Timing and Backdating of Executive Stock Option Exercises Before and After the Sarbanes-Oxley Act

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Abstract

This paper considers executive stock option exercise timing in light of recent evidence regarding the potential for backdating of exercise dates. I find that 29 (16) percent of executive option exercises were not associated with same-day disposition of shares before (after) the August 29, 2002, enactment of the 2 business day reporting requirement for insider transactions under the Sarbanes-Oxley Act. I interpret this as evidence executives often exercise options with the intention of holding the acquired shares for at least a year in order to qualify for long term capital gains tax treatment on stock appreciation beyond the exercise date. I separate exercises into three subsamples – (i) those accompanied by same day private or market sale of shares, (ii) those accompanied by a same day disposition of shares to the company only, and (iii) those not associated with share disposition – and find patterns consistent with exercise date timing for each subsample. Exercises accompanied by stock disposition (either to a third party or to the company) are associated with a stock price peak, and exercises not accompanied by sale are associated with a stock price trough. The favorable return patterns are greatly diminished in the post-Sarbanes-Oxley period. I conduct further tests based on executives' timing of reporting of option exercises to the SEC. Results from these tests support a conclusion that in the pre-Sarbanes-Oxley period executives benefited by timing option exercises in all subsamples based on private information, and that they benefited by backdating exercise dates when shares were either not immediately disposed of, or only disposed of to the company. I do not find strong evidence of exercise backdating after implementation of the more restrictive reporting requirements under the Sarbanes-Oxley Act.

1. Introduction

Previous studies of executive option exercise timing have focused on the question of whether exercises are timed relative to private information. Researchers have generally assumed that exercise timing is only rational if the executive immediately sells the acquired stock, and that informed exercise would be reflected in an abnormal stock price decline after the exercise date. The alternative hypothesis, that executives sometimes exercise options and hold the stock to minimize their overall tax burden (the "exercise-and-hold" strategy), has been dismissed as a sub-optimal strategy. Based on these assumptions, researchers have uncovered only weak evidence that executive stock option exercises are timed relative to private information (see, for example, Carpenter and Remmers (2001).

In this study, I consider the issue of option exercise timing in light of the recently uncovered phenomenon of option backdating. Much evidence has accumulated that executive stock option *grant dates* have been determined ex post to coincide with low stock prices favorable to executives. Lie (2005), Heron and Lie (2006a), and Narayanan and Seyhun (2006a, 2006b, 2006c) present strong evidence of grant backdating, and in recent months, the list of companies suspected of engaging in this questionable activity has been expanding. In addition, there are at least two instances in which *exercise dates* have been determined ex post. In the first, a 2004 SEC enforcement case, executives at Symbol technologies were found to have retroactively timed option exercises to dates that corresponded with favorable prices during the previous calendar month. In the second, Mercury Interactive reported in its amended 2004 Annual Report that "exercise dates for options exercised by certain executives appear to have been incorrectly reported."[1]

In both cases, exercises were allegedly backdated to correspond with low stock prices, enabling executives to realize greater tax savings under the exercise-and-hold strategy. Theoretical arguments against the exercise-and-hold strategy implicitly assume that the stock price on the day of exercise equals the price at which the executive could acquire additional shares. This analysis breaks down if the executive can choose the exercise date ex post to coincide with a price sufficiently below that at which he can purchase additional shares, thereby minimizing the tax burden associated with the exercise-and-hold strategy. Contrary to prior

[1] S.E.C. Litigation Release 18734 (June 3, 2004) and Mercury Interactive Corporation, 2004 Form 10-K/A (filed July 3, 2006).

research, I propose that the exercise-and-hold strategy may be optimal if the exercise date can be chosen ex post. This paper presents an analysis of the questions whether, allowing for the exercise-and-hold strategy, there is more substantial evidence of executive option exercise timing; and, if so, whether backdating of exercise dates explains some of this beneficial exercise timing.

I find that approximately 22 percent of executive options exercises are not accompanied by immediate disposition of shares (28 percent of exercises before, and 16 percent after, implementation of the more restrictive reporting requirements under the Sarbanes-Oxley Act) which I interpret as exercises associated with the exercise-and-hold strategy. By separating exercises according to stock disposition strategy, I uncover evidence of exercise timing across three different subsamples: (i) exercises accompanied by a same-day private or market sale of shares in the company's stock (Market or Private Sale Subsample), (ii) exercises accompanied by a same-day disposition of shares to the company only (Company Disposition Only Subsample),[2] and (iii) exercises not accompanied by same-day disposition of shares (No Disposition Subsample).

Returns around exercises in the No Disposition Subsample demonstrate a distinct local price *minimum*, or return trough, consistent with beneficial timing of exercises associated with the exercise-and-hold strategy.[3] Over the full time period, these exercises are preceded by ll day returns ending on the day of exercise of negative 1.21 percent, and are followed by 10 day returns of 4.16 percent.

When analyzed separately, return patterns around exercises in the Market or Private Sale Subsample and in the Company Disposition Only Subsample present support a conclusion that exercises are favorably timed to coincide with high prices when executives dispose of the underlying shares. Over the full time period, exercises in the Market or Private Sale Subsample are preceded by 21 day cumulative abnormal returns (total returns) of 6.5 percent (8.3 percent), and are followed by 20 day cumulative abnormal returns of negative 0.55 percent (0.44 percent). Exercises in the Company Disposition Only Subsample are preceded by 21 day cumulative abnormal returns (total returns) of 3.86 percent (5.56 percent), and are followed by cumulative

[2] The Company Disposition Subsample consists of exercises where the executive delivers shares to satisfy the exercise price and/or taxes due upon exercise, exercises where the executive receives cash in lieu of shares, and any other disposition of shares to the company other than those tendered under a merger agreement.
[3] All returns discussed in this introduction are significant at the 1 percent confidence level.

abnormal returns (total returns) of negative 0.56 percent (0.45 percent). These patterns are difficult to explain without ex post backdating of exercise dates.

I next consider whether the fortunate timing of executive option exercises is at least partially a function of exercise backdating. In a first set of tests for exercise backdating, I compare stock price patterns around exercises in the pre-Sarbanes-Oxley period to those in the post-Sarbanes-Oxley period, similarly to the analysis of Heron and Lie (2006a) for option grants. Prior to Sarbanes-Oxley, the SEC required insiders to report option exercises and stock transactions by the 10th calendar day of the month following exercise. This reporting window was shortened on August 29, 2002, under the Sarbanes-Oxley Act, to require that insiders report transactions by the second business day following the transaction. By spanning the two reporting regimes, I am able to examine whether the more stringent reporting requirements are associated with a decline in exercise timing. My results indicate that the favorable return patterns are most prevalent before the Sarbanes-Oxley Act, and are most pronounced in the 522 observations where an executive exercised more than 100,000 options on the same day. These exercises are preceded by total returns over the 21 day period ending on the exercise day of negative 6 percent, and total returns over the 20 days following the exercise of 9 percent.

I test for evidence of backdating by focusing on how the closing stock price on the exercise date compares to the stock price range during the calendar month. These tests should be most effective at detecting exercise backdating of the variety employed by Symbol Technologies, where executives were allowed to choose exercise dates ex post on a rolling monthly basis. I find that exercises in both the No Disposition Subsample and Company Disposition Only Subsample are significantly more likely to be executed on a day with the lowest closing price of the month in the pre-Sarbanes-Oxley period than in the post-Sarbanes-Oxley period

In addition, exercises in the Company Disposition Only Subsample were more likely to be executed on the day with the lowest price of the calendar month than exercises in the Market or Private Sale Subsample in the pre-Sarbanes-Oxley, but not in the post-Sarbanes-Oxley period. This finding further supports a conclusion that in the pre-Sarbanes-Oxley period executives were able to backdate exercises accompanied by disposition of shares to the company, but not exercises accompanied by sale of shares to a third party. These findings support the conclusion

that some exercises in these subsamples were backdated before implementation of the more restrictive reporting requirements.

The final set of tests focuses on whether price patterns around exercises are related to the timing of SEC reporting. Narayanan and Seyhun (2005) find that favorable price patterns around exercises in the pre-Sarbanes-Oxley period are stronger when the reporting lag is longer, and Heron and Lie (2006a) and Narayanan and Seyhun (2006a, 2006b) find they are more pronounced in the post-Sarbanes-Oxley period when the 2 day reporting requirement is violated. Both sets of authors argue these results suggest backdating as the longer reporting delay allows executives to backdate exercises over a longer look back period. I also consider another hypothesis, that exercises reported early (before the SEC reporting deadline) may be associated with both exercise timing and reporting to precede release of information. Executives may choose to report exercises early in order to distance informed exercises from eventual information release.

Using regression analysis, I find that return patterns are more favorable to executives around exercise in all three Subsamples in the pre-Sarbanes-Oxley period when they are reported early, consistent with this hypothesis. In addition, returns around exercises in the Company Disposition Only and No Disposition Subsamples are also more favorable to executives when they are reported late (in violation of SEC reporting requirements), consistent with backdating of exercise dates in these two Subsamples. In the post-Sarbanes-Oxley period, however, there is only very weak evidence executives systematically violated the SEC reporting requirements to backdate exercises to favorable dates.

The remainder of this paper proceeds as follows: Section 2 provides a literature review; section 3 provides hypothesis development; section 4 discusses the data and methodology; section 5 presents the results; and section 6 concludes.

2. Literature Review

This research is most closely related to the literature considering the information content of insider equity and option transactions. Numerous researchers have examined the information content of insider equity transactions. In early studies, abnormal returns following both insider purchases and sales suggested they were informed transactions (Seyhun (1986, 1992, 1998)).

Studies controlling for additional risk factors suggest that only insider purchases at small firms are informed (Jeng, Metrick and Zeckhauser (2000), Lakonishok and Lee (2001)).

Other researchers have focused on the information content of option exercises. Carpenter and Remmers (2001) find that from 1991 to 1995, negative post-exercise abnormal returns are limited to exercises by top managers at small firms. Bartov and Mohanram (2004) study option exercises during the period 1992 to 2001, and find negative abnormal returns following years when top executives exercise an abnormally large number of options. They also find evidence of earnings manipulation preceding abnormally large exercises that is reversed following exercise. Huddart and Lang (2003) find that months when there is an abnormally high number of option exercise by both executives and lower level employees are followed by poor returns over the following six months; conversely, months when there are an abnormally high number of option exercises are followed by abnormally high returns. All of these authors assume exercises are always associated with disposition of the acquired share, and find informed exercise is either limited to a small number of individuals or is apparent only when executives exercise an abnormal volume of options.

This research is also closely related to the literature concerned with executive stock option grant manipulation. Early work in this area focused on informed timing of option grants. Yermack (1997) finds that stock option grants to CEOs during the period 1992 to 1994 were followed by abnormal stock returns of more than 2 percent over the following 50 trading days. Aboody and Kasznik (2000) identified stock price patterns consistent with both the timing of unscheduled option grant dates around the scheduled release of corporate information, and the timing of information release around scheduled grant dates.

Recent work suggests that option grant dates are often backdated to coincide with stock prices favorable to executives.[4] Lie (2005) shows that the pattern of negative abnormal returns before, and positive returns after, option grants intensified over time from 1992 to 2002. Option grants in his sample were also well timed relative to market-predicted returns, which he argues is unlikely unless grant dates were selected ex post. Heron and Lie (2006a) demonstrate that the abnormal return patterns around option grants diminished substantially after August 29, 2002, when the SEC began requiring insiders to report option grants within 2 business days. The

[4] Narayanan and Seyhun (2006) propose another variant of option grant date manipulation termed "forward-dating" that refers to the practice of deciding to grant an option then choosing a grant date in the near future that is favorable to the executive.

abnormal return pattern persists, however, if the option grants are not timely reported. Narayanan and Seyhun (2005, 2006a, 2006b) find similar results as Heron and Lie (2006a), and also document that the magnitude of favorable return patterns around exercises in the pre-Sarbanes-Oxley period are positively related to the length of SEC reporting lag, suggestive of additional benefits from backdating over a longer look-back period. Bebchuk, Grinstein and Peyer (2006) find a positive link between the probability of grant backdating and poor governance, including less independent boards and more entrenched CEOs. Bizjak, Lemmon and Whitby (2006) suggest that the practice of grant backdating spread to new firms through common directors.

Finally, this research adds to the literature exploring executives' stock option exercise practices and the implications for employee stock option valuation and expensing. A number of significant contributions to this literature include Huddart and Lang (1996), Carpenter (1998) and Bettis, Bizjak and Lemmon (2006), and Armstrong, Jagolinzer and Larcker (2006). It is generally argued that traditional option pricing models may overvalue executive options because executives exercise options earlier than these models would predict. One explanation of the early exercise patterns is that risk-averse executives may wish to reduce their exposure to the performance of their companies stock. Consistent with this view, researchers have documented that executive option exercises tend to follow large run-ups in stock price. However, it may also be the case that early exercise patterns are partially explained by the higher than expected use of the exercise-and-hold strategy and the opportunity to profit through backdating of exercise dates.

3. Development of Hypotheses

The main issue this research addresses is whether executives time option exercises to their advantage. One form of timing would be *ex ante* relative to private information (information timing). A second is *ex post* timing of exercise dates to coincide with past stock prices more favorable to the executive than current prices (backdating). These are certainly not mutually exclusive practices, and could lead to similar empirical outcomes, demonstrating stock price patterns around exercises favorable to executives.

Because theory has indicated that the buy-and-hold strategy in option exercising is suboptimal, prior research has assumed that all option exercises are accompanied by the sale of

shares and have examined the market reaction to option exercises as a whole without regard to the disposition of shares on the exercise date.

However, exercise timing should be associated with different stock price patterns depending on the executives' exercise strategy. I consider two basic exercise strategies, classified by the executives' stock disposition decisions on the exercise day. The first exercise strategy is exercise in order to reduce exposure to the firm through disposition of the underlying shares. I consider two different subsamples of option exercises where executives dispose of shares on the exercise day: those accompanied by same day sale of shares in either a market or private transaction (Market or Private Sale Subsample),[5] and those accompanied by disposition of shares to the company only (Company Disposition Subsample). The second exercise strategy is exercising options in order to mark the beginning date for the one year holding period for long-term capital gains treatment under the exercise-and-hold strategy. I assume this strategy is represented by exercises not associated with a same-day disposition of shares (No Disposition Subsample).

3.1.a *Exercises Accompanied by Same Day Share Disposition*

The Market or Private Sale Subsample includes all exercises where the executive also reports a sale of shares to a third party on the day of exercise. Sales to a third party can be through either a private transaction, or through a market transaction. The SEC forms do not differentiate between these two methods of sale. The Company Disposition Only subsample includes exercises accompanied by a same day dispositions of stock to the company as allowed under Rule 16b-3(d)(1). Dispositions in connection with a merger are excluded, however. Examples include (i) dispositions of shares to satisfy the exercise price and required tax withholdings associated with exercise, (ii) cash settlement of options, so long as the shares are redeemed by the company and not sold through a broker and (iii) sale of shares (acquired through exercise or otherwise) to the company.

I hypothesize that exercise timing, either information timing or backdating, in the Market or Private Sale Subsample and the Disposition to Company Only Subsample will be associated with subsequent stock price decline, such that executives who time option exercises realize a

[5] Note that exercises in the Market or Private Sale Subsample may also be accompanied by disposition of shares to the company.

relatively high value upon sale of the underlying shares. It these options are backdated, they are also more likely to be associated with a stock price peak on the exercise date – otherwise, the executive could have benefited by backdating the exercise to a day when the price was more favorable. Note, however, that timed exercises may be associated with stock price peak in the absence of backdating, as early exercise is more likely when there has been a run up in stock price (Heath, Huddart and Lang (1999), Armstrong, Jagolinzer and Larcker (2006)). Alternatively, it is not impossible (although it seems very risky) that executives would time the disclosure of separate pieces of information, releasing good news first followed by bad news, to manufacture this type of price pattern.

3.1.b *Exercises without Same Day Disposition of Shares: the Exercise-and-Hold Strategy*

The exercise-and-hold strategy is an attempt to minimize the total tax burden associated with option exercise and share disposition. In the U.S. during this period, exercise of a non-qualified stock option (NQO) resulted in a taxable gain for the executive upon exercise equal to the difference between the market value of the underlying share and the exercise price. This amount was taxable in the year of exercise at ordinary income tax rates, and the tax must generally be withheld at the time of exercise. Subsequent increases in share value that are realized upon eventual sale of the shares are subject to taxation at capital gains rates if the shares are held for at least a year. Incentive Stock Options (ISO) have been treated differently for tax purposes. Under the standard individual tax framework, ISO exercise did not automatically trigger a taxable event, and all gain to the executive is taxed at capital gains rates upon eventual disposition of the shares if the shares are held for a year after exercise.[6] However, if the executive owes taxes in the exercise year under the alternative minimum tax regime, ISO exercises are treated similarly to NQO exercises for determining the tax owed. Executives therefore have incentive to engage in the exercise-and-hold strategy even with ISOs if they believe they will owe taxes under the AMT regime.

The profitability of the exercise-and-hold strategy depends, in part, on the ratio of the capital gains tax rate to the personal income tax rate. The highest marginal personal income tax rate was 39.6 percent from 1996 through 2000, when it was gradually decreased to 35 percent as

[6] A "qualified disposition" of ISO shares, which qualifies for the favorable tax treatment described, requires that the executive hold the shares for 2 years from grant, and one year from exercise. A "disqualifying disposition" in violation of these requirements results in tax treatment similar to that for non-qualified options.

of 2005. Long term capital gains rates over this same period were much lower, dropping from 28 percent in 1996 to 20 percent from 1997 to 2002, and even further to 15 percent from 2003 forward. The ratio of capital gains to personal income rates ranged from 0.71 in 1996 to 0.51 in 1997-2001, to 0.52 in 2002, to 0.43 percent in 2003-05.[7] Therefore, if they could exercise options at relatively low prices and defer the realization of stock appreciation into the future to be taxed at capital gains rates, executives stood to greatly reduce the magnitude of taxes owed.

Investment strategies have been proposed that arguably dominate the exercise-and-hold strategy. Carpenter and Remmers (2001) prove analytically that investing the exercise price in additional shares instead of exercising, then selling all of the shares at a later exercise date, is a dominant strategy in states of the world where the holding period stock return is positive. McDonald (2003) demonstrates that the Carpenter and Remmers (2001) strategy yields returns inferior to the exercise-and-hold strategy when the holding period return is negative, but that a strategy of investing in the underlying stock and risk free bonds is dominant regardless of the holding period return on the underlying stock.[8] McDonald (2003) also shows, however, that the exercise-and-hold strategy may remain optimal if the executive anticipates an increase in ordinary income taxes, either as a result of tax law changes or an increase in their marginal tax bracket. The prior research has implicitly assumed that the price at which executives can purchase additional shares is equal to the price that can be attributed to shares on the exercise day for tax purposes. It has ignored the possibility that executives may be able to choose, ex post, exercise dates when the stock prices was lower. The exercise-and-hold strategy is likely to be optimal in many instances if the exercise date can be backdated to coincide with values lower than that at which executives can acquire additional shares.

I expect timing of exercises in the No Disposition Subsample to be associated with positive post-exercise returns, as executives employing the exercise-and-hold strategy will benefit from exercising at a low price and selling later at a high price. If these exercises are timed through backdating, they could also be preceded by negative returns, resulting in exercise at a trough, as the most profitable exercise date is the one with the lowest price. It is plausible

[7] In contrast, over the early-1990s period studied by Ofek and Yermack (2001), the tax rate ratio ranged from 0.90 in 1992, to 0.71 from 1993 to 1995. The smaller potential tax savings during the earlier period may partially explain why researchers focusing on this time period did not find evidence of the exercise-and-hold strategy.

[8] Specifically, McDonald (2003) demonstrates that the optimal strategy consists of investing $(t-g)/(1-g)$ in shares of the underlying, and $K+t(S-K)-(t-g)/(1-g)S$ in bonds regardless of the realized return on the underlying stock, where K is the strike price, t is the ordinary income tax rate, g is the capital gains tax rate, and S is the stock price.

that exercise at a trough could result from information timing only, with no ex post backdating, as executives may be more likely to engage in the buy-and-hold strategy when they possess positive private information and they also believe the stock is undervalued. And as mentioned above, it is also possible that executives manage the flow of information to manufacture price patterns, in this case releasing bad news first followed by good news.

3.2 *Option Exercise Timing: Ex Ante Information or Ex Post Backdating?*

Although perhaps risky from a legal perspective, information timing of exercises in all three Subsamples should not be difficult to accomplish, with the possible constraint of blackout periods around earnings or news announcements.[9]

Backdating may be more difficult to implement. Exercises not accompanied by sale of shares to a third party are arguably easiest to backdate. Both the No Disposition and Company Disposition Only Subsamples satisfy this condition. Exercises in the No Disposition Subsample are perhaps most likely to be backdated since this would impose the smallest relative cost on the company. If the option is a non-qualified option, a tax deduction accrues to the company on the exercise day equal to the difference between the market price and exercise price. If the exercise is backdated to coincide with a low market price, a portion of this deduction is forfeited (or, alternatively, transferred to the executive). However, there was no tax implication to the company of an ISO exercise during this period, so the company does not suffer a direct loss from backdated exercise of an ISO.

Backdating of exercises in the Company Disposition Only Subsample is perhaps the next likeliest scenario. Backdating of these exercises may be more costly to the company as it effectively causes the company to "purchase" shares from the executive at inflated prices. Companies may be more likely to allow backdating of ISOs in this way because the disposition of shares amounts to a disqualifying disposition, causing the options to be treated as non-qualified options for tax purposes, and therefore generating a tax deduction for the company that would not have existed otherwise.

Exercises in the Market or Private Sale Subsample are arguably least likely to be backdated. Backdating of exercise and sale to coincide with a high price would require a

[9] See Bettis, Coles and Lemmon (1998) for an examination of corporate policies restricting trade by insiders.

counterparty willing to purchase shares at above current market value. However, I do not rule out this possibility. Backdating could be facilitated either through sham transactions or with the cooperation of private counterparties, such as investment banks for example, that may be willing to accommodate executives to service a business relationship with the company.[10] Unfortunately, the data does not allow differentiation between market and private sales, so this hypothesis cannot be pursued with greater precision.

3.4 *Other Variables and Hypotheses*

My central analysis is an event study of abnormal and total returns around executive option exercises in the three Subsamples. I also identify factors associated with return patterns around executive option exercises using additional event study and regression analyses. The following variables are included in these analyses.

Number of Options Exercised. If executives time option exercises based on private information, they are likely to exercise more options when the potential for gain is greater. I include the log of options exercised as an independent variable in regression analysis, and expect to find a positive relationship between this variable and the magnitude and likelihood of price patterns favorable to the executive.

Company Size. Seyhun (1986, 1998) and Lakonishok and Lee (2001) find the information content of insider exercises is negatively related to the size of the company. Carpenter and Remmers (2001) find that insider option exercises appear to be informed only at small companies, and Heron and Lie (2006b) find that option grant backdating is more prevalent in companies with a market capitalization under $1 billion. I include the log of company size as an independent variable in regression analysis to determine whether the timing of option exercises is more prevalent at smaller firms.

Technology Industry. Many high profile instances of option grant backdating are allegedly associated with firms in the technology industry. I include a dummy variable

[10] A variant of this strategy would be to rescind a private transaction ex post before it was reported to the S.E.C.

indicating whether a firm is in the technology industry to determine whether timing of option exercises is also associated with the technology industry.

CEO or CFO. The CEO and CFO of a company are most likely to possess inside information regarding a companies' future prospects, and may gain the most from information timing. Carpenter and Remmers (2001) find evidence of informed exercise only by CEOs. I include a dummy variable that captures the relationship of price patterns to whether the executive is CEO or CFO.

CEO/Chairman of Board. The decision whether a CEO should also be Chairman of the Board of Directors likely requires balancing of costs and benefits, as described by Brickley, Coles and Jarrell (1997). As they point out, advantages of a joint appointment may include reduction of the agency costs and information costs associated with an independent Chairman, and may also represent an important component of CEO succession. However, joint CEO/Chairmanship may also reflect greater CEO control over the board. If so, I expect that executives in firms with a joint CEO/Chairman may be more likely to backdate option exercises.

Concurrent Exercises by Multiple Executives. Without information timing or backdating, option exercises should reflect independent decisions of individual executives (except, of course, if executives hold options that expire on the same date, but this is controlled for with the *Expiration Month* dummy variable). If multiple executives at the same firm time exercises around release of information or backdate exercises to coincide with favorable prices, it is more likely that they will occur on the same day. I include a dummy variable in regression analysis that indicates exercises by multiple executives on the same day to test whether these exercises are associated with price patterns more favorable to executives.

Incentive Stock Options. As discussed above, companies may be more likely to allow executives to time the exercise of ISOs because of the more favorable tax consequences to the company regardless of whether the executive disposes of shares immediately. I expect that this will lead to more favorable stock price patterns around ISO exercises, and I include an ISO dummy variable in regressions to capture this effect.

Market Price/Exercise Price. Options lose their option value as they become more in-the-money. Armstrong, Jagolinzer and Larker (2006) find that the distance options are in-the-money is inversely related to the timing of exercise. I control for the ratio of market price/strike price in regression analysis.

Expiration Month. Executives have more freedom to time the exercise of options that are further from expiration. When options are close to expiration, the executive has little discretion regarding the timing of exercise based on information; although he may still time the flow of information around exercise, similar to the timing of information around scheduled option grants identified by Aboody and Kasznik (2000). Exercise at expiration would also be inconsistent with backdating. I include in regression analysis a dummy variable indicating that the exercise occurred in the expiration month, and hypothesize that favorable price patterns around exercises will be minimal during this period.

Dividend Record Date. Option holders may rationally exercise options early to capture a dividend payment. I include a dummy variable in regression analysis indicating whether the exercise date is within a month of the dividend record date to capture this effect.

4. Data and Methodology

4.1 *Data*

The Thompson Financial Network Insider Filing Data database ("Insiders Database") provides information on insider transactions compiled from Forms 3, 4, 5 and 144 filed with the SEC from 1996 through 2005.[11] The sample for this study includes option exercises by individuals indicating their highest title as either Chairman of the Board (CB), Chief Executive Officer (CEO), Chief Operating Officer (CO), President (P), General Counsel (GC) or Chief Financial Officer (CFO). Option exercises are only included if they are reported as Employee Stock Options, Incentive Stock Options or Non-Qualified Stock Options. The sample period begins on August 15, 1996, when the SEC first began requiring insiders to report transactions by

[11] Insiders are required to file Form 3 to report initial beneficial ownership of shares, Form 4 to report changes in beneficial holdings, Form 5 to report annual changes in beneficial ownership and Form 144 to declare intention to sell restricted shares.

the 10th calendar day of the following month, and ends September 30, 2005, to ensure that 3 months of post-exercise return data are available through CRSP. To minimize issues associated with a lack of independence of observations, I count exercises by multiple executives at the same company on the same day and with the same reporting lag as a single observation.

I match option exercises to stock dispositions reported on Table 1 of the SEC reporting forms. Stock dispositions are included in this study if the executive reported a transaction code indicating an open market or private sale (code 'S'), payment of option exercise price or tax liability by delivering or withholding securities (code 'F'), or disposition to the company pursuant to Rule 16b-3(e) (code 'D'), which allows for transactions with the company to be exempted from the short-swing profit rules.

I compare the transaction prices reported by executives for stock transactions to prices reported through CRSP. 1318 exercises (856 from pre-Sarbanes-Oxley period and 462 from post-Sarbanes-Oxley period) are excluded from the overall sample because they are accompanied by market or private stock sales reported at prices outside of the exercise day price range reported in CRSP. 829 exercises accompanied by disposition of shares to the company are excluded because the transaction price reported was both outside the exercise date price range from CRSP and did not match the closing price on the prior day. For 74 observations accompanied by disposition of shares to the company, the transaction date was changed to the day before the reported transaction date, because the reported transaction price matched the closing price on the prior day and was outside the price range on the reported exercise date. The final data requirements are that the company's market value is available through Compustat, and that stock price data is available on CRSP for the window (-20,20) trading days around the exercise date. The final sample consists of 36,956 exercises by 8,141 executives at 3,078 companies.

4.2 *Summary Statistics*

The distribution of observations across the Subsamples on an annual basis is reported in Table 1. In the pre-Sarbanes-Oxley period, 12,433 (59.49 percent) are in the Market or Private Sale Subsample, 2,491 (11.92 percent) are in the Disposition to Company Subsample, and 5,975 (28.59 percent) are in the No Disposition Subsample. The proportions of exercises in both the

Company Disposition Only and the No Disposition Subsamples generally decrease over time in the pre-Sarbanes-Oxley period.

The proportion of exercises in these two Subsamples continues to decline in the post-Sarbanes-Oxley period. After Sarbanes-Oxley, 12,141 exercises (75.61 percent) are in the Market or Private Transaction Subsample, 1,298 (8.08 percent) are in the Company Transaction Subsample, and 2,618 (16.30 percent) are in the No Disposition Subsample. The shift toward the Market or Private Sale Subsample over time is consistent with the opportunity to time or backdate exercises in the other two Subsamples diminishing after implementation of the Sarbanes-Oxley Act.

Additional summary statistics are reported in Table 2. Panel A reports that a total of 3,078 companies are represented in the overall sample, of which 2,160 are represented in the Market or Private Sale Subsample, 753 are represented in the Disposition to Company Only Subsample and 2,165 are represented in the No Disposition Subsample. ISO exercises represent at least some portion of 13 percent of observations. Consistent with executives engaging in the exercise-and-hold strategy more often when the exercise ISOs, they represent a larger percentage of the No Disposition Subsample (25 percent) than either the Market or Private Sale (9 percent) or Company Disposition Only Subsamples (13 percent). The largest proportion of option exercises are associated with CEOs, who account for approximately 37 percent of exercises in each Subsample, followed by CFOs, who account for approximately 25 percent of each exercise Subsample. Consistent with the prevalence of the exercise-and-hold strategy, 25 percent of observations in the No Disposition Subsample include exercise of ISOs, and only 8.6 percent of exercises in the Market or Private Sale Subsample reflect ISO exercises.

Panel B of Table 2 demonstrates that the average number of options an executive exercised is similar across Subsamples. Whether they dispose of the shares or not, the mean number of options exercises is approximately 30,000 options, and the median is approximately 7,500 options. Interestingly, when engaging in a same-day disposition of shares, on average executives dispose of a large number of shares on the exercise date. For the Market or Private Sale Subsample, executives disposed of an average of 4.3 times (median of 1 times) as many shares as were acquired through exercise, almost all of which are disposed of through a sale. Even in the Disposition to Company Subsample executives dispose of an average of 2.8 times (median of .61 times) as many shares as were acquired. The skew towards high volume of stock

disposition upon exercise for these two Subsamples could easily mask the large percentage of exercises that fall in the No Disposition Subsample if a researcher focuses the average level of stock disposition across all exercises. Finally, the last line in Panel B indicates that exercises in the Company Disposition Only Subsample are associated with larger companies (mean market cap = $13.5M) whereas exercises in the No Disposition subsample are associated with smaller companies (mean market cap = $4.7M).

4.3 *Methodology*

The basic methodology consists of analyses of cumulative abnormal daily returns (daily CARs) and total daily returns over short-run windows around Subsamples of executive option exercises. A firm's daily abnormal return is calculated as the daily total return minus the return on the appropriate CRSP size decile portfolio.[12] To minimize issues related to the independence of observations, I treat multiple exercises by executives at the same company on the same day as one observation if they are reported to the SEC on the same day. Multi-day CARs are calculated by summing daily abnormal returns over the period. I focus on returns from twenty trading days before to twenty trading days after exercises (-20,20) as the benefits to backdating should be concentrated in this window. Standardized cross-sectional significance tests are reported consistent with Boehmer, Musumeci and Poulsen (1991). T-statistics for total returns reflect deviations from zero return.

Results from ordinary least squares (OLS) and probit regressions are presented in subsequent cross-sectional analysis. Again, option exercises are aggregated across executives on a daily basis for regression analysis, and t-statistics from OLS regressions are adjusted for heteroskedasticity consistent with White (1985). In regression analysis in the pre-Sarbanes-Oxley period, I focus on returns in the window (-20,20) around exercise, and in the post-Sarbanes-Oxley period I focus on returns in the window (-5,5) around exercise. McFadden's pseudo-r-squared is reported for probit regressions.

[12] Size-adjusted returns seem to represent the most appropriate abnormal return model. The market model or four-factor model with parameters estimated prior to exercise are subject to downward bias because option exercises typically follow large run-ups in stock price. Adjustment relative to a value-weighted market portfolio biases abnormal returns upward because of the greater prevalence of small firms in the sample and the higher average returns to small firms. Similarly, adjustment relative to the equal-weighted market portfolio biases abnormal returns downward.

5. Analysis and Results

5.1 *Event Study Analysis for the Full Sample Period*

This section presents results from event study analysis of abnormal and total returns around executive stock option exercises. I perform separate event studies for the entire sample and each Subsample over the full period, August 15, 1996 to September 30, 2005 and report the results in Table 3 and Figure 1. As reported in Column 1 of Panel A, executive option exercises in aggregate are associated with a large abnormal stock price run-up before exercise and small positive abnormal returns after exercise. Column 1 of Panel B reports that total returns are similarly large before exercise and continue to be positive after exercise. If only examined in aggregate, it appears executives on average exercise options when their incentive to diversify their portfolio is high but that their exercises are not motivated by pending negative performance.

However, when analyzing the three Subsamples separately, it becomes apparent that the aggregate picture clouds the economic reality. As demonstrated in Columns 2 – 4 of Table 3, returns around executive option exercises are consistent with the hypothesized exercise strategies. Most interesting are the results for the No Disposition Subsample reported in Column 4 of Table 3 and demonstrated in Figure 2. Contrary to results for the full sample, exercises not accompanied by disposition of shares are associated with a clear stock price trough, consistent with the exercise-and-hold strategy and exercise timing. No Disposition exercises follow flat and then abruptly negative returns ((-10,0) CAR = -1.5%; (-10,0) total return = -1.21%) that continue through the day of exercise. Average returns reverse immediately upon exercise and are abnormally large for the full 20 days following exercises ((1,20) CAR = 2.95%; (1,20) total return = 4.16%). As depicted in Figure 2 Panel B, on average the price on the day of exercise for the No Disposition Subsample is the lowest price from approximately the previous month ((-20,0) tot. ret. = -0.39), indicating that on average there is no more advantageous exercise day during the month prior to exercise or the month after exercise. These results strongly suggest executives engage in the exercise-and-hold strategy when they exercise options and do not dispose of the shares on the exercise date. Given the striking stock price pattern around exercise, these results are also highly suggestive of some type of exercise timing. Indeed, backdating is difficult to rule out as it seems unlikely these price patterns would be generated through information timing alone.

After separating out the No Disposition Subsample, patterns suggestive of exercise timing in the other Subsamples become apparent as well. Exercises in both the Market or Private Sale and Company Disposition Only Subsamples are preceded by large positive abnormal returns, and are followed by significant negative abnormal returns. Exercises in both Subsamples also sit at the apex of the abnormal return peak: abnormal returns on each of the 6 trading days preceding and including the exercise day are positive and significant at the 1 percent level, and returns on each of the 5 days following these exercises are either insignificantly different from zero or significantly negative, leading to significant negative 5 day returns following exercises in both Subsamples. Abnormal returns following exercises in both Subsamples continue to decline over the full 20 days. These results suggest that executives successfully time exercises accompanied by same-day stock dispositions, whether the disposition is to a third parties or back to the company.

5.2 *Before and After the Sarbanes-Oxley Act*

The next issue is whether evidence of option exercise timing is weaker after the SEC enacted the 2 business day reporting requirement on August 29, 2002. As mentioned above, before that time executives had until the 10th calendar day of the following month to report stock and derivative transactions to the SEC. If the favorable timing of option exercises persists in the post-Sarbanes-Oxley period it is unlikely much of this advantage is generated through exercise backdating due to the short average reporting lags. However, if favorable exercise patterns do not persist after the reporting change, then this would suggest favorable exercise dates were selected through backdating in the pre-Sarbanes-Oxley period.

Table 4 presents results from event study analyses before and after enactment of the Sarbanes-Oxley Act. Pre- and post-Sarbanes-Oxley total returns (CARs) are reported for each Subsample in columns 1 and 2 (columns 3 and 4) of Panels A, B and C, and t-statistics assessing the significance of the differences across Subsamples are reported in columns 5 and 6. For both the Market or Private Sale and Company Disposition Only Subsamples, both total and abnormal returns leading up to exercises in the pre-Sarbanes-Oxley period are larger than those leading up to exercises in the post-Sarbanes-Oxley period (although the longer-term run-up in total returns is not significant for the Company Disposition Only Subsample). For both Subsamples the longer-term total returns following exercises are more negative in the pre-Sarbanes-Oxley

period, at the 1 percent significance level, consistent with more fortunate exercises in the pre-Sarbanes-Oxley period.

Although total returns following exercises in these two Subsamples are higher in the post-Sarbanes-Oxley period, abnormal returns are not. In only one instance is the abnormal return difference significant, the (1,10) horizon for the Market or Private Sale Subsample, and it demonstrates more negative abnormal returns in the post-Sarbanes-Oxley period. Taken together, these results are somewhat ambiguous. The fact that exercises in these Subsamples follow smaller total return run-ups and are followed by more positive total returns in the post-Sarbanes-Oxley period is suggestive of a decline in exercise timing ability. Perhaps most salient is the fact that total returns following exercises in both of these Subsamples in the pre-Sarbanes-Oxley period are, with one weak exception, generally not statistically different than zero, while returns following exercises in the post-Sarbanes-Oxley period are reliably greater than zero at all but the (1,5) horizon following exercises in the Market or Private Sale Subsample.

Another interesting comparison, presented in Panel D, is that of return patterns around exercises in the Market or Private Sale Subsample to those around exercises in the Company Disposition Only Subsample. The difference in CARs across these two subsamples over both the (1,5) and (1,10) horizon following exercises are significant at the 1 percent level in the pre-Sarbanes-Oxley period, and are insignificant in the post-Sarbanes-Oxley period. This suggests that some executives benefited from backdating exercises in the Company Disposition Only Subsample before Sarbanes-Oxley, and that the incremental benefit over information timing is mostly eradicated after Sarbanes-Oxley for exercises in this Subsample.

Return patterns around exercises in the No Disposition Subsample demonstrate the most pronounced post-Sarbanes-Oxley reduction. In the pre-Sarbanes-Oxley period, these exercises are preceded by (-10,0) total returns of -1.93 percent and followed by (1,20) day total returns of 4.72 percent. In contrast, exercises in the post-Sarbanes-Oxley No Disposition Subsample are preceded by (-10,0) day total returns of .43 percent, and followed by (1,20) day returns of 2.87 percent. The pre- and post-Sarbanes-Oxley total and abnormal returns are significantly different at the 1 percent level across each horizon considered. This result strongly suggests that the favorable price patterns around executive option exercises in the pre-Sarbanes-Oxley period resulted in great part from exercise backdating exercises to dates with low stock prices.

5.3 *The Relation Between Exercise Timing and The Volume of Options Exercised*

If executives time option exercises, I expect that they would exercise more options when the gains from timing are greatest. I use event study analysis to evaluate whether price patterns around exercise are related to the volume of options exercised. I divide the pre- and post-Sarbanes-Oxley Subsamples into four volume groups -- exercises of less 1,000 or less options; exercises of 1,001 to 10,000 options; exercises of 10,001 to 100,000 options; and exercise of 100,001 or more options – and perform event study analysis on each group separately.

Results for the pre-Sarbanes-Oxley period volume groups are presented in Figure 2.[13] Not surprisingly, in the pre-Sarbanes-Oxley Market or Private Sale Subsample executives exercise more options after larger run-ups in stock prices. Exercises in each volume category are followed by similar price patterns, although returns over the period (1,20) are more negative following the largest and smallest exercises than those in the middle volume categories. Returns following the 884 exercises in the largest volume category are followed by (1,20) day total returns of -1.03 percent, which are significantly different from zero at the 10 percent confidence level.

In the post-Sarbanes-Oxley period, exercises in each volume group for the Market or Private Sale Subsample are followed by positive returns. With the exception of the smallest volume category, (1,20) day returns following exercises in all other volume categories in the post-Sarbanes-Oxley period are approximately 1 percent and are significantly greater than zero.

Return patterns around the largest exercises in the pre-Sarbanes-Oxley Company Disposition Only Subsample are also somewhat more favorable than those around exercises in the other volume categories. Large exercises occur after a greater run-up in stock price and are followed by a larger stock price decline The (-10,0) run-up for the 312 exercises in the largest volume category is significantly larger than that preceding exercises in the other volume categories at the 5 percent level, and the (1,5) decline is significantly larger at the 10 percent level. An odd result from the Company Disposition Only Subsample in the post-Sarbanes-Oxley period is that returns following exercises in the smallest volume category are negative and are statistically lower than returns following larger volume exercises. The difference in returns is significant at the 10 percent level over both the (1,5) and (1,10) horizons following exercise. However, the smallest volume decile only represents 38 out of 1,298 observations.

[13] I have not reported tables for option volume groups based on volume, but they are available on request.

The relation of option volume to return patterns in the pre-Sarbanes-Oxley period is most pronounced for the No Disposition Subsample. These results are depicted in Figure 3 Panel C. Return patterns favorable to executives are much stronger around the 522 exercises of 100,001 or more options than for the other three volume groups, demonstrating a severe return trough. Exercises in this group are preceded by (-20,0) day total returns of -5.96%, of which -3.91% is concentrated in the six days before and including the exercise date. They are followed by sizeable positive returns. Total returns over the (1,5) day total returns are 5.65% and (1,20) total returns are 9.27% on average. Similar price patterns are evident around exercises in each of the other volume groups, and are decreasing in the volume of options exercised. The large magnitude of return reversal associated with large exercises in this Subsample as highly suggestive of exercise timing in the pre-Sarbanes-Oxley period.

Return patterns around volume groups of exercises in the post-Sarbanes-Oxley period are illustrated in Figure 3. Consistent with the full Subsample analysis, favorable return patterns around all volume groups in each Subsample are greatly diminished from the pre-Sarbanes-Oxley period. The one interesting result from this analysis is that (1,20) day returns following exercises in the No Disposition Subsample are monotonically increasing across the volume groups. Returns following exercises in each volume group are larger than those following exercises in the next smallest volume at the 5 percent level or greater. This result is consistent with information timing of exercises in this Subsample in the post-Sarbanes-Oxley period, such that executives exercise more options when they anticipate a greater benefit.

In the Market or Private Sale Subsample, executives exercise more options following larger stock price run-ups, but returns following exercises in the different volume groups are not significantly different. Returns around exercises in the volume groups for the Company Disposition Only Subsample are not significantly different at any horizon before or after exercises.

5.4 *Stock Price on the Exercise Date Relative to the Monthly Price Range*

Another method for examining exercise timing is to compare the stock price on the day of exercise to the price on days immediately surrounding the exercise date. A variant of this methodology was introduced in the context of grant backdating by Bebchuk, Grinstein and Peyer

(2006), who rank the exercise date relative to other days in the same calendar month based on the relative stock price. A similar methodology should be even more effective for identifying exercise backdating given the fact that before the Sarbanes-Oxley Act executives were supposed to report exercises on a monthly basis. Indeed, it seems executives at Symbol Technologies maintained a program of cherry-picking exercise dates ex post to coincide with low prices during the calendar month.[14]

I employ a slightly different methodology than Bebchuk, Grinstein and Peyer (2006). I analyze exercises based on the ratio of the exercise day stock price to the stock price range during the calendar month. For example, if a stock price ranges from $20 to $30 in a calendar month, then exercise dates where the stock closed at $20, $25 and $30 would be ranked in the 0^{th}, 50^{th} and 100^{th} percentile, respectively. One advantage of this methodology is that it reflects executives' advantage from exercising options on days when the stock price was very close to the extreme price for the month, but when the closing prices on multiple days were also close to that value.

Figures 4 and 5 present histograms of exercise date stock prices relative to the monthly stock price range for each Subsample in the pre- and post-Sarbanes-Oxley periods, respectively. Exercises are divided across 22 bins: the lowest price of the month, the highest price of the month, and 5 percent increments across the monthly price range. To the extent that executives exercise options and dispose of shares following large run-ups in stock price, the distributions for the Market or Private Sale and Company Disposition Only Subsamples should be naturally skewed toward the high end of the monthly stock price range. This is generally the case. However, there is a concentration of exercises on the highest price of the month for these Subsamples in both the pre- and post-Sarbanes-Oxley periods, consistent with some executives' timing these exercises.

Table 5 compares the percent of exercises that occurred on the most favorable day of the month in the pre- and post-Sarbanes-Oxley periods. Approximately 9 percent of exercises in the Market or Private Sale Subsample occurred on the most favorable day of the month in both periods, suggesting the favorable timing of these exercises is due only to information timing but not backdating. 11.65 percent of exercises in the Company Disposition Only Subsample occurred on the most favorable day in the pre-Sarbanes-Oxley period, compared to 8.94 percent

[14] S.E.C. Litigation Release 18734 (June 3, 2004).

in the post-Sarbanes-Oxley period. The difference, which is significant at the 1 percent level, indicates that exercises in this Subsample were 23 percent less likely to fall on the most favorable day of the month after enactment of the Sarbanes-Oxley Act. In addition, in the pre-Sarbanes-Oxley period, the likelihood of an exercise occurring at the highest price of the month in the Company Disposition Only Subsample is 32 percent greater than the likelihood in the Market or Private Sale Subsample, and significant at the 1 percent level. In the post-Sarbanes-Oxley period these likelihoods are almost precisely the same. These results further suggest the favorable timing of some exercises in the Company-Disposition Only Subsample before the Sarbanes-Oxley Act was a result of exercise backdating.

For the No Disposition Subsample in the pre-Sarbanes-Oxley period, the pattern is reversed, and the largest concentration of exercises falls on the lowest price of the month. Casual observation of the histogram in the post-Sarbanes-Oxley period indicates that the selection of favorable exercise dates is much less prevalent in this period. Table 5 indicates that 11.93 percent of exercises in this Subsample in the pre-Sarbanes-Oxley period occurred at the most favorable day of the month, compared with only 6.88 percent in the post-Sarbanes-Oxley period. The difference, significant at the 1 percent level, indicates that exercises in this Subsample were 42 percent less likely to occur on the most favorable day of the month after enactment of the Sarbanes-Oxley Act. Combined with the event study analysis above, these results provide very strong evidence that many exercises in the No Disposition Subsample were backdated in the pre-Sarbanes-Oxley period. In later analyses, I will consider the factors associated with exercises occurring on the most favorable day of the month, and whether the post-Sarbanes-Oxley period declines in favorable exercise dates are robust when controlling for these factors.

5.5 *Multivariate Analysis of Option Exercise Timing*

In this section, I evaluate the factors associated with exercise timing, and assess whether return patterns are still more favorable to executives in the pre-Sarbanes-Oxley period after controlling for these factors. I perform three regression analyses for each Subsample. The first is a probit regression with a dependent variable indicating when an executive exercised options on the most favorable day of the month (the day with the highest closing price for the Market or Private Sale Subsamples, and the day with the lowest price for the No Disposition Subsample). I

also conduct separate OLS regressions where the dependent variables are returns to the firm over the (-20,0) period and (1,20) period around exercise. In each regression, I include a dummy variable to determine the impact of enactment of the 2 day reporting requirement on exercise timing. I report results based on total returns only, although the results from regressions based on CARs are substantially similar.

The results are presented in Table 6. Columns 1 – 3 report results for the Market or Private Sale Subsample, Columns 4 – 6 report results for the Disposition to Company Only Subsample, and Columns 7 – 9 report results for the No Disposition Subsample. I will focus the discussion on the results related to exercising on the most favorable day of the month, and those related to returns following exercises, as these are the most important indictors of exercise timing.

The most interesting result from these regressions is that each of the post-Sarbanes-Oxley favorable return pattern reductions identified in the univariate analysis hold after controlling for other factors. Other results are also worth noting. First, exercises in the Market or Private Sale Subsample by executives at technology firms (10 percent level), and by CEOs who are also Chairman of the Board (5 percent level) are more likely to occur on the most favorable day in the month. Smaller firms and technology firms are associated with larger negative returns following exercises in this Subsample at the 1 percent level, and CEOs who are also Chairmen of the Board are associated with more negative returns following exercises at the 10 percent level.

Exercises in the Company Disposition Only Subsample are more likely to occur on the most favorable day of the month when the executive is at a smaller company (1 percent level) and at a company in the technology industry (5 percent level). Other variables in the (1,20) day return regression are insignificant with the exception of the result that a larger volume of shares exercised is associated with more favorable returns at the 1 percent level.

With respect to the No Disposition Subsample, option exercises are more likely to occur on the most favorable day of the month when the executive is at a smaller company (1 percent level) and when the company is in the technology industry (1 percent level). ISO exercises are also more likely to occur on the most favorable day of the month (1 percent level), consistent with the hypothesis that companies are more likely to allow backdating of these exercises because the company does not lose a tax deduction as when a NQO is exercised. Finally, exercises by the CEO or CFO are more likely than those by other executives to fall on the most

favorable day of the month (but only at the 10 percent significance level). Returns following exercises in this Subsample are also more favorable to executives at smaller companies (1 percent level) and technology companies (1 percent level). ISOs are also associated with more favorable post-exercise returns (5 percent level). Interestingly, there is strong evidence that returns following days when multiple executives exercise on the same day are much more favorable to executives (1 percent level). This last result suggests that executives at some companies coordinate their backdating activities.

Taken together, these results further substantiate the conclusion that the benefit of exercise timing is greatly diminished after passage of the Sarbanes-Oxley Act. It is also apparent that the benefits of exercise timing are generally more pronounced at smaller companies and companies in the technology industry. Finally, executives exercise more options when the benefits of exercise timing are greatest.

5.6 *Return Patterns and Timing of SEC Reporting in Pre-Sarbanes-Oxley Period*

5.6.a *Discussion of SEC Reporting of Insider Transactions*

To examine whether the favorable return patterns around executive option exercises are related to information timing, backdating or both, the next set of tests focuses on the relation between return patterns around exericises and the timing of SEC reporting. Narayanan and Seyhun (2005) find that longer reporting lags are associated with more favorable return patterns around option grants in the pre-Sarbanes-Oxley period, and Heron and Lie (2006a) find that the length of the reporting lag has a positive relation to the magnitude of favorable returns around option grants in the post-Sarbanes-Oxley period. Both sets of authors argue their results are consistent with option grant backdating because the longer reporting delay allows for a longer look back period for selecting an exercise date.

Table 6 documents the frequencies of exercises in each Subsample that are reported either early, on time, or late. I consider an exercise to be reported "early" if it is reported to the SEC before the final day allowed under the SEC reporting rules at the time, "on time" if it is reported to the SEC on the final allowable day, and "late" if it is reported in violation of SEC reporting requirements. Pre-Sarbanes-Oxley exercises are on time if the SEC receives the Form 4 on the 10^{th} calendar day of the month following exercise, or, if the 10^{th} falls on a weekend or

holiday, then on the next business day. Exercises after Sarbanes-Oxley are classified as on time if they are reported on the second business day following exercise.

Panel A of Table 6 reports the timing of SEC reporting in the pre-Sarbanes-Oxley period. About 40 percent of exercises are reported early in each Subsample. 53 percent of the Market or Private Sale, 48 percent of the Disposition to Company Only, and 42 percent of the No Disposition Subsample are reported on time. This leaves 8, 9 and 17 percent reported after the date required by the SEC, respectively, in the pre-Sarbanes-Oxley period. The much larger percentage of exercises reported late in the No Disposition Subsample is consistent with a higher frequency of exercise backdating when the executive engages in the exercise-and-hold strategy. Late reporting is substantially reduced in the post-Sarbanes-Oxley period, although it remains more prevalent in the No Disposition Subsample. 4, 7 and 9 percent of firms violate the 2 business day reporting requirement in the Market or Private Sale, Disposition to Company Only and No Disposition Subsamples, respectively, in the post-Sarbanes-Oxley period.[15]

Table 7 reports the reporting lag distributions in each Subsample in the pre- and post-Sarbanes-Oxley periods. The mean (median) reporting lag is 20 days for exercises in the Market or Private Sale, and 23 days for exercises in the Disposition to Company Only Subsample, consistent with on time reporting on average. The mean reporting lag of 39 days for the No Disposition Subsample is much longer. Indeed the distribution of reporting lags for the No Disposition Subsample is similar to the other distributions through the 75th percentile, before skewing toward substantially longer lags, indicating backdating of these exercises may be concentrated in a fraction of firms. Fascinatingly, 1 percent of these observations (65 exercises) are reported 514 days or more after exercise!

Reporting lags in the post-Sarbanes-Oxley period are reported in Table 7 Panel B. The mean reporting lag is 2 and 3 business days for the Market or Private Sale and Company Disposition Only Subsamples, respectively. The positive skew in reporting lags for the No Disposition Subsample remains evident: on average exercises are reported with a 5 business day lag, although longer lags are concentrated in 10 percent of exercises.

[15] In contrast, Lie and Heron (2006a) and Narayanan and Seyhun (2006b) find that approximately 25 percent of option grants to top executives were reported late in the post-Sarbanes-Oxley period. It is possible that a smaller number of exercises are backdated in the post-Sarbanes-Oxley period, and then reported late, because executives viewed exercise backdating as more egregious since it likely results in a violation of tax laws.

5.6.b *SEC Reporting and Returns around Option Exercises Before the Sarbanes-Oxley Act*

I conduct cross-sectional regression analysis around pre- and post-Sarbanes-Oxley periods separately to determine whether the favorable return patterns are related to the timing of SEC reporting. I expect that exercises reported *late* are more likely to be backdated, because late reporting allows a longer look back period for selection of the exercise date. The timing of SEC reporting may also be related to ex ante information timing. An executive may report exercises *early* if they are timed to precede release of information, giving the executive a more plausible explanation that the fortuitous timing was not based on prior knowledge of the information.

Table 9 presents regression analysis of the effect of the timing of SEC reporting on return patterns around executive exercises in the pre-Sarbanes-Oxley period. As noted above, exercises by executives at the same company on the same day that are reported to the SEC on the same day are counted as one observation, to maintain independence of observations. Columns (1) and (2) of each panel report results from probit regressions predicting the likelihood that an exercise occurs on the most favorable day of the calendar month. Columns (3) and (4) present results from regressions explaining returns over the period (-20,0) preceding exercise; and columns (5) and (6) present regression results explaining returns over the period (1,20) following exercises. In each regression couplet, the other variables discussed above are not controlled for in the first regression and they are controlled for in the second regression. The independent variables of interest in each regression are separate dummy variables indicating that the exercise was reported early or late. If early reporting is associated with more favorable return patterns around exercises, this would be consistent with information timing; and if late reporting is associated with more favorable return patterns, this would be consistent with backdating. Figure 6 presents charts of return patterns around exercises in the pre-Sarbanes-Oxley period.

Results of regressions analyzing the Market or Private Sale Subsample, reported in Table 9 Panel A, are consistent with information timing but not backdating of exercises in this Subsample. Exercises reported early are associated with both lower pre-exercise returns and lower post-exercise returns (at the 5 percent level or better). Both of these results is consistent with early exercise to precede the release of negative information. Post-exercise returns are lower because of the subsequent release of information, and pre-exercise returns could be lower because these exercises are not driven solely by diversification needs following stock price run-up. The fact that exercises reported either on time or late follow larger price run-ups likely also

explains why exercises reported early are not more likely to occur on the most favorable day of the month, because of the naturally high price associated with exercises following a price run-up.

The results for the Disposition to Company Only Subsample are reported in Table 9 Panel B. Early reporting of exercises in this Subsample are associated not only with more favorable post-exercise returns, but also with a greater likelihood of occurring on the most favorable day of the month (all at the 5 percent level). The greater likelihood of falling on the most favorable day of the month is not as confounded by large pre-exercise run ups preceding exercises in this Subsample. There is also some evidence these exercises are backdated. When controlling for other factors, post-exercise returns are more favorable when the exercise is reported late, with statistical significance close to the 5 percent level. The value of coefficients on lat reporting from regressions predicting exercise on the most favorable day of the month are also consistent with this conclusion, but they fall slightly outside conventional confidence intervals.

Again, the results for the No Disposition Subsample, reported in Table 9 Panel C are the strongest. Returns following exercises reported early and late are much more favorable than exercises reported on time, at the 5 and 1 percent significance level, respectively. These results most strongly suggest that some executives time exercises not associated with share disposition relative to private information, and others backdate these exercises to coincide with favorable prices. Exercises reported early are also preceded by much larger negative returns, although exercises reported late are not. The meaning of this set of results is ambiguous. One plausible interpretation is that return patterns around exercises reported early are manufactured through price manipulation downward before exercise, and back upward following exercise. Exercises reported early or late are no more likely to fall on the most favorable day of the calendar month. This result is not unexpected given that this measure for capturing exercise backdating is most likely to identify backdating where the exercises are reported on time, as in the case of Mercury Interactive.

These results support a conclusion that in the pre-Sarbanes-Oxley period exercises associated with sale of shares to a third party were often timed relative to private information, but that they were not backdated. Exercises associated only with disposition of shares to the company or where the executive held all acquired shares appear to have at times been timed

relative to private information, and at other times backdated to take advantage of past price patterns favorable to executives.

5.6.c *SEC Reporting and Returns around Option Exercises After the Sarbanes-Oxley Act*

As discussed above, the evidence of exercise timing is greatly reduced after the 2 business day reporting requirement was implemented under the Sarbanes-Oxley Act. Heron and Lie (2006a) and Narayanan and Seyhun (2006b) make the same determination with respect to option grants, but they also find return patterns suggestive of backdating persist around grants reported late in the post-Sarbanes-Oxley period. I perform regression analysis to determine whether similar results hold for option exercises in the post-Sarbanes-Oxley period. It is important to consider, however, that option exercises are not reported late in the post-Sarbanes-Oxley period as often as option grants, and this may reflect greater awareness by executives of the potentially more severe adverse legal consequences associated with exercise backdating. Figure 7 provides charts of return patterns around exercises in the post-Sarbanes-Oxley period.

The regression analysis is focused first on the likelihood of exercising on the most favorable day of the month. The second part of this analysis focuses on total returns in the windows (-5,0) and (1,5) because the relevant reporting horizon in the post-Sarbanes-Oxley period 2 business days. The early reporting group includes observations reported on the exercise date or the following business day, the on time reporting group includes exercises reported on the second business day after exercise and the late reporting group includes exercises reported three or more days after exercise. Any favorable price patterns associated with SEC reporting lags in the post-Sarbanes-Oxley period should be related to backdating but not information timing because there should not be substantial benefit from reporting early to precede information release when reporting is required by the 2nd business day.

The results of regression analyses are reported in Table 10. There are very few interesting results from this analysis, and the reasonable conclusion is that for the most part exercise backdating is almost completely eliminated in the post-Sarbanes-Oxley period. The only significant result from the analysis of exercises in the Market or Private Sale Subsample, reported in Panel A, is that exercises reported early are followed by returns that are significantly higher than those following exercises reported on time, at the 5 percent confidence level. Given the positive return associated with exercises in this Subsample that are reported late (although

this result is not significant), this would seem to indicate that exercises reported exactly 2 business days after exercise are most favorable for executives. One way of interpreting this result would be if executives have some ability to rescind these exercises and dispositions, for at least a couple of days when the stock price continues to increase after exercise. The alternative interpretation that this reflects backdating of these exercises is not consistent with results from other empirical tests discussed earlier.

The only statistically-significant result from tests of the post-Sarbanes-Oxley Company Disposition Only Subsample, reported in Panel B, is that exercises reported early are less likely to fall on the most favorable day of the month (1 percent significance level). Also, although not significant at conventional levels, the sign and magnitude of the coefficients from regressions analyzing returns following exercise are consistent with more favorable returns being associated with later reporting. These results lend only very weak support of a continued benefit from backdating of exercises where shares are disposed of to the company only in the post-Sarbanes-Oxley period.

The post-Sarbanes-Oxley results for the No Disposition Subsample, reported in Panel C, are largely inconclusive. No coefficient on reporting lag variables is significant at conventional levels in any specification, indicating that if exercises associated with the exercise-and-hold strategy are timed in the post-Sarbanes-Oxley period, it is unlikely to be through backdating.

6. Conclusion

When examined in aggregate, the evidence that executives time the exercise of stock options is not particularly strong. However, when exercises are separated into subsamples based on executives' stock disposition decisions on the day of exercise, strong patterns consistent with exercise timing emerge. Exercises not accompanied by a same day disposition of shares are preceded by a sharp decline in stock price, and followed by sharp increases in stock price, such that exercise occurs at a stock price trough. This pattern suggests executives often follow the tax minimization strategy of exercising options and holding the shares for at least a year, and that they time exercise to coincide with low stock values in order to maximize the amount of gains subject to capital gains treatment. Exercises accompanied by same day disposition of shares, either to a third party through a market or private sale or through disposition to the company only, are associated with a stock price peak on the exercise day, consistent with exercise timing

to maximize the value received for the shares upon disposition. By separating these exercises from those associated with the exercise-and-hold strategy, I find evidence that these exercises are timed that is much stronger than that presented by other researchers who analyzed all exercises together.

I also find evidence of exercise backdating when shares acquired through exercise are either held by the executive, or only disposed of to the company. The strongest piece of evidence supporting backdating is that favorable return patterns around exercises are greatly diminished after the August 29, 2002 implementation of the 2 business day SEC reporting rule for insider transactions under the Sarbanes-Oxley Act.

In the pre-Sarbanes-Oxley period, favorable price patterns around option exercises are associated with the timing of SEC reporting in ways consistent with both information timing and backdating. Return patterns around option exercises where the executive sells shares to a third party are more advantageous for executives when reported to the SEC early, suggesting both exercise and reporting are timed to precede release of unfavorable news. Exercises in the subsample accompanied by disposition of shares to the company, and those in the subsample where the executive continues to hold the acquired shares, are associated with more favorable return patterns when they are reported either early or late, consistent with both information timing and backdating of exercise dates. The relationship of return patterns to SEC reporting is strongest around exercises where the executive holds the shares.

These results indicate that the timing of executive stock option exercises was more widespread in the pre-Sarbanes-Oxley period than previously thought. They also strongly suggest that options exercises were backdated, in addition to the previously hypothesized timing of exercise based on private information. Both practices appear to be greatly curtailed after passage of the 2 business day reporting requirement under Sarbanes-Oxley.

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Table 1: Annual frequencies of executive option exercises by stock disposition category

This table presents the number and percentage of options exercises in the total sample and each subsample: (i) exercises accompanied by a same day market or private sale of shares (Market or Private Sale Subsample), (ii) exercises accompanied by a same day disposition of shares to the company (Company Disposition Only Subsample), and (iii) exercises not accompanied by a same day disposition of shares (No Disposition Subsample). For each year, the percent of annual exercises is presented for each subsample; the percent of total in the period (before or after Sarbanes-Oxley Act) is presented for the total option exercise sample.

Panel A: Before Sarbanes - Oxley Act

YEAR	all exercises	Market or Private Sale	Company Disposition Only	No Disposition
1996 (After Aug. 15)				
number	558	281	87	190
percent of annual	2.67%	50.36%	15.59%	34.05%
1997				
number	2,694	1,360	449	885
percent of annual	12.89%	50.48%	16.67%	32.85%
1998				
number	3,005	1,590	406	1,009
percent of annual	14.38%	52.91%	13.51%	33.58%
1999				
number	3,350	1,834	457	1,059
percent of annual	16.03%	54.75%	13.64%	31.61%
2000				
number	4,462	2,762	424	1,276
percent of annual	21.35%	61.90%	9.50%	28.60%
2001				
number	4,069	2,762	378	929
percent of annual	19.47%	67.88%	9.29%	22.83%
2002 (before Aug. 29)				
number	2,761	1,844	290	627
percent of annual	13.21%	66.79%	10.50%	22.71%
TOTAL				
number	**20,899**	**12,433**	**2,491**	**5,975**
percent of total	**100%**	**59.49%**	**11.92%**	**28.59%**

Panel B: After Sarbanes - Oxley Act

YEAR	all exercises	Market or Private Sale	Company Disposition Only	No Disposition
2002 (after Aug. 29)				
number	751	483	76	192
percent of annual	4.68%	64.31%	10.12%	25.57%
2003				
number	4,883	3,593	426	864
percent of annual	30.41%	73.58%	8.72%	17.69%
2004				
number	6,360	4,853	503	1,004
percent of annual	39.61%	76.31%	7.91%	15.79%
2005 (before July 1)				
number	4,063	3,212	293	558
percent of annual	25.30%	79.05%	7.21%	13.73%
TOTAL				
number	**16,057**	**12,141**	**1,298**	**2,618**
percent of total	**100%**	**75.61%**	**8.08%**	**16.30%**

Table 2: Summary statistics of variables associated with executive option exercises

Panel A presents summary statistics on the number of companies, the percent of options exercised in which at least some options were incentive stock options (ISOs), and the percent of exercises in each Subsample associated with each executive title. Option exercises were included in this study if the highest position reported by the option holder was Chief Executive Officer (CEO), Chief Financial Officer (CFO), Chairman of the Board of Directors (Chairman), President, Chief Operating Officer (COO) or General Counsel (GC). Panel B presents summary statistics by exercise regarding the number of options exercised by an executive, the disposition of shares on the same day, how far the options were in the money (defined as the ratio of the stock price on the day of exercise to the reported exercise price), how far the options are from expiration, and the market capitalization of the company.

Panel A: Summary statistics

	Total Sample	Market or Private Sale	Company Disposition Only	No Disposition
Number of Companies	3,078	2,160	753	2,150
Incentive Stock Options (percent of total)	12.77%	8.61%	12.84%	25.20%
Percent of options exercised by position:				
CEO	36.44%	36.02%	37.57%	37.23%
CFO	25.60%	25.71%	22.32%	26.69%
Chairman	6.17%	6.41%	4.59%	6.19%
President	14.50%	13.54%	17.30%	15.99%
COO	5.69%	6.20%	3.40%	5.23%
GC	11.60%	12.12%	14.82%	8.66%

Panel B: Summary statistics of variables

	Market or Private Sale			Company Disposition Only			No Disposition		
	mean	med.	STD	mean	med.	STD	mean	med.	STD
options exercised	27,234	7,500	154,589	34,399	8,000	163,993	29,759	7,348	106,893
shares disposed of immediately									
total (%)	430%	100%	37562%	282%	61%	6906%	0%	0%	0%
market or private sale (%)	425%	100%	37559%	0%	0%	0%	0%	0%	0%
delivered to company (%)	4%	0%	297%	282%	61%	6906%	0%	0%	0%
stock price / exercise price	31.81	3.47	954.77	7.57	2.05	92.70	35.48	2.96	862.44
time to expiration (years)	4.72	5.04	6.96	3.52	3.47	4.00	4.04	4.43	6.72
market capitalization ($mil)	7,555	1,401	23,244	13,496	2,042	36,830	4,747	668	18,418

Table 3: Size-adjusted abnormal returns and total returns around executive stock option exercises over the period August 15, 1996 to September 31, 2006

This table presents abnormal and total returns around executive option exercises over the period August 15, 1996 to September 30, 2005. Option exercises are separated into three Subsamples: those accompanied by same day stock sale to a third party in a market or private transaction (Market or Private Sale Subsample); those accompanied by a same day disposition of shares to the company only (Company Disposition Only Subsample); and those not accompanied by a same day disposition of shares (No Disposition Subsample). Option exercises by multiple executive at the same company are treated as one observation. Panel A presents abnormal returns generated by subtracting the daily return to the appropriate CRSP size decile portfolio from the raw return to the sample company. Panel B presents daily and cumulative total returns around executive option exercises. Standardized cross-sectional t-statistics consistent with Boehmer, Musumeci and Poulsen (1991) are reported. T-statistics for daily and cumulative total returns reflect deviations from zero return. Significance at the 1%, 5% and 10% level are represented by ***, **, and *, respectively.

Panel A: Size-Adjusted Returns Around Executive Stock Option Exercises

day relative to exercise	(1) All Observations		(2) Market or Private Sale Subsample		(3) Company Disposition Only Subsample		(4) No Disposition Subsample	
	CAR		CAR		CAR		CAR	
CAR window								
(-20,0)	4.45%	***	6.52%	***	3.86%	***	-1.19%	***
(-10,0)	2.69%	***	4.15%	***	2.70%	***	-1.50%	***
(-5,0)	1.73%	***	2.76%	***	1.95%	***	-1.32%	***
(1,5)	0.30%	***	-0.11%	***	-0.33%	***	1.78%	***
(1,10)	0.41%	***	-0.15%	**	-0.42%	***	2.38%	***
(1,20)	0.26%	***	-0.55%	***	-0.56%	***	2.95%	***
observations	36,956		24,574		3,789		8,593	

Panel B: Total Returns Around Executive Stock Option Exercises

day relative to exercise	(1) All Observations		(2) Market or Private Sale Subsample		(3) Company Disposition Only Subsample		(4) No Disposition Subsample	
	total return		total return		total return		total return	
Total return window								
(-20,0)	6.00%	***	8.30%	***	5.56%	***	-0.39%	**
(-10,0)	3.55%	***	5.18%	***	3.76%	***	-1.21%	***
(-5,0)	2.30%	***	3.46%	***	2.63%	***	-1.19%	***
(1,5)	0.56%	***	0.08%	**	-0.07%		2.19%	***
(1,10)	0.93%	***	0.31%	***	0.14%		3.06%	***
(1,20)	1.28%	***	0.40%	***	0.45%	***	4.16%	***
observations	36,956		24,574		3,789		8,593	

Table 4: Comparison of returns around executive option exercises before and after the Sarbanes-Oxley Act

This table compares abnormal and total returns around executive option exercises during the period August 15, 1996 to August 28, 2002 (the pre-Sarbanes-Oxley period) to those around exercises during the period August 29, 2002 to September 30, 2005 (the post-Sarbanes-Oxley period). On August 29, 2002 the S.E.C. enacted the two business day reporting requirement for insider stock and derivative transactions. Option exercises are separated into three Subsamples: those accompanied by same day stock sale to a third party in a market or private transaction (Market or Private Sale Subsample); those accompanied by a same day disposition of shares to the company only (Company Disposition Only Subsample); and those not accompanied by a same day disposition of shares (No Disposition Subsample). Option exercises by multiple executive at the same company are treated as one observation. Abnormal returns generated by subtracting the daily return to the appropriate CRSP size decile portfolio from the raw return to the sample company. Panel A presents abnormal and total returns in the pre- and post-Sarbanes-Oxley periods for the Market or Private Sale Subsample. Panel B presents abnormal and total returns in the pre- and post-Sarbanes-Oxley periods for the Company Disposition Only Subsample. Panel C presents abnormal and total returns in the pre- and post-Sarbanes-Oxley periods for the No Disposition Subsample. Panel D presents the differences in abnormal and total returns around exercises in the Market or Private Sale and the Company Disposition Only Subsamples. Standardized cross-sectional t-statistics consistent with Boehmer, Musumeci and Poulsen (1991) are reported. T-statistics for daily and cumulative total returns reflect deviations from zero return. Significance at the 1%, 5% and 10% level are represented by ***, **, and *, respectively.

Panel A: Market or Private Sale Subsample - before versus after SOX

	before SOX - total return		After SOX - total return		before SOX - CAR		after SOX - CAR		Differences			
	(1)		(2)		(3)		(4)		(5)		(6)	
window	tot. ret		ab. ret.		tot. ret		ab. ret.		total returns		CARs	
(-20,0)	9.80%	***	6.76%	***	8.51%	***	4.47%	***	3.04%	***	4.04%	***
(-10,0)	6.17%	***	4.17%	***	5.41%	***	2.86%	***	2.00%	***	2.55%	***
(-5,0)	4.06%	***	2.85%	***	3.52%	***	1.99%	***	1.21%	***	1.53%	***
(1,5)	-0.03%		0.20%	***	-0.06%		-0.17%	***	-0.23%		0.11%	
(1,10)	0.23%	**	0.39%	***	0.09%		-0.39%	***	-0.16%	**	0.48%	***
(1,20)	-0.22%		1.04%	***	-0.49%	***	-0.60%	***	-1.26%	***	0.11%	
obs.	12,433		12,141		12,433		12,141					

Panel B: Company Disposition Only Subsample- before versus after SOX

	before SOX - total return		After SOX - total return		before SOX - CAR		after SOX - CAR		Differences			
	(1)		(2)		(3)		(4)		(5)		(6)	
window	tot. ret		ab. ret.		tot. ret		ab. ret.		total returns		CARs	
(-20,0)	5.74%	***	5.24%	***	4.28%	***	3.06%	***	0.50%		1.22%	***
(-10,0)	3.86%	***	3.57%	***	2.96%	***	2.21%	***	0.29%		0.75%	***
(-5,0)	2.78%	***	2.35%	***	2.17%	***	1.53%	***	0.43%	***	0.64%	***
(1,5)	-0.17%		0.14%		-0.36%	***	-0.26%	***	-0.31%	*	-0.10%	
(1,10)	-0.08%		0.57%	***	-0.49%	***	-0.28%	**	-0.65%	***	-0.21%	
(1,20)	0.18%		0.98%	***	-0.53%	***	-0.61%	***	-0.80%	***	0.08%	
obs.	2,491		1,298		2,491		1,298					

Table 4 (cont'd): Comparison of returns around executive option exercises before and after the Sarbanes-Oxley Act

Panel C: No Disposition Subsample - before versus after SOX

	before SOX - total return	After SOX - total return	before SOX - CAR	after SOX - CAR	Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
window	tot. ret	ab. ret.	tot. ret	ab. ret.	total returns	CARs
(-20,0)	-1.34% ***	1.78% ***	-1.77% ***	0.13%	-3.12% ***	-1.90% ***
(-10,0)	-1.93% ***	0.43% **	-2.02% ***	-0.30%	-2.36% ***	-1.72% ***
(-5,0)	-1.78% ***	0.16%	-1.79% ***	-0.26% **	-1.94% ***	-1.53% ***
(+1,+5)	2.65% ***	1.14% ***	2.25% ***	0.72% ***	1.51% ***	1.53% ***
(1,10)	3.64% ***	1.74% ***	3.00% ***	0.96% ***	1.90% ***	2.04% ***
(+1,+20)	4.72% ***	2.87% ***	3.67% ***	1.29% ***	1.85% ***	2.38% ***
obs.	5,975	2,618	5,975	2,618		

Panel D: Differences in Returns around Exercises in the Market or Private Sale Subsample and the Company Disposition Only Subsample

	before SOX		After SOX	
period	total returns	CARs	total returns	CARs
(-20,0)	4.06% ***	4.23% ***	1.52% ***	1.41% ***
(-10,0)	2.31% ***	2.45% ***	0.60% ***	0.65% ***
(-5,0)	1.28% ***	1.35% ***	0.50% ***	0.46% ***
(+1,+5)	0.14%	0.30% ***	0.06%	0.09%
(1,10)	0.31%	0.58% ***	-0.18%	-0.11%
(+1,+20)	-0.40%	0.04%	0.06%	0.01%

Table 5: Probability of executive option exercises occurring on the date with the most favorable closing price of the month

This table presents the number and percent of observations in each Subsample that occur on the day of the calendar month with the most favorable closing stock price for the executive. For the Market or Private Sale and Company Disposition Only Subsamples, the most favorable day is the day with the highest closing price of the month. For the No Disposition Subsample, the most favorable day is the day with the lowest closing price of the month. The differences in the probability of exercising on the most favorable day of the month in the pre- versus the post-Sarbanes-Oxley period are reported for each Subsample. In addition, the differences in the probabilities of an exercise occurring on the most favorable day of the month are compared across the Market or Private Sale Subsample and the Company Disposition Only Subsample in both the pre- and post-Sarbanes-Oxley periods. Significance at the 1%, 5% and 10% level are represented by ***, **, and *, respectively.

	Number/Percent of Exercises at Lowest Price of Month		
	Market or Private Sale	**Company Disposition Only**	**No Disposition**
Before Sarbanes-Oxley			
number	1,043	280	713
percent	8.39%	11.24%	11.93%
After Sarbanes-Oxley			
number	1,003	111	180
percent	8.26%	8.55%	6.88%
Differences:			
before SOX - after SOX	0.13%	2.69% ***	5.06% ***
Market or Private Sale - Company Disposition Only			
Before SOX	-2.85% ***		
After SOX	-0.29%		

Table 6: Regression analysis of effect of the Sarbanes-Oxley Act on return patterns around executive option exercises

This table presents regression analyses of the factors associated with price patterns around executive exercises. For each Subsample, the first columns (Columns (1), (4) and (7)) present results of probit regressions where the dependent variable indicates if the exercise date stock price was the lowest price of the calendar month, adjusted for distributions. The second and third columns for each Subsample present results of OLS regressions where the dependent variable is total return over the period (-20,0) days preceding and (1,20) days following executive option exercises, respectively. Independent variables include: the log of the number of options exercised, the log of firm size, the ratio of market price to strike price on the day of exercise, a dummy variable indicating exercises within a month of the option expiration date, a dummy variable indicating the company is in the technology industry, a dummy variable indicating the exercise occurs within a month before a dividend record date, a dummy variable indicating when at least one of the options exercised was an ISO, a dummy variable indicating the option is exercised by the CEO or CFO, a dummy variable indicating that the executive is both CEO and Chairman of the Board, a dummy variable that indicates when more than one executive at the company exercises options on the exercise date, and a dummy variable that indicates if the exercise occurred in the post-Sarbanes-Oxley period. P-values are reported in parentheses, and are based on White's (1980) heteroskedasticity-robust T-statistics for the OLS regressions. McFadden's pseudo-R-square is reported for probit regressions. Significance at the 1%, 5% and 10% level are represented by ***, **, and *, respectively.

	Market or Private Sale						**Company Disposition Only**						**No Disposition**					
	highest price in month (probit)		**(-20,0) tot. ret. (OLS)**		**(1,20) tot. ret. (OLS)**		**highest price in month (probit)**		**(-20,0) tot. ret. (OLS)**		**(1,20) tot. ret. (OLS)**		**lowest price in month (probit)**		**(-20,0) tot. ret. (OLS)**		**(1,20) tot. ret. (OLS)**	
ind. variables	**(1)**		**(2)**		**(3)**		**(4)**		**(5)**		**(6)**		**(7)**		**(8)**		**(9)**	
Intercept	-1.540	***	7.690	***	-0.286		-1.061	***	5.128	***	3.795	***	-1.529	***	8.297	***	1.382	
	(0.000)		(0.000)		(0.696)		(0.000)		(0.000)		(0.001)		(0.000)		(0.000)		(0.301)	
log(shares)	0.016	*	1.653	***	0.279	***	0.033	*	0.487	***	-0.291	***	0.055	***	-0.441	***	0.800	***
	(0.053)		(0.000)		(0.000)		(0.059)		(0.000)		(0.007)		(0.000)		(0.001)		(0.000)	
log(market cap)	0.004		-1.952	***	-0.323	***	-0.063	***	-0.537	***	-0.107		-0.042	***	-0.677	***	-0.784	***
	(0.581)		(0.000)		(0.000)		(0.000)		(0.000)		(0.316)		(0.000)		(0.000)		(0.000)	
moneyness	0.000		0.000	*	0.001	**	-0.007		-0.009	**	0.002		0.000		0.000		0.000	***
	(0.512)		(0.068)		(0.047)		(0.229)		(0.031)		(0.567)		(0.289)		(0.499)		(0.000)	
exp. month	-0.112		-3.261	***	1.717	***	-0.099		-3.189	***	0.749		-0.118	*	1.702	***	-0.335	
	(0.125)		(0.000)		(0.000)		(0.224)		(0.000)		(0.110)		(0.058)		(0.002)		(0.568)	
technology firm	0.043	*	3.377	***	-0.754	***	0.264	**	6.677	***	-1.695		0.135	***	-1.691	**	2.168	***
	(0.089)		(0.000)		(0.003)		(0.011)		(0.000)		(0.086)		(0.002)		(0.014)		(0.001)	
dividend month	-0.040		-0.202		0.549	***	-0.008		-0.194		-0.110		-0.119	**	2.453	***	-1.274	***
	(0.260)		(0.335)		(0.001)		(0.890)		(0.571)		(0.719)		(0.026)		(0.000)		(0.000)	
ISO	0.045		1.514	***	0.116		0.021		0.488		-0.541		0.168	***	-1.981	***	1.034	**
	(0.244)		(0.003)		(0.763)		(0.797)		(0.407)		(0.294)		(0.000)		(0.000)		(0.034)	
CEO or CFO	-0.035		-0.450	*	-0.196		0.009		-0.138		0.042		0.068	*	-0.918	*	0.479	
	(0.158)		(0.082)		(0.370)		(0.879)		(0.760)		(0.912)		(0.092)		(0.056)		(0.260)	
CEO/Chairman	-0.093	**	-0.847	***	-0.553	*	0.062		0.432		0.561		-0.021		-1.036		-0.921	
	(0.031)		(0.009)		(0.093)		(0.472)		(0.431)		(0.247)		(0.756)		(0.175)		(0.188)	
multiple exec's	-0.006		1.171	**	0.172		0.104		1.900	***	-0.233		0.131		-0.271		2.876	***
	(0.887)		(0.021)		(0.641)		(0.336)		(0.008)		(0.716)		(0.116)		(0.806)		(0.009)	
after SOX	**-0.002**		**-3.061**	***	**1.363**	***	**-0.180**	***	**-0.645**		**0.911**	***	**-0.285**	***	**2.810**	***	**-1.373**	***
	(0.931)		**(0.000)**		**(0.000)**		**(0.003)**		**(0.092)**		**(0.005)**		**(0.000)**		**(0.000)**		**(0.000)**	
Obs.	24,525		24,524		24,524		3,785		3,785		3,785		8,550		8,550		8,550	
Pseudo-/Adj. R^2	0.16%		5.43%		0.51%		1.63%		4.13%		0.41%		2.63%		1.71%		1.83%	

Table 7: Summary of timing of SEC reporting of executive option exercises

Summary statistics are presented regarding the timing of SEC reporting of option exercises for each Subsample during the pre- and post-Sarbanes-Oxley period. Exercises are separated by whether they are reported before the tenth or otherwise allowed later day of the following month (early reporting group), on the tenth or last otherwise allowed day of the following month (on time reporting group) and after the date required by SEC rules (late reporting group) of the SEC reporting requirement for insider transactions as they applied during that time period.. Panel A reports results for the pre-Sarbanes-Oxley period, and Panel B reports results for the post-Sarbanes-Oxley period.

Panel A: Before Sarbanes-Oxley Act

Timing of SEC reporting	Market or Private Sale	Company Disposition Only	No Disposition
Reported Early			
number	4,845	1,070	2,469
percent	38.97%	42.95%	41.32%
Reported On Time			
number	6,642	1,202	2,494
percent	53.42%	48.25%	41.74%
Reported Late			
number	946	219	1,012
percent	7.61%	8.79%	16.94%
TOTAL	**12,433**	**2,491**	**5,975**

Panel B: After Sarbanes-Oxley Act

Timing of SEC reporting	Market or Private Sale	Company Disposition Only	No Disposition
Reported Early (0 or 1 day)			
number	7,067	487	1,426
percent	58.21%	37.52%	54.47%
Reported On Time (2 days)			
number	4,546	723	944
percent	37.44%	55.70%	36.06%
Reported Late (3 days or more)			
number	528	88	248
percent	4.35%	6.78%	9.47%
TOTAL	**12,141**	**1,298**	**2,618**

Table 8: Summary of lags between executive option exercises and SEC reporting

This table presents the distribution of SEC reporting lags for each subsample of exercises in the pre-and post-Sarbanes-Oxley period. For each subsample, both the number and percent of exercises with lags representing the 1st, 5th, 10th, 25th, 50th, 75th, 90th, 95th and 99th percentile of length of reporting lag is reported as well as the reporting lag in days associated with that percentile. The mean and standard deviation of reporting lag is also reported for each subsample. Panel A reports results for the pre-Sarbanes-Oxley period, and Panel B reports results for the post-Sarbanes-Oxley period.

Panel A: Before Sarbanes-Oxley Act -- Distribution of Reporting Lags

	Market or Private Sale	Company Disposition Only	No Disposition		
	reporting lag (days)	reporting lag (days)	reporting lag (days)	percent	
	191	238	514	**99**	%
	38	41	149	**95**	%
	27	27	49	**90**	%
	23	23	24	**75**	%
	17	17	17	**50**	%
	11	11	10	**25**	%
	8	8	7	**10**	%
	6	6	5	**5**	%
	4	4	2	**1**	%
mean	20.01	23.01	39.52		
std. dev.	37.57	40.83	117.92		

Panel A: Before Sarbanes-Oxley Act -- Distribution of Reporting Lags

	Market or Private Sale	Company Disposition Only	No Disposition		
	reporting lag (days)	reporting lag (days)	reporting lag (days)	percent	
	16	45	140	**99**	%
	2	3	7	**95**	%
	2	2	2	**90**	%
	2	2	2	**75**	%
	1	2	1	**50**	%
	1	1	1	**25**	%
	0	1	0	**10**	%
	0	1	0	**5**	%
	0	0	0	**1**	%
mean	1.97	3.22	5.16		
std. dev.	9.05	14.66	27.45		

Table 9: Regression analysis of the relation between timing of SEC reporting and return patterns around executive stock option exercises before the Sarbanes-Oxley Act

This table presents regression analyses of the relationship between (i) the timing of SEC reporting and (ii) the length of SEC reporting lag to return patterns around executive stock option exercises in the pre-Sarbanes-Oxley period. Control variables for which coefficients are not reported include the following: the log of the number of options exercised, the log of firm size, the ratio of market value to exercise price on the day of exercise, a dummy variable indicating exercises within a month of the option expiration date, a dummy variable indicating whether the company is in the technology industry, a dummy variable indicating the exercise occurs within a month before a dividend record date, a dummy variable indicating when at least one of the options exercised was an ISO, a dummy variable indicating the option is exercised by the CEO or CFO, a dummy variable indicating that the executive is both the CEO and the Chairman of the Board, a dummy variable that indicates when more than one executive at the same company exercises options on the same day. Independent variables of interest in the first specification for each Subsample include a dummy variable indicating that the exercise was reported to the SEC early (before the last allowable day), and a dummy variable indicting the exercise was reported to the SEC late (after the last allowable day). Independent variables of interest in the second regression for each Subsample include the number of days reporting lag for each of the Early Reporting Group, the On Time Reporting Group and the Late Reporting Group. Columns (1) and (2) of each panel present probit regressions where the dependent variable takes value 1 if the stock price on the day of exercise was the lowest price of the calendar month, adjusted for distributions. Columns (3) and (4) present results of OLS regressions where the dependent variable is the total return over the period (-20,0) days preceding and including the exercise date. Columns (5) and (6) present results of OLS regressions where the dependent variable is the total return over the period (1,20) days following and the exercise date. P-values are reported in parentheses, and are based on White's (1980) heteroskedasticity-robust T-statistics for the OLS regressions. McFadden's pseudo-R-square is reported for probit regressions. Significance at the 1%, 5% and 10% level are represented by ***, **, and *, respectively.

Panel A: Market or Private Sale Subsample

independent variable	**highest price in month**		**(-20,0) tot. ret.**		**(1,20) tot. ret.**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Intercept 1	-1.3825 ***	-1.6681 ***	10.835 ***	6.544 ***	0.063	0.025
	(0.000)	(0.000)	(0.000)	(0.000)	(0.806)	(0.984)
early SEC reporting	0.0184	0.0207	-2.481 ***	-2.533 ***	-0.819 **	-0.935 ***
	(0.586)	(0.545)	(0.000)	(0.000)	(0.020)	(0.008)
late SEC reporting	-0.0567	-0.0472	-0.842	-1.305	0.505	0.280
	(0.379)	(0.467)	(0.376)	(0.162)	(0.490)	(0.705)
controls	no	yes	no	yes	no	yes
Obs.	12,433	12,389	12,433	12,433	12,433	12,433
pseudo-R^2 /adj. R^2	0.02%	0.19%	0.26%	5.00%	0.04%	0.50%

Table 9 (cont'd): Regression analysis of relation between timing of SEC reporting and return patterns around executive stock option exercises before the Sarbanes-Oxley Act

Panel B: Company Disposition Only Subsample

independent variable	highest price in month				(-20,0) tot. ret.				(1,20) tot. ret.			
	(1)		(2)		(3)		(4)		(5)		(6)	
Intercept 1	-1.2969	***	-1.5391	***	6.001	***	4.165	**	0.696	**	4.998	***
	(0.000)		(0.000)		(0.000)		(0.013)		(0.035)		(0.001)	
early SEC reporting	0.1476	**	0.1424	**	-0.699		-0.583		-0.954	**	-1.112	**
	(0.035)		(0.045)		(0.186)		(0.265)		(0.043)		(0.019)	
late SEC reporting	0.1819		0.1606		0.399		0.738		-1.238		-1.691	*
	(0.123)		(0.191)		(0.672)		(0.434)		(0.168)		(0.064)	
controls	no		yes		no		yes		no		yes	
Obs.	2,491		2,487		2,491		2,491		2,491		2,491	
pseudo-R^2 /adj. R^2	0.31%		1.74%		0.02%		4.19%		0.12%		0.39%	

Panel C: No Disposition Subsample

independent variable	lowest price in month				(-20,0) tot. ret.				(1,20) tot. ret.			
	(1)		(2)		(3)		(4)		(5)		(6)	
Intercept 1	-1.1816	***	-1.5951	***	-0.661		14.106	***	3.668	***	0.751	
	(0.000)		(0.000)		(0.167)		(0.000)		(0.000)		(0.693)	
early SEC reporting	0.0101		0.00661		-2.086	***	-2.771	***	1.332	**	1.323	**
	(0.827)		(0.889)		(0.002)		(0.000)		(0.023)		(0.023)	
late SEC reporting	-0.0055		-0.0342		1.059		0.430		2.961	***	2.297	***
	(0.928)		(0.585)		(0.262)		(0.655)		(0.000)		(0.007)	
controls	no		yes		no		yes		no		yes	
Obs.	5,975		5,933		5,975		5,975		5,975		5,975	
pseudo-R^2 /adj. R^2	0.00%		2.33%		0.24%		2.03%		0.22%		2.07%	

Table 10: Regression analysis of relation between timing of SEC reporting and returns around executive stock option exercises after the Sarbanes-Oxley Act

This table presents regression analyses of the relationship between the timing of SEC reporting to return patterns around executive stock option exercises in the post-Sarbanes-Oxley period. Control variables for which coefficients are not reported include the following: the log of the number of options exercised, the log of firm size, the ratio of market value to exercise price on the day of exercise, a dummy variable indicating exercises within a month of the option expiration date, a dummy variable indicating whether the company is in the technology industry, a dummy variable indicating the exercise occurs within a month before a dividend record date, a dummy variable indicating when at least one of the options exercised was an ISO, a dummy variable indicating the option is exercised by the CEO or CFO, a dummy variable indicating that the executive is both the CEO and the Chairman of the Board, a dummy variable that indicates when more than one executive at the same company exercises options on the same day. The independent variables of interest include a dummy variable indicating that the exercise was reported to the SEC early (0 or 1 business day reporting lag), and a dummy variable indicating the exercise was reported to the SEC late (greater than 2 business day lag). Columns (1) and (2) of each panel present results from probit regressions where the dependent variable takes value 1 if the stock price on the day of exercise was the lowest price of the calendar month, adjusted for distributions. Columns (3) and (4) present results of OLS regressions where the dependent variable is the total return over the period (-5,0) days preceding and including the exercise date. Columns (5) and (6) present results of OLS regressions where the dependent variable is the total return over the period (1,5) days following and the exercise date. P-values are reported in parentheses, and are based on White's (1980) heteroskedasticity-robust T-statistics for the OLS regressions. McFadden's pseudo-R-square is reported for probit regressions. Significance at the 1%, 5% and 10% level are represented by ***, **, and *, respectively.

Panel A: Market or Private Sale Subsample

	probability of highest price in month		total returns			
Ind. variable			**Period = (-5,0)**		**Period = (1,5)**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Intercept	-1.371 ***	-1.397 ***	2.936 ***	2.432 ***	0.060	0.019
	(0.000)	(0.000)	(0.000)	(0.000)	(0.473)	(0.961)
reported early (0 or 1 day)	-0.022	-0.026	-0.215	-0.118	0.218 **	0.222 **
	(0.525)	(0.458)	(0.130)	(0.399)	(0.039)	(0.036)
reported late (3 or more days)	-0.090	-0.092	0.864	0.746	0.305	0.307
	(0.297)	(0.287)	(0.115)	(0.167)	(0.280)	(0.277)
controls	no	yes	no	yes	no	yes
Obs.	12,141	12,136	12,141	12,141	12,141	12,141
pseudo-R^2	0.02%	0.41%	**Adj. R^2** 0.07%	3.13%	0.02%	0.09%

Panel B: Company Disposition Only Subsample

	probability of highest price in month		total returns			
ind. variable			**Period = (-5,0)**		**Period = (1,5)**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Intercept	-1.268 ***	-0.120	2.395 ***	4.614 ***	0.069	0.344
	(0.000)	(0.757)	(0.000)	(0.000)	(0.619)	(0.649)
reported early (0 or 1 day)	-0.326 ***	-0.355 ***	-0.069	-0.085	0.275	0.261
	(0.004)	(0.002)	(0.811)	(0.769)	(0.201)	(0.225)
reported late (3 or more days)	0.061	-0.015	-0.283	-0.548	-0.516	-0.445
	(0.745)	(0.937)	(0.723)	(0.488)	(0.216)	(0.287)
controls	no	yes	no	yes	no	yes
Obs.	1,298	1,298	1,298	1,298	1,298	1,298
pseudo-/Adj. R^2	1.28%	4.41%	-0.14%	2.69%	0.16%	0.36%

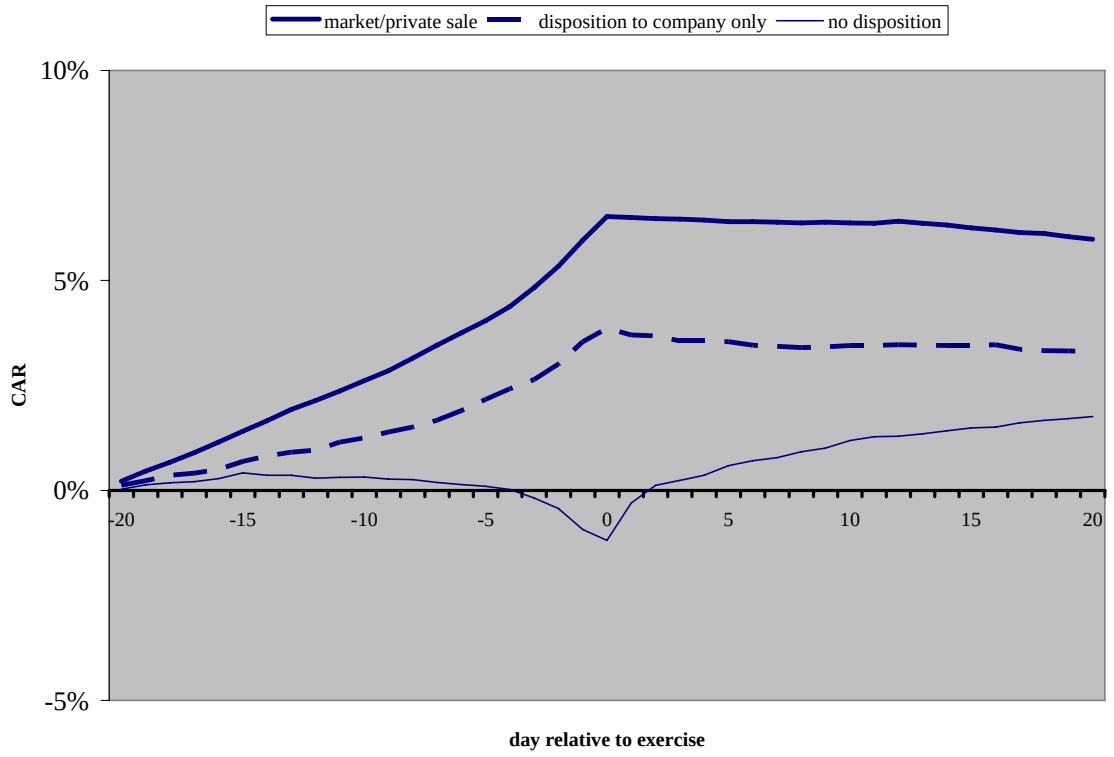
Table 10 (cont'd): Regression analysis of relation between timing of SEC reporting and returns around executive stock option exercises after the Sarbanes-Oxley Act

Panel C: No Disposition Subsample

	probability of lowest price in month		total returns			
Ind. variable			**Period = (-5,0)**		**Period = (1,5)**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Intercept	-1.446 ***	-1.455 ***	0.081	0.864	1.425 ***	0.826
	(0.000)	(0.000)	(0.753)	(0.373)	(0.000)	(0.357)
reported early (0 or 1 day)	-0.107	-0.104	0.072	0.047	-0.524	-0.404
	(0.185)	(0.208)	(0.822)	(0.888)	(0.107)	(0.226)
reported late (3 or more days)	0.145	0.125	0.421	0.406	-0.012	-0.126
	(0.246)	(0.323)	(0.535)	(0.544)	(0.982)	(0.815)
controls	no	yes	no	yes	no	yes
Obs.	2,618	2,617	2,618	2,618	2,618	2,618
pseudo-/Adj. R^2	0.37%	1.33%	-0.05%	1.46%	0.06%	1.16%

Figure 1: Returns around executive option exercises during the period August 15, 1996 to September 30, 2005

Panel A: Size-adjusted CARs



Panel B: Total Returns

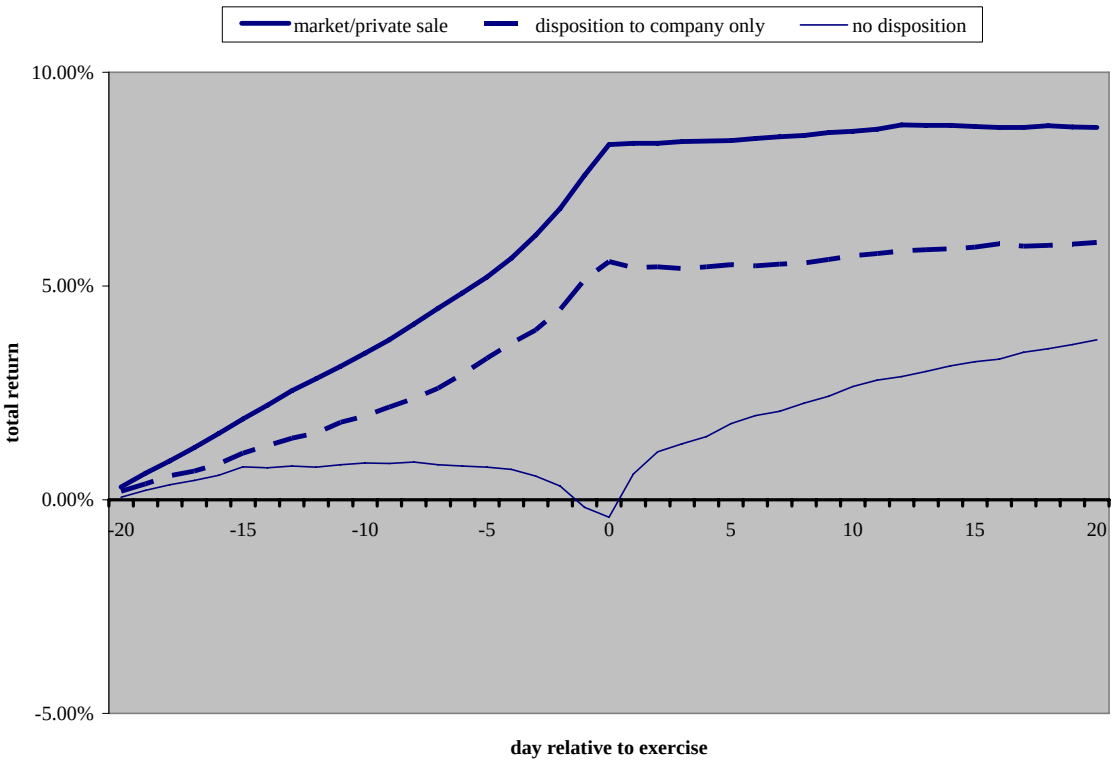
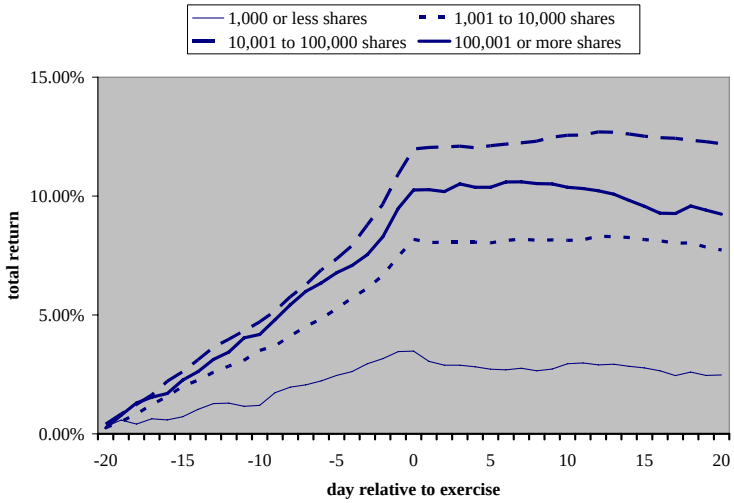
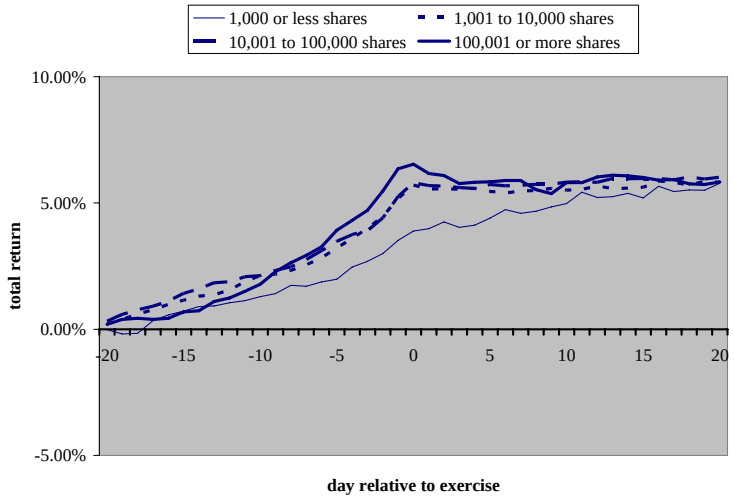


Figure 2: Option exercise volume and total returns around executive option exercises before the Sarbanes-Oxley Act

Panel A: Market or Private Sale Subsample



Panel B: Company Disposition Only Subsample



Panel C: No Disposition Subsample

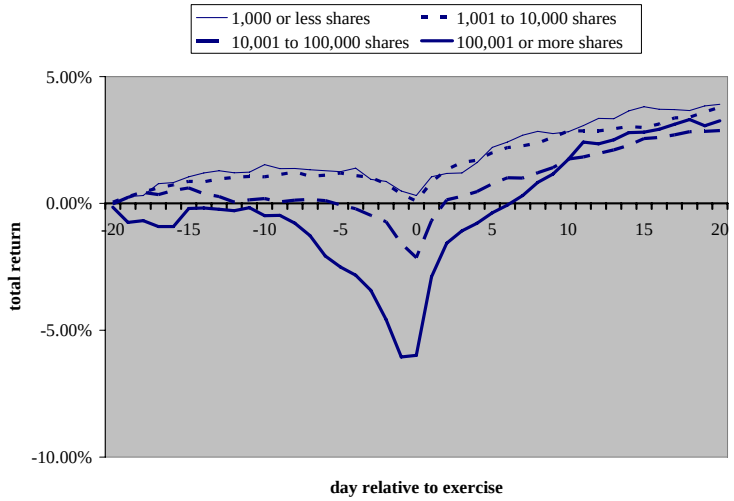
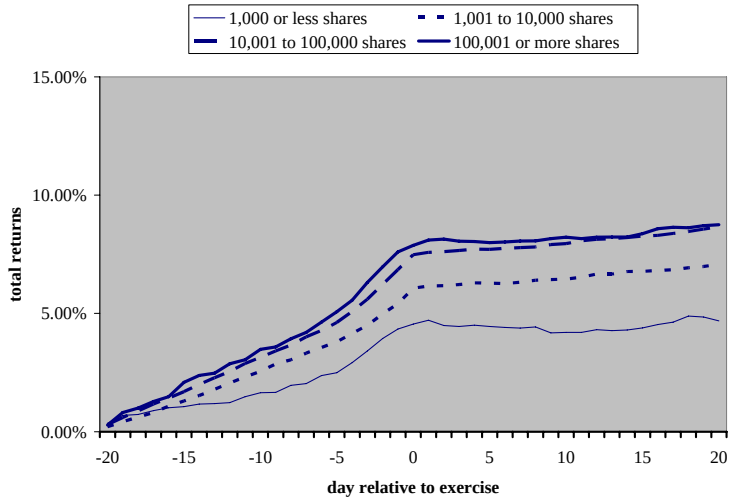
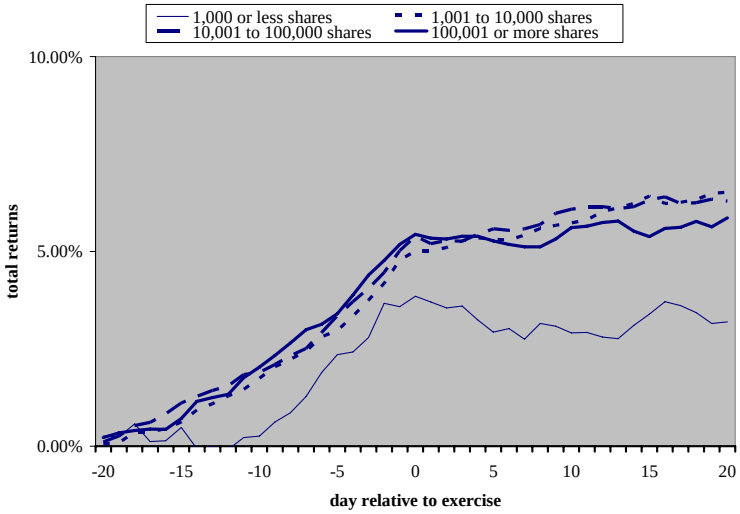


Figure 3: Option exercise volume and total returns around executive option exercises after the Sarbanes-Oxley Act

Panel A: Market or Private Sale Subsample



Panel B: Company Disposition Only Subsample



Panel C: No Disposition Subsample

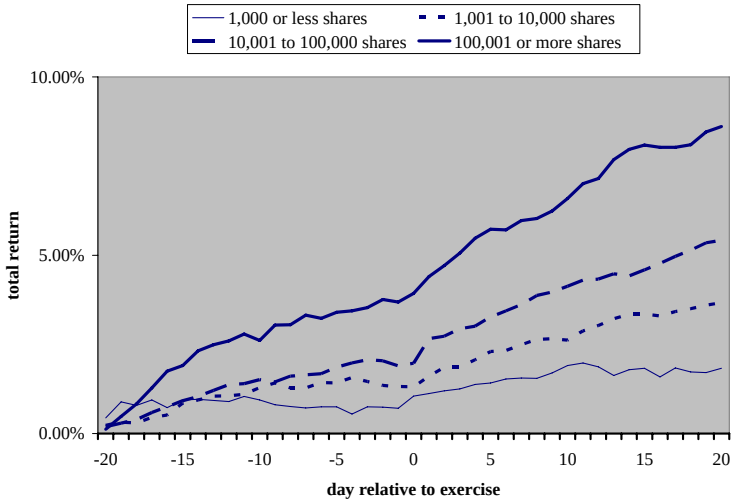
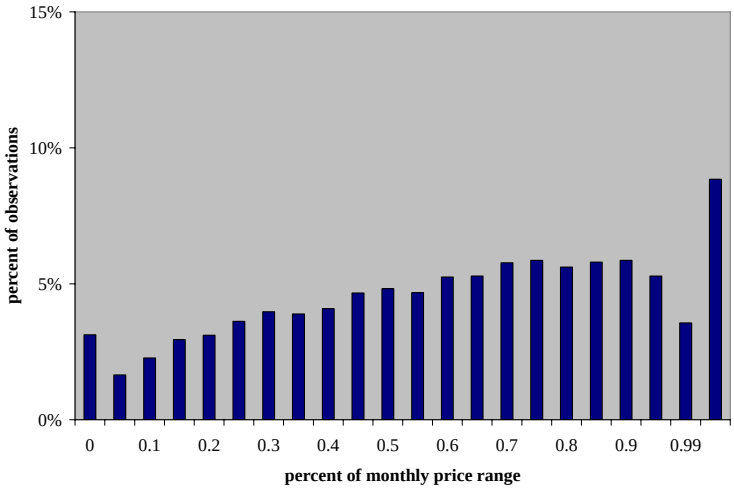
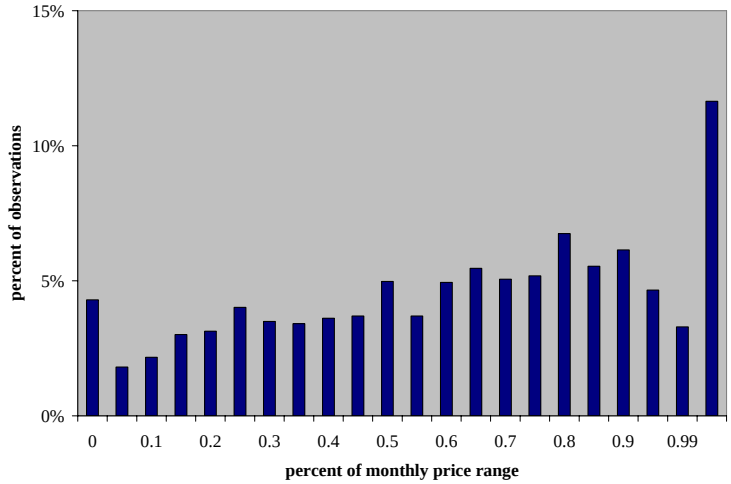


Figure 4: Distribution of stock prices on exercise dates as a percentage of the calendar month price range before the Sarbanes-Oxley Act

Panel A: Market or Private Sale



Panel B: Disposition to Company Only



Panel C: No Disposition

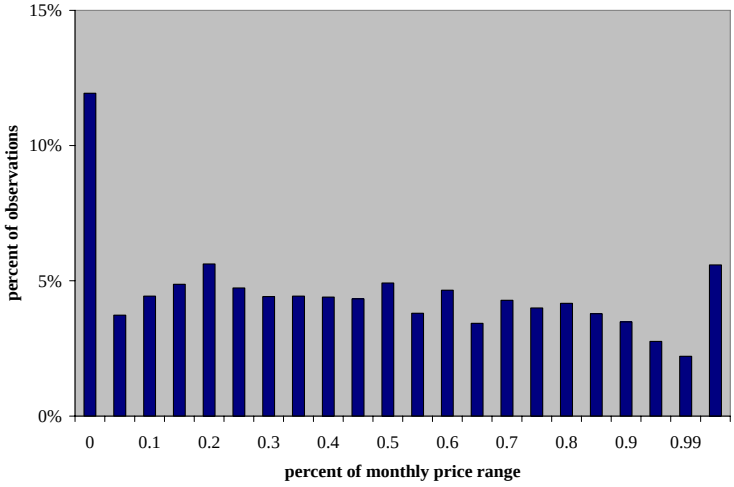
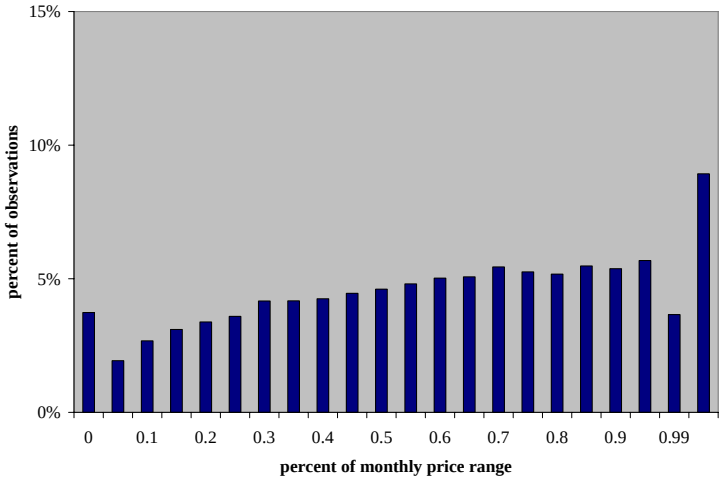
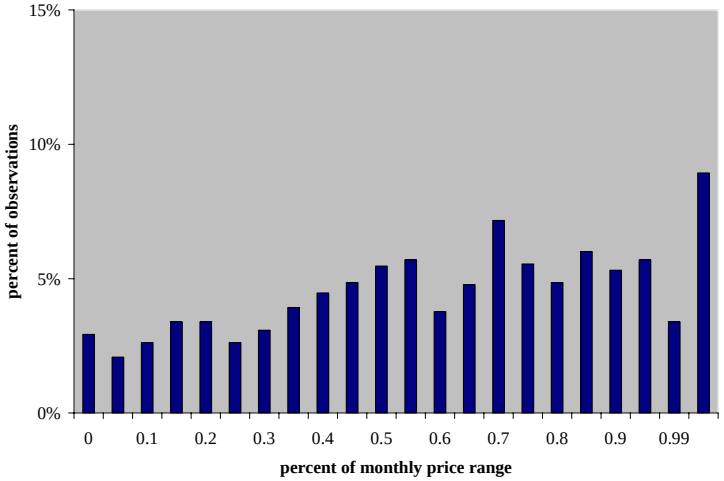


Figure 5: Distribution of stock prices on exercise dates as a percentage of the calendar month price range before the Sarbanes-Oxley Act

Panel A: Market or Private Sale



Panel B: Disposition to Company Only



Panel C: No Disposition

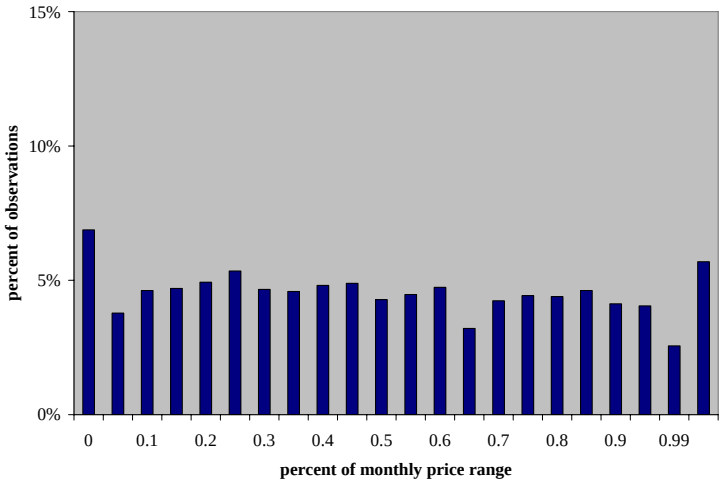
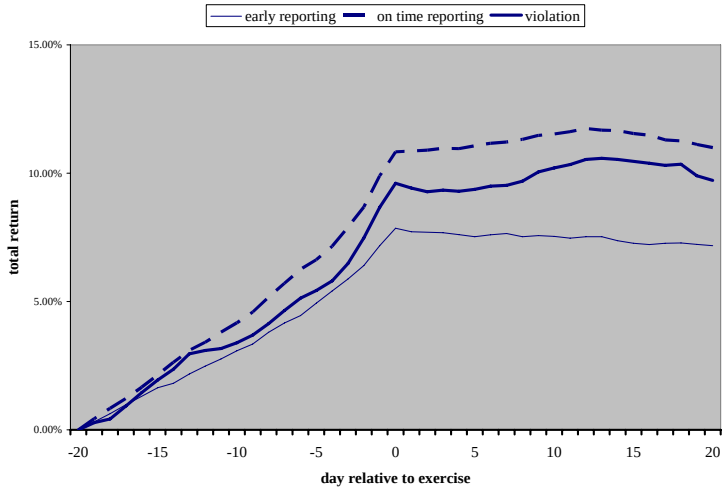
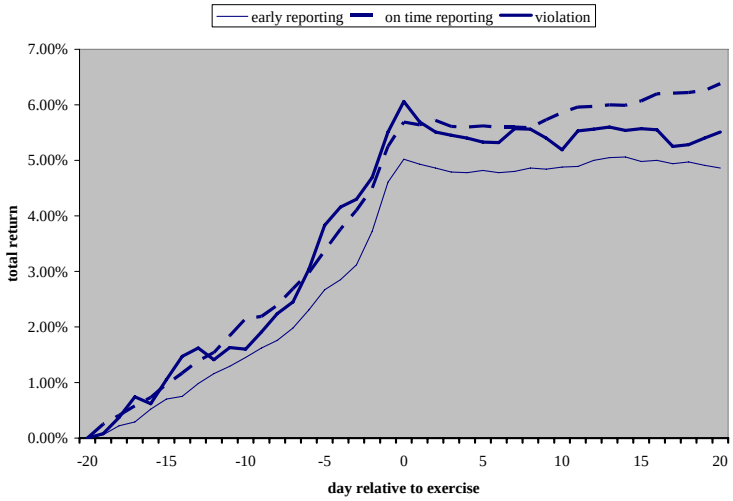


Figure 6: SEC reporting and total returns around executive option exercises before the Sarbanes-Oxley Act

Panel A: Market or Private Sale Subsample



Panel B: Company Disposition Only Subsample



Panel C: No Disposition Subsample

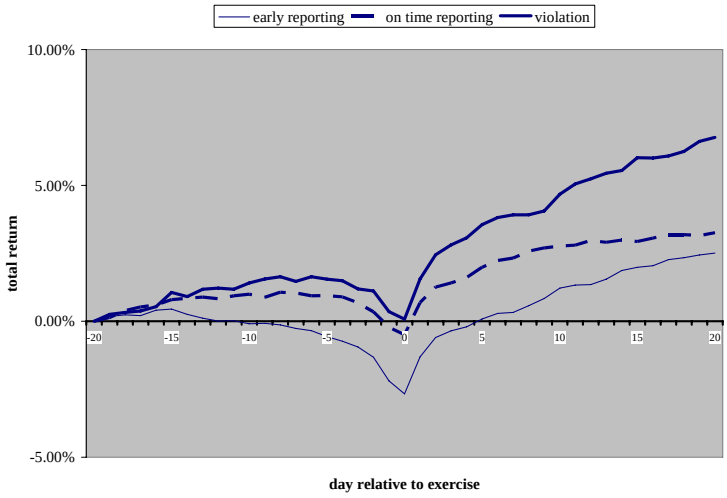
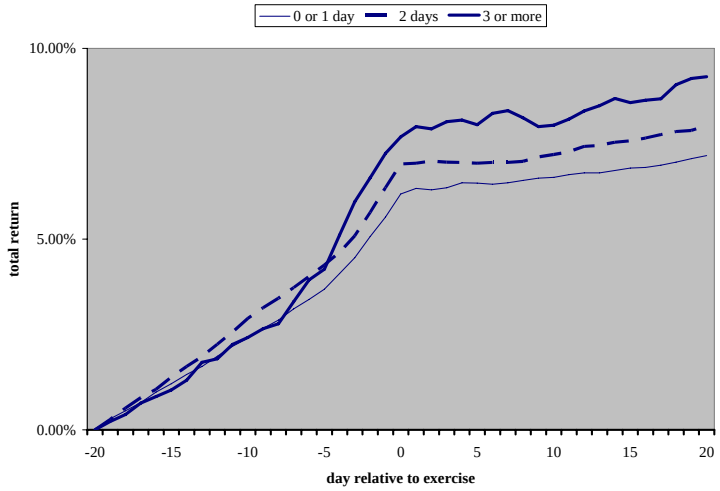
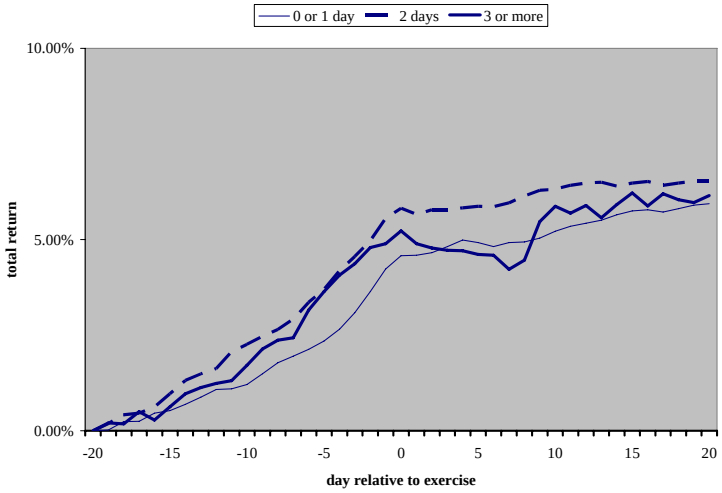


Figure 7: SEC reporting and total returns around executive option exercises after the Sarbanes-Oxley Act

Panel A: Market or Private Sale Subsample



Panel B: Company Disposition Only Subsample



Panel C: No Disposition Subsample