes grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (CRSP) database and contains 638,757 grants awarded during the post-SOX period of from August 29, 2002 through December 31, 2004. The observation unit is the individual grant. Event days are trading days. Cumulative market-adjusted abnormal return is computed as the difference between raw return and the return to an equally-weighted index of NYSE, AMEX and NASDAQ stocks.




## Figure 3

### Stock returns around grant date of stock options (observation unit: firm-grants)

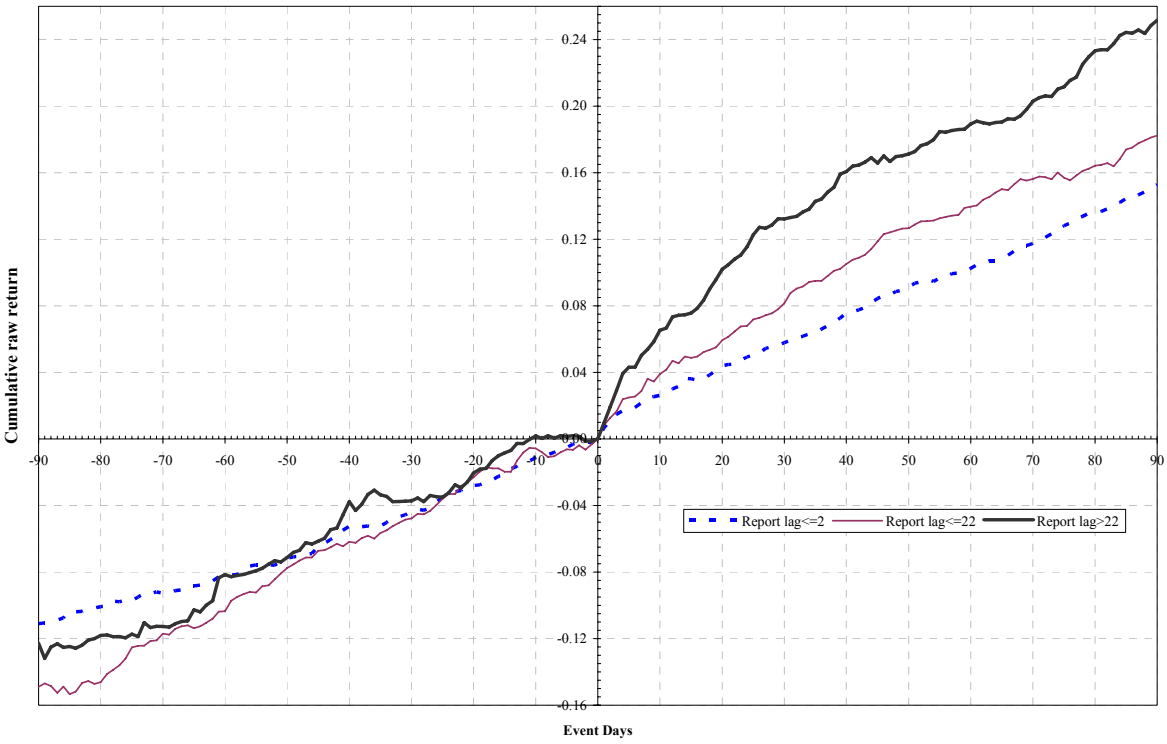
The figure plots cumulative raw and market-adjusted abnormal stock returns around the option grant date (day 0). The sample includes grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (CRSP) database. The observation unit is the firm-grant date: each grant date of a firm is treated as an event. The sample contains 23,052 firm-grant dates during the post-SOX period of from August 29, 2002 through December 31, 2004. Event days are trading days. Cumulative market-adjusted abnormal return is computed as the difference between raw return and the return to an equally-weighted index of NYSE, AMEX and NASDAQ stocks.




## Figure 4

## Effect of reporting lag on market-adjusted returns around grant dates

The figure plots cumulative market-adjusted abnormal stock returns around the option grant date (day 0) for three different groups based on the reporting lag. The sample includes grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (CRSP) database and contains 638,757 grants awarded during the post- Sarbanes-Oxley Act (SOX) period from August 29, 2002 through December 31, 2004. The observation unit is the individual grant. Event days are trading days. Reporting lag represents the number of business days between the grant date and the date when the SEC receives the filing of grant information. Cumulative market-adjusted abnormal return is computed as the difference between raw return and the return to an equally-weighted index of NYSE, AMEX and NASDAQ stocks.




## Figure 5

## Effect of reporting lag on raw returns around grant dates

The figure plots cumulative raw stock returns around the option grant date (day 0) for three different groups based on the reporting lag. The sample includes grants reported by insiders on Form 4 to meet Section 16(a) requirements of the Securities and Exchange Act of 1934. The sample is limited to grants by firms with daily returns available in the Center for Research in Security Prices (CRSP) database and contains 638,757 grants awarded during the post- Sarbanes-Oxley Act (SOX) period from August 29, 2002 through December 31, 2004. The observation unit is the individual grant. Event days are trading days. Reporting lag represents the number of business days between the grant date and the date when the SEC receives the filing of grant information. Cumulative market-adjusted abnormal return is computed as the difference between raw return and the return to an equally-weighted index of NYSE, AMEX and NASDAQ stocks.