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Citation

The impact of the options backdating scandal on shareholders[*]

Gennaro Bernile[†], Gregg A. Jarrell[‡]

Abstract

The revelation that scores of firms engaged in the illegal manipulation of stock options' grant dates (i.e. "backdating") captured much public attention. The evidence indicates that the consequences stemming from management misconduct and misrepresentation are of first-order importance in this context as shareholders of firms accused of backdating experience large negative, statistically significant abnormal returns. Furthermore, shareholders' losses are directly related to firms' likely culpability and the magnitude of the resulting restatements, despite the limited cash flow implications. And, tellingly, the losses are attenuated when tainted management of less successful firms is more likely to be replaced, whereas relatively many firms become takeover targets. We believe this evidence is relevant to the ongoing debate about the economic relevance of seemingly inconsequential corporate misdeeds, in general, and option grants manipulation, in particular.

JEL Classification: G14; J33; M43
Keyword(s): agency costs; event-study; option backdating; corporate scandal.

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1. Introduction

The practice of compensating executives using stock options has spread dramatically since 1993, following enactment of Section 162(m) of the federal tax laws.[1] This section confers corporate tax-deductibility status to option grants, provided that, among other requirements, the exercise price of the options is no less than the market price of the company's stock on the grant date (i.e. the grant is at- or below-the-money). During the period 1996-2004, few option grants were reported as in-the-money (i.e. exercise price lower than grant date stock price), reflecting their compelling reporting and tax disadvantage.[2]

Together with the popularity of stock option compensation have come alleged abuses of this instrument. In his groundbreaking article, Lie (2005) first proposes the "backdating hypothesis" to explain the systematically favorable stock price patterns surrounding option grant dates documented in earlier studies (Yermack, 1997; Aboody and Kasznik, 2000; Chauvin and Shenoy, 2001). Option grant backdating involves issuing (in-the-money) stock options to an employee on one date, while providing documentation falsely asserting that (at-the-money) options were issued at an earlier date when the company's stock price was equal to the disclosed exercise price. On March 18, 2006, *The Wall Street Journal* ran the story that many consider to be the spark initiating the backdating scandal. As of December 2006, at least 140 companies were under public scrutiny due to allegations that they engaged in *illegal* backdating of option grants.[3]

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[1] Hall and Murphy (2003) report this trend was well underway in the previous decade and argue it is largely driven by the lower "perceived cost" of stock options relative to other forms of compensation.

2 Hall and Murphy (2000) report that, in 1998, 94% of grants to CEOs of S&P 500 firms were reported as at-the-money on the grant date. Executives received at-the-money grants in at least 62% of unscheduled grant dates and none of the scheduled grants was reported as being in-the-money in the period 1996-2005 (Heron and Lie, 2006a).

[3] Although backdating can be legal, if the practice receives board approval and it is properly disclosed for reporting and tax purposes, most companies involved in the backdating scandal allegedly violated at least one of these requirements. Chancellor Chandler wrote in a recent ruling: "All backdated stock options involve a fundamental,

Companies accused of backdating face several potential problems as a *direct* consequence of such allegations. Conducting internal investigations of past option granting practices and correcting companies' historical financial records and tax returns requires time and resources, which may delay the public release of required financial statements. This delay could cause firms to run afoul of exchange rules, subjecting them to potential or actual delisting of their stock from the exchange.

Following internal investigations, for reporting purposes, backdated stock options need to be reclassified as being in-the-money on the *true* grant date, or surrendered, or repriced. Reclassifying past grants may lower firms' earnings over the options' vesting periods. If options are surrendered or repriced (and employees are not compensated in exchange) at worst historical earnings will not change, but they may increase depending on the reporting standard. In cases where these adjustments are material, historical financial records need to be restated and reissued to the investment community.

The tax rules regulating the treatment of at- versus in-the-money options are different both at the employee and at the firm level. Thus, correcting backdated options requires that tax computations be redone and both the company and its employees become potentially subject to the IRS for back-taxes, penalties, and interest. Furthermore, correcting backdated options may require: cooperating with investigations by outside regulatory agencies; dealing with class-action lawsuits and/or derivative actions by shareholders; paying make-whole bonuses to employees who received backdated options; and potentially violating debt covenants, forcing renegotiation and/or payment of the resulting penalties.[4]

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incontrovertible lie: Directors who approve an option dissemble as to the date on which the grant was actually made."

[4] As discussed later, involvement in the backdating scandal may *indirectly* affect accused firms, for instance, by forcing dismissal of valuable employees accused of being active participants in option backdating practices.

Despite the fact that correcting for backdating may result in large, downward adjustments to companies' reported earnings, the effect on cash flows is not uniformly negative or material. First, option compensation is a non-cash expense and its value can always be accurately determined, as of the grant disclosure date and thereafter, provided grants' characteristics are truthfully disclosed. Thus, correcting historical financial records should have no direct effect, *per se*, on shareholders' wealth. Second, the cash flow effects due to tax corrections at the firm level, so far, have more often than not been positive. When negative, they do not typically represent a significant portion of the affected companies' market capitalization. Third, as foreseeable, the cost of lawyers and accountants hired to conduct internal investigations, cooperate with government agencies, and deal with shareholder litigation have reportedly been in the order of several million dollars. Nonetheless, the available evidence suggests these out-of-pocket costs are relatively small. Furthermore, so far, companies have not borne significant penalties, and even benefited in some case as a result of employees disgorging the ill-gotten gains from and/or forfeiting the tainted options without make-whole bonuses. Because the direct cash flows due the backdating scandal are arguably relatively small, our null hypothesis (*Direct Cost Hypothesis*) posits that a firm's involvement in the scandal is of no economic relevance. Stock prices, thus, should not react significantly to the numerous backdating-related disclosures we analyze, except to reflect out-of-pocket costs.

In a world where investors have imperfect information about firms – and the people who run them, however, managerial misconduct with little direct impact on firms' fundamentals can have a large effect on claimholders' wealth. Management's involvement in backdating practices may prompt investors' reassessment of the agency costs stemming from the separation of ownership and control (Jensen and Meckling, 1976). Typically, stockholders' losses around

earnings restatements are in part ascribed to uncertainty regarding managerial competence and integrity (e.g., Dechow et al., 1996; Anderson and Yohn, 2002; Palmrose et al., 2004). Moreover, recent studies formalize the argument that investors' perception of disclosure quality, broadly defined as *information risk*, affects firm value (Duffie and Lando, 2001; Easley and O'Hara, 2004; Yu, 2005; Kumar et al., 2006; Epstein and Schneider, 2007). Lower (perceived) quality disclosure should be associated with lower valuations, and much available evidence is consistent with this idea.[5] Therefore, the alternative hypothesis we propose, which we broadly label *Agency Hypothesis*, is that a firm's involvement in the backdating scandal has significant economic implications, despite its limited (direct) impact on cash flows.

Our analysis focuses on 129 firms identified by the Wall Street Journal as implicated in the backdating scandal as of December 31, 2006. We independently identify 764 firm-specific backdating-related news events taking place on 580 separate firm-dates. Economically large and statistically significant negative abnormal returns occur around those events, especially around the first firm-specific news. The magnitude of the implied wealth changes seems too large to be attributed to any reasonable estimate of direct out-of-pocket costs of the backdating scandal or to the resulting legal penalties disclosed to date.

The multivariate tests show that measures we expect to be related to the effect of the scandal on the value of firms' reputational capital and information risk are significantly related to changes in shareholders' wealth. Conversely, variables one would expect to be related to the magnitude of direct out-of-pocket expenses, namely the number of past grants and/or their value, are not significantly related or are positively related to shareholders' wealth effects, inconsistent with the *direct cost hypothesis*. In addition, consistent with this interpretation, the occurrence of

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[5] See, among others, Welker (1995), Botosan (1997), Healy et al. (1999), Anderson and Yohn (2001), Palmrose et al. (2004), Hribar and Jenkins (2004), Kravet and Shevlin (2006).

government investigations or delisting notices have no incremental explanatory power, after controlling for firms' likely culpability.

Shareholder litigation is significantly less likely for firms with better governance systems, and less so the smaller are shareholder losses due to firms' direct involvement in the scandal. Conversely, controlling for firms' likely culpability, the possibility of private litigation has no significant impact on shareholders' wealth. Indeed, shareholders have overwhelmingly opted for derivative actions seeking disgorgement of ill-gotten gains and corporate governance reforms, whereas in the very few class-action suits settled to date the median damages award is less than 1.5% of the firms' pre-scandal market capitalization. Interestingly, controlling for potential endogeneity, the departure of senior managers tainted by the scandal has a large positive, statistically significant effect on the wealth of shareholders of firms that performed relatively worse in the year prior to the accusations. On the other hand, expected management turnover has no effect for better performing firms. This evidence supports the notion that firms involved in the scandal face a trade-off between the reduction of higher perceived agency costs and the losses due to replacing valuable employees. Finally, we find that institutional investors reduce their holdings in firms accused of backdating, possibly due to higher monitoring costs, and that firms involved in the scandal are very likely (10% of the sample) to receive arguably fair takeover offers. Overall, the evidence is consistent with the hypothesis that the loss of investors' confidence in the firm's management is a first-order determinant of the economic consequences resulting from the option backdating scandal.

The remaining of the paper proceeds as follows. Section 2 presents the data and describes the sample firms' characteristics and the incidence and evolution of firm-specific backdating news. Section 3 discusses in detail the potential consequences of being implicated in

the backdating scandal and develops the arguments underlying the hypotheses tested. Section 4 presents evidence on the stock market reaction to backdating news and its cross-sectional determinants. In Section 5, we analyze the determinants of shareholder litigation and executives' departure and the effect of these events on shareholders' wealth, and discuss the evidence on institutional ownership changes and takeover activity. Finally, we conclude in Section 6, and summarize the accounting and tax rules governing stock option compensation in Appendix A.

2. Data, sample characteristics, and the evolution of backdating news events

2.1 Data sources and the sample of allegedly backdating firms

We begin our investigation with the sample of firms identified by the Wall Street Journal as of December 31, 2006. At that time, the tally contained 136 firms that had disclosed government probes, admitted to misdated options, and/or announced executive departures.[6] Due to data requirements, we drop seven of those firms.[7] For those remaining, we collect backdating-related news stories, using a keyword search of all available sources in English on Factiva, limited to articles published after January 1, 2004 and before March 31, 2007.[8]

During this stage of the analysis, we record the *first* date on which any of the following news-event types becomes public: 1) *Internal Review*; 2) *SEC Investigation*; 3) *DOJ Investigation*; 4) *Expect Restatement*; 5) *Delisting*; 6) *Lawsuit*; 7) *Mgmt. Departure*; 8)

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[6] Some companies that have undertaken or disclosed internal probes followed by no further news may not be included in the WSJ's tally. Coverage by *WSJ online* is available at http://online.wsj.com/public/resources/documents/info-optionsscore06-full.html.

[7] The news search fails to produce relevant news stories for Sysview Technology; three firms are acquired before the first firm-specific backdating news-event, although after the alleged misconduct (Engineered Support Systems (DRS Technologies), Renal Care Group (Fresenius Medical Care), and Pixar (Walt Disney Co.)); finally, for three firms we could not retrieve usable option grants information from the Insiders' Filings database maintained by Thompson Financial (M-Systems Flash Disk Pioneers Ltd., Stolt-Nielsen SA, Research In Motion Ltd). The list of 129 companies remaining is available upon request.

[8] We use the following keyword search: ["Company Name" and (stock option* or option* grant* or backdat*)]. The first two backdating-related cases became public in November of 2004. At that point, publicly available filings showed the SEC had initiated informal inquiries of stock options granting practices at Nyfix Inc. and Analog Devices Inc. To be sure no other firm-specific backdating-related news appeared in the press before that time, we widened our search window to include all of 2004.

Quantified Restatement; 9) *SEC Exoneration*; 10) *DOJ Exoneration*; and, 11) *First News*. The *First News* date is that on which news that a firm may have engaged in option backdating first appear in the press, whether the news-type falls into one of the other categories or not.[9]

We obtain stock data (e.g. prices, returns, volumes, and number of shares outstanding) from Datastream. Fama-French (1993) and momentum factors' excess returns, reference portfolios' returns, size, book-to-market, and momentum breakpoints are from Prof. French's website. We retrieve accounting information from Compustat for the fiscal years prior to firms' direct involvement in the scandal. Option grants data are from the Insiders' Filings database maintained by Thompson Financial, which contains information on the award, exercise, and expiration of stock options filed on Form 3, 4, and 5.

2.2 Variables definition and sample characteristics

Table 1 provides summary statistics for various characteristics of the sample firms and of the (reportedly) at-the-money option grants they made during the period 1996-2004. Seventy-two percent of the firms are traded on NASDAQ, whereas 22.5% are traded on the NYSE, and the remaining firms over-the-counter, consistent with the common perception that backdating may be a "new economy" phenomenon. However, we do focus on firms that are publicly involved in the scandal, which, in turn, may cause the common perception about new economy firms' inclination to backdate. Indeed, Bebchuk, Grinstein, and Peyer (2006b) show that, by their measure, most of the manipulated grants likely take place in old economy firms.

By various measures, there is large variation in the size of the firms involved in the scandal. Their market capitalization before the scandal (i.e. stock price times the number of common shares outstanding as of 60 trading days prior to the first date on which a firm is

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[9] For instance, the WSJ's article "Perfect Payday" (March 18, 2006) named some companies with suspicious grant dates' patterns, one of which was UnitedHealth Group. At the time, no other public source suggested backdating occurred at that company. Three weeks later, the company announced an internal investigation and an SEC inquiry.

associated with backdating practices) varies between $29 million (Boston Communication Group) and $279 billion (Microsoft), with a mean (median) of $7.51 (1.74) billion, and 91 firms above $1 billion. The book value of assets as of closing of the fiscal year prior to the first backdating-related news yields similar observations (min=$32.2 million, max=$70.8 billion, mean=$3.25 billion, and median=$909.8 million).

During the 12-month period ending 60 days prior to the first firm-specific news event, the typical firm accused of backdating displays large positive buy-and-hold stock returns both unadjusted (mean=23.5%; median=11.9%) and relative to other public companies sharing the same two-digit SIC code (mean=14.0%; median=02.8%). The typical ISS' Corporate Governance Quotient of our sample firms is approximately 65, implying that the typical firm meets or exceeds minimum satisfactory standards in 65% of the 44 categories considered by ISS, as of the last measurement prior to the scandal – see Chhaochharia and Laeven (2007) for more details. The overwhelming majority of firms in our sample, 92.2%, are clients of a Big 4 auditing firm (i.e. Deloitte & Touche, KPMG, Ernst & Young, or PricewaterhouseCooper).

The bottom half of Table 1 provides sample characteristics of stock option-related variables. Some firms, 14% of the sample, expressed opposition to the passage of SFAS 123, in 1994, and/or SFAS 123R, in 2004, in a comment letter sent to Financial Accounting Standards Board, FASB. During the same period, a roughly similar portion of firms, 13.2%, was member of a lobby explicitly opposing the setting of those standards (i.e. IESOC, International Employee Stock Option Coalition, or AeA, American Electronics Association). Interestingly, the (untabulated) correlation between these dummy variables is relatively low (.177). Thus, although different firms opted to resort to different forms of opposition to the stock option expensing

standards set forth by SFAS 123 and 123R, they share a common denominator: they arguably found a way around those principles.

We do not have complete information about the various option grants that are under investigation and the dates on which they were awarded. Therefore, the remaining variables are based on data for all at-the-money option grants to Executive Officers between 1996 and 2004.[10] In constructing the dataset we use procedures similar to those described in Heron and Lie (2006a, b), Narayanan and Seyhun (2006a, b), and Bebchuk, Grinstein, and Peyer (2006a, b). The per-firm number of unique grant dates is as high as 35, and the typical number of grant dates is 9. The average (median) filing lag, defined as the number of days between the reported grant date and the date on which the required forms are filed with the SEC, is 176.1 (141.9) days. Using grant date Black-Scholes values, the average (median) per-firm value of all at-the-money option grants to executives between 1996 and 2004 is 2.9% (1.3%) of the market value of equity computed 60 days before the first backdating news-event.[11]

When all trading days in a firm-year are ranked from highest to lowest based on their subsequent 20-day return, the typical grant date ranks between 90 and 91. Thus, the typical grant seems to take place on a date favorable to the recipient. Scaled by the number of trading days in the relevant calendar year, the typical grant date rank, *Average Rank of Grant Date 20-day Return*, is about 37% – that is, 63% of the trading days in the same firm-year are followed by a lower 20-day return.

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[10] For robustness, we performed all tests reported in the paper using at-the-money grants to any insider required to file with the SEC Form 3, 4, or 5. The results are virtually identical and available upon request.

[11] SEC filings report the grants' characteristics and we adopt Compustat's modified Black-Scholes approach to value each grant: the volatility is the stock returns' annualized standard deviation during the 60 months prior to the grant date; the risk-free rate is the 7-year Treasury bond yield prevailing on the grant date; the dividend yield is that of the prior fiscal year; and the option grant life is equal to 70% of the stated maturity.

In the spirit of the methodology developed by Prof. Jay Emerson for the WSJ, we estimate the variable *Average Rank P-Value* for each firm.[12, 13] Specifically, given the firm's option granting pattern (i.e. number of grants per year, number of trading days in the year, and each grant's 20-day return rank) and assuming grant dates are independently drawn from a uniform distribution, we use Monte Carlo simulations to compute the probability of observing a similar pattern of grants that would result in equal or higher *Average Rank of Grant Date 20-day Return* over the period of interest (i.e. 1996-2004) – *Average Rank P-Value*. The simulations are designed to generate estimated p-values having 1% relative precision. For each firm, *Average Rank Odds* is the reciprocal of *Average Rank P-Value*.

The descriptive statistics for the simulated p-values and odds are consistent with our earlier remark: the typical post-grant date 20-day return is favorable to the recipients, with a mean (median) *Average Rank P-Value* that is substantially lower than 0.5. Similarly, the typical odds implied by the simulated p-values are enormous, although the effect of some outliers is rather obvious when comparing the sample mean to the median. Indeed, while the median odds are 7.7 to 1, the 95th percentile odds are 32,875 to 1 and the maximum odds are 168,000,000 to 1 (Affiliated Computer Services). To alleviate the impact of outliers, we rank sample firms' odds from lowest to highest and use the corresponding rank in the estimated regression models.

2.3 The frequency and evolution of backdating news

In Section 2.1, we define the backdating news-events for which we collect information following a firm's first public involvement in the scandal. Table 2 provides summary statistics of the frequency and timing of these events. The typical sequence is particularly important when

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[12] We repeat all tests using monthly price rankings as described in Bebchuck, Grinstein, and Peyer (2006a, b) and obtain qualitatively similar results, available upon request.

[13] We thank Jay Emerson for discussing his methodology with us and owe much gratitude to Hernan Awad for helping us designing the Monte Carlo simulations used to generate the *average rank p-value*s used in the analysis.

interpreting the market reaction to various news, given that, in an efficient market, investors' reaction to a particular event should be affected by the history of events up to that point, as well as investors' expectations of future events (Griffin et al. (2000)). After ordering events chronologically, firm-specific event date ranks may vary between 1 and 8, with lower ranks indicating earlier events.

The large majority of sample firms, 89%, announce internal reviews of their past option granting practices, and this type of disclosure appears to be preemptive, with an average (median) date rank of 1.6 (1). News of formal or informal SEC inquiries due to firms' option granting practices follow suit. When such inquiries are disclosed – 78% of (101) cases, their average (median) date rank is 2.4 (2).

Then, the legal trouble begins, as companies openly admit they expect to restate their historical financial records. Federal prosecutors take an interest in 53 (41% of) cases, with an average (median) date rank of 3.1 (3). Although the frequency of shareholders lawsuits and firms anticipating restatements is materially higher than that of criminal investigations, 60% and 76%, respectively, their typical date rank is not materially different.

Naturally, delays to file current or restated historical financial statements only occur later in the sequence of events, resulting in potential delisting. Fifty-five (43% of) firms receive a warning or notice of delisting, with an average (median) date rank of 3.6 (4). Next, news arrive that one or more senior executives and/or directors are parting with the company due to the scandal. This event is less frequent, 36% of (46) firms, and its average (median) date rank is 4.3 (5). Finally, with an average (median) date rank of 5.3 (6), a large portion (71%) of firms explicitly quantifies the amount of historical earnings to be restated or announces the amount of (non-material) charges to be imputed to current earnings.

3. The economic consequences for firms accused of option backdating

A firm's involvement in the backdating scandal has the potential to result in a chain of events that the firm can only control partially, if at all. In this section, first, we consider the likely direct and indirect economic consequences for firms accused of stock options backdating. Then, we articulate the main hypotheses and briefly outline our empirical tests.

3.1 Direct consequences

Consequences of Internal Investigations uncovering backdated grants

Conducting internal investigations requires paying millions of dollars in fees to outside lawyers and accountants. The available information is sketchy, yet, indicative. Mercury Interactive disclosed the largest expense in this category. The firm's total legal and accounting expenses amounted to $70 million, or 1.7% of its pre-scandal market capitalization. Given that Mercury is one of the first companies caught in the scandal (i.e. July 2005) and arguably one whose backdating practices have proven to be pervasive over a 13 years period (1992-2004), this is likely to be one of the highest amounts to arise.[14] As a result of internal investigations, firms may choose to reclassify, cancel, or reprice the tainted options and, consequently, restate their historical financial statements.

Reclassifying backdated options to in-the-money status requires firms to amend historical financial records to recognize the resulting "incremental" compensation expense, whether a firm adopted SFAS 123 or APB 25 at the time of the grant.[15] If backdated options are (retroactively)

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[14] Apple Computer reportedly required 27,000 person-hours to conduct its investigation. Assuming a (likely exaggerated) cost of $1000/hour, this effort would result in a $27 million expense, or 0.5% of the firm's pre-scandal equity value.

[15] The meaning of "incremental" is different depending on the reporting standard adopted by the company during the pre-2005 years. Independent of whether APB25 or SFAS123 was adopted at the time of the grant, reclassifying backdated options will increase the amount of option expenses recognized during the relevant years. Generally, however, the incremental "intrinsic value" under APB25 will be higher than the incremental "fair value" under SFAS 123, thus resulting in larger restatements following the reclassification. A brief summary of the reporting rules is available in Appendix A.

repriced to keep at-the-money status as of their *true* grant date, this will generally result in higher exercise prices for the same options. If repricing allows the corresponding grant to keep at-the-money status, no incremental "intrinsic" value is to be recognized under APB 25. However, higher exercise prices for otherwise identical stock option grants may result in lower (fair) values as of the true grant date, which could reduce reported expenses under SFAS 123. A similar logic applies if backdated options are forfeited.

Panel A of Table 3 provides a summary of the disclosed outcome of internal investigations, as of April 2008. Almost 30% of the sample firms reports finding a material weakness of their internal controls, pursuant to Sections 302 and 404 of the Sarbanes-Oxley Act of 2002. Ninety-one firms file actual or quantify expected restatement of previously reported earnings: the mean (median) cumulative effect is an earnings' reduction of $122.4 (31.1) million, corresponding to 4.7% (2.3%) of the typical firm's pre-scandal market capitalization. Twelve firms announce forfeiting of the tainted options or restitution of the corresponding ill-gotten gains by the recipients of those grants, typically executives. A larger portion of the firms, 22.5%, announce repricing or changing the terms (vesting periods) of backdated options. In these cases, the repricing typically applies to options held by executive and directors, as well as rank-and-file employees. In relatively few cases, firms provide make-whole bonuses for the effect of correcting backdated options on the compensation and personal tax liability of rank-and-file employees and executives/directors that unknowingly received tainted options.

Backdating-related restatements should have no effect on firms' cash flows, because option compensation is not a cash expense. Moreover, at any time after the disclosure of a grant, the economic value of backdated options depends on publicly available information (e.g. exercise price, maturity, vesting, etc.) not affected by the recognition that backdating took place.

After the fact, except for few cases of companies paying relatively small make-whole bonuses to the affected employees, firms benefit from the forfeiture of options, restitution of ill-gotten gains, or repricing of backdated options.[16] Consistent with these *ex-post* observations, analysts' earnings forecasts did not decline significantly around backdating news, in contrasts with the available evidence for companies caught fraudulently overstating earnings by other means (Palmrose et al., 2004).[17] Thus, absent other considerations, correcting the effects of option backdating, *per se*, should not materially affect investors' expectations of future cash flows.[18]

Tax consequences

The accounting principles governing the reporting of stock option compensation and its (GAAP-based) tax consequences differ from the rules determining the actual tax deductions a company is allowed by the IRS. This creates a discrepancy between what can be inferred from companies' restatement filings and the actual changes in their tax liability.[19]

Backdated options are always (reportedly) at-the-money and, thus, no actual tax-related obligation or deduction arises until they are exercised.[20] To the extent that unexercised, backdated options are repriced to preserve at-the-money status, they should not affect a company's current or historical tax returns. However, as a result of the now-higher exercise price, the company will deduct lower compensation expenses from its taxable income and, thus, realize lower tax savings when those options are exercised, all else equal. If unexercised,

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[16] The most notable case is that of UnitedHealth's CEO, McGuire, who returned almost $1 billion to his company, but obtained to serve no jail time in return.

[17] These results are available upon request from the authors.

[18] And, even if one is willing to give merits to the argument by which investors revise upward their beliefs about future compensation because firms have now discovered they cannot backdate, the ill-gotten gains resulting from these practices are reportedly immaterial, as shown by Narayanan et al. (2006).

[19] A report by Hinton et al. (2006) of NERA, and two reports for Congress by Brickley (2006) and Brickely and Shorter (2007) discuss the tax issues resulting from backdating at greater length. In Appendix A we provide a summary of the relevant tax rules.

[20] Furthermore, executives' options are usually classified as non-statutory (NSO), which exempts them from the $100,000 limit on the amount that an individual can exercise in a given year for qualified options (ISO).

backdated options are forfeited without any substitute compensation, then the expected tax savings are entirely eliminated – together with their cost to the company.

Exercised options found to have been backdated may be reclassified to in-the-money status at the time of their grant, lowering GAAP-based earnings and, thus, lowering the firm's GAAP-based income-tax expense in the restated years. However, taxes actually paid by a corporation are based on taxable income reported on the firm's *non-public* tax return. The actual tax liability could increase or decrease as a result of reclassifying backdated options. This effect depends on whether the tainted options were classified as qualified or non-qualified for tax purposes, the rank of the recipient (executives vs. employees), on the pattern and timing of past and expected future exercises, as well as any penalties and interests the firm may directly owe (or reimburse its employees) for past taxes and failure to withhold taxes in a timely fashion.[21]

All of these factors differ across companies, which makes it virtually impossible to generalize the impact on taxes of reclassifying backdated options to in-the-money status. Yet, some considerations will hold in general. First, the compensation realized upon exercise by the CEO and the next four highest paid executives will count towards the $1 million cap imposed by IRC 162(m), whereas that of other employees will not. Hence, if the tainted options have been already exercised when the backdating is discovered, the company owes taxes for amounts by which it deducted expenses exceeding the now-applicable $1 million limit. Second, reclassification disqualifies ISOs, making them NSOs, which has adverse tax consequences for the firm. Finally, unexercised discounted options represent "nonqualified defined compensation" under Section 409A, resulting in taxation and excise taxes at the time of vesting.

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[21] Stock options that have been backdated will generally run afoul of Code Section 409A to the extent they were (i) granted after October 3, 2004, (ii) granted before October 4, 2004, but not vested as of December 31, 2004, or (iii) materially modified after October 3, 2004.

To gauge the economic impact of incremental taxes stemming from the backdating scandal, we examined 55 restatements filed by companies in our sample as of July 2007. Thirty-three percent of the companies, 18 cases, reported negative tax consequences. Among these, only a handful of firms report increases in their tax liability between 0.3% and 1.1% of their pre-scandal market value of equity. Across the 55 cases, the mean (median) GAAP-based tax effect is positive (i.e. lower taxes), corresponding to an approximate reduction in GAAP-based taxes of 0.4% (.09%) of the firm equity market value before the scandal. In summary, the available evidence seems to indicate that the tax consequences of correcting for option backdating are typically negligible.

Out-of-pocket costs resulting from government investigations and shareholder litigation

Although correcting backdated options for reporting and tax purposes likely has an immaterial impact on expected future cash flows, firms may bear other out-of-pocket costs.

Firms could suffer due to ongoing shareholder litigation. As previously discussed, 78 firms face some form of shareholder litigation. In these instances, however, investors have overwhelmingly opted for derivative actions, 72 out of 78 targeted firms, whereas a relatively small number of firms face class-action lawsuits, 21 cases. [22] Due to the lack of significant cash flow effects, plaintiffs' lawyers are reportedly struggling to establish damages, which are directly awarded to shareholders in a class-action suit. In a derivative suit, the direct beneficiary is the company. In the context of backdating derivative suits, shareholders are seeking restitution of profits that executives enjoyed as a result of backdating and implementation of corporate practices' reforms to prevent future problems, both of which should ultimately benefit the targeted companies, directly, as well as their shareholders, indirectly.

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[22] This is in stark contrast with the finding of Thompson and Thomas (2004), reporting that only 137 out of 1,048 lawsuits filed in Delaware in 1999 and 2000 were derivative actions.

Panel B of Table 3 provides a summary of all available outcomes of backdating-related shareholder litigation. Nineteen cases have been dismissed, four of which are class-action suits, whereas eight requests for dismissal have been denied, two of which were derivative actions. To date, 19 cases have been settled, six class-action and thirteen derivative lawsuits, with only the former actually imposing direct costs on the target company. As shown in the table, the typical damages awarded to shareholders in class-action litigation represent approximately 1.5% of the target firms' pre-scandal market capitalization, whereas derivative suits' settlements are substantially smaller.[23]

In addition to private litigation, firms accused of backdating may be subject to criminal and administrative investigations by government agencies, which can ultimately result in fines and penalties. The SEC pursued formal enforcement actions against 14 firms, while informing 14 other firms there would be no follow-up to the initial formal or informal inquiries. Even in the former cases, however, SEC Chairman Cox' maintained position is that situations in which the company cooperates and its shareholders have already suffered damages should be addressed with leniency.[24] Thus, not surprisingly, as shown in Panel C of Table 3, administrative penalties related to backdating and paid to the SEC turn out to be relatively small – on average, .16% of the equity of eight firms fined to date. Disgorgement penalties, which the SEC requires employees who participated in backdating schemes to pay to their firms, are equally small.

It is also possible that companies face incremental costs for breaching debt covenants, typically finding themselves in technical default due to failure to file the required financial statements in a timely fashion. Anecdotal evidence suggests that, contrary to the tradition of

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[23] Yet, the derivative suit against UnitedHealth's executives and directors resulted in the largest settlement ($900 million) in US history, which, of course, was awarded to the firm net of a hefty contingency for the plaintiff's lawyers.

[24] Business Week, June 18, 2007: "Backdating: Why Penalties Are Puny".

granting companies time to rectify the situation, creditors have shown little flexibility toward firms accused of backdating. In the summer of 2006, Amkor struggled to meet its bondholders' request for immediate repayment of more than $1.5 billion and Sanmina-SCI asked an extension on the terms of its indenture, offering $12.5 million in exchange. Similarly, due to filing delays, Mercury Interactive agreed to pay its creditors $7.1 million and grant them an option to redeem notes at a premium, reportedly worth as much as $40 million.

While out-of-pocket costs can ultimately add up, we should highlight that the bulk of these costs appear to have been borne by relatively few firms in our sample. This, in turn, cannot explain the more generalized negative perception associated with option backdating practices and the systematic deleterious effects on shareholders that a firm's direct involvement in the scandal may have.

3.2 Indirect consequences

Agency Costs and Information Risk

Managers, agents, may behave opportunistically at the expense of shareholders, principal (Berle and Means, 1932). In their seminal work, Jensen and Meckling (1976) define agency costs stemming from the separation of ownership and control as the sum of monitoring costs (by the principal), bonding costs (by the agent), and residual losses. Well-functioning markets, however, should produce a set of contracts that optimally minimizes the expected cost of managers' self-interest, given the available information (Fama and Jensen, 1983a, b; Jensen, 1983).[25] Therefore, based on this view, investors should react negatively when the current set of contracts and regulations whereby shareholders monitor management is shown to be ineffective.

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[25] If the integrity of capital markets is a public good, some form of external monitoring (e.g. shareholders' associations) or government intervention (e.g. creation of the SEC) may also be optimal.

By definition, backdating is deceptive when it is illegal (and vice versa) – i.e. among other things, not approved by or disclosed to shareholders. In all cases, the practice is perpetrated or approved by at least some executives and, in a few cases, even some directors. Contemporaneous studies show that the incidence of backdating is inversely related to the quality of firms' governance systems (Bebchuck et al., 2006a,b; Bizjak et al., 2006; Collins et al., 2007). Therefore, to the extent that backdating is a form of unanticipated managerial opportunism, we would expect a firm's direct involvement in the scandal to prompt rational investors to reassess the magnitude of expected agency costs associated with that firm.

The arguments above rely on the assumption that investors have incomplete information, which has further implications for the effect of backdating accusations on firm value. In particular, if investors' information set is incomplete, they must bear estimation risk (Barry and Brown, 1985). Companies' disclosures can help reduce this risk (Kumar et al., 2007). Yet, there may be uncertainty about the precision or quality of firms' disclosures – *Information Risk*. Recent studies formalize this notion and show that investors' perception about disclosure quality can affect firm value (Duffie and Lando, 2001; Easley and O'Hara, 2004; Kumar et al., 2006; Epstein and Schneider, 2007). The common prediction of these theories is that lower quality disclosure should be associated with lower valuations.

The available evidence supports this prediction. Dechow et al. (1996), Anderson and Yohn (2002), and Palmrose et al. (2004) document significant negative returns following financial restatements and ascribe part of the losses to uncertainty about managerial competence and integrity (agency costs), and overall disclosure quality (information risk). Karpoff et al. (2005) report significant reputational penalties for firms targeted by SEC enforcement actions due to misrepresentations. Others investigate the relation between accounting information and

the cost of capital reaching a uniform conclusion: *low quality* disclosure increases firms' cost of capital (Welker, 1995; Botosan, 1997; Healy et al., 1999; Hribar and Jenkins, 2004).

Disruption of corporate leadership

Reportedly, managers of firms accused of backdating divert significant amounts of time from day-to-day operations to dealing with the related investigations. As shown in Table 2, in a sizable number of cases, corporate executives are fired or resign "voluntarily". Over the last two decades, numerous studies examined the consequences of management turnover, with mixed results (Reinganum, 1985; Warner et al., 1988; Bonnier and Bruner, 1989; Khanna and Poulsen, 1995; Denis and Denis, 1995).[26] Johnson et al. (1985) report that successful senior managers' sudden death has a negative impact on shareholders' wealth. Bennedsen et al. (2007) show the death of CEOs' immediate family members is associated with a subsequent decrease in firm performance.

Hence, shareholders may suffer from events that divert executives' attention or force them to part with the companies, particularly if management's value added is high. This should be especially true in this context, if dealing with backdating-related matters produces no benefits. On the other hand, if investors view executives' involvement in backdating practices as a manifestation of unforeseen agency problems, then any value loss due to reduced management's focus should be regarded as a component of previously underestimated agency costs. And, ultimately, if the decision to replace tainted executives is based on rational considerations, shareholders will trade off the expected benefits of lower agency costs and the cost associated with losing potentially valuable employees.

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[26] However, much evidence shows that the likelihood of management turnover is negatively related to firm performance (Coughlan and Schmidt, 1985; Warner et al., 1988; Dahya, et al., 2002; Fee and Hadlock, 2004).

Exchanges may delist stocks of companies failing to release required quarterly or annual financial statements in a timely fashion. Fifty-five firms in our sample received notice of potential delisting and, by October 2006, three companies in the WSJ's sample had their stock delisted by Nasdaq for failing to publish audited financial reports.[27]

Earlier studies show that shareholders' suffer losses around delisting announcements, partly due to increases of the firm's cost of capital (see, for instance, Sanger and Peterson, 1990). Thus, the market reaction to a firm's involvement in the backdating scandal may reflect investors' anticipation of the negative effects of delisting. Nonetheless, if delisting of firms accused of backdating is the result of management misconduct, we argue that the corresponding losses should be regarded as part of investors' reassessment of agency costs (i.e. residual loss).

3.3 Hypotheses and Empirical Tests

Based on the previous discussion we formulate two hypotheses in general terms and, then, delineate their empirical implications.

- *Direct Cost Hypothesis: Accusations of stock options backdating are not economically relevant beyond the direct out-of-pocket costs they impose on targeted firms.*

- *Agency Hypothesis: Well-founded accusations of stock options backdating are economically relevant due to the direct and (possibly higher) indirect costs stemming from the perceived management misconduct.*

The two hypotheses have different implications for how equity values should react to a firm's direct involvement in the scandal and how these changes should vary in the cross-section of firms accused of backdating.

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[27] NYSE's (NASDAQ's) bylaws mandate delisting of (can delist) a company's stock when annual (quarterly) reports are not provided on time.

a) Univariate analysis of the market reaction to backdating disclosures:

- The *Direct Cost Hypothesis* implies economically, and possibly statistically, insignificant backdating-related abnormal returns.

- The *Agency Hypothesis* predicts economically large and statistically significant losses.[28]

b) Multivariate analysis of the market reaction to backdating disclosures.

- The *Direct Cost Hypothesis* is silent on firms' culpability. According to this view of the backdating events, firms bear costs whether or not they are guilty of the alleged misconduct, even if investors do not regard it as such. First, these costs should increase with the amount of resources necessary to deal with backdating accusations, which is likely related to the extent to which firms relied on option compensation during the years in question. Second, compliance and regulatory costs are expected to negatively affect shareholders, independent of firms' likely culpability. Thus, controlling for the latter, the occurrence of shareholder litigation, government inquiries, and delisting is predicted to have a significant incremental negative impact on shareholders' wealth. Third, top executives' turnover should not benefit shareholders, if the scandal simply imposes *costs* on the accused companies. Indeed, assuming the scandal does not affect the perceived managerial ability of the tainted executives, replacing potentially valuable employees should have a uniformly negative effect on equity values, and more so for more valuable executives.

- The alternative hypothesis, *Agency Hypothesis*, has different implications, as the costs and the consequences of the scandal should directly depend on firms' likely culpability and vary with firms' ability to deal with the issue, respectively. First, changes in

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[28] A portion of the sample firms have yet to disclose the results of their reviews, and several lawsuits and government actions are still ongoing. Hence, we cannot systematically measure the direct out-of-pocket costs of the scandal. Therefore, the univariate tests would allow one to draw solid conclusions only if they do not reject the null.

shareholders' wealth resulting from backdating accusations should be directly related to the likelihood backdating took place, whereas the occurrence of private litigation and government actions should not have an effect that is independent of firms' likely culpability. Second, perceived information risk should increase with the size of the resulting restatements, if the latter signal management's inclination to manipulate financial statements. Thus, shareholders' losses should vary directly with the size of the (negative) restatements resulting from the scandal. Third, top executives' turnover should reflect an optimal trade-off between the benefits of lower agency costs and the costs of losing potentially valuable managers. Hence, replacing the tainted executives should not harm shareholders, with net benefits inversely related to the management's perceived ability. Fourth, if shareholder lawsuits supplement the governance mechanisms designed to alleviate the agency problems that gave rise to the backdating schemes, firms with better governance structure should be less likely to face private litigation.

Many attribute a pivotal role to institutional investors in monitoring firms' insiders (Smith, 1996; Gillan and Starks, 2000; Hartzell and Starks, 2003; Chen et al., 2004). Similarly, the market for corporate control may serve to discipline entrenched managers and reduce agency costs (e.g. Agrawal and Koeber, 1996). Motivated by these observations, in the last part of the paper, we discuss the immediate institutional investors' reaction to backdating accusations and the effect of the latter on the market for corporate control.

4. The market reaction to the option backdating scandal and its determinants

4.1 Does the market react to option backdating news? How?

Finding no evidence of significant losses is inconsistent with the *Agency Hypothesis*. The evidence in Table 4, however, shows substantial, negative risk-adjusted returns. The table reports

buy-and-hold abnormal returns (*BHAR*) based on 5x5 size/momentum (column [1]) or size/book-to-market (column [2]) reference portfolios, following Barber et al. (1999) and similar, among others, to Carpenter' and Remmers' (2001) study of stock options' exercises. Furthermore, column [3] presents cumulative abnormal returns (CAR) based on a model including Fama' and French's (1993) equal-weighted market, size, book-to-market, and Carhart's (1997) momentum factors.[29,30] The reported p-values rely on bootstrap, skewness-adjusted t-statistics in columns [1-2], and GLS panel regression standard errors in [3].

Although the estimates vary slightly depending on the approach, they all support the same conclusion – see also Figure 1: the trading days leading to and those immediately surrounding the first announcement of firm-specific backdating allegations are associated with negative abnormal returns – around -7%, significant at a 1% probability level. Furthermore, consistent with market efficiency, there is no evident positive or negative drift during the 80-day period following the first announcement. The results in Table 4 support the agency hypothesis and, we would argue, cast some doubts on the notion that shareholder losses are merely the result of fixed out-of-pocket costs ensuing from the scandal.

Interestingly, it seems that rational investors anticipate to some degree which firms would face backdating-related problems, consistent with some evidence by Caron et al. (2008). To explore this issue further, we conduct the tests summarized in Figures 2 and 3. Figure 2 depicts CARs estimated after we segment our sample in three groups based on the timing of the first firm-specific news. The first group, *First Wave*, includes firms directly involved in the scandal

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[29] Using a simple market model or the calendar time portfolio approach advocated by Barber and Lyon (1997) and Kothari and Warner (1997) yields similar results. Alternatively, we use the value-weighted market index and the resulting CAR estimates are at least 40% higher in absolute value. All results based on alternative approaches are available from the authors upon request.

[30] Because we analyze returns over separate firm-events windows, which would pose the problem of cumulating BHARs over events that are often months apart, and because the abnormal returns using the four-factor model are essentially identical to the other two methods, we use the FFM CARs in the remainder of our analysis.

by the end of April 2006; the second group, *Second Wave*, those between May and August 2006; and, the third group, *Third Wave*, those between September and December 2006. The graph shows that the negative pre-first news drift becomes apparent relatively earlier for firms involved in the scandal at later dates. Thus, consistent with our conjecture, it seems that, to some extent, investors anticipate firms' direct involvement once the avalanche of backdating stories mounts.

If this is indeed the case, the estimates in Table 4 only provide a lower bound of the impact of the scandal on shareholders' wealth. In Figure 3, we track the abnormal performance of the equal-weighted portfolio of sample firms starting around the initial circulation of Erik Lie's (2005) article, which the author places in February 2004.[31] First, there is no conclusive evidence that investors react during the two months surrounding circulation of Lie's article (t=0). Untabulated GLS' estimates, which we favor because the analysis is centered on a common date, show that CARs are not statistically significant during that period. Second, after the first few cases emerge and the WSJ runs a story quoting an early draft of Heron and Lie (2007) – i.e. November 2005, there seems to be a substantial, lasting drop in the value of the portfolio. Finally, the losses around and following the WSJ's March 18, 2006 article are economically and statistically significant, adding to the earlier losses. Altogether, between November 2005 and December 2006, the portfolio's risk-adjusted return is between -15% and -20% depending on the benchmark and in any case significant at least at the 5% confidence level. Thus, *First News* losses likely underestimate the full impact of the scandal, further strengthening the observation that shareholders' losses seem larger than any reasonable estimate of out-of-pocket costs.

Panels A and B of Table 5 provide a more complete picture of the market reaction to the firm-specific events summarized in Table 2. Panel A presents statistics for the cumulative effect of all firm-specific news events (*All News*) and separately for each event date ordered

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[31] We thank Erik Lie for clearing up this issue for us.

chronologically (*First*, *Second*, etc.) – dollar and percentage; for windows (-20, 20) and (-1, 1). The average 41-day *All News % ($) CAR* is -8.91% (-$686 million) and the associated p-values support rejection of the null hypothesis, *mean(CAR)=0*, at conventional significance levels. Moreover, the losses appear to be mainly concentrated around the first events. Hence, in addition to anticipating firms' involvement in the scandal – Table 4 and Fig. 1-3, investors seem to form unbiased expectations regarding the events that follow and react accordingly to the first news.

Panel B presents similar statistics by event type. Given the evidence in Panel A and the timing of internal investigations' announcements (Table 2), it is not very surprising that most of the losses take place around this event. There is evidence, however, that the announcement of DOJ investigations results in significant, negative incremental CARs. Among other events, only *Delisting Warning'*, *Management Departure'* (negative), and *Filed Restatement'*s (positive) 3-day CARs are statistically significant, although the associated 41-day CARs are not significantly different from zero.

In summary, Tables 4-5 and Figures 1-3 show that investors' typical reaction to firm-specific backdating news: is negative and significant, both economically and statistically; is consistent with anticipation of firms' direct involvement, with longer-horizon estimates implying larger losses; and, finally, is concentrated around the first news-events, for the most part. Although due to lack of systematic data on direct out-of-pocket costs we cannot rule out the null hypothesis, the magnitude of the losses casts serious doubts on the notion that direct costs are the only determinant factor.

4.2 What determines changes in shareholders' wealth around option backdating news?

In this section, our main focus is on the relation between firms' likely culpability, backdating-related disclosures, and the market reaction to backdating news. Before proceeding

with the multivariate analysis, we note that some events may themselves be caused by investors'

reaction to a firm's involvement in the scandal. In particular, it is possible *DOJ* and *SEC*

Investigations, *Management Departure*, and *Shareholder Lawsuit* could depend on shareholder

losses around the first news (Meulbroek, 1992; Francis et al., 1994; Jones and Weingram, 1996;

Grande and Lewis, 2007). To investigate this possibility, we analyze whether, conditional on a

firm facing one of these events *after* the first news (treatment group), the firm experiences more

negative *First News* CARs. If the events under consideration are motivated by the initial market

reaction, then shareholders of treatment firms should typically experience larger losses around

the first news compared to those in the control group (i.e. firms that do not experience the event

following the first news).

As shown in Table 6, first, we segment the sample based on whether a firm experiences a

(treatment) event or not and, within the first group, we further segment firms based on whether

the treatment event coincides with the first news – or is relatively close in time to the first news,

20 days. Then, we estimate the 41-day *First News CAR* separately for the three groups and

determine whether there are significant differences. As discussed above, *First News CAR* should

be lower for firms experiencing the (treatment) event relatively late compared to the no event

group, if the market reaction causes the event. The evidence in Table 6 does not support the idea

that government (DOJ or SEC) investigations are the result of more negative initial returns. On

the other hand, there is some indication that firms' and shareholders' actions following the

scandal may be related to the initial losses. Therefore, we control for potential endogeneity of

these two events in later multivariate tests.

Table 7 reports OLS estimates of the model relating shareholders' wealth changes to

firm-specific disclosures – except shareholder litigation and management turnover, firm and

option grant characteristics, and firms' likely culpability. Models (1) and (3) include the disclosure variables, as well as indicator variables for above median performance leading up to the scandal and above median governance – and market cap in the dollar CAR model, (3). In models (2) and (4), we include the option-related and firms' culpability variables. To determine whether backdating disclosures have explanatory power independent of firms' likely culpability, we estimate how each disclosure relates to the latter and the other option-related variables (Logit for the events and Tobit for the restatements) and use the residuals from these models in lieu of the observed disclosures in models (2) and (4).

The estimates in Table 7 show that shareholders' returns are inversely and significantly related to firms' likely culpability, as proxied by *Rank of Option Granting Pattern Odds*.[32] Holding all else constant, if the rank increases from the 25th to the 75th percentile (i.e. 65 positions), *All News CAR* decreases by more than 9.7% or $1,560 million (=.0015*65 or 24*65). Although higher *% or $ Black-Scholes Values* of firms' executives stock option plans during the 1996-2004 period are associated with lower returns, the coefficient estimate is not significant at conventional confidence levels. On the other hand, the frequency with which firms made option grants to executives during the same period has a positive, statistically significant effect on *All News CAR*. Therefore, the evidence is consistent with the idea that investors' reaction to backdating accusations is directly related to the likely extent of management misconduct (agency hypothesis), whereas the magnitude and frequency of option grants to executives during the years in questions do not matter or have a positive effect, respectively.

Shareholders of firms that performed relatively better during the year ending prior to the accusations (i.e. industry-adjusted returns above the sample median) suffer significantly larger

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[32] Using *Average P-Value* or *Average Odds* of the option granting pattern yields qualitatively similar results, available upon request.

losses. The effect of better governance prior to the accusations (i.e. ISS governance score above the sample median), on the other hand, is always negative, but not consistently significant. Among the other variables of interest in models (2) and (4), backdating-related disclosures have no consistent, incremental explanatory power beyond the effect of firms' likely culpability. Thus, it does not appear the market reaction to backdating news reflects costs firms bear independent of whether grants' manipulation took place, as implied by the *Direct Cost Hypothesis*.

The only other factor displaying explanatory power is the magnitude of the disclosed restatements. In the *% CAR* model, on average, a firm loses approximately $1 for each (residual) dollar restated, while the same effect is approximately 10 times larger in the dollar return model. Although these magnitudes are somewhat surprising, given that the restatements have little cash flow implications, their direction and significance supports the notion that lower perceived quality of a firm's disclosure policy results in higher information risk and, thus, lower valuations.

5. What follows backdating accusations?

5.1 The determinants of shareholder litigation and its effect on shareholders' wealth

The common perception is that shareholder litigation imposes significant costs on the target firms. Although Romano (1991) finds little evidence of significant price reaction to lawsuits' initiation (-0.41%), Bhagat et al. (1994, 1998) report a significant negative response to the announcement of various litigation filings. Furthermore, Francis et al. (1994) document a 17.2% price decline around corrective disclosures that prompt litigation and, consistent with this finding, others show that investors largely anticipate impending suits and the resulting losses (Griffin, et al. 2000; Grande and Lewis, 2007). Plaintiffs' decision to litigate, however, is based on estimated damages, which, in turn, depend on stock price movements: firms with better performance prior to a corrective disclosure and less negative reaction to own (or industry-

peers') disclosure(s) are less likely to be sued (Francis et al., 1994; Jones and Weingram, 1996; Grande and Lewis, 2007).

Many sample firms face some form of shareholder litigation due to the backdating scandal. The losses documented earlier could be due, at least in part, to investors' anticipation of lawsuits. Yet, it is also possible legal actions by shareholders are themselves prompted by the market reaction to a firm's involvement in the scandal. We estimate two simultaneous-equation models for the joint determination of shareholder litigation and wealth – percentage CAR in system (1) and dollar CAR in (2); and report the evidence in Table 8. The coefficient estimates and associated p-values are based on the two-stage estimation approach described in Maddala (1983). The identification of the system is assured by the presence of variables and interaction terms that are unique to each estimated equation in the system.

The second-stage coefficient estimates in the CAR equations in Table 8 are similar to those reported in the previous table, with firms' likely culpability, the magnitude of the restatements, and prior industry-adjusted performance directly related to shareholder losses. Furthermore, although investors' expectations of backdating-related lawsuits seem to be associated with more negative returns, the estimated coefficients are not statistically significant. Thus, it does not appear that private litigation is driving our earlier inference.

Focusing on the equation for the determinants of shareholder litigation, the coefficient estimates and their statistical significance are mostly consistent across the two systems. All else equal, shareholder lawsuits target firms where it is more likely backdating took place and, consistent with earlier studies, companies with a larger asset base (*deep pockets*). For firms that have worse governance systems, the effect of the market reaction on the likelihood of litigation is negative, yet not statistically significant. On the other hand, firms with better governance

systems are less likely to face shareholder lawsuits and this effect largely depends on the abnormal returns experienced by shareholders around backdating news – i.e. with larger losses being associated with a higher probability of litigation, for firms having better governance. While the null hypothesis is silent on the determinants of shareholder lawsuits, the evidence supports the idea that private litigation complements existing governance mechanisms in addressing the agency problems underlying backdating practices.

Some backdating-related events are related to the probability of litigation, independent of firms' likely culpability. Specifically, firms subject to government investigations are more likely to face private litigation, maybe because the existence of government actions provides more solid grounds to allegations that management misconduct took place. Interestingly, while firms' ability to quantify a restatement is associated with lower litigation frequency, the magnitude of the corresponding adjustment to the firm's financial records is positively related to the occurrence of shareholder lawsuits, possibly because larger restatements may be associated with more extensive misconduct.

5.2 The determinants of management turnover and its effect on shareholders' wealth

Backdating-related management turnover can be costly, especially for firms forced to part with more valuable executives and/or directors. If firms rationally trade off this cost against the benefits of preventing future management misconduct and restoring the firm's reputation, however, shareholders should gain or, at worse, not lose as a result of executives' departures. The null hypothesis, on the other hand, implies that backdating-related executives' departure cannot produce any benefit for shareholders.

Table 9 presents the analysis of the determinants of senior management (executives and/or directors) turnover and its relation with the market reaction to the scandal. The format of

the table and the simultaneous-equations models presented therein are similar to those of Table 8. Identification of the systems is assured by the presence of variables and interaction terms that are unique to each estimated equation in the model. Once again, the evidence shows that shareholders' losses are directly associated with firms' likely culpability, the magnitude of the restatements, and prior industry-adjusted performance. Furthermore, shareholders of firms with relatively low industry-adjusted performance prior to the scandal benefit as management departure becomes more likely, whereas turnover neither benefits nor harms shareholders of the remaining firms following direct involvement in the scandal – the p-value for the Wald test of (Management Departure Instrument + Interaction Term)=0 is approximately 0.89. This supports the idea that firms optimally trade off the benefits and costs of management turnover, despite the null hypothesis implying no benefits stem from executives' and/or directors' departure.

In the management departure equation, holding all else constant, the likelihood of turnover is positively related to our proxy of culpability, but this effect is not statistically significant. Second, better governance makes turnover following the scandal more likely for relatively worse-performing firms. Third, the likelihood of executives' departure increases with the occurrence of DOJ investigations into a firm's option granting practices and restatement announcements, and with the magnitude of the corresponding adjustments, independent of firms' likely culpability. Finally, the market reaction to the scandal, measured in percentage or dollar terms, does not appear to affect firms' decision to parts with executives tainted by the backdating allegations. Overall, the evidence is not consistent with the notion that the decision to part with senior management is a (irrational) response designed to "appease the gods" and supports the idea that it is affected by the impact of the scandal on the firm's reputational capital.

Although the majority of firms in our sample do not experience management turnover, anecdotal evidence suggests that culpable individuals who retain their position may still face severe consequences. In June 2006, for instance, two prominent proxy advisory firms, Glass Lewis and Institutional Shareholder Services, prompted shareholders of CNET to withhold votes for certain individuals likely to have been involved in the firm's backdating practices. These developments, as well as the estimated benefits of top managers' departure reported in Table 9 support the idea that the impact of the backdating scandal on firms' reputational capital is a first order-determinant of the losses experienced by shareholders.

5.3 Changes in institutional investors' holdings

The agency hypothesis posits that, as a result of the scandal, shareholders expect to bear higher costs to regulate and monitor their relationship with managers, or a higher residual loss given the current set of contracts. Institutional investors are typically portrayed as playing a crucial role in monitoring insiders and bearing a disproportionate share of the related costs (see, for instance, Smith, 1996; Gillan and Starks, 2000; Hartzell and Starks, 2003; Chen et al., 2004).

Using quarterly institutional ownership data, we analyze institutions' trading patterns following the backdating accusations and determine whether they respond by liquidating their positions in firms directly involved in the scandal.[33,34] The results of our analysis, available upon request, show that institutions do not liquidate their positions prior to firms' direct involvement in the scandal and, if anything, they typically accumulate equity during the three quarters prior to the first firm-specific news. However, both institutional ownership stakes and the number of holding institutions decrease following the first news, and the changes are statistically significant

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[33] The data are from Thompson Analytics' CDA/Spectrum Institutional 13(f) Common Stock Holdings and Transactions filings and cover the period ending in the third quarter of 2006 (i.e. September 30, 2006).
[34] We aggregate holdings reported by: Banks; Insurance Companies; Investment Companies (and Their Managers); Pension Funds; University Endowments; and Foundations.

at conventional confidence levels. Hence, although institutional investors do not seem to liquidate suspect stocks proactively, on average, they do actively disinvest the equity of firms directly involved in the backdating scandal.

5.4 Takeovers

Companies' involvement in the backdating scandal could make them appetible takeover targets. Firms accused of backdating are indeed very likely to receive takeover offers, with 12 firms receiving at least one offer by July 2007. As shown, backdating accusations depress equity values and, one could argue, give opportunistic buyers the ability to acquire targeted firms at unfairly discounted prices. However, there should be substantial competition among potential acquirers attracted by the prospects of buying an undervalued company. Therefore, it is not clear why (rational) shareholders should be willing to accept abnormally low bids.

On the other hand, a well-functioning market for corporate control should serve to alleviate agency problems (see, among others, Agrawal and Knoeber, 1996). Thus, the wave of acquisitions offers to firms accused of backdating is logically consistent with the notion that the indirect economic consequences of backdating accusations are of first-order importance. Along these lines, we would expect firms involved in the scandal to receive takeover offers with high frequency. And, to the extent that gains from improving the governance structure of the targeted companies are not bidder-specific, we expect firms accused of backdating to fair no worse than the typical target.

In the span of a year since direct involvement in the scandal, 12 firms with average pre-scandal market capitalization of \$5.65 billion receive takeover offers, with private acquirers playing a major role (5 offers). The evidence in Table 10 shows that 11 of those offers are all-cash and only 2 are contested. Thus, almost 10% of the sample firms become takeover targets

following the scandal, although the historical unconditional yearly frequency for public companies is less than 2% and never higher than 5% - using data between 1980 and 2003 from SDC. Furthermore, inconsistent with the idea that these deals are mainly motivated by buyers seeking to acquire undervalued targets, competing bids are relatively infrequent and the typical premium is comparable to historical averages. In particular, the average announcement day premium, 26.77%, is slightly higher than the premium based on pre-scandal market values, 22.96% - higher in 50% of the cases. This evidence does not lend unambiguous support to the argument that the shareholders of firms accused of backdating are systematically exploited by opportunistic buyers. And, although these facts are only suggestive, if taken in isolation, we believe that together with the earlier evidence, they further support the agency hypothesis.

5.5 Is the scandal effectively precluding an efficient compensation mechanism?

Some commentators and researchers suggest option backdating practices may simply be the result of efficient contracting between firms' managers and shareholders. Some argue, for instance, backdating may be in the interest of shareholders, because discount option grants are more valuable to the recipients, who, in turn, require smaller grants, which ultimately reduces equity dilution.[35] Gao and Mahmudi (2008), on the other hand, develop a model that shares features with Hall' and Murphy's (2000) analysis. The theory hinges on the notion that, due to managerial risk-aversion, the net-benefits of option compensation are maximized when managers receive discount stock options. Therefore, Gao and Mahmudi conclude, backdating is an efficient compensation mechanism.[36]

The latter argument, however, lacks both theoretical and empirical foundations. First, granting discount (i.e. in-the-money) options is not illegal *per se*. As a matter of fact, however,

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[35] This argument is fundamentally flawed, if, as implicit in its underlying logic, backdated and equivalent at-the-money option grants are to be equally valuable to the recipient.

[36] Which likely stretches Hall' and Murphy's (2000) conclusions beyond what these authors had originally intended.

the evidence overwhelmingly indicates firms are reluctant to granting discount options. This is usually ascribed to the unfavorable treatment to which such grants are subject under the US tax code. Yet, as Hall and Murphy (2000) point out, firms' tendency to avoid granting in-the-money options has its roots in the 1980's, long before tax considerations became a relevant concern. Second, the conclusion that *undisclosed* backdating may be in the interest of shareholders overlooks a very important consideration, in our opinion. If managers are self-interested, rational economic agents, then any form of *secret self-dealing* is subject to potentially large abuses – which are ignored in Gao' and Mahmudi's (2008) analysis. By the very definition of secrecy, an unapproved, undisclosed policy cannot be expected to benefit shareholders, because the expected monitoring costs imposed on individual investors are infinite. One could then argue directors' responsibilities include safeguarding shareholders interest in the context of these secret transactions. Yet, once more, this logic overlooks the empirical fact that, in the overwhelming majority of publicly confirmed cases of option backdating, directors are not aware of management secret self-dealing. Finally, we believe this argument is not supported by the evidence presented. Indeed, if backdating is an optimal compensation mechanism – and investors view it as such, management turnover following the scandal should harm shareholders.

6. Summary and Conclusions

Unlike other types of fraud, revelations of stock options backdating have a relatively small effect on cash flows. Absent unconditional out-of-pocket costs and tax adjustments, one could argue the backdating scandal should not affect shareholders (*Direct Cost Hypothesis*). Alternatively, investors' reaction to backdating news may reflect increased agency costs and information risk, if the accusations impair the reputation and credibility of targeted companies (*Agency Hypothesis*).

We measure the stock market reaction to the option backdating scandal based on over 750 news events distributed across 129 firms. Upon being involved in the scandal, firms experience large, negative abnormal returns, with losses of hundreds of millions of dollars that seem larger than any reasonable estimate of out-of-pocket costs.

Additional tests further support the agency hypothesis. Investors' reaction is negatively related to firms' likely culpability and, consistent with increased information risk, shareholders' losses are directly related to the magnitude of the resulting earnings restatements, despite their effect on cash flows being arguably small. Most revealingly, our tests show that, for relatively worse performing firms, a higher likelihood of management turnover following the scandal has a positive effect on shareholders' wealth, whereas executives' departure does not benefit nor harm shareholders of better performing firms. Finally, we find that institutional investors tend to liquidate their holdings in the accused companies, and that a relatively large portion of firms accused of backdating receives (arguably fair) takeover offers over the span of a calendar year.

In conclusion, despite the contention that option backdating is not economically relevant, it appears investors place significant weight on the information conveyed by backdating accusations. Therefore, one should be careful to not underestimate the value of management honesty and integrity, even when firm insiders' misconduct may seem inconsequential.

Appendix A – Reporting requirements and tax treatment of stock option compensation

Accounting rules: Under the guidelines established by the Accounting Principles Board (APB) Opinion 25, APB25, firms must recognize an accounting charge equal to the difference between the options' exercise price and the stock price on the grant date multiplied by the number of shares underlying the grant, and amortize the expense over the grant's vesting period (*Intrinsic Value Method*). No expense recognition takes place for at- or below-the-money option grants.

In 1995, FASB issued Statements of Financial Accounting Standards 123, or SFAS 123, prompting companies to recognize cumulative compensation charges equal to the fair market value of (*any*) stock option at the time of their grant (*Fair Value Method*). However, the rule allows firms to report under APB25, as long as footnotes to the financial statement contain pro-forma earnings under SFAS 123.[37] The fair value method and intrinsic value method result in different reported net income for the same firm issuing at-the-money options. By using the intrinsic value method, a firm reports higher net income during the option grants' vesting period, a (cumulative) amount equal to the (fair) value of the options on the grant date.

An option-related expense is recognized only for options that ultimately vest and a compensation expense is not reversed for options that are cancelled after vesting or expire unexercised. At the end of the life of the option (its expiration), the holder will either exercise it at a gain or allow it to expire unexercised. At that point, the firm's income is unaffected regardless of the accounting method and option holders' actions. Hence, no subsequent transaction reverses the vesting period differences in reported earnings due to the different accounting treatment of option grants.

Tax rules: The Internal Revenue Code (IRC) recognizes two fundamental types of options. One is called "statutory" or "qualified" options (ISO) because they are accorded favorable tax treatment, if they meet some qualifications (IRC Section 421-424). The second is "nonqualified" options (NSO), which have no special tax criteria to meet.

Provided that stock options granted to employees meet the requirements of IRC 422, i.e. qualify as Incentive Stock Options (ISO), they receive a tax benefit. Qualified options are not taxed to the employee when granted or exercised (under the regular tax); tax is imposed only when the stock is sold. If the stock is held one year from purchase and two years from the granting of the option, the gain is taxed as long-term capital gain. The employer is not allowed a deduction for

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[37] The vast majority of companies continued to opt for APB 25, until FASB issued SFAS 123R in December 2004, which eliminated firms' ability to choose between reporting standards. For the purpose of our analysis, SAFS 123R is not relevant, since we focus on the 1996-2004 period.

these options. However, if the stock is not held the required time, the employee will recognize compensation income equal to the difference between the fair market value of the stock at the time of exercise and the option price. This compensation is taxed at the employee's ordinary income rate, can be deducted by the employer for tax purposes, and is subject to withholding and the standard employment taxes.

Nonqualified options (NSO) fall under the general rules governing the transfer of property other than money in return for services (IR Code Section 83). The IRS has ruled that their fair market value cannot be established until they are exercised and any restrictions on the disposition of the stock have been lifted. At that time, the value of the options is equal to the difference between the exercise price and the stock's current market price.[38,39] NSO exercised by employees are subject to FICA and FUTA taxes and income tax withholding, just as cash wages are. The company granting the options is allowed to deduct from its income the same value of the options that the recipient includes in taxable income in the same year (Section 83(h)).

Thus, any realized compensation deriving from stock options, NSO or ISO, on which the recipient pays ordinary income taxes can be deducted for tax purposes by the granting firm. However, the tax deduction for compensation paid to the CEO and certain other highly paid officers is limited under IRC Section 162(m) to $1,000,000 annually, with a number of exceptions. Stock options reportedly granted at- or below-the-money, whether ISO or NSO, are not subject to the executive compensation limits, if they are granted in accordance with a plan approved by the shareholders and meet the other requirements of Section 162(m).

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[38] IR Reg. 1.83-7.
[39] There is a provision in Section 83 (b) allowing the recipient of the options to elect to include their value in income in the year they are exercised, valuing them as if the stock were not restricted. However, no future deduction is allowed if the stock is later forfeited.

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Table 1 – Summary statistics for 129 companies listed on the Wall Street Journal website on December 31, 2006 as being implicated in the stock options backdating scandal. The table reports summary statistics for characteristics of the sample firms. *NASDAQ* (*NYSE*, *OTC*) is a dummy variable that equals 1 if the firm's common equity is traded on NASDAQ (New York Stock Exchange, OTC Bulletin Board or Non NASDAQ OTC.) *Market Capitalization* is equal to the stock price as of 60 trading days prior to the date of the first firm-specific backdating-related news (i.e. t=0) multiplied by the number of common shares outstanding on that date. *Book Asset* is equal to the book value of asset at the end of the fiscal year prior to *t=0*. *1-year Raw Return* (*1-year Ind. Adj. Return*) is equal to the 12 months stock return ending 60 trading days prior to t=0 (minus the average stock return of firms with the same two-digit primary SIC code over the same period). *ISS Governance Index* varies between 0 and 100%, indicating the portion of the 44 categories considered by ISS in which a firm meets or exceeds minimum satisfactory standards as of the last measurement prior to the scandal – see Chhaochharia and Laeven (2007) for more details. *Big 4 Auditor* is a dummy variable equal to 1 if the firm current auditor is one of the big 4 accounting firms (Deloitte & Touche, Ernst & Young, KPMG, or PricewaterhouseCoopers). *Letter to FASB opposing expensing* is a dummy equal to 1 if the company sent a comment letter to the Financial Accounting Standards Board that opposed either the original FAS 123 exposure draft (1994), or the Share-Based Payment (a.k.a. FAS 123R) exposure draft (2004). *Affiliated to lobby opposing expensing* is a dummy equal to 1 if the company was a member of the International Employee Stock Option Coalition (IESOC) or of AeA (the American Electronics Association). All option grants characteristics are restricted to at-the-money stock option grants received by firms' Executive Officers between Jan. 1996 and Dec. 2004. *Number of Unique Grant Dates* is the total number of (unique) dates on which stock options were granted. *SEC Filing Lag* is the average number of days between the originally *reported* grant date and the date on which Form 4 is filed with the SEC to meet disclosure requirements of Section 16(a) of the Securities and Exchanges Act. *% Black-Scholes Grants Value* is the Black-Scholes value of the grants scaled by *Market Capitalization*. Each firm-calendar year, the 20-day return for each day is ranked from highest to lowest. *Average* (%) *Rank of Grant Date 20-day Return* is the mean of the rank (scaled by the number of trading days in the corresponding year) of the 20-day return across all unique grant dates of a firm. *Average Rank P-value* is the probability that an *Average Rank of Grant Date 20-day Return* equal to or better than the observed one may occur, assuming grant dates are randomly drawn from all available trading days in a year and given the firm's options granting pattern (i.e. number of grants per year and number of years in which at least one grant is made). The corresponding p-value is obtained through Monte Carlo simulations. *Average Rank Odds* (*Log(Average Rank Odds)*) is equal to (the natural log of) the reciprocal of *Average Rank P-value*.

N=129	Mean	Median	St. Dev.
Firm Characteristics			
NASDAQ	0.721	1	0.450
NYSE	0.225	0	0.419
OTC	0.054	0	0.227
Market Capitalization	7507.4	1740.1	26977.4
Book Asset	3248.3	909.8	8353.1
Book Leverage	0.117	0.002	0.200
1-year Raw Return	0.235	0.119	0.526
1-year Ind. Adj. Return	0.140	0.028	0.491
ISS Governance Index	65.46	65	8.08
Big 4 Auditor	0.922	1	0.268
Stock Options-related Characteristics			
Letter to FASB opposing expensing	0.140	0	0.348
Affiliated to lobby against expensing	0.132	0	0.340
Number of Unique Grant Dates	9.3	9	5.3
SEC Filing Lag	176.1	141.9	133.4
% Black-Scholes Grants Value	2.87%	1.30%	6.15%
Average Rank of Grant Date 20-day Return	90.7	90.5	33.8
Average % Rank of Grant Date 20-day Return	37.1%	36.8%	14.0%
Average Rank P-Value	0.2007	0.1298	0.2344
Average Rank Odds	1,314,675/1	7.7/1	14,800,000
Log(Average Rank Odds)	3.37	2.04	3.25

Table 2 – Summary statistics of backdating-related news events disclosed by March 30, 2007. The table reports sample characteristics of firms' backdating-related disclosures. The sample includes 129 public firms listed on the Wall Street Journal web site on December 31, 2006 as being implicated in the stock options backdating scandal. *Internal Review* is a dummy equal to 1 if there is news in the press indicating that the company is conducting an internal investigation related to potential stock options backdating. *SEC (DOJ) Investigation* is a dummy equal to 1 if there is news in the press indicating that the company is under investigation by the SEC (DOJ) due to alleged stock options backdating. *Shareholder Lawsuit* is a dummy equal to 1 if there is news in the press indicating that the company is facing a shareholder, derivative or class-action, lawsuit resulting from stock options backdating. *Expected Restatement* is a dummy equal to 1 if there is news in the press indicating that the company expects to restate previous years' earnings due to potential stock options backdating. *Delisting Warning* is a dummy equal to 1 if there is news in the press indicating that the company received notice or threat of delisting by its exchange due to failure to file the required financial statements as a result of potential stock options backdating. *Executive and/or Director Departed* is a dummy equal to 1 if there is news in the press indicating that a company's executive and/or director departed, voluntarily or involuntarily, as a result of potential stock options backdating. *Quantified Restatement* is a dummy equal to 1 if there is news in the press indicating that the company determined and disclosed the amount to be restated on its historical financial statements or announced that it will take a charge against current period earnings due to options backdating and disclosed the corresponding amount. In the last two columns, *Date Rank* refers to how the date on which a particular news type appears in the press ranks relative to the date of other news. A value of 1 is assigned to the earliest disclosure, 2 to the second, and so forth.

N=129	Mean	St. Dev.	Count	Mean Date Rank	Median Date Rank
Internal Review	0.89	0.31	115	1.6	1
SEC Investigation	0.78	0.41	101	2.4	2
DOJ Investigation	0.41	0.49	53	3.1	3
Shareholder Lawsuit	0.60	0.49	78	3.1	3
Expected Restatement	0.76	0.43	98	3.4	3
Delisting Warning	0.43	0.50	55	3.6	4
Executive and/or Director Departure	0.36	0.48	46	4.3	5
Quantified Restatement	0.71	0.46	91	5.3	6

Table 3 – Outcome of Internal Investigations, Shareholder Litigation, and SEC Inquiries disclosed by April 30, 2008. The table reports sample characteristics of disclosures related to the outcome of internal investigations (Panel A), shareholder lawsuits (Panel B), and SEC inquiries (Panel C) of 129 public firms listed on the Wall Street Journal web site on December 31, 2006 as being implicated in the stock options backdating scandal.

Panel A – Outcome of Internal Investigation. *Material Weakness* is a dummy equal to 1 if the company disclosed discovering a material weakness in its internal controls related to approval and/or reporting of stock option grants. *Cumulative $ Restatement* is the change in the firm's historical earnings subsequent to uncovering backdated stock-option grants. *% Restatement* is equal to *$ Restatement* scaled by the firm equity market capitalization as of 60 trading days prior to the first firm-specific backdating news. *Cancel Tainted Options or Return Ill-Gotten Gains* is a dummy variable equal to 1 if the firm announces forfeiture of unexercised backdated options or restitution of the corresponding ill-gotten gains by the recipient. *Reprice Tainted Options* is a dummy variable equal to 1 if the firm announces repricing of unexercised backdated options. *Change Terms of Tainted Options* is a dummy variable equal to 1 if the firm announces changing the terms of unexercised backdated options other than the exercise price – in both cases the vesting periods were increased. *Firm Make-whole for Employee's Taxes* is a dummy variable equal to 1 if the firm announces a plan to reimburse employees for taxes arising from exercised backdated options. *Firm Make-whole for Repricing* is a dummy variable equal to 1 if the firm announces a plan to reimburse employees for losses arising from repricing of unexercised backdated options.

N=129	Mean	Median	St. Dev.	Count
Disclose Material Weakness	0.295	0	0.458	38
Cumulative $ Restatement	-122.4	-31.1	305.7	91
Cumulative % Restatement	-0.047	-0.023	0.060	91
Cancel Tainted Options or Return Ill-Gotten Gains	0.093	0	0.292	12
Reprice Tainted Options	0.209	0	0.408	27
Change Terms of Tainted Options	0.016	0	0.124	2
Firm Make-whole for Employee's Taxes	0.039	0	0.194	5
Firm Make-whole for Repricing	0.070	0	0.256	9

Panel B – Outcome of Shareholder Class-Action and/or Derivative Litigation. ation. *Dismissed* is a dummy equal to 1 if a request for dismissal of a backdating-related class-action or derivative lawsuit is granted. *Not Dismissed* is a dummy equal to 1 if a request for dismissal of a backdating-related class-action or derivative lawsuit is not granted. *Settlement* is a dummy equal to 1 if a settlement in a backdating-related class-action or derivative lawsuit is reached and approved. *Class-Action Settlement ($)* is equal to the damage award agreed upon in the corresponding settlement, gross of legal fees. *Class-Action Settlement (%)* is equal to *Class-Action Settlement ($)* scaled by the firm equity market capitalization as of 60 trading days prior to the first firm-specific backdating news. *Derivative Settlement ($)* is equal to the damage award agreed upon in the corresponding settlement, gross of legal fees. *Derivative Settlement (%)* is equal to *Derivative Settlement ($)* scaled by the firm equity market capitalization as of 60 trading days prior to the first firm-specific backdating news.

N=78	Mean	Median	St. Dev.	Count
Dismissed	0.231	0	0.424	18
Not Dismissed	0.103	0	0.305	8
Settlement	0.218	0	0.416	17
Class-Action Settlement ($)	37.9	16	44.8	6
Class-Action Settlement (%)	0.019	0.014	0.018	
Derivative Settlement ($)	94.5	2.2	283.1	10
Derivative Settlement (%)	0.002	0.001	0.003	

Panel C – Outcome of Formal and Informal SEC Inquiries. *Enforcement Action* is a dummy equal to 1 if the firm becomes the subject of a formal action by the SEC. *No Enforcement Action* is a dummy equal to 1 if the firm is informed by the SEC that a formal or informal inquiry by the Commission is not to be followed by a formal enforcement action. *Administrative Penalty ($)* is equal to the penalty imposed by and to be paid to the SEC subsequent to a formal enforcement action. *Administrative Penalty (%)* is equal to *Administrative Penalty ($)* scaled by the firm equity market capitalization as of 60 trading days prior to the first firm-specific backdating news. *Disgorgement Penalty ($)* is equal to the penalty imposed by the SEC subsequent to a formal enforcement action and to be paid to the firm. *Disgorgement Penalty (%)* is equal to *Disgorgement Penalty ($)* scaled by the firm equity market capitalization as of 60 trading days prior to the first firm-specific backdating news.

N=101	Mean	Median	St. Dev.	Count
Enforcement Action	0.139	0	0.347	14
No Enforcement Action	0.139	0	0.347	14
Administrative Penalty ($)	7.1	4	9.4	8
Administrative Penalty (%)	0.0016	0.0004	0.0026	
Disgorgement Penalty ($)	157.2	5.3	263.1	3
Disgorgement Penalty (%)	0.0036	0.0039	0.0025	

Table 4 – Market reaction to the first firm-specific backdating news for 129 companies listed on the Wall Street Journal website on December 31, 2006 as being implicated in the stock options backdating scandal. The table reports risk-adjusted cumulative and buy-and-hold abnormal stock returns around the date of the first firm-specific backdating (i.e. *t=0*). Event windows are defined as trading days relative to *t=0*. Average buy-and-hold abnormal returns (columns [1] and [2]) are based on equal-weighted 5x5 size/momentum (column [1]) or size/book-to-market (column [2]) reference portfolios. Sample firms are matched with size/momentum reference portfolios at the end of each calendar month, while they are matched with size/book-to-market reference portfolios at the end of June of each year. A firm buy-and-hold abnormal return is defined as:

$$BHAR_{i(t1,t2)} = BHR_{i(t1,t2)} - BHR_{P(t1,t2)}$$

where $BHAR_{i(t1,t2)}$ is the (t_1,t_2) window buy-and-hold abnormal return for security i, $BHR_{i(t1,t2)}$ is the (t_1,t_2) window buy-and-hold return for security i, and BHR_{PT} is the (t_1,t_2) window buy-and-hold return for the reference portfolio. The *P-values* reported in brackets are based on skewness-adjusted bootstrap t-statistics, computed as described in Lyon, Barber, and Tsai (1999). Average cumulative abnormal returns, *CAR FFM Parameter GLS Estimates* (column [3]), are based on a model of expected return that includes the Fama-French (1993) factors (i.e. SMB and HML, in addition to the equal-weighted market index) and the Carhart (1997) momentum factor. The *P-values* reported in brackets are based on Schipper' and Thompson's (1985) panel regression approach, when using the same model of expected returns. The corresponding standard errors are adjusted for panel-specific residuals serial correlation, assuming a first-order autoregressive process, and pair-wise cross-panel correlation. *, **, and *** indicate that the null hypothesis, *Mean(BHAR or CAR)=0*, can be rejected at a 10%, 5%, and 1% significance level, respectively. Reference portfolio returns, size', book-to-market', and momentum's breakpoints, FF and momentum factor returns are from Ken French's website, http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

Trading Days Relative to First Date of Backdating News	N	[1] BHAR Size/Mom EW Portfolio Mean [P-value]	[2] BHAR Size/BM EW Portfolio Mean [P-value]	[3] CAR Fama-French Momentum Factors Mean [P-value]
(-40,-21)	129	0.0081 [0.756]	0.0114 [0.843]	0.0116 [0.8427]
(-20,-2)	129	-0.0478*** [0.001]	-0.0482*** [0.001]	-0.0450*** [0.0001]
(-1,1)	129	-0.0238*** [0.001]	-0.0243*** [0.001]	-0.0249*** [0.0001]
(2,20)	129	0.0052 [0.706]	0.0069 [0.765]	-0.0080 [0.2521]
(21,40)	126	-0.0039 [0.394]	0.001 [0.531]	0.0030 [0.215]
(41,60)	119	0.0075 [0.742]	0.0048 [0.659]	-0.0051 [0.6604]
(61,80)	113	0.0069 [0.73]	0.0076 [0.747]	-0.0024 [0.2355]

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Figure 1 – BHAR around the date of first firm-specific backdating news
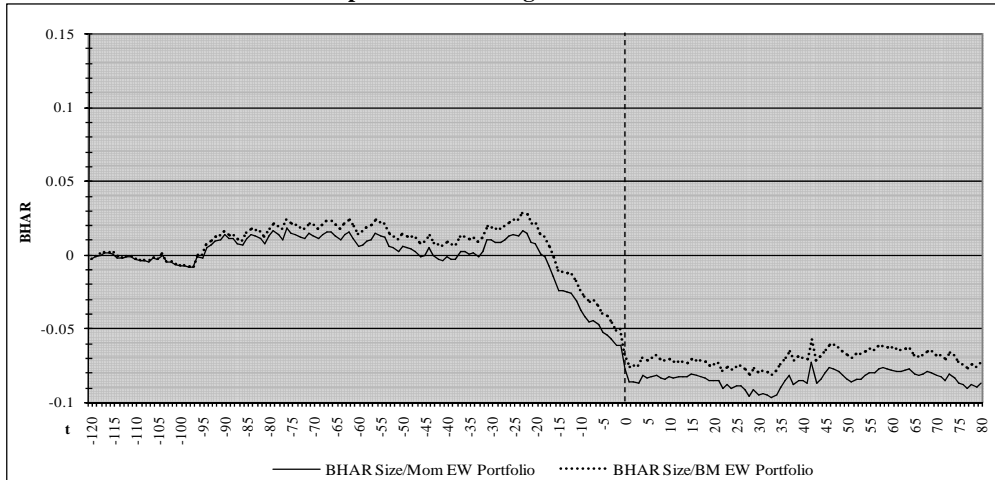

Figure 2 – BHAR around the date of first firm-specific backdating news for subsamples based on timing of first news
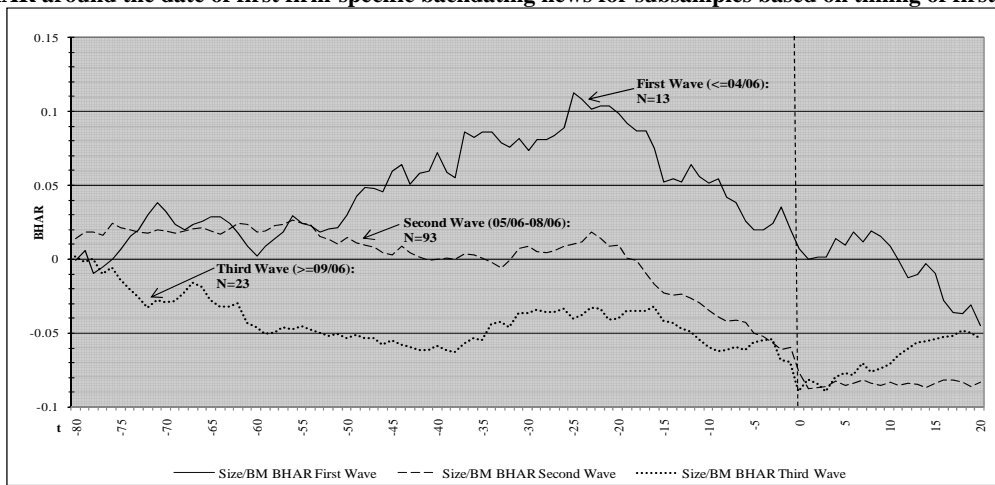

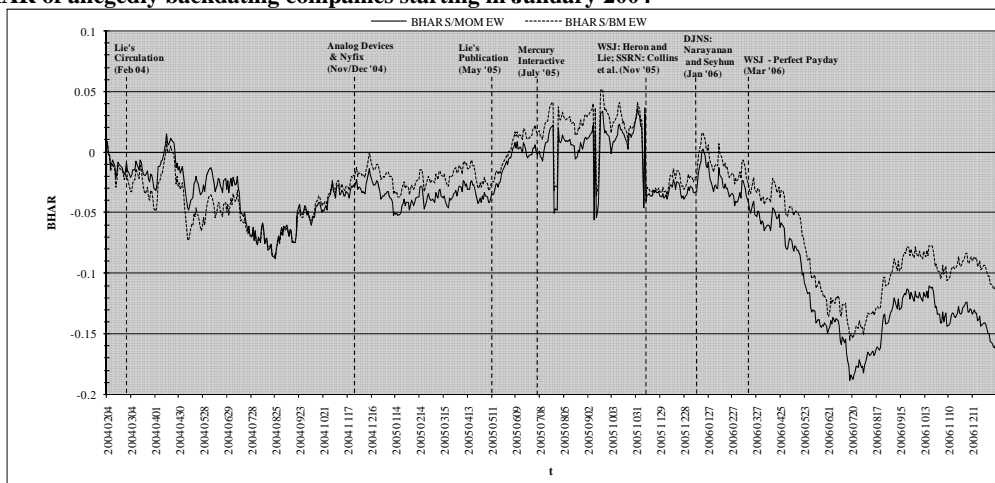**Figure 3 – BHAR of allegedly backdating companies starting in January 2004**

Table 5 – The stock market reaction around firm-specific backdating news events disclosed by March 30, 2007. The table summarizes stock prices' reaction to firm-specific backdating news. Average and median (*italics*) percentage and dollar cumulative abnormal returns are based on a model of expected returns including the Fama-French (1993) factors (i.e. SMB and HML, in addition to the equal-weighted market index) and the Carhart (1997) momentum factor. *% ($) CAR* is the sum of daily percentage (dollar) abnormal returns within the corresponding window centered on the relevant news event date. *N* is equal to the number of sample firms used in the computation. Significance levels of *Mean %CAR* are based on panel GLS p-values when assuming a panel-specific AR(1) process for the residuals and pair-wise cross-panel correlation. Significance levels of *Mean $CAR* are based on p-values of traditional cross-sectional t-statistics. Significance levels of *Median %($)CAR* are based on Wilcoxon signed rank test. *, **, and *** indicate that the null hypothesis can be rejected at a 10%, 5%, and 1% significance level, respectively.

Panel A – Backdating news dates ordered chronologically. *All News CAR* is the sum of AR's on relevant days surrounding any and all event dates. *First* (*Second, Third, etc.*) *News CAR* is the sum of AR's on relevant days surrounding the first (second, third, etc.) date of news in connection with the alleged stock options backdating.

	All News	First News	Second News	Third News	Fourth News	Fifth News	Sixth News	Seventh News
	N=129	N=129	N=121	N=101	N=79	N=63	N=41	N=21
Mean %CAR (-1,1)	-0.0306***	-0.0249***	-0.0094*	-0.0059***	0.0024	-0.0052*	-0.0036**	0.0056
Median %CAR (-1,1)	*-0.023^^^*	*-0.0135^^^*	*-0.0066^^*	*-0.0073*	*0.0011*	*-0.0052*	*-0.0029*	*0.0004*
Mean $CAR (-1,1)	-158.89*	-43.16	-71.47*	-41.42*	57	-41.75*	-217.39*	80.38
Median $CAR (-1,1)	*-28.99^^^*	*-13.41^^^*	*-8.18^*	*-6.36^*	*0.49*	*-5.63^*	*-2.83*	*-0.12*
Mean %CAR (-20,20)	-0.0891***	-0.0779**	-0.0699*	-0.0516*	-0.0315	-0.0005	0.0089	0.0093
Median %CAR (-20,20)	*-0.0472^^^*	*-0.0402^^^*	*-0.0666^^^*	*-0.0457*	*-0.0453^^*	*0.0067*	*-0.0213*	*0.0168*
Mean $CAR (-20,20)	-685.98**	-219.66	-283.77	-329.27*	-231.32*	-122.11	-418.73	-654.25*
Median $CAR (-20,20)	*-97.26^^^*	*-75.43^^^*	*-80.16^^^*	*-67.24^^*	*-27.31*	*-1.41*	*-46.43^^*	*4.66*

Panel B – Backdating news dates ordered by type. *Internal Review* (*SEC Investigation, DOJ Investigation, Shareholder Lawsuit, Expect Restatement, Delisting Warning, Mgmt. Departure, Filed Restatement*) *CAR* is the sum of AR's on relevant days surrounding the date on which for the first time there is news in the press indicating that the company is conducting an internal investigation (is under investigation by the SEC, is under investigation by the DOJ, is being sued by its shareholders, expects to restate earnings, has received a delisting warning or notice by its exchange, is parting with one of its Executives and/or Directors, has filed amended historical financial statements or announced the amount to be charged against current earnings) in connection with the alleged stock options backdating.

	Internal Review	SEC Investigation	DOJ Investigation	Shareholder Lawsuit	Expect Restatement	Delisting Warning	Mgmt. Departure	Filed Restatement
	N=115	N=101	N=53	N=78	N=98	N=55	N=46	N=57
Mean %CAR (-1,1)	-0.0287***	-0.007	-0.0401***	-0.0011	-0.012**	-0.0116*	-0.0119	0.0189***
Median %CAR (-1,1)	*-0.0199^^^*	*-0.0073^^*	*-0.0265^^^*	*-0.0006*	*-0.0052*	*-0.0037^*	*-0.0211^*	*0.0046^^*
Mean $CAR (-1,1)	-142.92***	-90.35**	-167.9***	-14.19	19.77	4	-213.56*	61
Median $CAR (-1,1)	*-17.37^^^*	*-5.63^*	*-57.86^^^*	*-0.9*	*-3.69*	*-0.86^^*	*-17.53*	*5.84*
Mean %CAR (-20,20)	-0.0761***	-0.0552	-0.0768*	-0.0388	-0.0332	-0.0366	-0.0335	0.0044
Median %CAR (-20,20)	*-0.0433^^^*	*-0.0453^^^*	*-0.0538^^^*	*-0.0361*	*-0.0388^*	*-0.046*	*-0.0058^*	*0.0073*
Mean $CAR (-20,20)	-315.74*	-400.5*	-309.45**	-199.71	-171.12	-193.82*	-503.38	-191.52
Median $CAR (-20,20)	*-79.36^^^*	*-49.01^^^*	*-92.5^^*	*-47.78*	*-24.22^^*	*-47.33^*	*-30.59*	*-8.75*

Table 6 – Government investigations, management departure, shareholder lawsuits, and the market reaction to the first backdating news. The table summarizes stock prices' reaction around the first firm-specific backdating news after segmenting the sample based on the occurrence and the timing of government investigations, management departure, and shareholder lawsuits. The *No Event* subsample includes all firms for which the corresponding event did not take place. The *Event disclosed on first news date* subsample includes those firms for which the corresponding event was disclosed on the date of the first firm-specific backdating news appearing in the press. The *Event disclosed after first news date* subsample includes those firms for which the corresponding event was disclosed on a date later than the first firm-specific backdating news appearing in the press. The *Event within 20 days of first news date* subsample includes those firms for which the corresponding event was disclosed on a date within 20 trading days of the first firm-specific backdating news appearing in the press. The *Event after 20 days of first news date* subsample includes those firms for which the corresponding event was disclosed on a date later than 20 trading days after the first firm-specific backdating news appearing in the press. The first figure in each block (*italics*) is the number of firms in the corresponding subsample. The second figure reported is the mean 20-day percentage CAR based on the model of expected returns including the Fama-French (1993) factors (i.e. SMB and HML, in addition to the equal-weighted market index) and the Carhart (1997) momentum factor, as described in Table 5. The figures in brackets are the corresponding cross-sectional standard errors. *, **, and *** indicate that the hypothesis *[Mean CAR (Later Event Sample) – Mean CAR (No Event Sample)]=0* can be rejected at a 10%, 5%, or 1% significance level, respectively. ^, ^^, and ^^^ indicate that the hypothesis *[Mean CAR (Later Event Sample) – Mean CAR (Early Event Sample)]=0* can be rejected at a 10%, 5%, or 1% significance level, respectively.

	% CAR around first news date, window (-20, 20)			
	SEC Investigation	DOJ Investigation	Executive Departure	Shareholder Lawsuit
No Event	*28* -0.0554 [0.032]	*76* -0.0688 [0.02]	*83* -0.0538 [0.0188]	*51* -0.0868 [0.0277]
Event disclosed on the first news date	*34* -0.0935 [0.0302]	*7* -0.1835 [0.0807]	*5* -0.0253 [0.034]	*8* -0.0264 [0.0216]
Event disclosed after the first news date	*67* -0.0793 [0.0217]	*46* -0.0768 [0.0248]	*41* -0.133***^^^ [0.0283]	*70* -0.0773^^ [0.0198]
Event within 20 days of first news	*51* -0.0866 [0.0243]	*20* -0.0917 [0.0465]	*7* -0.0182 [0.024]	*16* -0.0225 [0.0321]
Event more than 20 days after first news	*50* -0.0815 [0.0257]	*33* -0.0904 [0.0275]	*39* -0.1397***^^^ [0.0293]	*62* -0.0849^ [0.0208]

Table 7 – Relation of cumulative abnormal returns around all news event dates with past option grants and disclosures characteristics. The table reports OLS estimates of the following multivariate regression model:

$$All\ News\ CAR = \alpha + \beta\,X + \varepsilon,$$

where *All News CAR* is the percentage (columns 1-2) or dollar (columns 3-4) cumulative abnormal return computed using the *Fama French Momentum* model of expected returns described in Table 5. The variable *Rank of Option Granting Pattern Odds* is the firm-rank when *Average Rank Odds*, as defined in Table 1, is ranked from lowest to highest. It can vary between 1 and 129, with higher ranks corresponding to longer odds. The explanatory variables *Number of Grants*, *% or $ Black-Scholes Grants Value*, *Letter to FASB*, *Lobbying*, *Market Capitalization*, *Ind. Adj. 1-year Return Above Median*, and *ISS Governance Index Above Median* are defined in Table 1. The remaining explanatory variables are defined in Tables 2 and 3. In models (1) and (3), the remaining explanatory variables are as observed, whereas models (2) and (4) use residuals from multivariate Logit or Tobit regression models relating the corresponding variable to *Rank of Option Granting Pattern Odds*, *Number of Grants*, *% or $ Black-Scholes Grants Value*, *Letter to FASB*, *Lobbying*, *Market Capitalization*, *Ind. Adj. 1-year Return Above Median*, and *ISS Governance Index Above Median*. The standard errors on which *p-values* (reported in brackets) are based are adjusted for residuals' heteroskedasticity and clustering at the industry (i.e. four-digit SIC code) level. *, **, and *** indicate statistical significance at a 10%, 5%, and 1% probability level, respectively.

N=129	% CAR (-20, 20) around All News Dates		$ CAR (-20, 20) around All News Dates	
	(1)	(2)	(3)	(4)
Constant	0.1574**	0.0658	1045.3**	1835.2*
	[0.031]	[0.239]	[0.035]	[0.073]
Rank of Option Granting Pattern Odds		-0.0015***		-24.1**
		[0.002]		[0.045]
Number of Grants		0.0129***		61.8*
		[0.000]		[0.09]
% or $ Black-Scholes Grants Value		-0.5612		-3.9
		[0.122]		[0.166]
Industry Adj. 1-year Return Above Median	-0.2644***	-0.27938**	-964.8***	-1454.2***
	[0.000]	[0.000]	[0.001]	[0.003]
ISS Governance Index Above Median	-0.0210	-0.0390	-585.6*	-1147.3**
	[0.662]	[0.411]	[0.077]	[0.044]
Market Capitalization			0.0059	-0.0045
			[0.815]	[0.881]
Letter to FASB		-0.0412		266.1
		[0.421]		[0.664]
Lobbying		0.0223		41.9
		[0.575]		[0.931]
SEC Investigation	-0.0213	-0.0111	-412.4	-285.9*
	[0.673]	[0.605]	[0.138]	[0.087]
DOJ Investigation	-0.0446	-0.0095	-167.3	-91.1
	[0.49]	[0.793]	[0.751]	[0.668]
Expect Restatement	0.0496	0.0234	-782.8*	-226.5
	[0.362]	[0.251]	[0.077]	[0.276]
Delisting Warning	-0.0145	-0.0092	951.9	459.4
	[0.818]	[0.772]	[0.212]	[0.273]
Quantified Restatement	-0.0677	-0.0196	618.7*	210.4
	[0.135]	[0.284]	[0.054]	[0.191]
Material Weakness	-0.0510	-0.0051	111.4	130.1
	[0.317]	[0.846]	[0.819]	[0.584]
% or $ Restatement Amount	-1.0942**	-0.9943***	-10.1	-10.2*
	[0.025]	[0.003]	[0.101]	[0.091]
AdjR^2	0.2611	0.2663	0.3876	0.3885

Table 8 – Determinants of shareholder litigation and cumulative abnormal returns around all news event dates. The table reports estimates of the simultaneous equations model for the occurrence of shareholder litigation and the market reaction to backdating news. The sample is defined in Table 1. *Lawsuit* is a dummy variable equal to 1 if the company faces derivative or class-actions litigation due to backdating. *% ($) CAR* is the All News % ($) CAR based on the four-factor model, two-step estimation described in Table 5. *Rank of Option Granting Pattern Odds* is defined in Table 7. The explanatory variables *Number of Grants*, *% or $ Black-Scholes Grants Value*, *Letter to FASB*, *Lobbying*, *Market Capitalization*, *Ind. Adj. 1-year Return Above Median*, and *ISS Governance Index Above Median* are defined in Table 1. The remaining explanatory variables are residuals from multivariate Logit or Tobit regression models relating the corresponding variable to *Rank of Option Granting Pattern Odds*, *Number of Grants*, *% or $ Black-Scholes Grants Value*, *Letter to FASB*, *Lobbying*, *Market Capitalization*, *Ind. Adj. 1-year Return Above Median*, and *ISS Governance Index Above Median*. The table reports two-stage least squares estimates with p-values based on Maddala (1983). *, **, and *** indicate that the null hypothesis (Estimated Coefficient=0) can be rejected at a 10%, 5%, and 1% significance level, respectively. R^2 is the Zimmermann pseudo-R^2 in the *Lawsuit* regressions, and the adjusted-R^2 in the *CAR* regressions.

N=129	(1)		(2)	
	Lawsuit	**% CAR**	**Lawsuit**	**$ CAR**
Constant	-2.69***	0.0994*	-2.71***	1948.96*
	[0.003]	[0.055]	[0.003]	[0.068]
Shareholder Lawsuit Instrument		-0.0997		-332.39
		[0.568]		[0.862]
Demeaned % or $ CAR (-20,20) Instrument	-0.0930		-0.0001	
	[0.939]		[0.16]	
Rank of Option Granting Pattern Odds	0.0091**	-0.0011*	0.0098**	-23.09**
	[0.039]	[0.084]	[0.026]	[0.028]
Number of Grants	0.0131	0.0136***	0.0033	64.03
	[0.537]	[0.000]	[0.856]	[0.32]
% or $ Black-Scholes Grants Value	0.9130	-0.5520	0.6520	-3.76
	[0.642]	[0.115]	[0.719]	[0.252]
Industry Adj. 1-year Return Above Median	0.1243	-0.2791***	.2751	-1461.28**
	[0.749]	[0.000]	[0.438]	[0.021]
ISS Governance Index Above Median	-0.4602*	-0.0397	-0.3790	-1156.8*
	[0.079]	[0.377]	[0.225]	[0.077]
Above Median Governance*CAR Instrument	-2.41*		-0.0003**	
	[0.094]		[0.015]	
Log(Book Asset)	0.3278**		0.3202**	
	[0.036]		[0.023]	
Market Capitalization				-0.0040
				[0.747]
Letter to FASB		-0.0367		273.43
		[0.491]		[0.766]
Lobbying		0.0114		3.83
		[0.829]		[0.997]
Auditor EY	0.6688		0.6280	
	[0.222]		[0.237]	
Auditor DT	-0.1024		-0.0548	
	[0.831]		[0.921]	
Auditor KPMG	0.2769		0.3934	
	[0.519]		[0.372]	
Auditor PWC	0.4570		0.4766	
	[0.27]		[0.256]	
SEC Investigation	0.2476**	-0.0033	0.2256**	-262.44
	[0.012]	[0.902]	[0.043]	[0.477]
DOJ Investigation	0.2918**	0.0021	0.3173***	-47.16
	[0.012]	[0.951]	[0.005]	[0.912]
Expect Restatement	-0.1106	0.0178	-0.1454	-244.60
	[0.433]	[0.375]	[0.29]	[0.509]
Delisting Warning	-0.0031	-0.0075	0.0213	470.62
	[0.983]	[0.805]	[0.881]	[0.171]
Quantified Restatement	-0.3756**	-0.0269	-0.3614***	194.52
	[0.02]	[0.28]	[0.006]	[0.574]
Material Weakness		-0.0036		134.84
		[0.89]		[0.697]
% or $ Restatement	4.71**	-0.8702*	5.04**	-10.29***
	[0.033]	[0.07]	[0.015]	[0.000]
Pseudo or Adj. R^2	0.2634	0.2784	0.2797	0.2741

Table 9 – Determinants of executive and/or director departure and cumulative abnormal returns around all news event dates. The table reports estimates of the simultaneous equations model for the occurrence of management turnover and the market reaction to backdating news. The sample is defined in Table 1. *Mgmt. Depart.* is a dummy variable equal to 1 if the company announces the departure of at least one executive and/or director following direct involvement in the backdating scandal. *% ($) CAR* is the All News % ($) CAR based on the four-factor model, two-step estimation described in Table 5. *Rank of Option Granting Pattern Odds* is defined in Table 7. The explanatory variables *Number of Grants*, *% or $ Black-Scholes Grants Value*, *Letter to FASB*, *Lobbying*, *Market Capitalization*, *Ind. Adj. 1-year Return Above Median*, and *ISS Governance Index Above Median* are defined in Table 1. The remaining explanatory variables are residuals from multivariate Logit or Tobit regression models relating the corresponding variable to *Rank of Option Granting Pattern Odds*, *Number of Grants*, *% or $ Black-Scholes Grants Value*, *Letter to FASB*, *Lobbying*, *Market Capitalization*, *Ind. Adj. 1-year Return Above Median*, and *ISS Governance Index Above Median*. The table reports two-stage least squares estimates with p-values based on Maddala (1983). *, **, and *** indicate that the null hypothesis (Estimated Coefficient=0) can be rejected at a 10%, 5%, and 1% significance level, respectively. R^2 is the Zimmermann pseudo-R^2 in the *Mgmt Depart.* regressions, and the adjusted-R^2 in the *CAR* regressions.

N=129	(1)		(2)	
	Mgmt. Depart	**% CAR**	**Mgmt. Depart**	**$ CAR**
Constant	-0.0557	0.0875	-0.8607	2105.0*
	[0.953]	[0.142]	[0.455]	[0.066]
Management Departure Instrument		0.4500***		7249.7**
		[0.008]		[0.03]
Demeaned % or $ CAR (-20,20) Instrument	1.0487		0.0002	
	[0.363]		[0.243]	
Rank of Option Granting Pattern Odds	0.0054	-0.0017***	0.0075	-33.2**
	[0.181]	[0.002]	[0.115]	[0.04]
Number of Grants	-0.0360	0.0133***	-0.0316	86.5*
	[0.144]	[0.000]	[0.199]	[0.094]
% or $ Black-Scholes Grants Value	1.3311	-0.6347*	1.5982	-2115.5
	[0.486]	[0.07]	[0.325]	[0.31]
Industry Adj. 1-year Return Above Median	0.1357	-0.2797***	0.0319	-1144.5***
	[0.706]	[0.000]	[0.92]	[0.004]
ISS Governance Index Above Median	0.6930**	-0.0585	0.78884**	-1497.2**
	[0.031]	[0.213]	[0.019]	[0.045]
Above Median Performance*Mgmt. Dep. Instrument		-0.4283**		-4270.6*
		[0.012]		[0.062]
Above Median Governance*Mgmt. Dep. Instrument		-0.2065		-1985.8*
		[0.193]		[0.1]
Above Median Governance*Above Ind. Adj. Return	-0.6157		-0.6581	
	[0.206]		[0.256]	
Log(Book Asset)	-0.0511		0.0155	
	[0.688]		[0.922]	
Market Capitalization				-0.0109
				[0.707]
Letter to FASB		-0.0674		-20.5
		[0.215]		[0.974]
Lobbying		0.0303		-81.1
		[0.369]		[0.899]
Auditor EY	-0.7463		-0.6567	
	[0.148]		[0.191]	
Auditor DT	-0.3966		-0.0501	
	[0.491]		[0.933]	
Auditor KPMG	-0.2056		-0.0758	
	[0.727]		[0.901]	
Auditor PWC	-0.2945		-0.0974	
	[0.581]		[0.861]	
SEC Investigation	0.0762	-0.0116	0.0911	-367.7**
	[0.735]	[0.593]	[0.691]	[0.047]
DOJ Investigation	0.5720***	-0.0275	0.6110***	-833.4**
	[0.001]	[0.551]	[0.001]	[0.035]
Expect Restatement	0.6041***	0.0118	0.6417***	-635.5**
	[0.009]	[0.587]	[0.005]	[0.025]
Delisting Warning	0.0112	-0.0155	-0.0494	356.0
	[0.927]	[0.621]	[0.703]	[0.342]
Quantified Restatement	0.2060	-0.0237	0.1821	-142.0
	[0.25]	[0.299]	[0.273]	[0.574]
Material Weakness		-0.0098		-36.7
		[0.699]		[0.824]
% or $ Restatement	7.0296**	-1.6386***	0.0026*	-10.2*
	[0.044]	[0.000]	[0.06]	[0.085]
Pseudo or Adj. R^2	0.3177	0.4019	0.3231	0.4613

Table 10 – Characteristics of takeover offers made subsequent to direct involvement in the backdating scandal by 129 companies listed on the Wall Street Journal website on December 31, 2006 as being implicated in the stock options backdating scandal. *Target Company* is the name of the company in the WSJ's list as of December 2006. The firm must have received a public takeover offer after the first backdating news date as defined in Table 4 and by December 2007. *Private Equity Acquiror* is a dummy equal to 1 if the target company receives a takeover offer by a private equity firm. *Competing Bids* is a dummy equal to 1 if the target company receives at least two public takeover offers after being directly implicated in the backdating scandal. *All Cash* is a dummy equal to 1 if the target company receives an all-cash takeover offer. *Premium Pre-announce Price* is equal to the percentage acquisition premium relative to the target firm stock price as of 20 trading days prior to the public announcement of the offer. *Premium Pre-scandal Price* is equal to the percentage acquisition premium relative to the target firm stock price as of 20 trading days prior to the first firm-specific backdating news as defined in Table 4.

Target Company	Private Equity Acquiror	Competing Bids	All Cash	Premium Pre-announce Price	Premium Pre-scandal Price	Pre-scandal Less than Pre-announce
Michaels Stores Inc.	1	0	1	15.6%	24.6%	0
Mercury Interactive Corp.	0	0	1	40.3%	12.1%	1
Caremark Rx Inc.	0	1	0	1.1%	-4.5%	1
KOS Pharmaceuticals Inc.	0	0	1	59.0%	63.2%	0
Biomet Inc.	1	0	1	17.6%	47.4%	0
Redback Networks Inc.	0	0	1	47.2%	26.5%	1
Witness Systems Inc.	0	0	1	25.5%	7.8%	1
Affiliated Computer Services Inc.	1	0	1	19.4%	31.4%	0
Cablevision Systems Corp.	1	1	1	14.0%	23.0%	0
Agile Software Corp.	0	0	1	12.0%	-4.3%	1
Openwave Systems Inc.	1	0	1	-11.4%	-94.3%	1
Boston Communications Group Inc.	0	0	1	81.0%	142.7%	0
Proportion or Mean	0.42	0.17	0.92	26.77%	22.96%	0.50