Guilty Until Proven Innocent: The Economic Consequences of the Initiation and the Outcome of Internal Investigations of Option Backdating

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I. Introduction

The economic consequences of backdating practices are of significant interest to investors, regulators, capital markets, and academicians. Evidence consistent with the practice of backdating was first suggested by Narayanan, Schipani and Seyhun (2006) and Heron and Lie (2007). Backdating occurs when a company (intentionally or unintentionally) retroactively dates options (with or without the knowledge of the board), presumably to a point in time when its stock traded at a relatively low price. For accounting and tax reasons strike prices are normally set to equal the stock price on the grant date. Thus, backdating sets the strike price of options at a lower level and provides an instant "paper" gain for option recipients. However, this gain typically is not realizable because of option vesting restrictions.

Recent empirical evidence with regard to backdating practices has reached three main conclusions that are relevant to this research her. First, backdating is found to be motivated by management opportunistic behavior to maximize their private benefits at the expense of shareholders. Narayanan et al. (2006), Heron and Li (2006, 2007), Bernile and Jarrell (2007) and Walker (2007) indicate that backdating was carried out with the intent of deceiving and defrauding shareholders to enhance CEOs' compensation. Second, the gain to management from backdating is not significant. Narayanan et al. (2006) report that the average gain to executives from backdating is $0.60 million per firm per year. This value is based on the assumption that the CEOs backdated their option grants on every grant date that backdating would have been profitable (which is an unlikely scenario). Bernile and Jarrell (2007) report an insignificant gain

from backdating of approximately 0.80 percent of the typical firm's equity. Walker (2007) indicates that press reports focusing on option strike price discounts achieved through backdating significantly overstate the effect of backdating on the value of these options. Third, the market response to the revelation of a company's involvement in backdating is significantly negative. Narayanan et al. (2006) report a negative eight percent abnormal return ($510 decline in market value) over a 21-day announcement window. Further, Bernile, Jarrell and Mulcahey (2006) report an 8.91 percent decline ($686 million average decline in market value) over a 41-day announcement window.

These results raise two important unanswered questions. First, why are management and the boards of backdating firms willing to take a significant amount of risk by becoming involved in deception, fraud, misrepresentation, dishonoring their fiduciary duties and violating securities laws by altering option contracts when the expected gain associated with the backdating strategy is minuscule? Since these insiders are in a better position to predict the risk-reward trade-off from a backdating strategy, why do they become involved in such a poor trade-off in the first place? The "power hypothesis" argument (Bebchuk and Fried (2004), and Bertrand and Mullainathan (2000, 2001)) suggests that executives have captured the compensation process and it is no longer an "arms-length" transaction between management and the board. If true, why do firm executives not seek a less risky and/or more rewarding compensation strategy such as option re-pricing? Are there motives other than opportunistic behavior and rent-extraction explanations to motivate backdating practices? To answer this question is our first objective and contribution. Specifically, we develop alternative explanations as to what motivates backdating and examine the characteristics of firms accused or suspected of backdating. The explanations explored here include positive economic motives in terms of equitable hiring, increased morale and retention of talented employees as an alternative to the managerial opportunism hypothesis.

Second, why does the market react negatively to the revelation of company involvement in backdating given that the gain from backdating or wealth expropriation from shareholders to executives is not significant? Additionally, why does the market react to information related to an act with little or no cash-flow implications?[1] Furthermore, why do the capital markets prematurely condemn companies that initiated internal investigations by discounting their market value before the resolution and outcome of the internal investigation? Answers to these questions represent the second contribution of this study. We provide three explanations for the negative market response to the initial internal investigation announcements to answer this second question. The first explanation focuses on investor perceptions of potential adverse consequences for firm value. The second explanation is that the announcement conveys information to the capital markets that the company has a weak corporate governance structure and defective system of internal control over financial reporting. The third explanation focuses on potential media-bias and suggests that there is a tendency for the media to focus on and provide more coverage for bad news events as opposed to good news events.

The third contribution of this study is to address the impact of the investigation outcomes on both the scope of firms that are not found guilty of intentional backdating and the market reaction to non-guilty findings. This outcome analysis has not been undertaken by other any other research known to the authors and we believe its neglect is notable when considering our findings.

Backdating can be intentional or unintentional, legal (if it is fully disclosed) or illegal, and it could be undertaken for motives that are consistent with shareholder wealth maximization or for reasons motivated by management greed[2]. However, the media, some academicians and investor

[1] Bernile and Jarrell (2007) indicate that backdating has no cash-flow implications. This is because option compensation is a non-cash expense and its value can always be accurately determined as of the grant disclosure date and thereafter, provided that the grant's characteristics are truthfully disclosed. As such, and in the absence of tax considerations, the actual value of executive stock options is always verifiable.

[2] Crimmins (2006), formerly of the SEC's Enforcement Division, points to the fact that backdating may not involve fraud or deception and the possibility that backdating occurs unintentionally or for other motives

groups have attributed backdating solely to management's self-serving motives. As such, management and the boards of companies that have announced the initiation of an internal backdating investigation or who become subject to SEC and/or the DOJ investigation, have been accused of being fraudulent, neglecting their fiduciary duties and accumulating wealth at the expense of shareholders.[3] SEC Commissioner Paul Atkins (2006) suggests that the revelation of backdating is followed by massive media coverage and led to wholesale condemnation of management and boards of companies that have been accused or suspected of backdating.[4] Furthermore, an important and under-appreciated fact in the debate is that ESO grants typically have a vesting restriction period and cannot be exercised for several years. Thus, the ultimate value of the option to the recipient only becomes clear at the end of the vesting period on the basis of a market price that is unpredictable. This fact suggests that the vesting restriction makes it difficult for the option-holder to predict the gains from backdating. Taken together these factors suggest that the gain to executives from backdating is not significant enough to make it the sole or primary motive for backdating. Other motives with economic consequences consistent with shareholder wealth maximization, such as increasing employee morale and retention, have been ignored or received little or no attention[5]. Our objective in this research is to fill this gap and provide answers to the question of what causes firms to backdate?

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apart from self-serving management. He states that "It will be particularly interesting to see how the government handles situations where individuals did not knowingly violate the law or deceptively cover up their activities, where individuals lacked an understanding of the accounting and tax rules involved in option grants, where they relied on in-house or outside professionals to alert them to potential compliance issues and where problems stemmed from imprecision or outright sloppiness in tending to the formalities that drive the setting of grant dates" (pg. 1956).

[3] Walker (2007) argues that backdating may have been an excellent method of delivering stealth compensation to executives and to conceal the actual value of options' shares in order to justify options on more shares.

[4] Commissioner Paul S. Atkins, U.S. Securities and Exchange Commission, Washington, D.C. July 6, 2006. Speech by the SEC Commissioner: Remarks Before the International Corporate Governance Network 11th Annual Conference.

[5] Backdating the grant date could be undertaken for innocent reasons (e.g., to provide equity for recently-hired employees when stock prices are volatile) that were taken in ignorance of negative accounting and tax complications. However, the mere fact that options were backdated does not mean that securities laws have been violated. Purposefully backdated options that are properly accounted for and do not run afoul

In answer to the first question, we find only limited evidence that option backdating is directly traceable to management opportunism as has also been found in previous research. Conversely, we find recurring evidence suggesting that management may have actually engaged in backdating in an effort to generate motivational economic benefits for their employees, rather than simply enriching themselves. Our evidence upon the second question suggests that the media portrayal of all firms initiating a backdating investigation is found to be a principal factor causing the negative market reaction. To a lesser extent the negative market reaction also reflects expected costs due to legal liability and increased leadership risk. This leads to investor losses that are far in excess of any gains extracted by management. Finally, this study finds that by not taking into account the outcomes of the internal backdating investigations, previous research overestimates both the economic impact and serves to unfairly portray nearly half (48 percent) of the investigated firms as effectively being guilty until proven innocent.

The remainder of the paper is organized as follows: Section II describes the internal review process and discusses the possible outcomes of a backdating investigation. Section III provides a review of the relevant literature. Section IV describes the development of the hypotheses analyzed in an effort to answer the two principal questions identified above. Section V addresses the development of the data and describes the analytical methods employed. Section VI discusses the empirical research findings. Lastly, Section VII provides a summary and the conclusions drawn from this research.

II. The Internal Review, Intentional, Unintentional and No Backdating Outcomes

The Internal Review (investigation) into backdating practices may be initiated voluntarily by the company's board of directors. It may be the result of an SEC notice or a U.S. Department of Justice (DOJ) subpoena. The investigation is carried out by a special committee which includes

of the company's public disclosure rules are legal. Similarly, there is no securities law issue if backdating results from an administrative paperwork delay.

independent board members, external auditors, forensic accountants, and an independent council. The committee assumes the responsibility for examining option-grant documentation, reviewing emails and communication documents, and interviewing company officers and directors. In its final report, the committee will state if backdating occurred and whether the backdating was intentional or unintentional. If the company needs to restate the previous year's financial statements it will report the amount of the restatement, as well as other information.

There are three possible outcomes in a backdating investigation. These outcomes are: intentional backdating, unintentional backdating or no backdating. Intentional or blatant backdating involves drafting or modifying the grant document to reflect a particular date that is associated with a more favorable (lower) exercise price. Stock options are typically granted using the stock price on the effective grant date (said to be "at-the-money") to avoid negative tax consequences. Lowering the grant-date exercise price creates the accounting reality that the options were actually offered "in-the-money". They therefore have an intrinsic value and a built-in profit at the time of the grant. There is nothing technically wrong with this type of retroactive grant change provided that it is authorized under the option plan document and that it is accounted for as an in-the-money option. This change generates a charge against earnings and it needs to be disclosed in the required public filings. This disclosure generally was not done.

Intentional backdating results in serious issues with the SEC and/or DOJ regarding possible fraud, improper disclosure, improper financials, and inadequate internal controls. Additionally, significant legal issues may arise in connection with falsifying option documents. Further, this falsification may well undermine management credibility.

Unintentional or unintended backdating is related to causes that do not reflect fraudulent intent. Essentially, it is the result of sloppiness and casualness in option-accounting procedures. Examples of these unintentional causes include: first, the compensation committee holding a

meeting without mandated advance preparation as to who is to receive the option grants and the amount. Additionally it may involve leaving the decision up to the CEO or the chairman of the compensation committee and then pricing the options based on the meeting-date stock price. Second, an unintentional cause may be due to delegating the right to make grants to the CEO or another officer and not having a clear record of when a grant was actually made. Third, the Chairman of the Compensation Committee may have discussed the option grants separately with each committee member. That may have lead to using the date of the discussion to set the grant price with a latter ratification of the grant, either at a meeting or by written consent.

The SEC has shown sympathy for these situations and has distinguished them from intentional backdating. Within this category falls another type of backdating called "educated unintended backdating". This type of backdating results from procedures intentionally being set up under the assumption they are permissible, when they in fact, are not. An example is making a grant to all new hires on the last day of their hiring month, where the grant date is set to coincide with the lowest price during that month. Appendix A provides examples of backdating outcome announcements where the findings are: intentional, unintentional, and no backdating, respectively.

III. Review of the Literature

Yermack (1997), Aboody and Kasznik (2000) and Chauvin and Shenoy (2001) document the systematic, favorable, V-shaped stock-price pattern surrounding option grant dates. They attribute such behavior to "good timing". However, Lie (2005) and Heron and Lie (2007) propose the "backdating hypothesis" as an alternative explanation. Lie (2005) shows that employee stock option (ESO) awards occurred on a date where the stock price had shown negative abnormal returns before the grant date and positive abnormal returns afterwards. He suggests that management, in their attempts to enhance their private benefits resort to backdating. The effective

outcome is that option grants were awarded ex-post on a day where the share price, and thereby the grant-date exercise price, was relatively low. While these studies examine corporate behavior solely around option grant dates to determine whether "good timing" or backdating is present, our study examines share price behavior around both the internal investigation initiation announcement and the subsequent announcement of the resolution and the outcome of the investigation.

Recent studies attribute backdating behavior to agency problems. Managers are characterized as manipulating the terms of their compensation contracts for personal benefit at the expense of shareholders. Narayanan et al. (2006) examine the legal, economic, tax and governance implications of backdating. Narayanan et al. propose that backdating practices are carried out with the intention to deceive and defraud investors and to increase management welfare at the expense of shareholders. They measure the economic impact of backdating on 47 firms that have been implicated or are under investigation for backdating. They find that backdated firms lost an average market value of $510 million per firm during the 11-day window around the announcement, compared to an average gain to executives from backdating of $600,000 per firm per year. They conclude that the potential benefit to executives from clandestine backdating is minuscule compared to the damage to shareholders at the revelation of this activity. Thus, their profitability evidence is not consistent with their argument. They also do not provide an explanation for the significant decline in equity value upon the revelation of a backdating investigation. Similarly, Bernile et al. (2006) examine the market reaction to backdating announcements for 110 companies. They find that the shareholders of these companies suffer a significant decline in shareholder equity ranging from 20 to 50 percent, which translates into $100 to $250 billion of market equity. In addition, they suggest that the resulting gains to management from backdating amount to 0.80 percent of the firm's equity value and are therefore negligible. They conclude that the cash-flow effects of option backdating are insignificant relative

to the market value of the equity of the implicated companies. Becker and Lu (2006) examine the effect of regulatory intervention on 83 companies accused of backdating stock options. They report a 4.91 percent decline in market value over a seven-day event window. Becker and Lu conclude that companies under investigation suffered a greater decline in value than companies who were not. They suggest that the total loss in market value may reflect both the severity of the backdating problems and an extra cost imposed by regulatory intervention. All three studies examine the extent of the market reaction to backdating announcements. However, none provides an explanation for the decline in value in the absence of cash-flow implications. Further, they do not explain what motivates backdating practices in the first place and why management and boards take the risk of being involving in fraud, deception and violation of securities laws, when in fact no significant gain from such activities is found.

Walker (2007) suggests that backdating may serve as a method used by management to conceal the actual value of their options in order to justify options on more shares. As such, it can be thought as an excellent method of delivering stealth compensation to executives. On the other hand, he suggests that backdating might be necessary to equalize compensation between employees hired in rapid succession and preserve favorable accounting treatment. Furthermore, he indicates that the gain from backdating strategy is negligible and press reports focusing on option strike price discounts achieved through backdating significantly overstate the effect of backdating on option's value.

Most arguments developed to explain the motives behind backdating attribute this behavior to agency problems and management compensation manipulation. However, Gau and Mahmudi (2008) challenge these arguments and provide a contradictory explanation based on the efficient-contracting framework. They argue that backdating is an effective approach to increase managerial incentives and reduce compensation risk for managers that are both under-diversified and risk-averse. Setting the exercise price below the grant-date stock price is optimal for these

managers. Backdating achieves this end without losing the accounting and tax benefits of issuing options that would otherwise have been in-the-money.

Wu (2008) examines the stock market response to companies' announcements of being investigated for possible backdating. She finds that backdating firms are larger, younger, have lower cash holdings and higher stock volatility. In addition, she finds little evidence to support managerial entrenchment and underperformance. Wu concludes that backdating is rational and cannot totally be attributed to lucky or greedy executives. Further, she finds that backdating firms are neither poorly governed nor badly managed.

In summary, previous studies report that the market reaction to backdating announcements is significantly negative, the gain to management from backdating strategies is not significant and they attribute backdating to management greed. Their studies are predicated upon the assumption that companies initiating an internal investigation or that have been investigated by the SEC and/or DOJ are in fact, guilty of backdating. No previous studies examine the outcomes of the internal investigation and the implications of these outcomes. Furthermore, no previous studies provide explanations to their contradictory conclusions or provide answers as to what motivated backdating in the first place. These critical issues are examined in this research.

IV. Development of Testable Hypotheses

A. The Initiation and Outcome of the Internal Investigation:

Why does the market react negatively to company announcements of the initiation of an internal investigation of backdating given that the gain to management from backdating is not significant and when backdating per se has little or no cash-flow implications? Furthermore, why does the market prematurely condemn the accused companies by discounting their values before the completion and the resolution of the internal investigation? To answer these questions, this

section develops testable hypotheses around two announcements. The first is the public announcement that an internal investigation (review) has been initiated. The second is the announcement which reports the outcome of the internal investigation.

1. The Backdating Investigation Initiation Announcement

Narayanan et al. (2006) and Bernile et al. (2006) report a significant negative market reaction to backdating announcements. Our explanation of why this occurs in the absence of cash flow implications focuses on the investors' perceptions of potential consequences. The fact that the company has either initiated its own internal investigation or has become subject to a formal or informal external investigation by the SEC and/or the DOJ alerts investors that the outcome of the investigation may produce findings with adverse consequences on the firm's value. Specifically, we argue that investors will follow the precautionary principle that it is "better to be safe than sorry". This logic suggests that selling the stock is more prudent than holding it and risking a negative outcome. Investors will adjust their valuation assessment to reflect the possibility of an increase in litigation, leadership, regulatory-intervention and bond-covenant violation risks. Thus, contrary to the "legal" presumption of innocence, the market assumes that the management of backdating firms are guilty, at least until the internal investigation provides evidence supporting their innocence. This leads to the first testable hypothesis. *H1: The announcement period Cumulative Average Abnormal Return (CAAR) for companies that are initiating an internal investigation (review) of possible backdating is expected to generate a negative and significant equity market reaction.*

To the extent that investors can anticipate the extent and the implications of any involvement, their expectations will be reflected through a differential market reaction to backdating investigation announcements. Specifically, we anticipate a less negative reaction where no backdating or unintentional backdating is subsequently found compared to firms where

backdating is found to be intentional. The second hypothesis embodies this expectation. *H2: The announcement period CAAR for companies announcing the initiation of an internal investigation and then subsequently announcing the discovery of intentional backdating is expected to be significantly more negative than the CAAR for those companies where no backdating or unintentional backdating is found.*

To provide further evidence on our hypotheses, we proxy for the possibility of an increase in litigation risk, leadership risk, regulatory intervention risk, and bond-covenant violation risk as independent variables in the cross-sectional regression analysis. This is discussed in more detail in a subsequent subsection.

2. The Backdating Investigation Outcome Announcement

Three possible outcomes could result from the internal/external investigation. First, the investigation may reveal that the management and/or the board are "guilty" and are involved in intentional backdating. In this case, the outcome announcement represents a confirmation of investors' previous assessments. Since it provides no new information the market reaction to the outcome announcement is expected to be neutral. *H3: Outcome announcements stating that management have been involved in intentional backdating are expected to generate an insignificant market reaction. Furthermore, the mean difference between the outcome announcement CAAR and the investigation announcement CAAR is hypothesized to be negative and statistically significant.*

Second, the investigation may conclude that the company is "innocent" and is not guilty of backdating. Third, the outcome may be that the backdating is unintentional. In these latter two cases investors are expected to revise their negative initial assessments upward. *H4: Outcome announcements stating that there was no backdating, or that the backdating was unintentional,*

are expected to engender a positive and significant market reaction. Furthermore, the mean difference between the outcome announcement CAAR and the initiation announcement CAAR is expected to be positive or negative but not statistically significant.

B. Cross-Sectional and Logistic Regression Analysis

This subsection develops hypotheses to answer the questions regarding what motivates management and boards to be involved in backdating and the characteristics of these firms. Proxies for each hypothesis are developed and a logistic regression model is utilized to provide evidence of the backdating-firm characteristics in comparison to a control sample of matching, non-backdating firms. A cross-sectional regression model is employed to explain the determinants of the market reaction to backdating announcements and to provide further evidence for the hypotheses developed here.

1. Management Opportunism

Narayanan et al. (2006), Heron and Li (2006, 2007) and Bernile and Jarrell (2007) find evidence to indicate that backdating was carried out with the intent of deceiving and defrauding shareholders to enhance CEOs' compensation. Walker (2007) argues that backdating may have been an excellent method of delivering stealth compensation to executives. If the number of options granted is based on the calculated Black-Scholes' (1973) value of the options, backdating will result in larger and much more valuable option grants.[6] Hence, backdating may be linked to management's attempts to reduce the apparent value of options. Lower stock prices on the

[6] Walker (2007) develops a numerical example showing how backdating reduces the *apparent* value of an option to a lower *actual* value. Specifically, he uses ceteris paribus analysis to calculate Black-Scholes (B-S) option values for two options differing only on the basis of the actual grant-date stock price with the following parameters: $40 strike price; five-year expiration; 80 percent annual volatility; and a three percent risk-free rate. If the stock price is $50 then the option's apparent value is $34.77. However, if the option is backdated to a point where the actual stock price was $40 then the actual B-S option value is only $26.25. If an executive or employee were granted $1 million of options, they would receive 28,760 options based on apparent value and 38,095 options based on actual value.

originally-specified grant date would have significantly increased the economic value of the stated terms of an option as calculated using an option-pricing model.

Three issues are examined to provide evidence on the extent of the agency problem and the private benefits to management and the board. The first issue relates to stock and option entitlements. The second issue is the effectiveness of the corporate governance structure and the internal control system in mitigating the private incentives. The third issue is the degree of information asymmetry as an environmental condition enhancing self-serving behavior.

a. Stock and Option Entitlements

Recent evidence provided by Bartov and Mohanram (2004), Bergstresser and Pillipon (2006), Burns and Kedia (2006) and Cheng and Warfield (2005) suggests that managers with significant wealth tied up in the firm's stock and options have more incentive to be involved in strategies, including backdating, to temporarily increase share prices, the value of their options, and hence their total compensation. Two variables are developed to capture firm management/board stock and option entitlement values. The percentage of shares and options owned (PSHROWN) by management and board members serves as the proxy for equity and potential equity ownership. It is calculated as the sum of shares and options held by the top five executives and board members, divided by the total number of shares. The second proxy is the Black-Scholes fair-market value of options granted (to the top five executives) divided by total compensation (BSVTC). Firms whose management and boards derive a higher percentage of their total compensation from equity ownership and options are hypothesized to be more likely to backdate. This argument suggests that a positive sign is anticipated between both (PSHROWN) and (BSVTC) and the likelihood of backdating options (in the logistic regression). Further, for firms with larger values of both (PSHROWN) and (BSVTC), market reaction is expected to be more negative (or less positive) to

backdating announcements. Thus, the expected signs for both variables in the cross-sectional regression are negative.

b. Corporate-Governance and Internal-Control Deficiencies

An effective corporate governance structure can mitigate and counteract the private incentives of management and boards of directors. Companies with strong corporate governance are less likely to be involved in intentional backdating. We construct a composite index (CINDX) based on two indices. First described by Bebchuk, Cohen and Ferrell (2004)[7] high values of the entrenchment index (EINDX) indicate greater entrenchment while larger values of their corporate governance index (GINDX)[8] indicate better governance. The CINDX is constructed to equal one if the company has both an above-median GINDX and a below-median EINDX and is zero otherwise. This approach is used to proxy for corporate governance and to capture the most information from these two indices. Companies with an effective governance structure should be less likely to backdate. Thus, a negative relationship is anticipated between (CINDX) and the likelihood to backdate in the logistic regression. The backdating announcement may convey information about the effectiveness of firm's corporate governance structure and its internal control over financial reporting. For companies with weak corporate governance structure and defective internal control system, this announcement does not represent a surprise. However, for companies with strong corporate governance structure and effective system of internal control, a backdating announcement represents a negative surprise. This suggests a positive relation between CINDX and the announcement period CAAR in the cross-sectional regression.

[7] The entrenchment index is based on six provisions that are a subset of twenty-four governance provisions tracked by the Investor Responsibility Research Center. Bebchuk, Cohen and Ferrell (2006) find this subset of provisions to be highly correlated with firm value and shareholder returns.

[8] This composite index is utilized to incorporate information beyond that contained in each index individually (as the correlation between EINDX and GINDX is -0.846). Further, in unreported results, the regression models are estimated using the individual indices. This analysis indicates that the results are robust with regard to the addition of either the corporate governance or the entrenchment index to the composite index.

Effective internal control systems provide capital markets with an early warning about potential financial statement problems. Further, companies with an effective internal financial monitoring system are less likely to be involved in backdating. McConnell (2006) notes that one of the common characteristics of backdating firms is having internal control weaknesses. Ashbaugh-Skaife, Collins and Kinney (2007), Doyle, Ge and McVay (2007) and Beneish, Billings and Hodder (2008) find that disclosing material weaknesses is informative to the capital market[9]. The proxy for internal control deficiencies (DWEAK) utilized here is a dummy variable; equal to one if the company discloses material weaknesses over the three-year period preceding the announcement year for both the backdating firms and the matching group.[10] A positive relationship is anticipated between the material weakness variable and the likelihood to backdate in the logistic regression. In the cross-sectional regression, firms not displaying material weaknesses should generate a more negative reaction to backdating announcements and the expected sign is thereby negative.

c. Information Asymmetry

High degrees of information asymmetry provide a rich environmental condition that may encourage management to be involved in backdating. Thus, less transparent firms are more likely to backdate. The number of analysts following the firm (ANALYST) is employed to proxy for the level of information asymmetry. The higher the degree of information asymmetry, as evidenced by a lower value for ANALYST, the more likely the firm is to backdate. Thus, the sign for ANALYST is expected to be negative in the logistic regression. Furthermore, the degree of information asymmetry between the firm and its shareholders should determine the level of

[9] A material weakness is defined as "A significant deficiency or a combination of significant deficiencies that results in a more than remote likelihood that a material misstatement of the annual or interim financial statements will not be prevented or detected" (Public Company Accounting Oversight Board, 2004, Appendix 10).

[10] The data were obtained by searching Item II 9-A on the SEC's Form 10-K and Item I4 on Form 10-Q entitled "Controls and Procedures" for material weaknesses.

investor-surprise to the backdating announcement. As such, companies with greater analyst following (a lower degree of information asymmetry) are likely to be associated with a more negative market reaction due to the greater surprise from the backdating announcement. This logic suggests a positive relation between the CAAR and ANALYST.

2. Economic-Benefits Hypothesis

The economic-benefits hypothesis suggests that backdating is associated with positive benefits. Gao and Mahmudi (2008) argue that backdating is an effective strategy to reduce the risk of compensation contracts and increase managerial incentives for risk- averse and under-diversified managers. This helps to align the interests of the CEOs with those of shareholders. Specifically, for a given level of compensation, backdating can effectively lower the option's strike price, which provides a greater incentive to the managers. Their argument is based on the assumption that the optimal strike price for option grants is usually below the grant-date share price. While directly issuing in-the-money options causes tax and accounting disadvantages, backdating is one way to achieve the optimal strike price and effectively attain at-the-money options.

Walker (2007) suggests that backdating might be associated with economic benefits such as retaining highly-skilled and talented employees, increasing employee morale and leveling the playing field between employees hired in rapid succession[11]. Backdating of non-executive options can help build a talented workforce and increase the value of option grants offered to lower-level employees, making it easier to attract and retain them. Walker (2007) finds that the executives of backdating firms receive a smaller fraction of the company-wide option grants than their non-

[11] Microsoft and Micrel Inc. have, in fact, admitted to utilizing the technique of backdating for retention purposes. [See for example, Charles Forelle & James Bandler, "During 1990s, Microsoft Practiced Variations of Options Backdating", *Wall Street Journal*, January 16, 2006, pg. A1; David Reilly, "Moving the Market: Micrel Says Deloitte Approved Option-Pricing Plan," *Wall Street Journal*, June 1, 2006, pg. C3].

backdating peers. He reports that 13.8 percent of options granted by backdating firms went to the top five executives, relative to 18.7 percent for the non-backdating group. Since the option grants to backdating firms are found to be less "top-heavy" this evidence suggests that management and boards are concerned about employee morale[12]. Furthermore, Walker (2007) suggests that without perfect foresight, the company cannot equalize compensation and preserve favorable accounting treatment without manipulation or backdating.

We utilize the pay performance sensitivity of option grants (PPSOG) as a proxy for the economic-benefits argument. The stock option delta measures the sensitivity of option value to a change in the price of the underlying stock. It increases as options get more and more in-the-money. (PPSOG) is measured as the percentage of the firm's stock on which options are written multiplied by the options' deltas. To estimate option deltas, the "one-year approximation" approach[13] developed by Core and Guay (2002) is utilized. Backdating is an action which places ESOs in-the-money, increasing their delta and thereby the sensitivity of these options to performance. If backdating is associated with increased employee morale and greater incentives, then it should lead to better performance. Thus, a positive relation is anticipated between PPSOG and the likelihood of backdating in the logistic regression.

The second proxy is the percentage of options granted to employees (PCTEMP) relative to options granted to the top five executives. Higher values of PCTEMP imply that companies are granting more options to their employees. Under this hypothesis, higher PCTEMP values are consistent with firms being more likely to backdate to increase morale and retain employees. This

[12] Stephen Hall, a New York consultant on executive pay, believes that these strategies were motivated by a desire to retain staff: "Companies were always trying to figure out how they could put glue on people. But no doubt a greed element enters into it." http://www.guardian.co.uk, Monday, July 10, 2006.

[13] This approach requires information from only the most recent proxy statements. It avoids the cost and difficulty of collecting option data from various proxy statements. Furthermore, Core and Guay (2002) suggest this approach is unbiased and 99% correlated with the measures that would be obtained if the parameters of a CEO's option portfolio were completely known.

logic suggests a positive sign for this variable in the logistic regression. Further, market reaction should be positive (or less negative) to backdating announcements if increased employee morale and retention are the goal of backdating. Thus, the PCTEMP should be positively related to the CAAR in the cross-sectional regression.

3. The Media-Bias Hypothesis

The extent and intensity of media bias in the coverage of bad news and how it may affect investor perceptions and market reaction to backdating announcements is also examined. Bagnoli, Clement and Watts (2006) and Kaniel, Starks and Vasudevan (2007) suggest that bias in media coverage affects investor behavior and that media coverage of bad news dominates the coverage of earnings announcements. Being suspected of backdating is bad news and backdating companies become subject to intense media scrutiny. The *Wall Street Journal* (WSJ) garnered public attention with an in-depth article on backdating, dated March 18, 2006. The WSJ also keeps a running tally of backdating firms and scrutinizes the negative ethical implications for top-level managers. Anecdotal evidence suggests that similar disclosures made prior to the recent media spotlight on option backdating did not lead to market reactions as large as those found in this study. For example, when Microsoft announced it was taking action to handle its option backdating problems,[14] the market did not react in any significant way. Similarly, when Mercury Interactive announced in November 2004 that it received an informal inquiry from the SEC, there was no statistically significant decline in stock prices. The proxy for media coverage (MEDIA) is calculated as the number of articles related to the company's backdating news divided by the number of all articles related to the company that are found on the Internet.[15] Higher values

[14] Microsoft Corp. awarded options at monthly lows each July from 1992 to 1999, with varying dates. The company routinely issued options to new employees at the stock's lowest closing market price in the 30 days after they joined the company. In a news release dated July 19, 1999, the company voluntarily disclosed the practice and stated that it was ending the monthly-low policy and taking a $217 million charge.

[15] The search covers the period from 30 days before, to one day after, the backdating announcement.

thereby indicate greater intensity of backdating coverage by the media. This variable does not apply to the comparison group, so it does not appear in the logistic regression. In the cross-sectional model, higher MEDIA values are expected to be associated with a more negative market reaction, so the parameter estimate should have a negative sign under this hypothesis.

4. Investigation-Outcome Uncertainty Hypothesis

The announcement that the company has either initiated its own internal investigation or has become subject to a formal or informal investigation by the SEC and/or DOJ may convey to investors the possibility of an increase in litigation risk, leadership risk, regulatory-intervention risk and bond-covenants violation risk. Specifically, the announcement may convey first, an increase in litigation-risk and the possibility that the company may face a class action lawsuit. Second, the announcement may engender an increase in leadership-risk and the possibility that management may resign or be fired. Third, it may signal a potential increase in regulatory-intervention risk in that the SEC and or DOJ may impose penalties on the firm. Finally the announcement may communicate the possibility that bond-covenants have been violated, causing bondholders to demand immediate repayment or additional fees for breached indentures. There are four variables used in the cross-sectional regression as proxies to test this hypothesis. The first variable is the number of lawsuits (NSUITS), which proxies for litigation risk. The larger the number of lawsuits filed against the company, the higher the direct and indirect legal costs and the more negative the market reaction to backdating announcement. This logic suggests a negative relation between (NSUITS) and CAAR.

The second proxy is a dummy variable (DRESIGN) that represents leadership risk and/or management departure. It equals one if one or more members of the original management team either resigned or are fired or relocated, and is zero otherwise. Firm value may suffer from events that divert the focus of management. Executives of firms accused of backdating conceivably

expend a significant amount of time and effort away from company business to deal with the related investigation. Empirical evidence by Dahya, McConnell and Travlos (2002) and Fee and Hadlock (2004) suggests that management departure or resignation is negatively related to firm performance. Backdating announcements revealing that management is being fired or is resigning are expected to be associated with greater negative market reaction.[16] This relation suggests a negative sign between the (DRESIGN) variable and the CAAR variable in the cross-sectional regression model.

The third variable (DSELF) is a proxy for whether firms initiated their own internal investigation or it is initiated by either the SEC or DOJ. Firms may believe that the initiation of an internal investigation allows them to minimize the damage to stock prices through aggressive self-policing and disclosure. Since firms that self-report are effectively policing themselves, the market reaction to backdating announcements should be more positive (or less negative) to these announcements. Therefore, the sign of the (DSELF) variable is expected to be positive in the cross-sectional regression.

The fourth variable under this hypothesis is the degree of financial leverage (LEV). It is employed as a proxy for bond-covenant violation risk. Bondholders may demand immediate repayment or additional fees for breached indentures. Late filings due to backdating probes may place the company in technical default of their indentures. For example, the bondholders of Amkor Technology Corp. demanded the repayment of more than $1.5 billion in debt in 2006 as a result of option backdating. Also, Sanmina-SCI Corp. asked its bondholders for an extension on the terms of its indentures, offering the bondholders financial concessions of $12.5 million. The higher the degree of financial leverage, the greater the probability that a backdating firm will

[16] On the other hand, investors may view the departure of executives involved in backdating as a step in the right direction in eliminating inefficient, self-serving executives.

violate its debt covenants. Thus, a negative relation between (LEV) and the market reaction in the cross-sectional regression is expected.

5. Control Variables

The number of options backdated (NOBD) relative to the total number of common shares outstanding captures the extent of options backdated. Higher values of NOBD reflect the severity of the backdating. Hence, a more negative market reaction is anticipated and a negative relation is anticipated between NOBD and the CAAR. When backdating is discovered, financial statements must be restated to reflect the fact that the backdated options were granted in-the-money. This requires that the intrinsic value of the options be treated as a compensation expense. The restatement will then lower reported earnings. The ratio of the restatement amount to market value of equity (AMTEQ) is employed to capture the effect of the restatement. Investors may focus on reported earnings and not on the actual cash-flow. Those companies backdating options may have done so to avoid reporting option expenses in their income statements and to enhance reported earnings[17]. If true, a negative relation is anticipated between AMTEQ and the CAAR. High tech companies (HITECH) tend to overweight the percentage of options in their compensation structure to secure the type of entrepreneurial talent desired in a high leverage risk-reward relationship. These companies are more likely to backdate stock options to increase managerial incentives. Thus, a positive relation is anticipated between HITECH and the likelihood to backdate. Furthermore, given the heavy reliance on options by high tech companies, the announcement of the internal investigation is expected to have a more negative impact (a negative relation to the CAAR) for these firms. The HITECH proxy is constructed as an indicator variable equal to one if the company is in the high-tech sector and is zero otherwise. The coding

[17] See for example the case of *SEC* v. *Reyes* in which the SEC alleges that executives at Brocade Communications Systems falsified paperwork to avoid recording option expenses. ["Charles Forelle, Brocade Ex-CEO, 2 Others Charged in Options Probe", *Wall Street Journal*, July 21, 2006, pg. A1]

is based on the North America Industrial Classification System (NAICS) and by examining the type of business description as reported in the company's SEC filings.

To ensure our results are not driven by certain firm characteristics. We control for firm size (SIZE) measured as the natural logarithm of firm total assets. Firm growth opportunities are also used as a control variable. This is measured by the market value of total assets divided by the book value of total assets (M/B). Here the market value of total asset is calculated as the book value of total asset minus the book value of equity plus the market value of equity. Finally firm historical performance is proxied by the return on equity (ROE) and it is measured as operating income before depreciation divided by market value of equity.

V. Data Description and Methods of Analysis

The preliminary sample of firms that announced an internal investigation of backdating practices was obtained from the WSJ, which keeps an "Options Scorecard" list of allegedly backdating firms.[18] The list was supplemented by a search of the Factiva database, the Internet, and websites of major law firms keeping a tally of alleged backdating firms. The period covered is from January 1, 2004, through December 31, 2007. Four procedures are utilized to develop the initial sample of 156 firms. First, the company-specific "backdating announcement" event is defined as the first date the firm acknowledged that it initiated or will initiate an internal investigation regarding a backdating probe, or that it acknowledged the receipt of an informal or informal inquiry letter from the SEC, is under an SEC investigation, or received a subpoena from the DOJ. Second, the Factiva database and the company's website news archive were searched for the exact announcement date to ensure the correct determination of the first public announcement. Third, the Factiva database was searched for other confounding events. These

[18] http://online.wsj.com/public/resources/documents/info-optionsscore06-full.html is the website for the WSJ's list of suspected backdating firms.

include earnings announcements, share repurchases, mergers or acquisitions, [19] etc., within the five-day window, from two days before until two days after, the announcement day. Announcements with such confounding events within this window were dropped from the analysis. Fourth, the announcement date for each company is tracked forward until December 31, 2007. The news archive section of each company's website and the Factiva database was searched to determine the outcome and findings of the investigation and whether backdating had occurred. Further, this determination includes four elements. First, was the backdating intentional or unintentional? Second, did the company restate their financial statements and what was the amount of restatement? Third, did members of the management team resign or were any fired or relocated? Fourth, what were the number of individual lawsuits and class-action lawsuits initiated against the company?

These procedures produced a final sample of 136 unique announcements for 136 companies with returns available from the Center for Research in Security Prices (CRSP) and company accounts data available on the COMPUSTAT database.[20] A matched sample of 136 non-backdating, comparison-group firms is constructed to perform univariate and multivariate comparisons. The matching of firms is based on the first four digits (108 matching), three digits (22 matching) and two digits (6 matching) of the SEC code and on the basis of firm total assets as a proxy for firm size.

[19] Three companies were acquired before the company-specific announcement (acquirer in parentheses). These firms are Engineered Support Systems (DRS Technologies), Renal Care Group (Fresenius Medical Care) and Pixar (Walt Disney Co.). In addition, Microsoft Corp. was eliminated because the issue of backdating had been disclosed as far back as 1999.

[20] For all of the analyses, the authors have attempted to utilize the maximum number of observations. These 136 initiation-announcement firms are employed in the analysis shown in Tables 1, 3 and 6. There are nine backdating firms that did not announce the initiation, but they did announce the outcome of a backdating investigation. These nine firms (as well as nine non-backdating matching firms) are included (for a total of 145) in the analysis reported in Table 4. Finally, Tables 2 and 5 are based 142 firms as three (of the 145) firms do not have the complete COMPUSTAT datasets required for the logistic regressions.

Table 1 provides a frequency distribution, based on different sample characteristics of the final sample of 136 announcements of possible involvement in the backdating of ESOs. The analysis shows that 63.9 percent of the sample belongs to HITECH firms (semiconductors and software services, computers, communications, and optical and medical devices). This percentage represents a high degree of concentration for this group. By comparison, HITECH firms account for less than 10 percent of all companies traded on US stock exchanges. This finding is consistent with the idea that HITECH companies grant more options in order to attract, retain and motivate their employees.

Backdating implies that the company originally accounted for these options as being at-the-money options. This does not require recognition of the fair-value option grant under the Financial Accounting Standards Board (FASB) 123 regulation. The relevant issue is that after backdating, these grants turn out to be in-the-money. In-the-money option grants require recognizing the fair market value of these grants as an expense on the income statement. As such, the discovery of backdating requires the restatement (RESTATED) of previous financial statements to adjust for the cost of the options. Table 1 shows that 73.5 percent of firms restated the previous years' financial statements, whereas the remaining 26.5 percent of firms concluded no restatement was necessary.

Table 1 also provides information about the resolution and the outcome (OUTCOME) of the internal or external investigations. It shows that in 19.1 percent of cases (26 firms) the investigation reveals no backdating (NB) evidence. Further, 28.7 percent of the firms were found to have backdated unintentionally (UB). Finally, in 52.2 percent of the cases (71 firms) the management was determined to have backdated intentionally (IB). This evidence shows that nearly half (47.8 percent) of firms are not found to be involved in intentional backdating at all. Thus, the market decline in response to backdating investigation announcements (shown in Table 3 and discussed subsequently) cannot be attributed totally to actual incidents of backdating.

Rather, it suggests that investors are concerned about the outcome of the investigation and/or media bias in the coverage of backdating events and these factors are apparently significant contributors to the market reaction. Thirty-five point three percent of backdating companies experience management departure in the form of resignation (RESIGN) or dismissal although 64.7 percent do not.

All 136 firms initiated an internal investigation, but in some cases these investigations were provoked by either the SEC or DOJ or both. Forty-three firms (31.6 percent) initiated their own (Firm Self Initiations) internal investigation into backdating without provocation. Thirty-nine of the remaining 93 firms (41.9 percent[21]) were provoked into their investigation by the SEC-only (SEC), by either a formal or informal letter of inquiry and/or requests to provide information about option grants, etc. Four firms (4.3 percent) were provoked by a DOJ-only investigation (DOJ). Fifty of the 93 firms (53.8 percent) were induced to initiate their internal investigations by a joint (JOINT) SEC and DOJ action.

Thirty-eight point two percent of the companies had material weaknesses (MW). Furthermore, 233 lawsuits (SUITS) were filed against the firms in the sample, which averages out to 1.7 lawsuits per firm.

The bottom section of Table 1 illustrates another point of interest in regard to the role and effectiveness of the auditors of these firms. It turns out that 95.6 percent of firms are audited by one of the big four accounting firms (Ernst & Young, Deloitte & Touche, KPMG and PriceWaterhouseCoopers) and only 4.4 percent are either audited by Grant Thoronton or BDO Seidman. However, none of these firms received a "qualified" opinion. Rather, the auditors granted a "non-qualified" opinion for every firm in the sample. This aspect certainly raises a question about the effectiveness of auditors in detecting backdating practices.

[21] In the interest of brevity, this and following two percentages are not reported in Table 1.

Univariate tests for significant differences in means between explanatory variables for the backdating firms versus the non-backdating firm comparison group are conducted and the results are shown in Table 2. Further, univariate tests between intentional and unintentional or no-backdating firms are also shown in Table 2.

Abnormal returns around the initiation of the investigation and the outcome announcements are estimated using the Fama-French (1993) three-factor model as the return-generating process. This model simultaneously controls for firm size and the differential risk factor between firms with high versus low and market-to-book equity-ratio values. The average abnormal return (AAR) is calculated on the basis of an ordinary least squares (OLS) regression using 150 daily returns from trading day t = -210 through trading day t = -61, relative to the announcement date, i.e., t=0. The AAR for event date t is calculated as a simple cross-sectional average over the N firms in the sample. The event window is the three-day period (t-1 to t+1) cumulative average abnormal return (CAAR) and it is expected to capture the market reaction to the backdating announcement. Both the rank z-test as developed by Corrado (1989) and the jackknife z-test developed by Giaccotto and Sfiridis (1996) are utilized to test for the level of significance of the AAR and the CAAR. The jackknife z-test is an improvement upon the standard t-test because it adjusts for event-induced, transient changes in variance. Specifically, if an announcement causes a change in the return's variance during a specific day, the return standard deviation will be a biased estimator. The jackknife z-test adjusts for this potential problem. In addition to return analysis, the announcement effect on daily relative trading volume is examined. This analysis is similar to the returns analysis, but the log-transformed relative volume replaces the daily rate of returns, which is similar to procedures conducted by Campbell and Wasley (1996). The results are presented in Table 3 and Table 4.

A logistic regression is used to examine the factors differentiating backdating firms from the comparison group of non-backdating firms. This examination is conducted to provide evidence

on the motivation and characteristics of backdating practices. The results of this analysis are presented in Table 5.

A cross-sectional regression model is employed to examine the determinants of market reaction and to differentiate between the competing hypotheses. The dependent variable is the announcement period CAAR derived from the Fama and French (1993) three-factor model. The multivariate regression model, the definition of the dependent and independent variables, and the anticipated signs for each proxy variable has been provided previously and is presented in Table 6, along with the results of estimating the model.

The outcome of the internal investigation versus the SEC/DOJ findings are an important element of our research. The authors have searched the Factiva database, the website of each company, the SEC filing, and the internet, for the announcement of the outcome and the outcome of the internal investigation. Each firm is monitored from the announcement of an internal review initiation until the investigation committee issues its final outcome report. The reports find one of three possible outcomes. First, the investigation may conclude that there is no evidence suggesting that management and/or the board are involved in backdating. Second, the committee can conclude that there is unintentional backdating and it may be due to administrative procedures or other factors with no evidence to defraud shareholders. Third, the report may conclude that intentional backdating occurred with the intention to defraud the shareholders and benefit at their expense. The total sample is classified on the basis of the outcome into these three groups, i.e., no backdating, unintentional backdating and intentional backdating. For each group we examine the market reaction around the announcement date of the initiation of the internal investigation and also the announcement of the outcome, and then test for the difference between groups to provide evidence regarding the predictions of our hypotheses.

VI. Empirical Results

Univariate test results for significant differences between the means of explanatory variables for the backdating firms versus the comparison group as well as between intentional (IB) and unintentional/non-backdating (UINB) firms are shown in Table 2. The focus of this analysis are the variables utilized (or closely related to them) in the cross-sectional and logistic regression analysis. The only results described are the cases where the mean differences are found to be significantly different from zero. Top executives of backdating firms are found to have a higher proportion of their compensation in the form of stock options (BSVTC) relative to non-backdating firms. Further, these executives along with the board members hold a higher percentage of shares and options (PSHROWN) in their firms. The mean differences for both variables are statistically significant at the one percent level.

Mean differences for backdating firms are significantly lower on the corporate governance index (CGINDX), higher based on the entrenchment index (EINDX) and higher on the composite index (CINDX) compared to the non-backdating group. Further, backdating firms have more material weaknesses (DWEAK), and are followed by a lower number of analysts (ANALYST) relative to the matching group. The mean difference between the two samples for each one of those variables (except ANALYST) is statistically significant at the one (ten) percent level. These results suggest that backdating firms have a higher proportion of options in their compensation structure, a less effective corporate governance structure and internal control system, and greater information asymmetry compared to their peers. These situations may have served as environments that fostered backdating practices.

Table 2 also shows that backdating firms grant more options to their employees (PCTEMP) than to their top five executives when compared to the matching group. The mean difference of 0.046 is statistically significant at the one percent level. In addition, backdating firms have a

higher pay for performance sensitivity of option grants (PPSOG) relative to the matching group. The mean difference of 0.397 is statistically significant at the five percent level. These results suggest that backdating may serve as a motivational tool to increase performance for companies with higher sensitivity of pay-for-performance and/or with more options grants to non-executives.

Companies involved in intentional backdating have a higher average restatement amount (AMT) of $165.369 million relative to $22.252 million for companies with no or unintentional backdating. The mean difference of $143.117 is statistically significant at the one percent level. This difference principally reflects the fact that UINB companies either do not need to restate their financial statements or the restatement amount is much smaller. This finding is reinforced by the AMTEQ variable being similarly, statistically lower for UINB firms. Intentional backdating firms are ranked lower on the corporate governance index, higher on the entrenchment index, lower on the composite index and have more material weaknesses. Further, greater management departure (DRESIGN) and a higher number of lawsuits (NSUITS) are associated with intentional backdating companies. All of these differences are significant at the one percent level. Lastly, IB firms have lower growth opportunities as evidenced by lower TOBQ and they tend to belong to the HITECH industries. The mean differences between IB and UINB for these two variables are statistically significant at the five percent level. Collectively, these results clearly point to the importance of differentiating between intentional and unintentional backdating based on the outcomes of the investigations.

Table 3 reports the results of the market reaction to backdating announcements in the form of returns, dollar market-value changes and volume analysis. The results indicate that the three-day (day t-1 to t+1) announcement-period CAAR is -3.75 percent which is statistically significant at the one percent level based on both the rank test and the jackknife z-test statistics. The -3.75 percentage decline translates into a cumulative average change in market value (CACMV) of -$192.96 million per firm over the three-day window. Over the 11-day window (day t-5 through

day t+5) the CACMV is -$212.52 million. This amount is significantly smaller (less than half) than the average loss of $510 million per firm over the same (11-day) period reported by Narayanan et al. (2006). The difference may be due to the fact that their sample is much smaller (47 firms) and the firms they examine are typically larger in size as measured by total assets.

The results of volume analysis confirm the return analysis. They show that the three-day cumulative average abnormal relative volume (CAARV) increase of 65.12 percent for backdating firms (relative to the volume for the all-CRSP-securities comparison index) is statistically significant at the one percent level. A similar result is also shown for the eleven-day window. These results indicate that the price decline occurs in the presence of significantly higher volume for backdating firms. Thus, the observed return is not likely to be spurious or transitory.

Furthermore, the average market value loss of $192.96 million is nearly twice the average restatement (AMT shown in Table 2) of $96.967 million (median of 19.60 million). It greatly exceeds the mean (median) of the value of options granted (OPTVAL) of $1.716 ($1.032), and it similarly exceeds the mean (median) value of total compensation to the CEO (CEOTC) of $2.941 ($1.819)[22]. These results suggest that financial-reporting motives, the presumed negative impact of restatements on reported earnings and thereby the management private-benefits hypothesis cannot account for or explain a decline of $192.96 million per firm in equity value. Actually, these results are consistent with the argument that the announcement conveys information about the ineffectiveness of the firm's corporate governance structure and its internal control system. In addition, it reflects market concern about the uncertainty associated with the outcome of the investigation and the expected increase in litigation, management departure, regulatory intervention and the risk of violating debt covenants. Additionally, these results are consistent with the media bias in the coverage of backdating stories as a bad news event.

[22] These results are reported here rather than in a separate table in the interest of brevity.

Table 4 reports the results of the market reaction to the internal investigation on both the "Initiation Date" and "Outcome Date" where the announcements are segregated on the basis of the subsequent outcome. Internal investigation announcements with a subsequent outcome of intentional backdating are associated with the largest negative market response (-5.150 percent) relative to announcements with a subsequent outcome of unintentional backdating (-1.540 percent) or no backdating (-1.882 percent). The difference in CAARs for the intentional versus the unintentional and no backdating categories (shown in rows 1.6 and 1.7) is statistically significant at the one percent level. This significant differential market reaction is consistent with H2 where investors, to some extent, can anticipate the severity and the implications of the companies' involvement in backdating.

The market reaction to the outcome announcement for the total sample is positive (0.447 percent) but it is not significant. However, different results are obtained when the sample is categorized on the basis of the investigation outcome. For companies revealing intentional backdating, the market reaction is negative (-0.410) but it is not significant. Conversely, outcome announcements of unintentional, or no backdating, are associated with positive and significant market reactions (CAARs) of 1.431 percent, and 1.594 percent, respectively. Furthermore, these positive market reactions almost offset the negative market reactions associated with the initial investigation announcements, both in terms of returns and in dollar value (as reflected in rows 2.3, 2.4 and 2.5 of the lower panel of Table 4). In addition, over the combined period from one day before the "Investigation Date" to one day after the "Outcome Date", for the intentional backdating group the CAAR is -5.628 percent. This CAAR is statistically significant at the one percent level. Interestingly, the CAARs for the unintentional-backdating, and no-backdating, groups are, in fact, positive at 2.219 percent, and 2.031 percent, respectively. However, these CAARs are not significantly different from zero.

These results provide strong support to our argument that the initiation of an internal investigation may reveal potential issues with adverse consequences for firm values, eg., increased litigation, leadership questions, regulatory intervention, and bond-covenant violation risk. As such, investors will follow the precautionary principle that it is "better to be safe than sorry", and contrary to the "legal" presumption of innocence, investors will ascribe a guilty verdict to the announcing firms by discounting their value pending the investigation outcome. For companies where the investigation concludes that the management is involved in intentional backdating, the outcome announcement does not provide significant incremental information. For companies revealing unintentional or no-backdating outcome, investors revise their verdict and adjust their estimates upward, which is consistent with the predictions of H3 and H4. These results provide an answer to the question of why the market reacts negatively to the initial investigation announcement in the absence of cash flow implications and when the gain from backdating strategy is insignificant. Further, these results suggest that previous studies have effectively rendered premature judgments that all companies announcing internal investigations have backdated intentionally.

Quite to the contrary, this research finds that 48 percent of firms initiating a backdating investigation were either not involved in backdating at all or the backdating was unintentional. In addition, by failing to incorporate the results of the investigation outcome, previous studies overstate the economic impact of backdating. This is especially true given the positive market response found here to outcome announcements for UINB firms that largely offsets the initial negative reaction to investigation announcements.

Table 5 presents the results of the logistic regression used to examine the factors differentiating backdating firms from the comparison group of non-backdating firms. This examination is conducted to offer evidence regarding management motives for backdating. The specification of the logistic regression model, the definition of the variables serving as proxies for

each hypothesis, as well as the predicted signs of each variable, are detailed in Table 5. The logistic regression analysis shows that BSVTC and PSHROWN, proxies for management and board private benefits, are positive as anticipated and statistically significant. These results suggest that companies with a higher percentage of shares and options held by management and boards and higher percentages of options to total compensation are more likely to backdate to enhance their private benefits. The parameter estimates for CINDX, and DWEAK, are negative, and positive, respectively, and significant at the one percent level. These findings indicate that companies with weak corporate governance structure and defective internal financial-reporting control systems are more likely to be involved in backdating. The significance of the ANALYST variable (in models 3 and 4), but with the wrong sign, is not consistent with the expectation that greater information asymmetry provides a more suitable environment for firms to be involved in backdating practices.

The two proxy variables for the Economic-Benefits hypothesis, PPSOG and PCTEMP are significant and have the predicted signs. This evidence is consistent with firms choosing to backdate options in an effort to increase managerial incentives and supports the findings of Gao and Mahmudi (2008). The regressions' pseudo R-squares, which may be interpreted as traditional R-squares, range from 0.192 up to 0.238, and the regressions therefore exhibit reasonable levels of predictive ability.

Table 6 reports the results of the cross-sectional regression analysis. The dependent variable is the three-day initial investigation announcement period CAAR. Management opportunism not supported by the cross-sectional regression results, as neither the BSVTC nor PSHROWN variables are significant. These results are consistent with the findings of Narayanan et al. (2006) and Bernile and Jarrell (2007) that the gain to the CEOs from backdating is not significant to cause investors concern.

The results indicate that the parameter estimates for CINDX, DWEAK and ANALYST are all significant at the one percent level and have the predicted signs. For companies that ranked higher (lower) on corporate governance (entrenchment) index, with fewer material weaknesses and followed by more analysts (less information asymmetry), the announcements represent a negative surprise, causing investors to revise their expectations downwards. These results are consistent with the hypothesis that the initial backdating investigation announcement causes the capital market to perceive that these companies have a weaker corporate governance structure, less effective internal controls and a higher degree of information asymmetry than believed previously.

Two proxy variables under the Outcome Uncertainty hypothesis yield consistent and significant parameter estimates. The DRESIGN proxy for management departure and leadership risk and NSUITS proxy for litigation risk are negative and statistically significant. These results suggest that backdating announcements reflect the expected costs associated with legal liability and management departure or dismissal. DSELF is positive, as anticipated, though it is only significant in Model 2. This result provides only marginal support for a differential market reaction between companies initiating their own investigation relative to investigations initiated by the SEC or the DOJ.

The parameter estimate for MEDIA is negative and statistically significant, as anticipated. This result supports the Media-Coverage hypothesis that media bias in the coverage of backdating as a negative event contributes to the negative market reaction even for companies that are subsequently exonerated by the company's internal review. The PCTEMP, and PPSOG, parameter estimates are positive as predicted by the Economic Benefits hypothesis and are significant at the five percent level in Model 2, and the 10 percent level in Model 3, respectively. The results provide some support to the argument that backdating is undertaken to increase managerial and employee incentives and align their interests with those of shareholders.

HITECH is negative and statistically significant at the one percent level. This suggests that high technology firms are associated with a stronger negative market reaction to backdating initiation announcements. Furthermore, NOBD is negative and significant at the five percent level in Model 2. This suggests that the larger the number of backdated options the more negative the market response to backdating announcements. The cross-sectional models exhibit an impressive explanatory power with adjusted R-squares ranging from 46.30 to 53.00 percent. Additionally, the relationship between the explanatory variables and the dependent variable does not appear to be spurious, as all F-test values are significant at the one percent level.

To provide further insight on the economic consequences of backdating we examine the extent and the implications of the SEC and DOJ enforcement actions related to options backdating. Table 7 provides summary statistics and a frequency distribution of case characteristics for the 27 firms that become subject to enforcement actions by the SEC, DOJ or both[23]. It reports the frequency and title of the defendant, the nature of charges brought against the company, the type of settlement and summary statistics regarding the monetary settlements. The results by defendant show that the Chief Executive Officer (59.3 percent), Chief Financial Officer (55.6 percent), and the General Counsel (33.3 percent) are the predominant defendants. Further, securities fraud (100 percent) and false filing to SEC (18.5 percent) are the main charges brought against backdating firms. With regard to the settlement of the charges, the results indicate that 19 firms (70.04 percent) agree to pay a civil monetary penalty, for 15 firms (55.56 percent) the defendant accepted a five, 10, or permanent ban on acting as an officer or director of public company. Thirteen firms (48.15 percent) accepted the disgorgement of ill gotten gain from backdating, and 12 (44.44 percent) accepted prejudgment of interest.

[23] Appendix C provides more information on these 27 companies that become subject to an enforcement action. It reports the company name, plaintiff name and whether the enforcement action is brought solely by the SEC (27 cases) or by both the SEC and DOJ (8 cases), the title of the defendant(s), the nature of charge(s) brought against the company, the monetary amount and type of settlement.

The mean (median) monetary settlement is $6.73 ($3.100) million excluding United Health Corp Inc. as an outlier in which the settlement reached $470.02 million. Furthermore, 14 out of the 20 firms were ordered to pay a monetary settlement with an average settlement amount of less than $4 million. Only three firms have a settlement amount exceeding $30.12 million. Furthermore, (in non-tabulated results) we utilize the press release by the SEC and DOJ as the announcement date for the 42 cases of enforcement actions against the 27 companies listed in Appendix B, to examine the equity market reaction to these announcements. The three-day announcement period CAAR for the total sample of 42 announcements is a positive 0.580 percent which is not statistically significant. We thereby conclude, that given the relatively small number of companies that become subject to enforcement actions by the SEC and/or DOJ, the typically small monetary settlements (with the exception of United Health Group Inc) and the insignificant market reaction to enforcement action announcements this evidence suggests that previous studies overestimate the economic impact of backdating.

VII. Summary and Conclusions

Firm announcements of the initiation of internal investigations into possible backdating practices have lead to adverse publicity from the media as well as negative pronouncements from academics regarding the economic effects and motivation of those involved. Recent empirical evidence concludes that backdating is motivated principally by management opportunism and it is associated with a significant negative valuation effect. However, the gain to executives from backdating activities is trivial and not significant.

These conclusions provoke two important questions that we try to answer in this research. First, why is management willing to take a significant amount of risk (involvement in fraud, deception, misrepresentation and violation of securities laws) when the gains from the backdating strategies are not found to be significant? Our research addresses whether there are other motives

in addition to management opportunism or extracting pecuniary gains that motivate CEOs or other executives to become involved in backdating? Second, why does the market react negatively to the initiation of an internal investigation given that the gain from backdating strategy is not significant, there are no cash flow implications and the resolution and outcome of the internal review are unknown?

To address the first question, we develop and test for economic motives in addition to management opportunism as a motive for backdating practices and explore the unique characteristics of the accused companies. The results of the logistic regression suggest that companies with a higher proportion of options to total compensation in their compensation structure, a higher percentage of shares and options held by management and the board, with weak corporate governance structure and internal control system over financial reporting are more likely to backdate ESOs. These findings support the management opportunism hypothesis. However, companies with higher pay performance sensitivity of options granted to employees are more likely to backdate. This finding is consistent with the argument that backdating is done to increase employee incentives as theorized under the economic-benefits hypothesis.

Conversely, the backdating-firm cross-sectional analysis results offer no support for the management opportunism hypothesis. However, these results do provide evidence showing that companies announcing an internal investigation of backdating have a higher ranking on the corporate governance index, a lower ranking on the entrenchment index, do not have material weaknesses and have a lower degree of information asymmetry generates a more negative market reaction. This is consistent with the hypotheses that the initial announcement of the internal investigation conveys information to the capital market information that these firms have poorer corporate governance structures, inefficient internal controls and are less transparent than previously perceived.

The proxy variables under the outcome-uncertainty hypothesis associated with management departure and lawsuits have a negative and significant market reaction. This is consistent with our hypothesis that the backdating announcement reflects the expected costs associated with legal liability and the increase in leadership risk.

Companies with higher pay for performance sensitivity and with higher percentage of options granted to employees relative to options granted to CEOs are associated with less negative market reaction. These results provide support to the argument that a backdating strategy increases managerial incentives and is consistent with the economic benefits hypothesis. In addition, high-tech companies and companies with a larger number of backdated options are associated with more negative market reaction.

Answering the second question, we hypothesize that the negative valuation effect potentially reflects three explanations. First, it may evince investors' assessments of expected increases in litigation, management departure, regulatory intervention and bond-covenant violation risk. Second, it potentially conveys information about the effectiveness of firms' corporate governance structure and internal control over financial reporting. Third, it possibly reflects the effect of media bias in the coverage of backdating as a bad news event.

The market reaction to the internal investigation announcement in the form of returns, market value and trading volume are all found to be highly significant. However, we find this decline is much smaller (less than half) of what has been reported by previous studies. Furthermore, the average market value loss exceeds the average amount of the restatement, the average amount of options granted and the average amount of total compensation to the CEO. This suggests that management entrenchment and the presumed impact of the restatements on reported earnings cannot alone explain the decline in equity value for non-guilty firms. For companies where the investigation outcome reveals intentional backdating, the outcome announcement CAAR is

negative but it is not significant. These results provide strong support for the argument that at the investigation announcement investors discount firm value to account for expected increases in litigation, management-departure, regulatory-intervention and bond-covenant violation risk. The cross-sectional regression results also support the media-bias hypothesis as coverage of backdating stories as bad news events contributes significantly to a negative market reaction. This true even for those companies suspected of backdating that are subsequently exonerated by the company's internal review.

A principal contribution of this study is that unlike previous studies we investigate the resolutions of the internal investigations. We find first, that 48 percent of the accused companies are not found to be involved in backdating at all, or the backdating was unintentional. Second, the market-value lost in response to the initiation of internal investigation announcements is almost completely offset by positive and significant market-value gains for innocent companies at the outcome announcement date. We thereby conclude that previous studies overstate the number of companies involved in illegal or intentional backdating since they do not examine investigation outcomes. Further, by failing to account for the effect and the implications of the investigation outcome, they overstate the economic impact of backdating. Their analysis acts to prematurely condemn a significant number of innocent companies and the surrounding media attention acts to impose undue hardship and costs on these companies.

In conclusion our research finds only limited evidence that option backdating can be principally traced to management opportunism or entrenchment as has been previously portrayed by previous research. Rather, our evidence shows that management may actually be engaging in backdating to generate motivational economic benefits to employees rather then benefiting themselves. Negative media attention is found to be a primary reason why initial market reaction leads to investor losses that far exceed any management gains. Finally, our results show that by failing to account for the outcomes of the internal backdating investigations, previous research

both overstates the economic impact of backdating events and unfairly portrays nearly half of the firms involved as being presumed guilty until proven innocent.

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Table 1: Summary Statistics and Frequency Distribution of the Final Sample

SIC code is the standard industrial classification code.[24] FREQ is the number of companies within each industry group. HITECH indicates whether the company is in the high-tech sector based on their business description. RESTATED indicates whether the internal review committee decided to restate previous financial statements. OUTCOME is the outcome of the internal review where NB indicates the investigation reveals no backdating, UB indicates unintentional backdating and IB indicates intentional or evasive backdating that may involve fraud and manipulation. RESIGN indicates whether the investigation leads to resignation of the CEO, CFO or a member of the top management team. SELF indicates whether the company initiated the investigation without any request from the SEC or the DOJ. SEC and DOJ indicates who initiated the investigation, while JOINT indicates both the SEC and DOJ initiated the investigation. MW is the number of companies with material weaknesses. SUITS is the number of shareholder law suits filed against the company.

SIC	FREQ		HITECH		RESTATED		OUTCOME			RESIGN		Firm Self	Non-Firm Initiations				
Code	No.	%	Yes	No	Yes	No	NB	UB	IB	Yes	No	Initiations	SEC	DOJ	JOINT	MW	SUITS
1	2	1.5	0	2	1	1	1	-	1	1	1	-	1	-	1	0	5
2	10	7.4	0	10	7	3	3	5	2	1	9	3	6	-	1	3	4
3	56	41.1	46	10	39	17	10	12	34	20	36	16	13	2	25	20	124
4	6	4.4	6	0	5	1	1	1	4	2	4	2	1	-	3	3	9
5	15	11.0	2	13	12	3	2	7	6	1	14	7	4	-	4	4	9
6	4	2.9	0	4	3	1	1	-	3	3	1	2	-	-	2	4	23
7	37	27.2	33	4	29	8	7	11	19	16	21	10	13	1	13	15	55
8	6	4.4	0	6	4	2	1	3	2	4	2	3	1	1	1	3	4
Total	**136**	**100**	**87**	**49**	**100**	**36**	**26**	**39**	**71**	**48**	**88**	**43**	**39**	**4**	**50**	**52**	**233**
Pct	**NA**	**100**	**63.9**	**36.1**	**73.5**	**26.5**	**19.1**	**28.7**	**52.2**	**35.3**	**64.7**	**31.62**	**28.68**	**2.94**	**36.76**	**38.2**	**na**

Auditor's Name	**N**	**Pct**	**Big 4**
BDO Seidman	2	1.50	N
Grant Thoronton	4	2.90	N
Ernst & Young	35	25.7	Y
Deloitte & Touche	24	17.7	Y
KPMG (Peat Marwick)	32	23.5	Y
PriceWaterhouseCoopers	39	28.7	Y
Total[25]	136	100.0	

[24] SIC codes are defined as: 1-mining and construction; 2-manufacturing of food, tobacco, textiles, apparel, lumber and wood products, chemical and petroleum industries; 3-manufacturing of rubber, stone, concrete, metals, machine and computer equipment, electronics, transportation and medical equipment; 4-transportation, communication, electric, gas and sanitary services; 5-wholesale and retail trade; 6-finance, insurance and real estate; 7-hotel, business, automotive, motion picture and recreational services; and 8-health, legal, educational, professional and other services.

[25] The auditor's opinion for each firm in the final sample is examined. All auditors granted a non-qualified opinion for each company they audited.

Table 2: Univariate Analysis of Backdating versus Non-backdating Firms and Intentional versus Unintentional/No-backdating Firms

The univariate analysis is based on the sample of 142 backdating firms that announce the outcome of the investigation (for which the cumulative abnormal returns are not required). IB represents intentional backdating. UINB is unintentional or no backdating. BSVTC is the Black-Scholes option value of options granted scaled by total compensation. PSHROWN is the percentage of shares and options held by management and board members. AMT is the restatement amount. AMTEQ is AMT scaled by total equity. IOEXPNI is the implied option expense scaled by absolute value of net income. CGINDX (EINDX) is the corporate governance (entrenchment) index. CINDX is the composite corporate governance entrenchment index. DWEAK is a dummy variable equaling one if the company reported material weakness in the year preceding the announcement and is zero otherwise. ANALYST is the number of analysts following a given firm. DRESIGN is a dummy variable equal to one if one or more executive(s) resign, are fired or relocated and is zero otherwise. NSUITS is the number of lawsuits filed against the firm. DSELF is a dummy variable equaling one if the company self-reported and is zero if the investigation is initiated by the SEC or DOJ. LEV is the degree of financial leverage. PCTEMP is the percentage of options granted to employees (non-top five executives). PPSOG is the pay-performance sensitivity of option grants calculated as percentage of the firm's stock on which options are written multiplied by the options' deltas. MEDIA is the number of articles related to the company's backdating news divided by the number of all articles related to the company that are found on the Internet. NOBD is the number of options backdated relative to the total number of common shares outstanding. HITECH is a dummy variable equal to one if the company belongs to the hi-tech sector and is zero otherwise. TOBQ is Tobin's q ratio. ROE is the return on equity. LMVEQ is the log of market value of equity. The Pseudo R-square may be interpreted like the R-square value in a normal regression. NA indicates not applicable.

Variable	All	Backdating	Matching	Mean Diff	IB	UINB	Mean Diff
BSVTC	0.440	0.501	0.390	0.104***	0.502	0.484	0.018
PSHROWN	0.051	0.079	0.023	0.056***	0.075	0.081	-0.006
AMT	NA	96.967	NA	NA	165.369	22.252	143.117***
AMTEQ	NA	0.042	NA	NA	0.062	0.020	0.042***
IOEXPNI	1.300	1.290	1.310	-0.020	0.822	1.945	-1.123
CGINDX	8.450	8.010	8.830	-0.820***	6.918	8.891	-1.973***
EINDX	1.970	2.576	1.640	0.708***	2.849	1.887	0.962***
CINDX	0.289	0.388	0.117	0.271***	0.318	0.491	-0.173***
DWEAK	0.313	0.481	0.219	0.262***	0.634	0.354	0.280***
ANALYST	11.481	12.766	10.751	2.015*	12.366	12.246	0.120
DRESIGN	NA	0.375	NA	NA	0.606	0.123	0.483***
NSUITS	NA	1.985	NA	NA	2.803	1.092	0.991***
DSELF	NA	0.316	NA	NA	0.263	0.369	-0.101
LEV	0.159	0.144	0.165	-0.015	0.136	0.124	0.012
PCTEMP	0.788	0.811	0.765	0.046***	0.819	0.801	0.018
PPSOG	0.741	0.994	0.597	0.397**	0.772	0.780	-0.008
MEDIA	NA	0.022	NA	NA	0.022	0.023	-0.001
NOBD	NA	0.049	NA	NA	0.052	0.047	0.005
HITECH	0.626	0.701	0.584	0.117*	0.718	0.554	0.164**
TOBQ	3.266	2.098	3.922	-1.824*	2.466	4.568	-2.102**
ROE	0.010	0.005	0.002	0.007	-0.006	0.017	-0.023
LMVEQ	7.384	7.518	7.309	0.208	7.479	7.433	0.046

***, **, and * indicate significance at the one, five, and 10 percent level, respectively.

Table 3: Market Reaction to Backdating Announcements

Day is the day relative to the announcement day. AAR is the average abnormal return from the Fama-French model. CAAR is the cumulative average abnormal return. Rank Test is a nonparametric test statistic to test for a significant difference in the ratios of positive, relative to negative, abnormal returns. Jacknife Z is the jackknife z-test statistic, testing whether the AAR is significantly different from zero. ACMV is the average change in market value. CACMV is the cumulative average change in market value. AARV is the average abnormal relative volume. CAARV is the cumulative AARV.

Day	Return Analysis				Market Value Analysis		Volume Analysis			
	AAR	CAAR	Rank Test	Jacknife Z	ACMV	CACMV	AARV	CAARV	Rank Test	Jacknife Z
-60	-0.37	-0.37	-0.620	-1.233	-19.04	-19.04	3.70	3.70	0.880	1.020
-40	0.09	-1.27	0.030	0.181	4.65	-65.35	-3.48	45.64	-0.930	-2.103*
-20	-0.47	-2.50	-0.39	-1.145	-24.50	-128.64	1.04	59.27	-0.670	-0.760
-10	-0.24	-3.98	-0.960	-0.943	-12.35	-204.80	-5.09	44.56	-0.830	-2.494*
-5	0.00	-4.55	-0.360	-0.196	0.00	-234.13	2.06	49.25	0.240	0.169
-4	-0.11	-4.66	-0.640	-0.492	-5.66	-239.79	1.181	51.06	0.020	0.052
-3	-0.38	-5.04	-1.130	-1.436	-19.55	-259.34	0.00	51.06	-0.290	-0.715
-2	-0.08	-5.12	-0.720	-0.613	-4.12	-263.46	0.23	51.29	0.160	-0.023
-1	-0.49	-5.61	-1.990*	-2.179*	-25.21	-288.67	4.04	55.33	1.200	1.364
0	-2.26	-7.87	-5.070***	-5.411***	-116.29	-404.97	29.96	85.29	4.070***	5.820***
1	-1.00	-8.87	-2.070*	-2.495*	-51.46	-456.42	31.12	116.41	5.570***	7.437***
2	0.35	-8.52	0.850	1.455	18.01	-438.41	12.38	128.79	2.970**	3.708***
3	0.35	-8.17	1.550	1.682	18.01	-420.40	6.71	135.50	1.570	1.756
4	0.07	-8.10	0.360	0.039	3.60	-416.80	4.50	140.00	1.060	0.870
5	-0.01	-8.11	-0.200	0.172	-0.51	-417.32	3.76	143.76	0.470	0.822
10	0.03	-8.32	-0.120	0.137	1.54	-428.12	-4.05	144.22	-0.530	-1.858
20	-0.14	-8.74	-0.660	-0.327	-7.20	-449.73	-5.70	119.68	-1.380	-1.918
40	-0.22	-8.84	-0.450	-2.098*	-11.32	-454.88	-5.12	62.30	-1.540	-2.522*
60	0.19	-7.95	0.840	0.891	9.78	-409.08	5.63	25.63	0.470	0.809

Day	CAAR	Rank Test	Jacknife Z	CACMV	CAARV	Rank Test	Jacknife Z
-1,1	-3.75	-5.270***	-6.674***	-192.96	65.12	6.260***	6.706***
-5,5	-3.56	-2.842**	-4.597***	-212.52	96.58	5.130***	3.529***

***, **, and * indicate significance at the one, five, and 10 percent level, respectively.

Table 4: The Market Response to the Initiation and the Outcome Announcements of Internal/External Investigations of Backdating

The table reports the three-day (t-1, through t+1) cumulative average abnormal return (CAAR) from the Fama and French (1993) three-factor model around the announcement date of the initiation of the internal investigation and the announcement of the outcome of the investigation. The analysis was performed on the total sample and based on the outcome and whether the investigation reveals intentional, unintentional, or no backdating. The combined period is defined as the CAAR over the period from one day before the announcement of the initiation of the internal investigation to one day after the outcome announcement date. Difference is the difference in CAARs between the initiation date and the outcome date. JNZ is the Jackknife Z statistic. DCAAR is the change in CAAR. ACMV is the average change in market value of the firm equity in dollar terms. DACMV is the difference in the average change in market value of the firm. t-Stat is the t-statistic testing for a significant difference between the two means, i.e., either CAAR or ACMV.

Announcement Dates	**Initiation Date**			**Outcome Date**			**Combined Period**		**Difference**	
Sample/Subsample	**N**	**CAAR**	**JNZ**	**N**	**CAAR**	**JNZ**	**CAAR**	**JNZ**	**DCAAR**	**t-Stat**
1.1. Total Sample	136	-3.750	-5.270***	145	0.447	1.286	-1.917	1.360	-4.197	-6.438***
1.2. Intentional Backdating	71	-5.150	-5.722***	72	-0.410	-0.752	-5.628	3.325***	-4.740	-5.812***
1.3. Unintentional Backdating	39	-1.540	-3.017***	47	1.431	2.984**	2.219	1.562	-2.971	-3.112***
1.4. No Backdating	26	-1.882	-3.551***	26	1.594	3.698***	2.013	1.201	-3.476	-3.006***
1.5. Unintentional and No Backdating	65	-1.660	-3.890***	73	1.480	3.211***	2.137	1.604	-3.140	-4.051***
1.6. (1.2. minus 1.3.)	32	-3.610	-4.836***	25	-1.841	-3.613***	na	na	na	na
1.7. (1.2. minus 1.4.)	45	-3.268	-3.448***	46	-2.004	-3.812***	na	na	na	na
1.8. (1.3. minus 1.4.)	13	0.342	-1.133	21	-0.163	-0.496	na	na	na	na
The Change in the Market Value of Equity ($)										
Sample /Subsample	**N**	ACMV	JNZ	N	ACMV	JNZ	ACMV	JNZ	DACMV	t-Stat
2.1. Total Sample	136	-192.96	-5.779***	145	23.309	0.987	-98.234	-1.405	-216.269	-4.321***
2.2. Intentional Backdating	71	-330.11	-7.020***	72	-26.281	-1.011	-360.744	4.621***	-303.829	-6.761***
2.3. Unintentional Backdating	39	-57.800	-3.211***	47	53.709	3.065***	83.285	1.181	-111.509	-3.025***
2.4. No Backdating	26	-77.95	-3.678***	26	66.023	3.221***	83.377	1.270	-143.973	-3.234***
2.5. Unintentional and No Backdating	65	-65.53	-3.981***	73	58.425	3.581***	84.360	1.532	-123.955	-3.871***

***, **, * indicate significance at the one, five, and 10 percent level, respectively.

Table 5: Logistic Regression Analysis Comparing the Matched Sample of Backdating versus Non-Backdating Firms

$$BDATE = \beta_0 + \beta_1 (BSVTC) + \beta_2 (PSHROWN) + \beta_3 (CINDEX) + \beta_4 (DWEAK) + \beta_5 (IOEXPNI) + \beta_6 (LEV) + \beta_7 (ANALYST) + \beta_8 (PPSOG) + \beta_9 (PCTEMP) + \beta_{10} (PCTEMP) + \beta_{11} (HITECH) + \beta_{12} (TOBQ) + \beta_{13} (ROE) + \beta_{14} (LMVEQ) + \varepsilon.$$

This table depicts the results from estimating the above logistic regression equation for 284 companies (142 backdating firms and 142 matching firms). BDATE is the dependent variable. It is an indicator variable equaling one for backdating firms and zero for matching firms. BSVTC is the Black-Scholes option value of options granted scaled by total compensation. PSHROWN is the percentage of shares and options held by management and board members. CINDX is the composite corporate governance entrenchment index. DWEAK is a dummy variable equaling one if the company reported material weakness in the year preceding the announcement and is zero otherwise. IOEXPNI is the implied option expense scaled by absolute value of net income. LEV is the degree of financial leverage. PPSOG is the pay performance sensitivity of option grants. PCTEMP is the percentage of options granted to employees (non-top five executives). HITECH is a dummy variable equal one if the company belongs to the hi-tech sector and zero otherwise. TOBQ is Tobin's q-ratio. ROE is the return on equity. LMVEQ is the log of market value of equity. t-stat is the t-test statistic testing for a significant difference between the parameter estimate and zero. Pseudo R-square may be interpreted like the R-square value in a normal regression. na indicates not applicable.

	Predicted	Model 1		Model 2		Model 3		Model 4	
Variable	**Sign**	**Estimate**	**t-Stat**	**Estimate**	**t-Stat**	**Estimate**	**t-Stat**	**Estimate**	**t-Stat**
Intercept	na	-4.998	-3.669***	-5.197	-3.949***	-4.215	-3.527	-1.604	3.008***
BSVTC	+	1.383	2.158**	1.599	2.231**	na	Na	na	na
PSHROWN	+	9.962	2.683***	7.025	1.768*	6.303	1.659*	7.693	2.018**
CINDEX	-	-1.340	-3.771***	-1.378	-3.004***	-1.402	-3.098***	-1.425	-3.224***
DWEAK	+	0.926	2.978***	1.139	3.162***	1.102	3.122***	1.100	3.180***
ANALYST	-	0.025	0.894	0.039	1.523	0.058	2.401**	0.065	2.710**
IOEXPNI	+	-0.007	-0.310	-0.149	-1.697*	-0.152	-1.783*	-0.125	-1.532
LEV	+	0.085	0.119	-0.197	-0.208	-0.410	-0.435	-0.443	-0.487
PPSOG	+	0.686	3.151***	0.633	2.673***	0.768	3.068***	0.476	2.356**
PCTEMP	+	3.127	3.185***	3.997	2.978***	3.259	2.556**	na	na
HITECH	+	-0.477	-1.410	-0.327	-0.833	-0.188	-0.494	-0.042	-0.112
TOBQ	+/-	-0.016	-0.792	-0.059	-1.647*	-0.059	1.664*	-0.064	-1.758*
ROE	+/-	0.059	0.108	0.127	0.234	0.172	0.332	-0.080	0.169
LMVEQ	+/-	0.155	1.006	na	na	na	na	na	na
No of Obs.		284		284		284		284	
Pseudo R-square		0.218		0.2378		0.221		0.1915	

***, **, * indicate significance at the one, five, and 10 percent level, respectively.

Table 6: Results of the Cross-Sectional Analysis of Backdating Firm Characteristics

$$CAAR = \beta_0 + \beta_1 (BSVTC) + \beta_2 (PSHROWN) + \beta_3 (CINDEX) + \beta_4 (DWEAK) + \beta_5 (ANALYST) + \beta_6 (DRESIGN) + \beta_7 (NSUITS) + \beta_8 (DSELF) + \beta_9 (LEV) + \beta_{10} (MEDIA) + \beta_{11} (PPSOG) + \beta_{12} (PCTEMP) + \beta_{13} (HITECH) + \beta_{14} (NOBD) + \beta_{15} (AMTEQ) + \beta_{16} (TOBQ) + \beta_{17} (ROE) + \beta_{18} (LMVEQ) + \varepsilon.$$

This table depicts the results from estimating the above cross-sectional regression equation for 136 backdating firms. CAAR is cumulative average abnormal return during the three-day initiation announcement period. BSVTC is the Black-Scholes value of options granted scaled by total compensation. PSHROWN is the percentage of shares and options held by management and board members. CINDX is the composite corporate governance entrenchment index. DWEAK is a dummy variable equaling one if the company reported material weakness in the year preceding the announcement and is zero otherwise. ANALYST is the number of analysts following a given firm. DRESIGN is a dummy variable equal to one if one or more executive(s) resign, are fired or relocated and is zero otherwise. NSUITS is the number of lawsuits filed against the firm. DSELF is a dummy variable equaling one if the company self-reported and is zero if the investigation is initiated by the SEC or DOJ. LEV is the degree of financial leverage. MEDIA is the number of articles related to the company's backdating news divided by the number of all articles related to the company. PPSOG is the pay-performance sensitivity of option grants calculated as percentage of the firm's stock on which options are written multiplied by the options' deltas. PCTEMP is the percentage of options granted to employees (non-top five executives). HITECH is a dummy variable equal to one if the company belongs to the hi-tech sector and zero otherwise. NOBD is the number of options backdated relative to the total number of common shares outstanding. AMTEQ is the restatement amount scaled by total equity. TOBQ is Tobin's q-ratio. ROE is the return on equity. LMVEQ is the log of market value of equity. Adj. R-square is the adjusted R-square value. PE is the parameter estimate. T-stat is the t-test statistic testing for a significant difference between the parameter estimate and zero. White is the White test (1980) statistic for a significance difference of parameter estimate. na indicates not applicable.

	Exp.	Model 1			Model 2			Model 3		
Hypothesis/Variables	**Sign**	**PE**	**t-stat**	**White**	**PE**	**t-stat**	**White**	**PE**	**t-stat.**	**White**
Intercept	na	-0.017	-0.690	-0.887	-0.001	-0.020	-0.031	0.000	0.030	0.010
1. Managerial Opportunism										
BSVTC	-	-0.003	-0.190	-0.207	0.010	0.520	0.634	-0.009	-0.540	-0.638
PSHROWN	-	0.004	0.120	0.118	0.003	0.070	0.094	na	na	na
2. Corporate Governance/Internal Control/Information Asymmetry										
CINDX	+	0.026	3.020***	3.097***	0.026	2.930***	2.829***	0.025	2.970***	2.991***
DWEAK	-	-0.029	-3.180***	-4.041***	-0.034	-3.550***	-4.872***	-0.030	-3.210***	-4.201***
ANALYST	+	0.002	3.110***	2.530***	na	na	na	0.002	3.360***	2.586***
3. Outcome Uncertainty										
DRESIGN	-	-0.020	-2.140**	-2.714***	-0.030	-3.250***	-3.932***	-0.019	-2.100**	-2.586***
NSUITS	-	-0.006	-3.180***	-1.787**	na	na	na	-0.006	-3.240***	-2.082***
DSELF	+	0.013	1.400	1.516	0.015	1.630	1.927**	0.013	1.480	1.522
LEV	-	0.005	0.250	0.316	-0.001	-0.050	-0.062	0.005	0.260	0.316

Table 6 Cont'd.

4. Media Coverage										
MEDIA	-	-0.414	-2.980***	-2.146**	-0.511	-3.540***	-2.270***	-0.408	-2.960***	-2.136**
5. Economic Benefits										
PPSOG	+	0.008	1.580	1.623	0.004	0.740	0.718	0.008	1.540	1.754*
PCTEMP	+	0.022	0.870	1.364	0.034	1.350	1.998**	na	na	na
6. Control Variables										
HITECH	-	-0.026	-2.770***	-2.927***	-0.024	-2.500**	-2.869***	-0.024	-2.680***	-2.667***
NOBD	-	-0.098	-1.400	-1.245	-0.158	-2.110**	-1.744*	-0.079	-1.190	-1.037
AMTEQ	-	0.059	0.810	0.564	-0.029	-0.400	-0.243	0.058	0.810	0.554
TOBQ	+/-	-0.000	0.220	-0.099	0.000	0.500	0.339	0.000	0.240	0.310
ROE	+/-	-0.005	-0.110	-0.104	na	Na	na	-0.005	-0.130	-0.103
LMVEQ	+/-	na	na	na	-0.001	-0.120	-0.121	na	na	na
F-Value		9.450***			8.490***			10.770***		
Adj. R-Square		0.525			0.463			0.530		

***, **, * indicate significance at the one, five, and 10 percent level, respectively.

Table 7: SEC and DOJ Case Characteristics and Frequency Distribution by Defendant, Charges, and Settlement

This table depicts the characteristics of 27 cases launched by the SEC (sole plaintiff) and 8 cases where the plaintiff is both the DOJ and the SEC. The Settlement classified as type A required the company to retain an internal auditor, appoint a corporate compliance officer, install a training program for employees, hire an independent examiner to review accounting practices, and make payment to injured investors. B denotes a civil monetary penalty. C denotes disgorgement (forced repayment) of ill gotten gains. D denotes prejudgment interest paid on disgorgement amounts. E denotes permanent suspension from practicing before the SEC as an accountant. F is for forfeiture. G denotes a five-year, 10-year or permanent ban on acting as an officer or director of a public company. H indicates a permanent injunction barring the defendant from violating federal securities laws. I denotes reimbursement of bonuses. J denotes jail sentences (one is a six-month sentence and the other is for a 25-month sentence). K denotes payment of a fine. L denotes a two-year ban from acting as an attorney. *UHG is United Health Group Inc.

Defendant Title	**N**	**Charges**	**N**	**Settlement**	**N**
Chief Executive Officer (CEO)	16	Securities Fraud (SF)	27	A	5
Chief Financial Officer (CFO)	15	Obstruction of Justice (OJ)	1	B	19
Chief Operating Officer (COO)	4	False Filing to SEC (FF)	5	C	13
Vice President (VP)	4	Lying to Accountant (LTA)	2	D	12
General Council (GC)	9	Tax Evasion (TE)	2	E	4
Chairman of the Board (COB)	1	Mail Fraud (MF)	1	F	1
Controller (CONT)	3	Money Laundering (ML)	1	G	15
Member Compensation Comm. (MCC)	1			H	3
Director (DIR)	2			I	2
Co-Chief Financial Officer (CCFO)	1			J	2
Chief Accounting Officer (CAO)	1			K	3
				L	1

Monetary Settlement Summary Statistics and Frequency Distribution by Amount

Mean and Median ($M)	**Amount**	**Bracket**	**N**	**Average**
Average with UHG	29.896	Less than $1	7	0.513
Average without UHG	6.731	From $1 to $10	7	4.091
Median with UHG	3.986	From $10 to $20	3	11.808
Median without UHG	3.100	From $20 to $40	2	30.125
		Greater than $40	1	470.021*

Appendix A

Intentional Backdating: "Dallas, Nov. 27, 2006/PRNewswire-FirstCall/--*Affiliated Computer Services, Inc.* (NYSE: ACS) today announced the completion of the company's internal investigation into its historical stock option practices investigation… The investigation concluded that certain conduct of Mark A. King, the Company's CEO, and Warren D. Edwards, the Company's CFO, violated the Company's code of ethics for Senior Financial Officer. The internal investigation was initiated in response to a pending informal inquiry by the SEC and a subpoena from a grand jury in the Southern District of New York. The investigation reviewed the company's historical stock option practices during the period from 1994 through 2005, including all 73 stock option grants made by the company during this period, and related disclosure in the company's Form 10-Q, filed May 15, 2006. The investigation concluded that in a significant number of cases Mr. Rich (the company's former CEO), Mr. King and/or Mr. Edwards used hindsight to select favorable grant dates during the limited time periods after Mr. Deason (Chairman of the Board) had given the officers his authorization to proceed to prepare the paperwork for the option grants and before formal grant documentation was submitted to the applicable compensation committee. The investigation found that in those instances Mr. Rich, Mr. King and/or Mr. Edwards often looked back in time and selected as the "grant date" a date on which the price was at a low, notwithstanding that the date had already passed and the stock price on the date of the actual selection was higher. (Source: "*ACS Concludes and Reports Results of Stock Option Investigation"*, http://www.prnewswire.com.)

Unintentional Backdating: "Corona, Ca. March 23, 2007-Hansen Natural Corporation (NASDAQ: HANS) today announced that the Special Committee of its Board of Directors appointed to investigate the company's stock option practices had substantially completed its four and a half month investigation and had presented its report and findings to the Board of Directors of Company on March 16, 2007. …. The Special Committee found no willful or intentional misconduct in connection with the granting of dating of, or the accounting for, stock options. The Special Committee found no evidence raising concerns with the integrity of management and found that management and other Company personnel interviewed in the course of the investigation were cooperative and credible. The Special Committee found that during the time period covered by its review, there were inadequate internal accounting controls at the Company related to its stock options grant process, deficiencies in the process of documenting the approval of stock option grants, and some errors and potential errors with respect to the accounting of

certain option grants". (Source: *"Hansen Natural Announces Stock Option Grant Report and Findings"*, http://www.hansens.com.)

No Backdating: "Milpitas, CA. Oct. 2, 2007-Linear Technology, Inc. (Nasdaq: LLTC), announced today that it received a notice from the SEC that the investigation concerning the company's historical stock option grant practices had been completed and that no enforcement action was recommended. The company disclosed that the company had reviewed its historical option grants practices and option grants with the assistance of outside counsel and an independent forensic accounting firm. The primary scope of the review covered the periods for calendar year 1995-2006. Based on the findings of the review, the company concluded that there was no need to restate any previously filed financial statements. The review found no evidence of fraud or misconduct of any kind in the Company's practices in granting stock options". (Source: *"Linear Technology Corporation announces that SEC has Terminated its Inquiry Regarding Historical Stock Option Grant Practices"*, http://www.linear.com.)

Appendix B: SEC and DOJ Charges and Settlements

Plaintiff indicates whether the charges were brought up by the securities exchange commission (SEC) or by both the SEC and the Department of Justice (DOJ). Defendant is the title of the defendant(s) where CEO is the Chief Executive Officer, CFO is the Chief Financial Officer, COO is the Chief Operating Officer, VP is the Vice President, GC is the General Council, DIR is a Director, CONT is Controller, MCC is a Member of the Compensation Committee, CCFO is for Co-CFO. Charges are abbreviated as SF (securities fraud), FF (false filing to SEC), OJ (obstruction of justice), LTA (lying to accountants), MF (mail fraud), ML (money laundering) and TE (Tax Evasion). The Settlement classified as type A1 required the company to retain an internal auditor, appoint a corporate compliance officer (A2), install a training program for employees (A3), hire an independent examiner to review accounting practices (A4) and make payment to injured investors (A5). B denotes a civil monetary penalty. C denotes disgorgement (forced repayment) of ill-gotten gains. D denotes prejudgment interest paid on disgorgement amounts. E denotes permanent suspension from practicing before the SEC as an accountant. F is for forfeiture. G1 denotes a five-year, 10-year (G2) or permanent ban on acting as an officer or director of a public company (G3). H indicates a permanent injunction barring the defendant from violating federal securities laws. I denotes reimbursement of bonuses. J denotes jail sentences (one is a six-month (6MJ) sentence and the other is for a 25-month (25MJ) sentence). K denotes payment of a fine. L denotes a two-year ban from acting as an attorney.

Company Name	Plaintiff	Defendant	Charges	Monetary Settlement	Settlement
1. Analog Devices, Inc.	SEC	CEO	SF	4.871	B, C, D
2. Apple, Inc.	SEC	CFO, GC	SF	5.807	B, C, D
3. Blue Coat Systems, Inc.	SEC	CEO	SF	0.186	B, C, D, G1
4. Broadcom Corporation	SEC, DOJ	CEO, CFO, GC	SF, OJ, FF	13.400	B, C, D
5. Brocade Communication Systems, Inc.	SEC, DOJ	CEO, CFO, VP, COO	SF, FF, LTA	23.250	B, J (25MJ), K
6. Brooks Automation Inc	SEC, DOJ	CEO, COB	SF, TE		H
7. Comverse Technology, Inc.	SEC, DOJ	CEO, CFO, GC	SF, MF, ML, FF	4.883	C, D, E, G3
8. Embarcadero Technologies, Inc.	SEC	CEO, CFO, CONT	SF	0.250	B
9. Engineered Support Systems, Inc.	SEC	CEO, CFO, CONT, MCC	SF	0.887	B, C, D, E, G3
10. HCC Insurance Holdings, Inc.	SEC	CEO, GC	SF	0.250	B, G1, H, L
11. Integrated Silicon Solution, Inc.	SEC	CFO	SF	0.540	B, C, D, G1
12. Juniper Networks, Inc.	SEC	GC	SF		B
13. KB Home, Inc.	SEC	CFO	SF	6.655	B, C, D, G1
14. KLA Tencor Corporation	SEC	CEO	SF		B
15. Marvell Technology Group Ltd.	SEC	COO	SF	10.500	B, G1
16. Maxim Integrated Products, Inc.	SEC	CEO, CFO	SF		H
17. McAfee, Inc.	SEC	GC	SF		F
18. Mercury Interactive, Inc.	SEC, DOJ	CEO, CFO, GC, DIR	SF, TE	3.100	B, G3
19. Microtune Inc.	SEC	CEO, CFO	SF		H
20. Monster Worldwide, Inc.	SEC, DOJ	CEO, COO, GC, CONT	SF, FF,	0.933	C, D, G3
21. Peregrine Systems, Inc.	SEC	CFO, VP	SF		A1, A2, A3
22. Research in Motion Limited	SEC	CFO, VP, CCFO	SF	2.268	B, C, E, G1
23. Safenet, Inc.	SEC, DOJ	CFO, COO	SF, FF, LTA	1.050	B, E, G2, J (6MJ), K
24. Sycamore Networks, Inc.	SEC	CFO, DIR	SF	0.545	B, C, D, I
25. Symbol Technologies, Inc.	SEC	CAO, VP	SF	37.000	A4, A5, G3
26. Take Two Interactive Software, Inc.	SEC, DOJ	CEO	SF	11.523	B, C, D, G1, K
27. UnitedHealth Group Inc.	SEC	CEO, GC	SF	470.021	B, C, D, G1, G3, I
Average				$30.098	