1-14-2013

Scandal Enforcement at the SEC: The Arc of the Option Backdating Investigations

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January 2013

ABSTRACT: We study the SEC's allocation of enforcement resources in the wake of a salient public scandal. We focus on the SEC's investigations of option backdating in the wake of numerous media articles on the practice of backdating. We find that the SEC shifted its mix of investigations significantly toward backdating investigations and away from investigations involving other accounting issues. We test the hypothesis that SEC pursued more marginal investigations into backdating at the expense of pursuing more egregious accounting issues. Our event study of stock market reactions to the initial disclosure of backdating investigations shows that those reactions declined over our sample period. We also find that later backdating investigations are less likely to target individuals and less likely to be accompanied by a parallel criminal investigation. Looking at the consequences of the SEC's backdating investigations, later investigations were more likely to be terminated or produce no monetary penalties. We find that the magnitude of the option backdating accounting errors diminished over time relative to other accounting errors that attracted SEC investigations.

Keywords: Option backdating, SEC enforcement.

JEL Codes: K22, K23

* Corresponding author. Thanks to Jennifer Arlen, Sara Gilley, Scott Lee, David Marcus, Un Kyung Park, Frank Partnoy, Randall Thomas, two anonymous referees, and to participants at the 2011 Conference on Empirical Legal Studies, the 2012 NYU-Penn Law and Finance Conference, the 2012 American Law and Economics Association Annual Meeting, workshops at Chicago, Illinois, Michigan, New York University, Vanderbilt, and Yale for helpful comments on an earlier draft. We are particularly grateful to Cornerstone Research for assisting us with data on SEC investigations and enforcement actions used here.

1. Introduction

How does the SEC determine its enforcement priorities? This question has received relatively little study, but has important implications for understanding the SEC's role in maintaining the integrity of the capital markets in the United States. The agency and its supporters recurrently complain about the lack of resources devoted by Congress to the SEC's mission of investor protection. Those complaints are echoed by critics of private enforcement, particularly of the securities class action bar, who argue that deterrence would be better served by allocating more resources to public enforcement through the SEC. These arguments presuppose that the SEC is using its resources at least relatively efficiently, and that adding additional resources to its enforcement efforts would yield commensurate gains in deterrence. Would more bucks for the SEC produce a bigger deterrent bang?

This paper offers empirical evidence on the SEC's enforcement priorities in the wake of a recent, and particularly high profile, scandal involving option backdating. Although a number of papers have looked at enforcement actions filed by the SEC (e.g., Cox et al. 2003 and 2005), there has been little research into the broader category of investigations. This paper begins to fill that gap.

Many SEC investigations involve a single company or individual and have no connection to any other SEC investigation. Presumably the SEC makes the decision on how far to pursue such an investigation based on the egregiousness of the offense, the number of victims, the relationship of the offense to practices in the capital markets, the likelihood of success, the presence of a private securities class action, and other factors. Some SEC investigations, however, target systemic practices. These investigations are often triggered by a newspaper

report concerning the issue or the SEC's failure to address the issue. A notable recent example would be the SEC's investigations into Ponzi schemes following revelations of its repeated failure to uncover Bernard Madoff's massive fraud. One possibility, raised by the behavioral economics literature, is that regulators may overreact to salience (Choi & Pritchard, 2003).

We use the SEC's investigations into option backdating to examine how the SEC allocates resources to its investigations. Option backdating involves retroactively assigning award dates for employee stock options to put the options "in the money" at the actual time of the grant. Option backdating seems particularly well suited to attract media scrutiny. In the public perception, the practice resonates as yet another example of executive greed and deception, essential ingredients for generating substantial populist outrage. No surprise then that option backdating went – almost overnight – from the subject of academic speculation to front-page news.

How would the SEC respond to that wave of media attention? We predict a positive correlation between media attention and the agency's decisions to investigate. The more interesting policy question, however, is the impact produced by those investigations. We conjecture that media attention may reduce the level of likely wrongdoing necessary to induce the agency to act. Did the public attention to the scandal encourage the SEC to pursue marginal option backdating cases? And do those cases come at the expense of stronger potential cases that involve other accounting issues? We use other accounting investigations as our primary baseline because these investigations involve issues most comparable to backdating. (We look at a broader set of investigations in the final portion of the paper.) Options backdating involves accounting issues, but for clarity of exposition we use "backdating"

to refer to option backdating investigations and "accounting" to refer to other accounting investigations.

We assess the impact of SEC investigations into backdating from three distinct perspectives; all use SEC accounting investigations as our baseline of comparison. First, we examine the market reaction to SEC investigations, conducting an event study of stock price reactions to the initial disclosure of investigations. Both SEC investigations and enforcement actions generally are met with significant and negative stock price reactions (Karpoff, Lee, and Martin, 2008a); we find that negative reactions to disclosure of SEC backdating investigations diminish over our sample period relative to the reactions to accounting investigations.

Second, we look at the intensity of the investigation. We examine the presence of investigations of individual officers; investigations into individuals are more likely to be driven by indicia of culpable intent. Individuals were less likely to be investigated as the backdating scandal wore on. We also look at parallel criminal investigations by the Department of Justice (DOJ); the DOJ is likely to pursue cases only when there is clear evidence of fraud. We find that parallel criminal investigations declined over time for the SEC's backdating investigations. These findings suggest that the SEC's later backdating investigations had weaker indicia of fraud relative to accounting investigations.

Finally, we examine the outcome of the investigation. Did the investigation lead to an enforcement action or was it terminated or settled for no monetary recovery? Did individual officers pay a settlement? Again we find that the consequences stemming from the SEC's backdating investigations diminished over our sample period relative to the consequences from accounting investigations.

Why did the SEC's investigations have less of an impact as the scandal wore on? Were the later backdating issues just as egregious as the earlier ones but the SEC simply lost interest? Or did the SEC pursue increasingly marginal cases? To assess these competing hypotheses, we compare the economic significance of the backdating investigations with accounting investigations. Here we use magnitude of the accounting error as our exogenous proxy for the importance of the investigations. We find that the accounting magnitude of the backdating investigations declined over our sample period relative to the magnitude for accounting investigations. We interpret this result as consistent with a case selection explanation for the declining impact of the SEC's backdating investigations.

We proceed as follows. Section 2 provides a brief history of the option backdating scandal. Section 3 describes our sample. We present the results of our statistical tests in Section 4. Section 5 tests the robustness of our conclusions using an expanded sample. Section 6 concludes.

2. A Brief History of Option Backdating

Backdating has a number of features likely to attract SEC scrutiny. On its face, backdating seems to undermine the incentive rationale for awarding stock options, giving employees a built-in profit from their option awards without any relationship to performance. Moreover, assigning award dates with the benefit of hindsight suggests that management may have been less than candid with directors. These issues raise concerns about corporate governance, a traditional bête noire of the SEC. More subtly, backdating raises tax and

accounting problems for the issuing company; the former is the concern of the IRS, but the latter falls squarely within the bailiwick of the SEC.

The roots of the option backdating story can be traced back as far as 1997. Yermack (1997) found that stock prices tend to increase shortly after grants. Yermack's explanation for the pattern was that executives were timing the grants in anticipation of the release of good news. Lie (2005), however, found that the *overall* stock market performed worse than normal immediately before the grants, and better than normal immediately thereafter. Given that company insiders are unlikely to have a comparative advantage in predicting stock market movements, Lie attributed this perspicacity to selection of option grant dates with the benefit of hindsight.

In a separate study, Heron & Lie (2007) found that this pattern diminished substantially after the SEC imposed a new requirement that stock option grants must be reported within two business days. That requirement was imposed by the SEC in August 2002 in the wake of the Sarbanes-Oxley Act. Narayanan and Seyhun (2006), however, found that companies report about a quarter of grants later than the two-day deadline and that such delayed reporting is associated with big price gains after the grant dates. Thus, it would appear that the SEC's new reporting requirement curtailed, but did not eliminate, the practice of backdating.

Lie's original study was circulated in the first half of 2004, including to the SEC. (Stecklow, 2006). An IRS settlement involving backdating was reported in the *New York Times* in August of that year (Johnston, 2004), but the SEC's efforts in the area did not attract any substantial media attention until 2005. (Maremont, 2005). Two publications, however, raised the profile of the issue, identifying a number of companies engaged in backdating. The first was

a front-page story in the *Wall Street Journal*, *The Perfect Payday*, in March 2006. (Forelle & Bandler, 2006). That article departed from prior media coverage in that it named names of companies suspected of backdating. The *Perfect Payday* article was followed by the publication of a report by the Center for Financial Research and Analysis (CFRA) in May 2006, identifying yet more companies potentially involved in the practice. This specificity provided the fuel that led to a media firestorm, as the backdating story migrated from the business press to the mainstream media in May 2006. This public identification of suspected companies coincided with the surge in media interest commencing in May 2006 documented in Figure 1.[1]

[Figure 1 here]

The media were now paying attention, and apparently so was the SEC. Following *The Perfect Payday* article, SEC commissioners and senior officials gave 17 speeches relating to backdating. There are no speeches on this topic before July 2006 and none after June 2007. Perhaps not coincidentally, the SEC and the DOJ brought civil and criminal cases against Gregory Reyes, the CEO of Broadcom in July 2006. The actions against Reyes were the first enforcement actions to be brought in the wake of the media frenzy unleashed by *The Perfect Payday* article.[3] The SEC's enforcement actions in the area have continued, with the most recent case being filed in July 2010.[4]

[1] The source for this data is a LexisNexis search for "stock option /15 practic! or backdat! or back-dat! and date is --" in the Allnews database. The number of stories is no doubt bolstered by multiple newspapers running the same story from a wire service such as the Associated Press. We do not believe that the multiple count for an individual story distorts the measure because we use the measure as a proxy for interest in the subject, not coverage per se. We note that there is a feedback loop here. Media attention may have led to SEC investigations, but SEC investigations also drew substantial media coverage. Our focus, however, is not on the extent of the media coverage, but rather, the results produced by the SEC as the cycle of investigations and enforcement wore on.

[3] SEC Litigation Release No. 19768 (July 20, 2006). The SEC website identifies two companies previously involved in enforcement actions involving backdating, Symbol Technologies and Peregrine Systems. SEC Litigation Release No. 18205 (June 30, 2003) ; SEC Litigation Release No. 18734 (June 30, 2004).

[4] SEC Litigation Release No. 21593 (July 16, 2010) (Trident Microsystems).

3. Sample Description and Data

Our primary sample consists of public companies that publicly disclosed SEC investigations involving backdating and accounting issues from 2004 through 2007. For our primary sample, companies must have securities price data available on the Center for the Research on Security Prices (CRSP). We identified SEC investigations through NEXIS searches as well as searches of SEC filings. As the SEC typically does not disclose its investigations unless and until it files an enforcement action, our search relies on company disclosure that they are under investigation. Consequently, we may miss SEC investigations that the company deems immaterial; these undiscovered SEC investigations likely involved few SEC resources and are of only small economic importance. We use accounting investigations during the same period as our primary baseline with which to compare backdating investigations.[5]

We exclude Foreign Corrupt Practices Act (FCPA) investigations from our comparison pool of accounting investigations. Our rationale for excluding these cases is that the SEC maintains a separate staff for Foreign Corrupt Practices Act (FCPA) accounting-related investigations. Consequently, these investigations are less fungible with backdating investigations than are more traditional accounting investigations. Moreover, FCPA investigations generally focus on bribery of government officials rather than books and records errors that flow from the bribery. By contrast, the accounting investigations that we use as our baseline may lead to either fraud charges or books and records charges, but the gravamen of

[5] To provide a broader baseline of comparison, we also collected all SEC investigations involving public companies during that same period. We present data relating to this broader sample in Section 5.

the investigation is the accounting problem. In our later robustness tests, we compare backdating investigations against all SEC investigations involving public companies, including FCPA investigations. Cornerstone Research assisted in our data collection for SEC investigations.

[Insert Figure 1 here]

Figure 1 presents the shift from accounting to backdating investigation during our study period. The precipitous decline in accounting investigations in 2006 suggests an opportunity cost of investigating option backdating. The SEC investigation of accounting-related problems drops drastically in that year, both in absolute number and proportion of total investigations.

Table 1, Panel A shows the breakdown over time between the two categories of investigations, backdating and accounting. The investigations are classified by the earliest disclosure of an investigation, or an earlier date if the first disclosure confirms an earlier beginning for the investigation. The disclosures typically reveal informal investigations, so we are classifying the earliest stages of the SEC inquiry. Most notable here is the steep spike in backdating investigations initiated in 2006. That spike was followed by a sharp decline in 2007 with only a few accounting investigations launched in that year. This pattern suggests that the SEC's focus on backdating caused a backlog, making resources unavailable for other kinds of investigations while the agency pursued the backdating investigations initiated in 2006.

[Table 1 here]

The sharp drop in accounting investigations is even more pronounced in Panel B of Table 1 when we break down the investigations into three periods, corresponding to the elevation of media scrutiny depicted above in Figure 1. We define the Pre-Frenzy period as the

time prior to May 2006, when there were few news stories on option backdating. The SEC, however, had access to Lie's study from 2004, so it was possible for it to have commenced more investigations in the Pre-Frenzy period if it had chosen to do so. We define the Early Frenzy period as May and June 2006. This period is marked by a sharp increase in news stories focused on backdating. We define the Late Frenzy period as the time from July 2006, when the SEC began to discuss publicly its investigations into backdating and brought its first formal backdating enforcement action after *The Perfect Payday* article, to the end of 2007. We use these three periods in our regression analysis presented in Section 4.

We see that backdating constituted a small portion – 5.1% percent – of the SEC's accounting-related investigations in the Pre-Frenzy period. In the Early Frenzy period, however, backdating quickly came to dominate the SEC's investigations, making up 85.7% of the investigations launched during that time, before dropping down to 66.7% level in the Late Frenzy period. This quick shift in enforcement priorities suggests that the SEC declined to pursue accounting cases that the SEC otherwise would have pursued in order to free up resources to pursue backdating investigations.

One possibility is that the SEC enjoyed economies of scale in backdating investigations. If the agency learned from prior investigations, backdating investigations launched later in the period could be pursued more efficiently, as attorneys and accountants would know which stones needed to be turned over. Alternatively, perhaps internal investigations conducted by the companies implicated in the backdating scandal did all of the heavy lifting for the SEC by presenting the agency's staff with all the relevant facts.

We cannot know the actual amount of resources the SEC applied to its investigations. Instead, we focus on settled actions, representing those actions where the SEC received a return from its investigation investment. We use the amount of time between the initiation of an SEC investigation and the settlement of the action as a proxy for the amount of resources the SEC expended on the action. If the SEC developed economies of scale in its enforcement of backdating actions, we expect that the resolution time for settled backdating cases should decline over time relative to Pre-Frenzy backdating cases. We also expect that the resolution time for settled backdating cases should also decline over time relative to accounting cases. We assume that accounting cases should stay relatively constant in their resource requirements over this period.

The data in Panel D tend to undercut the enforcement efficiency hypothesis. Panel D reports the mean and median resolution times for SEC actions that resulted in a settlement; there is no significant change in resolution times for either accounting or backdating settled actions across the study's three time periods. Moreover, focusing solely on the Late Frenzy period, we find no significant difference between the mean or median resolution times for accounting compared with backdating SEC actions. If the SEC developed a comparative advantage in backdating investigations, it does not show up in these data. Without more direct measures of cost and efficiency, however, we cannot rule out the possibility that the SEC became more efficient at managing backdating investigations as the scandal wore on.[6]

[6] As we report later in the paper, the backdating actions in the Late Frenzy period typically were of smaller magnitude and had a higher probability of termination without monetary recovery compared with accounting actions. Even if the SEC was able to bring more backdating actions efficiently, to the extent such actions were of smaller magnitude and experienced a higher incidence of termination, it is unlikely that the social value of such actions outweighed the opportunity cost of foregone SEC enforcement against accounting violations.

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Panel E of Table 1 suggests a connection between the SEC's shift in investigation resources and the spike in media attention devoted to options backdating. Panel E identifies the source of the first disclosure of an options backdating problem. In the Pre-Frenzy period, the SEC is the instigator, but the number of investigations is small. In the Early Frenzy period, the number of investigation spikes, but the media first brought attention to most of those companies. During the Late Frenzy period, internal investigation initiated by the company are the primary impetus. The SEC went from leader in the Pre-Frenzy period to follower in the Early Frenzy and Late Frenzy periods.

Table 2, Panel A presents descriptive statistics showing the characteristics and consequences of the SEC investigations for the overall sample. Firms that were the subject of backdating investigations were no more likely to have an individual officer investigated than were firms subject to accounting investigations, but they were more likely to be the subject of a criminal probe. Turning to the consequences of the investigations, the backdating and accounting investigations yielded roughly similar results. Overall, the SEC was more likely to terminate backdating investigations, but both types of investigation were likely to come away with no recovery. The incidence of individual settlements was also comparable. Finally, the size of the accounting errors for the two types of investigation is similar.

Table 2, Panel B compares the size and industries of the companies that were subject to backdating and accounting investigations during our sample period. The firms subject to accounting investigations are larger on average, but the difference is not significant. Not surprisingly, the companies subject to backdating investigations are much more likely to be in the computer hardware and software industries. The practice of options backdating was

purported to be endemic to those industries; the investigations took a particular, although not exclusive, focus on those sectors.

4. Empirical Tests

The descriptive statistics presented in Table 1 suggest that the SEC may have been scrambling to catch up with the flow of media scrutiny into options backdating. This possibility invites the question: If the SEC was scrambling to catch up with the media, did the SEC pursue weaker backdating cases? We turn to this question in this section.

We assess the impact of the SEC's option backdating investigations from three distinct perspectives: (1) market reactions to disclosure of the investigations; (2) intensity of the investigations; and (3) the outcomes of the investigations. We also assess the magnitude of the accounting error, a proxy for the economic significance of the cases being investigated. In this section, we use the SEC accounting investigations as our baseline of comparison. The goal of each inquiry is to assess whether there was a change in the impact of the backdating investigations over time.

4.1 Market reactions

To assess market responses to SEC backdating investigations, we begin with an event study of stock market reactions to the initial disclosure of investigations. We use event windows for our studies focusing on the date of the first public disclosure of the SEC investigation. Two concerns drive our selection of event windows. First, the public disclosure date of a SEC investigation is noisy, as the real first date of public disclosure could be earlier

than the date that we uncovered in our research. For example, a company may announce an internal investigation into accounting issues that may lead the market to expect a SEC investigation prior to the first public announcement of the SEC investigation. Second, some of the companies targeted for investigations delisted shortly prior to the public disclosure of an SEC investigation (typically with large negative returns immediately before delisting). Utilizing a narrow window omits these companies and thereby biases the average cumulative abnormal return upwards. Consequently, we use both moderate (−10 to +1) and wide (−30 to +1) event windows for our analysis. The latter window is wide enough that it is likely to capture the first public confirmation of an investigation. The moderate and wide windows also decrease the power of the event study, however, and may also capture other disclosures by the companies which both bias against finding any significant results. For comparison purposes, we also use a narrow (−1 to +1) window centered on the first public disclosure of the SEC investigation. We present the results in Panel A of Table 3.

[Insert Table 3 here]

In the Pre-Frenzy period, firms subject to backdating and accounting investigations both experienced significant negative reactions when the investigations were first disclosed. Notably, the firms subject to backdating investigations had greater negative reactions for the wide (−30 to +1) and moderate (−10 to +1) event windows during this period than did firms that were subject to accounting investigations. This comparison, however, did not hold for the narrow (+1 to −1) event window for which accounting investigations had a greater negative reaction on average than for backdating investigations. We cannot rule out the possibility that the narrow event window may miss the first date that the public expected a SEC investigation.

This relation changes during the Early Frenzy period, with the small number (seven) of firms subject to investigations for accounting violations experiencing substantially larger declines (−15.75% in the wide, −8.81% in the moderate window). The forty-eight firms subject to backdating investigations experienced significant negative reactions, but the magnitude is considerably smaller than the reactions to the accounting investigations (−10.26% for the wide, −3.72% for the moderate window). This difference between the two categories, along with the small number of accounting investigations, suggests that only the most egregious accounting violations were capturing the SEC's attention during the Early Frenzy period. Once again, this comparison does not hold for the narrow (+1 to −1) event window for which accounting investigations had approximately the same average negative reaction as backdating investigations.

The most striking finding from this comparison, however, is the *positive* (albeit insignificant) stock price reaction in the moderate window to the disclosure of backdating investigations launched in the Late Frenzy Period. (The reaction for the wide window is negative, but not significantly different from zero and the reaction in the narrow window is positive and significant at the 10% level.) In comparison, the reaction to the disclosure of an accounting investigation in the Late Frenzy Period is negative and significant for all three windows (difference with the reaction to a backdating investigation significant at the 5% level). On its face, this reaction suggests that the market is skeptical that these investigations will uncover significant wrongdoing.

The counter argument is that the market may have anticipated which companies would face an SEC investigation. Carow et al. (2009) find that firms predicted to have engaged in stock

options backdating, but without public disclosure of an investigation, experienced stock price performance similar to that of firms with publicly disclosed investigations. Their finding would suggest that the market may have already incorporated the possibility of an investigation by the Late Frenzy period.[8] To test this possibility, we conduct an event study centered on the first public disclosure date of the underlying issue or problem that led to the SEC investigation. Because there is less of a concern that an earlier disclosure event may lead the market to expect the underlying issue or problem (since we searched for the first public disclosure date of the issue or problem), we used only a narrow event window (−1 to +1 days) and report the event study results in Panel B of Table 3.

From Panel B of Table 3 note that the market response to an announcement of an option backdating issue is less than the market response to an accounting issue in all three time periods. Unlike the results in Panel A, the market reaction for the backdating sample in the Late Frenzy period is negative and significant (although smaller in magnitude compared to the accounting sample in the Late Frenzy period). It is possible that the market anticipated those companies that would face a backdating investigation after *The Perfect Payday* article. To test for this possibility, we replaced the first public announcement date for those option backdating scandals with a first public announcement date after March 20, 2006, with that date, which was the first trading date after the publication of *The Perfect Payday* article. Panel B of Table 3 reports event study results for the first public announcement date with the date of *The Perfect Payday* for option backdating investigations if earlier. Note that the market reaction for the

[8] Gande and Lewis (2009) find anticipation effects within industries for shareholder class actions.

backdating sample is once again positive and insignificant for investigations commenced in the Late Frenzy period.

We use the cumulative abnormal returns (CAR) from our event study as the dependent variable to assess the relation between stock returns and media scrutiny of option backdating. We estimate the following ordinary least squares regression model using robust standard errors:

$$CAR_i = \alpha + ß_{1i}Backdating_i + ß_{2i}ln(1 + Days\ from\ WSJ)_i + ß_{3i}ln(1 + Days\ from\ WSJ)_i \times Backdating_i + ß_{4i}ln(Market\ Cap.)_i + ß_{5i}Computer\ Hardware_i + ß_{6i}Computer\ Software_i + \varepsilon_i$$

We define Days from WSJ as the number of days from *The Perfect Payday* article to the first public announcement of the SEC investigation. If the first public announcement of the SEC investigation is before *The Perfect Payday* article we set Days from WSJ as equal to zero. In the model, we use ln(1 + Days from WSJ) as an explanatory variable. We also include an interaction variable between this variable and our indicator variable for an option backdating investigation. This interaction variable captures the relation between the duration of the backdating scandal and the stock market's reaction to the disclosure of the backdating investigation. We also include the log of market capitalization measured at the end of the calendar year just prior to the commencement of the SEC investigation (Market Capitalization); Anginer et al. (2011) find that the SEC's investigations focused on larger firms. Finally, we include industry controls for SIC 367 and 737, the two industry groups with the largest number of backdating investigations in our sample; if the market anticipated backdating investigations, it should be most obvious in

these sectors.[9] The results of our cumulative abnormal return regression are presented in Model 1 of Table 4.

[Table 4 here]

The results in Model 1 of Table 4 are consistent with our findings in Table 3. The coefficient for the Backdating variable is negative but not significantly different from zero. Prior to the media frenzy around backdating, we find a no evidence of a difference between the market reaction for backdating and accounting investigations. The sign for the interaction variable between ln(1 + Days from WSJ) and Backdating, however, is positive and significant at the 10% level. As time passes from *The Perfect Payday* article, the market reaction to additional backdating investigations becomes increasingly less negative compared with the market reaction to accounting investigations.

As an alternate specification for different time periods during the option backdating scandal, we replace ln(1 + Days from WSJ) with indicator variables for the Early Frenzy and Late Frenzy periods. Using indicator variables allows us to see whether there is a discontinuous shift in the SEC backdating investigations initiated during the Early Frenzy period of media pressure related to backdating to later in the Late Frenzy period (using the Pre-Frenzy period as the base category of comparison). We also replace the ln(1 + Days from WSJ) x Backdating interaction variable with interaction variables for the two periods and Backdating. Model 2 of Table 4 reports the results.

[9] The industry controls correspond to SIC 367 (Electronic Component and Accessories), which accounted for 8.1% of our sample of backdating investigations, and SIC 737 (Computer Programming, Data Processing, and Other Computer Related), which accounted for 13.6% of our sample.

The results for Model 2 are similar to those in Model 1. The coefficient for the Early Frenzy x Backdating interaction variable is positive, but insignificant, while the coefficient for the Late Frenzy x Backdating interaction variable is positive and significant at the 10% level. (The difference between the two is not significant.) Compared with an accounting investigation, the initial announcement of a SEC backdating investigation resulted in a 11.3 percentage point more positive market reaction in the Late Frenzy period. These results suggest that either the market was unimpressed by these later investigations into option backdating, or had fully anticipated any negative consequences flowing from them.[10]

The market may have learned about the option backdating prior to the first public disclosure of the SEC investigation and anticipated a possible SEC investigation. Not all reports about option backdating, however, led to an SEC investigation of the company identified. Nonetheless, we re-estimated Models 1 and 2 in Table 4 using the −1 to +1 CARs from an event study centered around the first public date for the disclosure of information relating to option backdating (regardless of whether an SEC investigation is mentioned) for the option backdating investigations. We report the results in Models 3 and 4 of Table 4. Neither the ln(1 + Days from WSJ) x Backdating interaction term in Model 3 nor the ln(1 + Days from WSJ) x Late Frenzy interaction term in Model 4 are significantly different from zero.[11] While we observe a

[10] We re-estimated Models 1 and 2 with the cumulative abnormal return from -30 to +1 and the -10 to +1 windows centered on the public disclosure date of a SEC investigation as the dependent variables. Unreported, we obtained the same qualitative results as in Model 1 and 2. The ln(1 + Days from WSJ) x Backdating interaction variable is positive and significant at the 5% level (-30 to +1 day window) and the 10% level (-10 to +1 day window). The ln(1 + Days from WSJ) x Late Frenzy interaction variable is positive and significant at the 5% level (-30 to +1 day window) and the 10% level (-10 to +1 day window).

[11] It is possible that the market anticipated those companies that would face a backdating investigation after *The Perfect Payday* article. To test for this possibility, we re-estimated Models 3 and 4 with the cumulative abnormal return from the -1 to +1 day window centered on the first public announcement date, replacing the first public announcement date for those option backdating scandals with a first public announcement date after March 20, 2006, with that date, which was the first trading date after the publication of The Perfect Payday article.

significant decline in how the market reacts to the first public announcement of a SEC investigation related to backdating, we do not observe a similar decline related to the first public disclosure date of the underlying backdating violation.

We performed a number of robustness tests. We used a linear specification of Days from WSJ instead of ln(1 + Days from WSJ).[12] We used the number of prior news stories on option backdating (Prior News Stories) as an alternate measure of the duration of the backdating scandal.[13] We used a series of time indicator variables instead of the Early and Late Frenzy indicators.[14] We also added an indicator variable for backdating investigations that also involved non-backdating issues.[15] The results of the robustness models were largely consistent with the models in Table 4.

Unreported, we get qualitatively similar results as in Models 3 and 4. Neither the ln(1 + Days from WSJ) x Backdating nor ln(1 + Days from WSJ) x Late Frenzy interaction terms are significantly different from zero.

[12] We re-estimated Models 1 and 3 of Table 4 using Days From WSJ instead of ln(1 + Days from WSJ) and Days From WSJ x Backdating instead of ln(1 + Days from WSJ) x Backdating. Unreported, we obtained the same qualitative results as in Model 1. The re-estimated Model 3 provided stronger results. The coefficient on the Days from WSJ x Backdating interaction term is positive and now significant at the 5% level.

[13] We re-estimated Models 1 and 3 of Table 4 using ln(1+Prior News Stories) instead of ln(1 + Days from WSJ) and ln(1+Prior News Stories) x Backdating instead of ln(1 + Days from WSJ) x Backdating. Prior News Stories is defined as the number of option backdating news stories prior to the first public date of the SEC investigation in question and provides a measure of the amount of public pressure summed over time relating to the option backdating scandal. Rather than focusing directly on time, the Prior News Stories variable uses the aggregate amount of media attention to backdating as a continuous measure of the relative stage (early, when the aggregate number of stories is small, versus late, when the aggregate number of stories is large and reached a maximum) of the backdating scandal. Unreported, we obtained weaker results in Model 1. The coefficient on ln(1+Prior News Stories) x Backdating is positive but now significant at only the 13.3% level. In contrast, we obtain somewhat stronger results in Model 3. The coefficient on ln(1+Prior News Stories) x Backdating is positive but now significant at the 10% level.

[14] We re-estimated Models 2 and 4 of Table 4 using time indicator variables for May-June 2006, July-August 2006, September-October 2006, November-December 2006, and for the Year 2007 instead of the Early and Late Frenzy indicator variables (May-June 2006 is the same as the Early Frenzy indicator variable). We also replaced the Early and Late Frenzy x Backdating interaction terms with corresponding interaction terms between the time indicator variables x Backdating. Unreported, in the re-estimated Model 2, the July-August 2006 x Backdating and the Year 2007 x Backdating interaction terms were positive and significant at the 5% levels, consistent with the results of Table 4. Unreported, in the re-estimated Model 4, none of the time indicator and Backdating interaction variables were significant, consistent with the results of Table 4.

[15] We re-estimated the models of Table 4 with the addition of an indicator variable if the SEC investigation involved both option backdating as well as some non-option backdating aspect (such as an unrelated accounting violation).

4.2 Investigation Intensity

One measure of the impact of the SEC investigations is whether individuals are targeted. We assess this possibility from two perspectives: 1) Did the SEC's investigation include individuals as well as the issuer?; and 2) Was there a parallel investigation by the Department of Justice? Including an individual in the SEC's investigation suggests that the agency believes there may be culpable misconduct, which could lead to a fraud allegation, rather than a simple disclosure violation. The presence of a parallel DOJ investigation, which has exclusive jurisdiction over criminal prosecutions of securities offences, also provides an external source potentially validating SEC investigations into backdating. The weakness of the measure is that the decision of the DOJ to pursue a criminal investigation is not entirely independent of the SEC because most criminal securities cases result from referrals by the SEC. Nonetheless, the presence of a DOJ investigation signals the strength of the evidence indicating fraud; only the strongest cases are likely to be referred by the SEC and to attract the attention of prosecutors.

Table 5 reports the incidence of individual and DOJ investigations as part of accounting and backdating SEC investigations for the Pre, Early, and Late Frenzy periods. In the Pre-Frenzy period, the incidence of additional individual and DOJ investigations was greater for backdating investigations (differences significant at the 10% and 5% levels respectively). By the Late Frenzy period, in contrast, the incidence of additional individual and DOJ investigations was greater for accounting investigations (difference significant only for DOJ investigations at the 10% level).

Unreported, the additional indicator variable for a combined option backdating and a non-option backdating investigation was insignificant. The re-estimated models returned qualitatively similar results as the models in Table 4.

[Table 5 here]

To provide a multivariate test, we use the presence of an individual investigation and the existence of a DOJ investigation as dependent variables in separate logistic regressions using the same independent variables as used in the regressions presented in Table 4. Table 6 reports the results.

[Table 6 here]

The results tell a consistent story. The coefficients for Backdating are positive and significant in three of the four models of Table 6. Thus, the initial backdating investigations garnered very thorough scrutiny relative to accounting investigations. The coefficients for ln(1 + Days from WSJ) x Backdating interaction variables, however, are negative and significant at the 5% level in Model 1 (Individual Investigation) and at the 1% level in Model 3 (DOJ Investigation). When we use our indicator variables for our three periods, we find positive and significant coefficients at the 10% levels for the Early Frenzy variable in both Model 2 (Individual Investigation) and Model 4 (DOJ Investigation), indicating accounting investigations launched during this period garnered increased interest relative to the Pre-Frenzy period. Measured at the mean of all the other independent variables, an accounting investigation had a 29.9 percentage point greater probability of an individual investigation and a 28.6 percentage point greater probability of a DOJ investigation in the Early Frenzy period compared with an accounting investigation in the Pre-Frenzy period.

This result is consistent with our conjecture that backdating investigations crowded out all but the most serious accounting investigations during this time. By contrast, the coefficient for the Early Frenzy x Backdating interaction variable is negative (albeit significant, at the 5%

level, only for the Individual Investigation regression reported in Model 2) while the coefficient for the Late Frenzy x Backdating interaction variable is negative and significant in both Models 2 and 4 (at the 10% and 1% levels respectively). Measured at the mean of all the other independent variables, a backdating investigation had a 21.1 percentage point lower probability of an individual investigation and a 25.2 percentage point lower probability of a DOJ investigation compared with an accounting investigation in the Late Frenzy period.

We performed a number of robustness tests. We used a linear specification of Days from WSJ instead of ln(1 + Days from WSJ).[16] We used the number of prior news stories on option backdating (Prior News Stories) as an alternate measure of the duration of the backdating scandal.[17] We used a series of time indicator variables instead of the Early and Late Frenzy indicators.[18] We also added an indicator variable for backdating investigations that also

[16] We re-estimated Models 1 and 3 of Table 6 using Days From WSJ instead of ln(1 + Days from WSJ) and Days From WSJ x Backdating instead of ln(1 + Days from WSJ) x Backdating. Unreported, we obtained the same qualitative results as in Models 1 and 3.

[17] We re-estimated Models 1 and 3 of Table 6 using ln(1+Prior News Stories) instead of ln(1 + Days from WSJ) and ln(1+Prior News Stories) x Backdating instead of ln(1 + Days from WSJ) x Backdating. Prior News Stories is defined as the number of option backdating news stories prior to the first public date of the SEC investigation in question and provides a measure of the amount of public pressure summed over time relating to the option backdating scandal. Rather than focusing directly on time, the Prior News Stories variable uses the aggregate amount of media attention to backdating as a continuous measure of the relative stage (early, when the aggregate number of stories is small, versus late, when the aggregate number of stories is large and reached a maximum) of the backdating scandal. Unreported, we obtained the same qualitative results as in Models 1 and 3.

[18] We re-estimated Models 2 and 4 of Table 6 using time indicator variables for May-June 2006, July-August 2006, September-October 2006, November-December 2006, and for the Year 2007 instead of the Early and Late Frenzy indicator variables (May-June 2006 is the same as the Early Frenzy indicator variable). We also replaced the Early and Late Frenzy x Backdating interaction terms with corresponding interaction terms between the time indicator variables x Backdating. For Model 2, our regression program (STATA) failed to return standard errors for July-August 2006 and November-December 2006 and we dropped these variables and their corresponding interaction terms with Backdating. Unreported, in the re-estimated Model 2, the July-August 2006 x Backdating, November-December 2006, and the Year 2007 x Backdating interaction terms were negative and significant at the 5% levels, consistent with the results of Table 6. For Model 4, our regression program failed to return standard errors for September-October 2006 and November-December 2006 and we dropped these variables and their corresponding interaction terms with Backdating. Unreported, in the re-estimated Model 4, the July-August 2006 x Backdating and Year 2007 x Backdating were both negative and significant at the 5% levels, consistent with the results of Table 6.

involved non-backdating issues.[19] The results of the robustness models were largely consistent with the models in Table 6.

These results are consistent with the conduct under investigation becoming less serious as the SEC's cycle of investigations wore on. There are a number of potential explanations for the drop in individual and criminal investigations, including: (1) the SEC pursued weaker backdating investigations later; (2) the DOJ faced similar political pressures as those faced by the SEC, but it responded to the later decline in media attention by declining to pursue backdating investigations; or (3) a learning effect, as the results of earlier investigations suggested that the practice of backdating was less egregious than initially thought.

4.3 Investigation outcomes

We next examine the outcomes of the SEC's investigations. We focus on the sanctions imposed as a result of the SEC's investigations; we view those sanctions as a proxy for the investigations' deterrent impact.

Our first inquiry might be thought of as the investigation's yield on investment in enforcement resources: Did the investigation lead to an enforcement action, or was it terminated? Many SEC investigations are closed without the filing of a formal enforcement action. Conventional explanations for termination are varied, but the most common reasons are that that the investigation failed to find sufficient evidence of wrongdoing, or the

[19] We re-estimated the models of Table 6 with the addition of an indicator variable if the SEC investigation involved both option backdating as well as some non-option backdating aspect (such as an unrelated accounting violation). Unreported, the additional indicator variable for a combined option backdating and a non-option backdating investigation was insignificant. The re-estimated models returned qualitatively similar results as the models in Table 6 with one exception. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 1 was negative but significant at the 11.9% level, just beyond conventional levels of significance.

wrongdoing was not of sufficient magnitude to warrant further investment of enforcement resources. The pattern of media attention documented in Figure 1, however, raises an alternative rationale for termination: the SEC lost interest once the issue was no longer in the public spotlight.

We employ three measures of the SEC's yield on its investigations. The first, Terminated, is an indicator variable set to equal one if no formal enforcement action was filed. The second, No Monetary Penalty, is a broader measure set to equal one if the investigation was terminated without the filing of an enforcement action *or* if an enforcement action was filed, but settled for no monetary penalty. This variable is set to equal zero if an enforcement action is filed that leads to any monetary penalty. The third, Individual Settlement, is the incidence of individual settlements stemming from the SEC investigation (typically corporate officers), set to one if an individual agreed to a settlement and zero otherwise.

Table 7 reports the incidence of Terminated, No Monetary Penalty investigations, and Individual Settlements for accounting and backdating SEC investigations during the Pre, Early, and Late Frenzy periods. In the Pre-Frenzy period, the incidence of Terminated and No Monetary Penalty investigations was greater for accounting investigations (significant at the 10% level, however, only for No Monetary Penalty investigations). By the Late Frenzy period, however, the incidence of Terminated and No Monetary Penalty investigations was greater for backdating investigations (at the 5% and 10% levels respectively). Compared with accounting investigations, backdating investigations yield progressively weaker sanctions across the three time periods. Similarly, the incidence of Individual Settlements diminished for backdating investigations relative to accounting investigations during the Early and Late Frenzy periods (the

difference between accounting and backdating scandals was significant, however, only in the Early Frenzy period at the 5% level).

[Insert Table 7 here]

As a multivariate test, these variables are used as the dependent variables in logistic regressions (for Terminated, No Monetary Penalty, and Individual Settlement) using the same independent variables as used in the regressions presented in Table 4. The results are presented in Table 8 as Models 1 and 2 (Terminated), Models 3 and 4 (No Monetary Penalty), and Models 5 and 6 (Individual Settlement).

[Insert Table 8 here]

The results from Table 8 offer strong support for the proposition that the SEC's backdating investigations produced diminishing returns as the period wore on relative to accounting investigations. The coefficients for the ln(1 + Days from WSJ) x Backdating variable is positive and significant at the 5% level in Model 1 (Terminated) and Model 3 (No Monetary Penalty) and negative and significant at the 10% level in Model 5 (Individual Settlement). Thus, as the backdating scandal progressed, the SEC backdating investigations resulted in an increasingly lower likelihood of a formal enforcement action, against both the company and individuals, relative to accounting investigations.

We get similar results when we use the period indicator variables. The coefficients for both the Early Frenzy x Backdating and the Late Frenzy x Backdating interaction variables are positive and significant in both Model 2 (Terminated) and Model 4 (No Monetary Penalty). Measured at the mean of all the other independent variables, a backdating investigation had a 31.2 percentage point greater probability of a Terminated investigation and a 24.8 percentage

point greater probability of a No Monetary Penalty outcome compared with an accounting investigation in the Early Frenzy period (with a similar magnitude difference in the Late Frenzy period). The coefficient for Early Frenzy x Backdating interaction variable is negative and significant at the 5% level in Model 6 (Individual Settlement). Measured at the mean of all the other independent variables, a backdating investigation had a 22.1 percentage point lower probability of an individual settlement compared with an accounting investigation in the Early Frenzy period. F-tests show no significant differences for Backdating between the Early Frenzy and Late Frenzy periods in any of the models.

We performed a number of robustness tests. We used a linear specification of Days from WSJ instead of ln(1 + Days from WSJ).[20] We used the number of prior news stories on option backdating (Prior News Stories) as an alternate measure of the duration of the backdating scandal.[21] We used a series of time indicator variables instead of the Early and Late Frenzy indicators.[22] We added an indicator variable for backdating investigations that also

[20] We re-estimated Models 1 and 3 of Table 8 using Days From WSJ instead of ln(1 + Days from WSJ) and Days From WSJ x Backdating instead of ln(1 + Days from WSJ) x Backdating. Unreported, we obtained the same qualitative results as in Models 1 and 3.

[21] We re-estimated Models 1 and 3 of Table 8 using ln(1+Prior News Stories) instead of ln(1 + Days from WSJ) and ln(1+Prior News Stories) x Backdating instead of ln(1 + Days from WSJ) x Backdating. Prior News Stories is defined as the number of option backdating news stories prior to the first public date of the SEC investigation in question and provides a measure of the amount of public pressure summed over time relating to the option backdating scandal. Unreported, we obtained the same qualitative results as in Models 1 and 3.

[22] We re-estimated Models 2, 4, and 6 of Table 8 using time indicator variables for May-June 2006, July-August 2006, September-October 2006, November-December 2006, and for the Year 2007 instead of the Early and Late Frenzy indicator variables (May-June 2006 is the same as the Early Frenzy indicator variable). We also replaced the Early and Late Frenzy x Backdating interaction terms with corresponding interaction terms between the time indicator variables x Backdating. For Model 2, our regression program (STATA) failed to return standard errors for July-August 2006 and we dropped this variable and the corresponding interaction term with Backdating. Unreported, in the re-estimated Model 2, the May-June 2006 x Backdating, September-October 2006 x Backdating, and Year 2007 x Backdating interaction terms were positive and significant at the 5%, 1%, and 10% levels respectively, consistent with the results of Table 8. For Model 4, our regression program failed to return standard errors for July-August 2006, November-December 2006 and Year 2007 and we dropped these variables and their corresponding interaction terms with Backdating. Unreported, in the re-estimated Model 4, the May-June 2006 x Backdating and September-October x Backdating were both positive and significant at the 5% levels, consistent

involved non-backdating issues.[23] We added an indicator variable for situations where the company first brought the potential securities law violations to the SEC's attention to control for the possibility that the SEC may be more lenient with such companies.[24] We also added an indicator variable for the presence of a private class action or derivative suit based on the same subject matter of the SEC investigation.[25] The results of the robustness models were largely consistent with the models in Table 8.

It is possible that although the SEC terminated more backdating investigations relative to accounting investigations as the scandal progressed, the SEC may have secured larger settlements for those backdating scandals that did settle. To test for this possibility, we used the same independent variables of Models 1 and 2 of Table 8 in an OLS model using log(1 + Total Monetary Settlement with the SEC) as the dependent variable. Unreported, the

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with the results of Table 8. For Model 6, our regression program failed to return standard errors for July-August 2006, November-December 2006 and Year 2007 and we dropped these variables and their corresponding interaction terms with Backdating. Unreported, in the re-estimated Model 6, the May-June 2006 x Backdating and September-October x Backdating were negative and significant at the 5% and 10% levels respectively, consistent with the results of Table 8.

[23] We re-estimated the models of Table 6 with the addition of an indicator variable if the SEC investigation involved both option backdating as well as some non-option backdating aspect (such as an unrelated accounting violation). Unreported, the additional indicator variable for a combined option backdating and a non-option backdating investigation was insignificant. The re-estimated models returned qualitatively similar results as the models in Table 8 with two exceptions. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 1 was positive but significant at the 10.9% level, just beyond conventional levels of significance. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 5 was negative but not significantly different from zero.

[24] In all six re-estimated models of Table 8 with the addition of an indicator variable for where the company first brought the potential securities law violations to the SEC's attention (Internal), the coefficient on Internal was not significantly different from zero. The re-estimated models returned qualitatively similar results as the models in Table 8 with two exceptions. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 1 was positive but significant at the 14.3% level, beyond conventional levels of significance. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 5 was negative but not significantly different from zero.

[25] In the re-estimated Models 1 and 2 (Terminated) and 4 (Zero), the coefficients on the presence of a private suit (Private Suit) were negative and significant at the 1% levels. Private Suit was dropped from the re-estimated Model 3 because the presence of a private suit correlated perfectly with a SEC investigation that did not result in a No Monetary Penalty outcome. In the re-estimated Models 5 and 6 (Individual Settlement), the coefficient on Private Suit was positive and significant at the 1% level. The re-estimated models returned qualitatively similar results as the models in Table 8 with two exceptions. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 1 was positive but significant at the 11.8% level, just beyond conventional levels of significance. The coefficient on ln(1 + Days from WSJ) x Backdating in Model 5 was negative but not significantly different from zero.

coefficient on ln(1 + Days from WSJ) x Backdating was negative and significant at the 5% level. We also used the same independent variables of Models 1 and 2 of Table 8 in an OLS model using the Total Monetary Settlement with the SEC over Market Capitalization ratio as the dependent variable.[26] Unreported, the coefficient on ln(1 + Days from WSJ) x Backdating was again negative although now significant at only the 10% level. If anything, the total monetary penalty of those backdating investigations that settled diminished relative to accounting investigation settlements as the scandal progressed. The coefficient on Early Frenzy x Backdating and Late Frenzy x Backdating were both negative but significant at only the 12.4% and 12.1% levels respectively, beyond conventional levels of significance.

4.4 Economic significance of the investigations

The prior regressions show a consistent pattern of declining impact for the SEC's backdating investigations relative to accounting investigations. One explanation for that decline is that the SEC pursued weaker cases as the scandal wore on, and that those cases naturally had a declining impact. A competing explanation would be that the SEC lost interest in the investigations after the media furor over the practice subsided, leading the agency to be more willing to terminate the investigations or settle them on the cheap.

In an effort to distinguish between these two explanations, we assess the economic significance of option backdating cases. Here we use the magnitude of the accounting error underlying the backdating or accounting investigation, as reflected in the restatement or other

[26] The mean Total Monetary Settlement with the SEC to Market Capitalization ratio for the accounting investigations that settled in our dataset was 0.010; the mean Total Monetary Settlement with the SEC to Market Capitalization ratio for the backdating investigations that settled in our dataset was 0.004 (difference significant at the 5% level).

correction of financial statements by the company, as our proxy for economic significance. We define the magnitude of the accounting error as either the size of any restatement or, in the absence of a restatement, the size of the accounting error as reported by the company**.** We assume that the magnitude of the error is determined solely by the actual extent of the issuer's underlying backdating or accounting problem and not directly by the SEC investigation itself.

If the SEC pursued weaker cases, we expect the magnitude of the accounting error for backdating cases to become smaller as the backdating scandal progressed relative to the magnitude of the error in accounting investigations. If the SEC lost interest, there should be no change in magnitude. Table 9 reports that the mean error is greater for backdating investigations compared with accounting investigations in the Pre-Frenzy period (although the difference is not significant). By the Late Frenzy period, the mean error is greater for accounting investigations (difference significant at the 5% level).

[Table 9 here]

As a multivariate test, we estimate an ordinary least squares regression with the log of the magnitude of the accounting error as our dependent variable with robust standard errors. We use the same independent variables as the models above. We present the results in Table 10.

[Table 10 here]

The results show diminishing economic significance for the backdating investigations over time relative to accounting investigations. In Model 1, the coefficient for the Backdating variable is positive and significant, but the interaction variable ln(1 + Days from WSJ) x Backdating is negative and significant at the 1% level. The regression with period indicator

variables reported in Model 2 produce similar results. The coefficients on Early Frenzy x Backdating and Late Frenzy x Backdating are negative and significant at the 5% and 1% levels respectively. The SEC apparently pursued only the biggest backdating investigations before the onslaught of media attention, but pursued smaller cases as the period wore on. This result is consistent with the tepid reactions of the stock market in the later period documented above. This result also suggests that the weaker stock market reactions to backdating investigations later in the period is not driven entirely by market anticipation; small cases produced smaller reactions from the stock market.

The declining economic significance of the SEC's backdating investigations also suggests that the declining impact of the SEC's investigations reflects case selection, rather than the vigor with which the SEC pursued its investigations. If the later investigations pursued backdating of smaller magnitude, it is no surprise that they lead to greater likelihood of termination and smaller penalties for those cases in which enforcement actions are filed. On the other hand, the drop in the magnitude of SEC backdating investigations relative to accounting investigations indicates that the SEC's shift away from accounting investigations resulted in an increasingly high opportunity cost. Instead of going after an additional accounting investigation of greater economic significance, the SEC chose to pursue backdating investigations.

5. Robustness

One alternative explanation for the drop off in non-backdating investigations may be due to a drop in the background level of securities law violations. Although the background

level of securities law violations is unobservable, we can track the number of restatement announcements per month as identified by Audit Analytics. Table 11 reports that there is no significant difference in the mean number of restatement announcements per month across the three time periods, supporting the view that there was no decline in the background level of securities law violations.

[Insert Table 11 here]

Another question raised by our reliance on other SEC accounting investigations as our baseline of comparison is the possibility that the SEC was investigating other types of misconduct during the Early Frenzy and Late Frenzy periods. If this were true, it would provide an alternative explanation for the drop in accounting investigations during this time. To assess this possibility we collected data on *all* SEC investigations of public companies during this period using public disclosures in newspapers or SEC filings. In addition to backdating and accounting issues, the SEC investigations involved Non-Accounting Disclosure, Foreign Corrupt Practices Act (FCPA), insider trading (if the corporation was a subject of investigation), forward-looking information and projections, Food and Drug Administration (FDA) related disclosures, Regulation FD, trading and market manipulation issues, mergers, and other investigations. (Investigations involving exclusively individuals are still excluded, as they are not directly comparable.) This sample differs from sample used for our primary analysis in that it also includes smaller public companies traded in the OTC market, for which CRSP data is not available. Consequently, we do not have stock price data for this more comprehensive sample.

We re-created our regression analysis of investigation intensity and outcomes, presented above in Tables 6 and 8 for the smaller sample. We replace ln(Market Cap.) with an

indicator variable for whether CRSP data exists for the company subject to SEC investigation and add indicator variables for the subject matter of the investigation with Other as the base category.[27] Looking first at the presence of an individual as part of the investigation, or a criminal investigation by DOJ, we obtained similar qualitative results as those presented in Table 6.[28] We then compared the outcomes of the backdating investigations with all other investigations and obtained similar qualitative results as those presented in Table 8.[29] These results are consistent with the hypothesis that the backdating investigations were increasingly of marginal impact as the scandal wore on relative to other investigations that the SEC was conducting during this period.

6. Conclusion

[27] We cannot recreate the event studies from Tables 3 and 4 due to the lack of stock price data. We lack data on individual settlement outcomes and amounts and cannot recreate the models in Table 10. We cannot assess the magnitude of the conduct under investigation because many of the investigations in this sample do not involve accounting errors and thus are unable to recreate Table 12.

[28] Unreported, in the regressions of re-estimated Table 6, the coefficients for the Backdating variable are positive and significant in all four models. The initial backdating investigations attracted more intrusive scrutiny than other investigations launched during this period. The coefficients for the ln(1 + Days from WSJ) x Backdating interaction variables, however, are negative and significant at the 5% and 1% levels respectively in Model 1 (Individual Investigation) and Model 3 (DOJ Investigation). When we use our indicator variables for our three periods, we find a negative and significant coefficient for the Late Frenzy x Backdating variable at the 5% and 1% levels in Model 2 (Individual Investigation) and Model 4 (DOJ Investigation) respectively, suggesting that the smaller number of backdating investigations launched during this period got less attention when compared to the SEC's other investigations during this period.

[29] Unreported, in the re-estimated models of Table 8, the coefficient for the ln(1 + Days from WSJ) x Backdating variable is positive and significant in Model 1 (Terminated) and Model 3 (Zero) at the 5% and 1% levels respectively. Similarly, the coefficient for the ln(1 + Days from WSJ) x Backdating variable is negative and significant at the 5% level in Model 5 (Individual Settlement). The results are similar for the models with the period indicator variables. The coefficients for both the Early Frenzy x Backdating and the Late Frenzy x Backdating interaction variables are positive and significant in Model 2 (Terminated) and Model 4 (Zero). Similarly, the coefficient for the Late Frenzy x Backdating interaction variable is negative and significant at the 5% level in Model 6 (Individual Settlement). So compared to all other investigations of public companies during these periods, SEC investigations into backdating were more likely be terminated or to result in no monetary sanction as the backdating scandal progressed; even those backdating cases that resulted in a positive monetary sanction returned a lower sanction in the Late Frenzy period.

Scandal Enforcement

The SEC is an independent agency, but its independence from the executive branch does not mean that it is independent from political currents. The populist outrage that drew the interest of the press to the option backdating story was also likely to whet the enforcement appetite of the SEC. Media attention may serve as an easily accessible proxy for popular opinion, and more importantly, the interest level of members of Congress. Members of Congress are influenced by salience like everyone else; Congress is likely to demand that the SEC be "doing something" if financial wrongdoing has found its way to the front pages of the newspaper. And Congress determines the agency's funding level.

We test the hypothesis that the SEC responds to the salience of financial wrongdoing in determining its enforcement priorities. Our findings are generally consistent with that hypothesis. Our study shows that the backdating investigations crowded out alternative investigative possibilities, but only after the media put a spotlight on the practice. We find that the stock market reaction to backdating investigations declined over time as the scandal progressed. The SEC was less likely to include individuals in its investigations, and federal prosecutors were less inclined to pursue criminal investigations. We also find that the consequences of the SEC's backdating investigations declined as the scandal wore on. The SEC was more likely to terminate later investigations, and the SEC was more likely to come away with no monetary penalty. Whatever the impetus for the SEC's backdating investigations, the evidence presented here suggests that the investigations foregone were likely to have more substantial impact than the backdating investigations that were pursued.

The most plausible explanation for this decline in the consequences of the SEC's backdating investigations is case selection. We find that the SEC's backdating investigations

focused on smaller accounting errors later in the cycle of investigations. Smaller cases produced smaller consequences. Our conclusions hold whether we focus on just accounting investigations as our baseline of comparison, which we argue is the most similar comparator, or the expanded set of all SEC investigations of public companies.

One response to our opportunity cost argument is that even smaller cases may send a "signal" to the marketplace that the SEC is focused on backdating. Such a signal may increase overall deterrence, particularly in light of the public interest in backdating. Our event study results, however, show that the market reacted far less negatively to later option backdating SEC investigations. If a strong deterrent message was being sent by the SEC, the market did not perceive it. And any deterrent signal that was being sent was likely diluted by the lower settlements and penalties imposed in those later cases, unless no one was paying attention at that point. Moreover, the practice of backdating was unlikely to continue, given the rule changes adopted by the SEC in the wake of the Sarbanes-Oxley Act that made future instances of backdating unlikely—reducing the societal value of any deterrence signal relating to backdating.[31] The SEC, nonetheless, may seek to send a signal more generally that regardless of whether the specific prohibited activity remains a problem in the marketplace, the SEC will pursue future wrongdoing of any kind relentlessly. Although this broader form of deterrent signal is possible, we question its strength given the dilution of the signal from the SEC's poor performance in the later backdating investigations.

[31] The Sarbanes Oxley Act of 2002 requires senior management, among others, at public companies must report option grants with two business days of the grant date. See Securities Exchange Act of 1934 § 16(a)(2)(C); Rule 16a-3, Securities Exchange Act of 1934.

Scandal Enforcement

Another response is that the SEC may have been casting a wide net initially and using its early option backdating investigations to gather information on the breadth and severity of the problem. The agency may then use this information to fine tune its later backdating enforcement actions. Such an initial strategy would predict that the initial SEC investigations—when the SEC is learning about option backdating—would vary widely in quality, but that the SEC should become more focused in its later cases once it gains information and expertise on option backdating. We find exactly the opposite. The initial backdating investigations are the strongest. And far from learning about the breadth and severity of option backdating and using this information to focus on only the most egregious backdating cases, the SEC pursues progressively weaker backdating investigations over time.

The SEC's response to option backdating suggests that it is not immune to the political imperative to "do something." The question is whether the SEC's response to scandal tends toward overreaction, with attendant opportunity costs in the form of foregone investigations, which may undermine deterrence. It is impossible to know which accounting and other investigations were not pursued because the SEC was occupied with backdating, but our analysis suggests that the SEC's zeal for backdating investigations may have carried a real opportunity cost.

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Table 1: SEC Investigations

Panel A: Investigations by Year

Year	Accounting	%	Backdating	%	Total
2004	81	95.3%	4	4.7%	85
2005	67	95.7%	3	4.3%	70
2006	42	27.8%	109	72.2%	151
2007	21	65.6%	11	34.4%	32

Pearson chi2(3) = 149.4770; Pr = 0.000.

Panel B: Investigations by Period

Period	Accounting	%	Backdating	%	Total
Pre-Frenzy	168	94.9%	9	5.1%	177
Early Frenzy	8	14.3%	48	85.7%	56
Late Frenzy	35	33.3%	70	66.7%	105

Pearson chi2(2) = 172.8697 Pr = 0.000.

Panel C: Investigations Initiated Per Month

	Accounting Mean	Median	p-value	Backdating Mean	Median	p-value
Pre-Frenzy	6.2	5.5		0.4	0.0	
Early Frenzy	4.0	4.0	0.342	24.0	24.0	0.000
Late Frenzy	2.0	2.0	0.000	4.1	2.0	0.000

p-values are from a t-test of the difference in the means for each period with the Pre-Frenzy period.

Panel D: Resolution Time for Settled Investigations

	Accounting Mean	Median	p-value	Backdating Mean	Median	p-value
Pre-Frenzy	951.4	934.5		958.8	941.0	
Early Frenzy	1063.3	1147.5	0.686	842.6	761.0	0.605
Late Frenzy	986.1	917.0	0.837	822.0	830.5	0.459

p-values are from a t-test of the difference in the means for each period with the Pre-Frenzy period. The p-value from a t-test of the difference in means for the Accounting and Backdating scandals in the Late Frenzy period is equal to 0.835. The p-value from a Wilcoxon rank sum test of the difference in medians for the Accounting and Backdating scandals in the Late Frenzy period is equal to 0.854.

Table 1 Continued

Panel E: Party First Discovering Backdating Problem

Period	SEC	%	Internal Investigation	Media	Private Attorney	%
Pre-Frenzy	4	44.4%	1	2	1	44.4%
Early Frenzy	1	2.1%	10	34	3	97.9%
Late Frenzy	9	13.0%	30	15	15	87.0%
Total	14	11.8%	41	51	19	88.1%

Pearson chi2(6) = 38.5862; Pr = 0.000.

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Table 2: Summary Statistics

Panel A: Dependent Variables

	Accounting		Backdating		
	N	Mean	N	Mean	p-value
Individual Investigation	211	0.223	127	0.205	0.698
DOJ Investigation	210	0.181	125	0.288	0.022
Investigation Terminated	211	0.659	127	0.772	0.028
Zero	211	0.777	127	0.819	0.362
Individual Settlement	200	0.180	127	0.165	0.734
Accounting Error Magnitude	186	128.6	118	118.6	0.879

Accounting Error Magnitude is in millions of dollars. The p-value is from a two-sample, two-sided t-test of the difference in means between the accounting and backdating samples across all time periods.

Panel B: Control Variables

	Accounting		Backdating		
	N	**Mean**	**N**	**Mean**	**p-value**
Market Capitalization ($ Mill.)	199	8724.8	126	5365.6	0.334
SIC 367	206	0.019	129	0.178	0.000
SIC 737	206	0.097	129	0.186	0.019

The industry controls correspond to SIC 367 (Electronic Component and Accessories) and SIC 737 (Computer Programming, Data Processing, and Other Computer Related). The p-value is from a two-sample, two-sided t-test of the difference in means between the accounting and backdating samples across all time periods.

Table 3: Event Studies

Panel A: Event Study on First Public Date of the SEC Investigation

	N	−30 to +1	−10 to +1	N	−1 to +1
Pre-Frenzy Accounting	165	−8.66%** (−8.316)	−3.38%** (−5.898)	163	−4.81** (−12.056)
Pre-Frenzy Backdating	9	−12.28% (−1.470)	−7.32% (-1.583)	9	0.08% (−0.461)
Early Frenzy Accounting	7	−15.75%** (-3.189)	−8.81%** (-3.732)	6	−2.44%* (−2.114)
Early Frenzy Backdating	48	−10.26%** (−5.145)	−3.72%** (−3.105)	48	−2.11%** (−3.814)
Late Frenzy Accounting	34	−12.72%** (−5.053)	−6.21% ** (−4.473)	34	−6.53%** (−7.709)
Late Frenzy Backdating	68	−0.39% (-0.450)	0.37% (−0.610)	68	0.05% (−1.633)

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. p-values are from a two-tailed Patell z-statistic significance test (z-statistic in parentheses).

Panel B: Event Study on First Public Date of Underlying Violation

	N	-1 to +1 First Public Date of Underlying Violation	-1 to +1 First Public Date of Underlying Violation (w/ WSJ Date if earlier)
Pre-Frenzy Accounting	167	−6.36%** (−15.918)	−6.36%** (−15.918)
Pre-Frenzy Backdating	9	−3.78%* (−2.178)	−1.50% (−0.874)
Early Frenzy Accounting	7	−5.60%** (−4.642)	−5.60%** (−4.642)
Early Frenzy Backdating	48	−1.69%** (−3.480)	−0.75% (1.057)
Late Frenzy Accounting	34	−7.69%** (−10.009)	−7.69%** (−10.009)
Late Frenzy Backdating	68	−1.85%** (−2.625)	0.72% (1.179)

$^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$. p-values are from a two-tailed Patell z-statistic significance test (z-statistic in parentheses).

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Table 4: OLS Models of Event Study Cumulative Abnormal Returns

	(1) −1 to +1 First Public Date of SEC Investigation	(2) −1 to +1 First Public Date of SEC Investigation	(3) −1 to +1 First Public Date of Underlying Violation	(4) −1 to +1 First Public Date of Underlying Violation
Backdating	-0.0490	-0.0505	0.00815	0.0234
	(0.0532)	(0.0590)	(0.0239)	(0.0244)
ln(1 + Days from WSJ)	-0.00458		-0.00117	
	(0.00549)		(0.00366)	
ln(1 + Days from WSJ) x Backdating	0.0196+		0.00852	
	(0.0102)		(0.00566)	
Early Frenzy		-0.0757		0.0157
		(0.0904)		(0.0507)
Late Frenzy		-0.0262		-0.0131
		(0.0309)		(0.0232)
Early Frenzy x Backdating		0.131		-0.000966
		(0.114)		(0.0568)
Late Frenzy x Backdating		0.113+		0.0363
		(0.0586)		(0.0327)
ln(Market Cap.)	-0.00907	-0.00897	0.0122**	0.0122**
	(0.0123)	(0.0126)	(0.00333)	(0.00335)
SIC 367	-0.0212	-0.0208	-0.00416	-0.00386
	(0.0312)	(0.0315)	(0.0153)	(0.0158)
SIC 737	0.0389	0.0423	-0.0109	-0.0134
	(0.0719)	(0.0755)	(0.0171)	(0.0171)
Constant	0.0264	0.0269	-0.149**	-0.149**
	(0.100)	(0.102)	(0.0302)	(0.0304)
N	320	320	321	321
adjusted R^2	0.018	0.022	0.093	0.092

Dependent variable is cumulative abnormal returns for the time period centered on the date indicated in the models above. OLS models use Backdating (compared with Accounting as the base category), ln(1 + Days from WSJ), ln(1 + Days from WSJ) x Backdating, Early Frenzy (compared with Pre Frenzy as the base category), Late Frenzy (compared with Pre Frenzy as the base category), ln(Market Cap.), SIC 367 (Electronic Component and Accessories), SIC 737 (Computer Programming, Data Processing, and Other Computer Related), and a constant term as independent variables. Variables defined in the appendix. Robust standard errors in parentheses; $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

In Model 2, F-test of the difference between Early Frenzy and Late Frenzy results in a p-value=0.570; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.188. In Model 4, F-test of the difference between Early Frenzy and Late Frenzy results in a

p-value=0.596; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.491.

Table 5: Comparison of Accounting and Backdating Investigations

Individual Investigations

	Accounting Mean	Backdating Mean	p-value
Pre-Frenzy	20.8%	44.4%	0.096
Early Frenzy	50.0%	25.0%	0.147
Late Frenzy	22.3%	14.3%	0.272

p-values are from a chi-squared test of the difference in the frequency of individual investigations for the accounting and backdating subsets of SEC investigations.

DOJ Investigations

	Accounting Mean	Backdating Mean	p-value
Pre-Frenzy	15.6%	44.4%	0.025
Early Frenzy	37.5%	52.2%	0.444
Late Frenzy	25.7%	11.4%	0.061

p-values are from a chi-squared test of the difference in the frequency of DOJ investigations for the accounting and backdating subsets of SEC investigations.

Table 6: Logit Models of Individual and DOJ Investigations

	(1) Individual Investigation	(2) Individual Investigation	(3) DOJ Investigation	(4) DOJ Investigation
Backdating	1.334+	1.122	2.371**	1.578*
	(0.700)	(0.720)	(0.729)	(0.740)
ln(1 + Days from WSJ)	0.0561		0.0959	
	(0.0699)		(0.0731)	
ln(1 + Days from WSJ) x Backdating	-0.387*		-0.441**	
	(0.161)		(0.163)	
Early Frenzy		1.447+		1.426+
		(0.749)		(0.785)
Late Frenzy		0.0695		0.573
		(0.448)		(0.446)
Early Frenzy x Backdating		-2.496*		-1.145
		(1.091)		(1.113)
Late Frenzy x Backdating		-1.700+		-2.362**
		(0.889)		(0.908)
ln(Market Cap.)	0.0684	0.0734	0.138+	0.116
	(0.0737)	(0.0750)	(0.0760)	(0.0791)
SIC 367	0.383	0.366	-0.410	-0.668
	(0.500)	(0.504)	(0.517)	(0.569)
SIC 737	-0.113	-0.214	-0.592	-0.581
	(0.430)	(0.439)	(0.465)	(0.477)
Constant	-1.777**	-1.812**	-2.551**	-2.433**
	(0.564)	(0.574)	(0.598)	(0.618)
N	332	332	329	329
pseudo R^2	0.021	0.028	0.053	0.105

Dependent variables in the models include indicator variables for Individual Investigation and DOJ Investigation in the models. Logit models use Backdating (compared with Accounting as the base category), ln(1 + Days from WSJ), ln(1 + Days from WSJ) x Backdating, Early Frenzy (compared with Pre Frenzy as the base category), Late Frenzy (compared with Pre Frenzy as the base category), ln(Market Cap.), SIC 367 (Electronic Component and Accessories), SIC 737 (Computer Programming, Data Processing, and Other Computer Related), and a constant term as independent variables. Variables defined in the appendix. Robust standard errors in parentheses; $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

In Model 2, F-test of the difference between Early Frenzy and Late Frenzy results in a p-value=0.099; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.228. In Model 4, F-test of the difference between Early Frenzy and Late Frenzy results in a p-value=0.317; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.000.

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Table 7: Comparison of Accounting and Backdating Outcomes

Terminated

	Accounting Mean	Backdating Mean	p-value
Pre-Frenzy	67.3%	44.4%	0.159
Early Frenzy	50.0%	75.0%	0.147
Late Frenzy	62.9%	82.9%	0.023

p-values are from a chi-squared test of the difference in the frequency of terminated investigations for the accounting and backdating subsets of SEC investigations.

No Monetary Penalty

	Accounting Mean	Backdating Mean	p-value
Pre-Frenzy	79.8%	55.6%	0.085
Early Frenzy	50.0%	79.2%	0.078
Late Frenzy	74.3%	87.1%	0.099

p-values are from a chi-squared test of the difference in the frequency of investigations that were either terminated or settled with no monetary penalty (Zero) for the accounting and backdating subsets of SEC investigations.

Individual Settlement

	Accounting Mean	Backdating Mean	p-value
Pre-Frenzy	16.5%	33.3%	0.194
Early Frenzy	57.1%	18.8%	0.026
Late Frenzy	17.1%	12.8%	0.554

p-values are from a chi-squared test of the difference in the frequency of terminated investigations for the accounting and backdating subsets of SEC investigations.

Table 8: Models of SEC Investigation Outcomes

	(1) Terminated	(2) Terminated	(3) No Monetary Penalty	(4) No Monetary Penalty	(5) Individual Settlement	(6) Individual Settlement
Backdating	-0.962	-0.922	-1.199+	-1.058	1.077	0.929
	(0.694)	(0.714)	(0.724)	(0.748)	(0.729)	(0.761)
ln(1 + Days from WSJ)	-0.0445		-0.0832		0.0627	
	(0.0635)		(0.0708)		(0.0757)	
ln(1 + Days from WSJ) x Backdating	0.388*		0.415*		-0.310+	
	(0.157)		(0.166)		(0.167)	
Early Frenzy		-0.869		-1.693*		1.996*
		(0.741)		(0.763)		(0.814)
Late Frenzy		-0.181		-0.342		0.00450
		(0.391)		(0.445)		(0.500)
Early Frenzy x Backdating		2.308*		2.912**		-2.799*
		(1.084)		(1.126)		(1.171)
Late Frenzy x Backdating		1.959*		1.912*		-1.177
		(0.853)		(0.911)		(0.946)
ln(Market Cap.)	-0.113+	-0.117+	-0.230**	-0.244**	0.0490	0.0590
	(0.0674)	(0.0681)	(0.0774)	(0.0790)	(0.0814)	(0.0832)
SIC 367	-0.139	-0.159	-0.111	-0.105	-0.150	-0.178
	(0.494)	(0.497)	(0.559)	(0.563)	(0.597)	(0.601)
SIC 737	0.0778	0.130	-0.0465	0.0671	-0.0141	-0.198
	(0.389)	(0.397)	(0.438)	(0.450)	(0.447)	(0.466)
Constant	1.493**	1.532**	3.023**	3.147**	-1.918**	-1.989**
	(0.514)	(0.519)	(0.615)	(0.630)	(0.623)	(0.638)
N	332	332	332	332	321	321
pseudo R^2	0.035	0.036	0.049	0.056	0.013	0.029

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Dependent variables in the models include indicator variables for Terminated, Zero, and Individual Settlement. Logit models use Backdating (compared with Accounting as the base category), ln(1 + Days from WSJ), ln(1 + Days from WSJ) x Backdating, Early Frenzy (compared with Pre Frenzy as the base category), Late Frenzy (compared with Pre Frenzy as the base category), ln(Market Cap.), SIC 367 (Electronic Component and Accessories), SIC 737 (Computer Programming, Data Processing, and Other Computer Related), and a constant term as independent variables. Variables defined in the appendix. Robust standard errors in parentheses; $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

In Model 2, F-test of the difference between Early Frenzy and Late Frenzy p-value=0.394; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.466. In Model 4, F-test of the difference between Early Frenzy and Late Frenzy results in a p-value=0.108; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.494. In Model 6, F-test of the difference between Early Frenzy and Late Frenzy results in a p-value=0.029; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.477.

Table 9: Comparison of Accounting and Backdating Magnitude of Error

	Accounting Mean Error	Backdating Mean Error	p-value
Pre-Frenzy	125.4	427.6	0.316
Early Frenzy	90.6	174.6	0.582
Late Frenzy	151.2	49.5	0.036

Error amount is in millions of dollars. p-values are from a t-test test of the difference in the means for the accounting and backdating subsets of SEC investigations.

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Table 10: OLS Model of Accounting Error

	(1) ln(Accounting Error)	(2) ln(Accounting Error))
Backdating	2.341**	2.111**
	(0.724)	(0.748)
ln(1 + Days from WSJ)	0.130+	
	(0.0660)	
ln(1 + Days from WSJ) x Backdating	-0.463**	
	(0.154)	
Early Frenzy		1.143
		(0.727)
Late Frenzy		0.798+
		(0.406)
Early Frenzy x Backdating		-2.203*
		(1.063)
Late Frenzy x Backdating		-2.418**
		(0.849)
ln(Market Cap.)	0.248**	0.251**
	(0.0763)	(0.0758)
SIC 367	0.669+	0.683+
	(0.383)	(0.387)
SIC 737	0.0299	0.0352
	(0.303)	(0.308)
Constant	0.577	0.541
	(0.524)	(0.520)
N	299	299
Adjusted R^2	0.108	0.108

Dependent variable is ln(Accounting Error). OLS models use Backdating (compared with Accounting as the base category), ln(1 + Days from WSJ), ln(1 + Days from WSJ) x Backdating, Early Frenzy (compared with Pre Frenzy as the base category), Late Frenzy (compared with Pre Frenzy as the base category), ln(Market Cap.), SIC 367 (Electronic Component and Accessories), SIC 737 (Computer Programming, Data Processing, and Other Computer Related), and a constant term as independent variables. Variables defined in the appendix. Robust standard errors in parentheses; $^{+}$ $p < 0.10$, * $p < 0.05$, ** $p < 0.01$.

In Model 2, F-test of the difference between Early Frenzy and Late Frenzy results in a p-value=0.670; F-test of the difference between Early Frenzy + Early Frenzy x Backdating and Late Frenzy + Late Frenzy x Backdating results in a p-value = 0.103.

Table 11: Number of Restatements Per Month

	Restatements		
	Mean	Median	p-value
Pre-Frenzy	112.6	93.5	
Early Frenzy	164.0	164.0	0.228
Late Frenzy	113.6	109.0	0.948

p-values are from a t-test of the different in the means for each period with the Pre-Frenzy period.

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Figure 1