The Use of Discretionary Expenditures as an Earnings Management Tool: Evidence from Financial Misstatement Firms

By

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Abstract

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This study examines the use of real earnings management in a setting where earnings manipulation is likely to have occurred. Using firms subject to SEC Accounting and Auditing Enforcement Releases, I find that misstating firms show lower discretionary SG&A but higher discretionary R&D than the control sample in the years in which they overstate earnings. I then investigate whether this result is explained by heightened management incentives to support stock prices. I find evidence consistent with investors overvaluing high discretionary R&D and low discretionary SG&A during misstatement years. Overall, these results suggest that while cutting SG&A is considered a feasible earnings management tool to inflate earnings and stock prices, cutting R&D is not a viable option in a setting where managers desire to signal growth and maintain high stock market valuations.

Dedication

This dissertation is dedicated to my family:
Xinguo Sun (my father),
Xingxian Yang (my mother),
and Jian Sun (my husband).

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Chapter 1

Introduction

Recent research has indicated a proliferation of real earnings management. Graham, Harvey, and Rajgopal (2005), in a survey of top executives, report that 80% of respondents would decrease expenditures such as R&D, advertising, and maintenance expenses to manage reported earnings. In contrast, less than 40% of participants would use accrual-related maneuvers. Empirical evidence also suggests that managers cut R&D to achieve various earnings targets (Baber, Fairfield, and Haggard 1991; Bens, Nagar, and Wong 2002; Roychowdhury 2006); to boost their short-term compensation (Dechow and Sloan 1991); and to substitute for accruals management when the cost of accruals management increases (Cohen, Dey, and Lys 2008; Cohen and Zarowin 2010; Zang 2012).

In this study, I examine the use of real earnings management in firms that are subject to SEC Accounting and Auditing Enforcement Releases (AAERs). One advantage of using this sample is that its management has strong incentives to manage earnings, thereby increasing the power of the test of detecting earnings management. This sample also provides a unique opportunity to assess the prevalence of real over accrual-based earning management as prior studies document that AAER firms engage extensively in accrual-based earnings management (e.g., Dechow, Sloan, and Sweeney 1996). Specifically, I focus on discretionary R&D and SG&A expenditures as forms of real earnings management, and examine whether AAER firms cut R&D and SG&A during years in which they have attempted to boost earnings using accruals.[1]

[1] My definition of discretionary R&D and SG&A refers to the residuals obtained from prediction models identified from prior literature. These models separate R&D and SG&A expenditures into a predicted component (termed nondiscretionary expenditures) and a residual component (termed discretionary expenditures). The former is designed to capture the optimal expenditure level given firms' economic conditions and investment opportunity set. The latter indicates the departures from the normal level, and thus it captures the suboptimal amount in the presence of any capital market or compensation incentives managers may have. It should be noted that these models do not perfectly isolate discretionary expenditures from nondiscretionary expenditures, and therefore, ex ante, it is unclear whether the discretionary component represents the suboptimal expenditure. For example, while a positive discretionary R&D, by definition, indicates value-destroying over-investment, it may also be value-enhancing if part of the

I reason that AAER firms would have considered real earnings management, such as cutting discretionary expenditures, before engaging in fraudulent accruals manipulation for three reasons. First, real earnings management is less likely to draw auditor or regulatory scrutiny as it does not involve interpretation of accounting rules and is often indistinguishable from an optimal business decision. Second, Zang (2012) suggests that real earnings management often precedes accruals management because it must occur during the fiscal year, whereas managers can adjust accruals to achieve targeted earnings after the fiscal year end. Third, AAER firms tend to grow accruals in the years prior to the violation period (Dechow et al. 1996; Dechow, Ge, Larson, and Sloan 2011). This limits the extent of accruals manipulation and leaves more room for real earnings management during violation years. If firms insist on using accruals alone to misstate earnings to cover the reversal of the previous misstatement and maintain a stable earnings stream, they will have to manipulate an increasing amount of accruals, and thus are more likely to become the subject of SEC enforcement.[2]

However, the reduction of discretionary expenditures not only increases current bottom-line earnings, it can also have other potential implications. For example, cutting SG&A can be used to signal firms' operating efficiency and managers' efforts to control costs, and therefore is positively valued by investors. Managers, however, face a trade-off in making their investment decisions with respect to R&D. While cutting R&D increases earnings, prior studies have shown that investors view R&D as an indicator of future profitability (Lev and Sougiannis 1996; Chan, Lakonishok, and Sougiannis 2001; Eberhart, Maxwell, and Siddique 2004; Bhojraj, Hribar, Picconi, and Mcinnis 2009), and thus imply that cutting it will negatively affect stock prices. It is, therefore, an empirical question to examine how managers in AAER firms evaluate the counteracting forces associated with R&D.

Previous studies have suggested that one of the primary motivations for financial misstatements is to maintain a high stock price. They show that managers engage in aggressive earnings manipulation to attract external financing at lower cost (Dechow, Sloan, and Sweeny 1995; Dechow, et al. 2011); to sell their stockholdings at inflated prices (Beneish 1999); to obtain high equity-based compensation (Efendi, Srivastava, and Swanson 2007; Feng, Ge, Luo, and Shevlin 2011); and to reveal their growth expectations and avoid disappointing investors (Dechow et al. 2011). Building on this stream of literature, a competing hypothesis relating to R&D expenditure is that AAER firms may show high discretionary R&D to signal their growth potential and support their stock prices.

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residual captures optimal R&D. However, if firms are struggling and accused of engaging in extensive manipulation by the SEC, and reverse the discretionary component after the alleged manipulation period, then the discretionary component is more likely to reflect suboptimal expenditures, as argued in this study.

[2] Real earnings management, in this study, specifically refers to the act of reducing discretionary expenditures to overstate earnings. Increasing discretionary expenditures can be considered a form of income-decreasing earnings management tool as it also represents a deviation from maximizing shareholders' interests. However since this study focuses on a sample of earnings overstatements, I do not consider increasing discretionary R&D an example of real earnings management.

I begin my analysis by comparing discretionary R&D and SG&A between AAER firms and two control samples (i.e., a matched sample and the broader population). The results show that AAER firms have lower discretionary SG&A in the years in which the SEC alleged that earnings are overstated. However, I find no evidence of real earnings management using R&D. If anything, AAER firms show significantly higher discretionary R&D than their control firms during manipulation years. Moreover, a time-series analysis of AAER firms indicates that discretionary R&D increases as the year of manipulation approaches and then shows a sharp decline thereafter. Conversely, discretionary SG&A reveals a downward trend during the years leading up to the manipulation period and returns to the normal level a year after the manipulation period. This reversal pattern further separates the manipulation during the violation period from firms' optimal strategy.

I next test whether managers' actions to accelerate R&D investment and cut SG&A are consistent with their incentives to support a high stock price. Specifically, I examine the relation between discretionary expenditures and stock returns during manipulation years as well as in the year following the manipulation period. I find that investors overvalue high discretionary R&D and low discretionary SG&A during the manipulation period. I also explore the effect of discretionary expenditures in the manipulation period on two-year and three-year cumulative stock returns. The results show that the positive reaction for discretionary R&D during the manipulation period turns to significantly negative as I lengthen the return window to include one year or two years beyond the manipulation period. The negative reaction for discretionary SG&A in the manipulation period follows a similar trend of return reversals in the post-manipulation period. Collectively, these results suggest that managers are able to temporarily mislead investors and obtain a higher valuation during manipulation years.

As an additional analysis, I investigate the use of expenditure management for firms conducting seasoned equity offerings (SEO). Similar to AAER firms, prior research has suggested that SEO firms engage in accrual-based earnings management around the year of the offerings (Rangan 1998; Teoh, Welch, and Wong 1998; DuCharme, Malatesta, Sefcik 2004; Shivakumar 2000). It is, therefore, a natural setting to test whether they also cut discretionary expenditures in conjunction with accruals management. Furthermore, SEO firms care strongly about stock prices as they are raising capital. *A priori*, I predict that they are likely to increase R&D to obtain a high valuation even though doing so depresses current earnings. Consistent with this prediction, I find that SEO firms have higher discretionary R&D and lower discretionary SG&A relative to non-SEO firms in the year prior to and during the year of the offerings. Discretionary R&D (discretionary SG&A) is also higher (lower) for the years around the issuance versus other years away from the issuance event. Further examination reveals that investors react positively to high discretionary R&D and low discretionary SG&A in the year prior to and at the year of the offerings. There is, however, only weak evidence of return reversals associated with discretionary R&D in the post-offerings period.

I provide two additional tests to address the concern about whether AAER firms are an appropriate setting to examine real earnings management, in particular, the reduction of R&D. The first test aims to answer whether AAER firms view revenue as being more important than bottom-line earnings, and thus have greater incentives to manipulate revenue instead of earnings. This is an important insight because it raises a question about whether AAER firms do face a trade-off when it comes to R&D decisions. If AAER firms are largely concerned about revenue, then it is almost certain that they will not cut R&D in an attempt to show higher earnings; rather firm managers would keep investing in R&D to signal future revenue growth. Furthermore, there is some evidence in the literature suggesting that investors' attention may have shifted away from bottom-line earnings to other items such as sales growth or R&D investment (e.g., Ertimur, Livnat, and Martikainen 2003; Callen, Robb, and Segal 2008; Joos and Zhdanov 2008; Fedyk, Singer, and Soliman 2012).

I find that about 60 percent of financial misstatements in my sample relate to the revenue account although the primary objective of revenue manipulation could be to boost sales, earnings, or both. I also examine the information content and value relevance of earnings surprises versus revenue surprises in the AAER setting. I show that investors of AAER firms react more strongly to earnings surprises than revenue surprises, suggesting that AAER firms would have incentives to manipulate earnings. Finally, I analyze the extent of meeting or beating sales forecasts versus earnings forecasts. I show that there are more AAER firms that have met analysts' earnings forecasts but failed to meet sales forecasts than firms that have met sales forecasts but failed to meet earnings forecasts. Collectively, there is no strong evidence suggesting that AAER firms would consider revenue being more important than bottom-line earnings. These results, therefore, reinforce the competing tensions managers face with respect to R&D investment decisions.

The second issue about using AAER firms to examine the existence of real earnings management is that their incentives to manipulate bottom-line earnings may not be as strong as other settings such as just meeting or beating earning benchmarks. I, therefore, test my primary results using more stringent earnings management samples: AAER firm-years with earnings just meeting or beating analyst consensus forecasts, zero earnings, and the prior year's earnings. I find consistent evidence that AAER firms have higher discretionary R&D than their control counterparts when they have just met or beat analysts consensus forecasts or zero earnings. This result suggests that even for subsamples with very strong incentives to meet earnings targets, there is no evidence of real earnings management associated with R&D cuts.

Finally, I conduct robustness tests of my results to alternative variable definitions, model specifications, research settings, and partitions of the sample. The results from these tests do not differ appreciably from those already in the main analyses. Specifically, I examine 1) different versions of R&D and SG&A prediction models; 2) whether advertising expense is viewed more consistently with SG&A expenses than R&D; 3) whether the R&D results are driven by firms in R&D intensive industries, computer industry, and software industry; 4) whether the results are affected by the internet bubble in 1999-2001, and the passage of Sarbanes Oxley Act in 2002; and 5) a sample of firms with significant issuance, which is an alternative setting where managers may also face a trade-off with respect to R&D expenditures.

This study contributes to several streams of literature. First, my findings contribute to the real earnings management literature by showing that management decisions with respect to cutting R&D depend on the trade-off between the costs of R&D cuts against the benefits of higher earnings. Specifically, if investors view R&D as indicative of future earnings growth, then managers who want to maintain a high stock price will not necessarily use the reduction of R&D as a feasible real earnings management tool. This result also has implications for earnings management literature in general and highlights that earnings are not always the sole focus of financial statement users nor the only source of potential manipulation.

Moreover, Cohen et al. (2008), Cohen and Zarowin (2010), and Zang (2012) show that the choice of real earnings management is affected by the costs of accrual-based earnings management. This study extends the extant research on the determinants of real earnings management by suggesting that it is also constrained by investor perception of specific real activities. Since investors tend to fixate on R&D, a significant cost of cutting R&D is a direct capital market penalty.

Second, this study contributes to the literature on earnings management for financial misstatement firms (e.g., Feroz, Park, and Pastena 1991; Dechow et al. 1996; Beneish 1999). It highlights that in the setting where managers are under pressure to boost current earnings, they engage in certain real earnings management, such as cutting SG&A in addition to accruals management, but appear unwilling to cut R&D to sacrifice stock prices. This study also builds on previous research linking capital market incentives to financial misstatements (Dechow et al. 1996; Dechow et al. 2011). It suggests that managers in AAER firms have strong incentives to improve market perception of firm growth and operating efficiency by increasing R&D investment and decreasing SG&A.

Third, my findings provide additional evidence to the debate on the dynamic of overinvestment for financial misstatement firms. McNichols and Stubben (2008) and Kedia and Philippon (2009) show that AAER firms and restatement firms (GAO sample) tend to over-invest in capital expenditures. This study shows that AAER firms also increase spending in R&D even though doing so reduces current earnings. I offer the explanation that this is because these managers have strong incentives to improve the perception of capital markets and understand that investors favorably value R&D.

Finally, my findings highlight the importance of distinguishing R&D and SG&A expenditures when examining firms' real activities manipulation decisions. Prior research on real earnings management has often applied consistent arguments with respect to firms' reduction of R&D and SG&A.[3] This study suggests that a decrease in R&D exhibits counteracting forces between current earnings and stock prices. A decrease in SG&A benefits earnings and improves investor perception of operating efficiency. Since discretionary R&D and SG&A have different implications for stock prices, future research should analyze them separately.

[3] See Roychowdhury (2006), Cohen and Zarowin (2010), and Zang (2012) for example, and numerous studies that examine discretionary expenditures as the sum of R&D, advertising and other SG&A expenditures.

The remainder of this dissertation is organized as follows. Chapter 2 reviews the literature and outlines the hypotheses development. Chapter 3 describes the sample and proxies for discretionary expenditures. Chapter 4 reports the empirical results for AAER firms. Chapter 5 presents the results from several additional analyses. Chapter 6 summarizes robustness analyses, and Chapter 7 concludes.

Chapter 2

Literature review and hypotheses development

2.1 Real earnings management

Early research on real earnings management centers mostly on the opportunistic reduction of R&D (Baber et al. 1991; Dechow and Sloan 1991; Bens et al. 2002). In recent years, studies have documented the existence of other types of real activities manipulation. For example, Roychowdhury (2006) finds that managers avoid reporting losses by cutting discretionary expenditures, overproducing inventory to reduce current period costs of goods sold, or by increasing sales through price discounts or lenient credit terms.

Graham et al. (2005) survey 401 executives and find that 80% of participants would decrease discretionary expenditures such as R&D to meet an earnings target; In contrast, less than 40% of participants would use accrual-related maneuvers.[4] Jong, Mertens, Van der Poel, and Van Dijk (2012) perform a similar analysis, but survey financial analysts instead. They show that analysts also have a more positive view on using real actions to meet earnings targets than accrual manipulation.[5] Previous empirical research has also examined the trade-off between real and accruals management. Cohen et al. (2008) investigate these two earnings management methods around the passage of the Sarbanes Oxley Act (SOX). They document that the post-SOX period is characterized by decreases in accruals management and increases in real earnings management,

[4] Specifically, Graham et al. (2005) ask CFOs about their preference on a list of accruals management and real management strategies. The results show that 80% of survey participants would decrease discretionary expenditures and 55% would delay starting a new project. There is much less support for accruals management. For example, less than 40% of participants would book revenues now rather than next quarter, 28% would draw down on reserves previously set aside, 21% would postpone an accounting charge, and 8% would alter accounting assumptions in pension calculations.

[5] Jong et al. (2012) specifically show that the top four of the most favorable earnings management choices to meet the desired earnings target (ordered by preference) are: repurchasing common shares, decreasing discretionary spending, providing incentives for customers to buy more products this quarter, and delaying the start of a new project. For the remaining five earnings management tools, four of them are related to accrual choices.

suggesting that firms switched from accruals management to real earnings management as scrutiny of accounting practices increased. Zang (2012) develops an empirical model to capture the sequentiality of real and accruals management. She finds that real manipulation decision precedes the accruals manipulation decision, and managers use these two strategies as substitutes. Both studies show that firms' real earnings management decisions are affected by the costs of accruals management such as auditor characteristics, scrutiny of accounting practice, and firms' accounting flexibility.

While it is important to understand different earnings manipulation strategies, what real earnings management literature and earnings management studies in general have often overlooked is that earnings are not always the sole focus of financial statement users nor the only source of potential manipulation. There is evidence suggesting that for some types of firms, investors' attention may have shifted away from bottom-line earnings to other items such as sales growth (e.g., Ertimur et al. 2003; Callen et al. 2008) or R&D investment (e.g., Joos and Zhdanov 2008). Fedyk, et al. (2012) hypothesize that IPO firms trade-off and prioritize different types of financial statement management (i.e., earnings, sales, and R&D). They find that IPO firms in general do not manage earnings, but rather manage sales and increase R&D. A recent survey paper by Dichev, Graham, and Rajgopal (2012) documents that the most important motivation for firms to manipulate earnings is their desire to influence stock prices. In other words, when there is a conflict between earnings and stock prices, stock prices are likely to win out.

2.2 Earnings management for AAER firms

While there is little research evidence suggesting that AAER firms engage in real earnings management, prior research has investigated the extent to which AAER firms engage in accrual-based earnings management. Feroz et al. (1991) examine the types of accounting problems that induce SEC enforcement actions, and show that about 70% of violations consist of overstatement of receivables and inventory resulting from premature revenue recognition and delayed write-offs. Dechow et al. (1996) provide evidence that AAER firms have higher total accruals and discretionary accruals than non-AAER firms during the manipulation period. Moreover, the accruals increase as the alleged years of earnings manipulation approach and decrease significantly after the manipulation years primarily due to accrual reversals.

Prior studies have also attempted to explain the motives for financial misstatements. They show that one of the primary incentives is to maintain a high stock price. Dechow et al. (1995) find that managers manipulate earnings to attract external financing at lower cost. Others find that managers do so to increase their wealth. For example, Beneish (1999) shows that managers are more likely to sell their holdings in the period when earnings are overstated. Efendi et al. (2007) and Feng et al. (2011) show that these managers have higher equity-based compensation compared to managers of non-AAER firms. Dechow et al. (2011) find that AAER firms have higher price-earnings and market-to-book ratios, suggesting that investors are optimistic about firms' future growth opportunities. AAER firms also have higher past stock returns, suggesting that managers engage in earnings manipulation to avoid disappointing investors and losing their high valuation.

In Dechow et al. (2011), they also document an unusually high percentage change in cash sales during manipulation years, and suspect this a result of firm growth or transaction management. While they provide some evidence of real earnings management from the revenue side, this study aims to better understand the existence of real activities from the expense side.

2.3 Accounting for R&D and SG&A expenditures

Numerous studies in economic, finance, and accounting literatures suggest that investors view R&D expenditure as an investment. Lev and Sougiannis (1996) document that the benefits of R&D expenditure are reflected in future earnings. In a similar vein, Bhojraj et al. (2009) show that firms that beat analyst forecasts by cutting R&D have worse operating performance and stock performance in the subsequent three years than firms that miss analyst forecasts without earnings management.[6] Other studies provide evidence that R&D is positively associated with contemporaneous or subsequent stock returns. For example, they show that market values are positively related to the level of R&D outlay (Chan et al. 2001), innovations in R&D expenditure (Eberhart et al. 2004)[7] and R&D announcements (Chan, Martin, and Kensinger 1990). Collectively, these studies support R&D being positively valued by investors, and thus cutting it will negatively affect firm value.

Empirical evidence examining the performance consequences and market valuation of SG&A mostly concludes that SG&A is valued as an expense. Lev and Thiagarajan (1993) and Abarbanell and Bushee (1997) investigate the value relevance of SG&A as a fundamental signal. The former find some evidence that investors negatively view SG&A. The latter find no relation between the level of SG&A and one-year-ahead earnings changes or analysts' forecast revisions. In practice, high SG&A is also viewed negatively by investors and analysts.[8] Banker, Huang, and Natarajan (2011) argue that SG&A includes line items such as R&D, advertising, and marketing expenses, all of which could generate future benefits. They show that SG&A is indeed positively mapped into future earnings. Since their definition of SG&A contains R&D, it is unclear whether these results are attributable to R&D and other SG&A.

2.4 Over-investment for financial misstatement firms

Two studies have examined the investment behavior for financial misstating firms. Both focus on capital expenditures that have no impact on current earnings. McNichols and Stubben (2008) show that earnings manipulators over-invest in capital expenditures

[6] In contrast, Gunny (2010) finds that firms that engage in real earnings management, including cutting discretionary R&D, to just meet earnings benchmarks have better operating performance in the subsequent three years than firms that do not engage in real activities manipulation and miss or just meet the benchmarks.

[7] Eberhart et al. (2004) define significant R&D increases to be when (1) an R&D intensity ratio is at least 5%, (2) the firm increases its dollar R&D by at least 5%, and (3) the firm increases its ratio of R&D to assets by at least 5%.

[8] Mintz (1994) notes that "SG&A supplies a quick test of whether management is serious; if comparables (of SG&A to sales) are 5% and yours is 7%, don't talk about being lean and mean unless you've got a very convincing story." Lazere (1996) also notes that "slicing SG&A by $1 has the same bottom-line effect as boosting sales by around $13…. On Wall Street, every dollar of SG&A erased boosts market value."

during the manipulation period, and no longer do so in the post-manipulation period. To establish causality, they also show a positive inter-temporal relation between discretionary revenue (a proxy for earnings management) in the year prior to the manipulation and over-investment during manipulation years. They conclude that earnings management leads to over-investment because investment decision makers within the firm might believe the misreported growth due to their over-optimism or unawareness of the misstatement. Alternatively, they might understand the true state of the firm but are willing to take the risk to turn performance around. Kedia and Phillipon (2009) study the joint dynamic of financial misreporting, insiders' trading, employment, and investment using a model of multidimensional signaling. They predict that managers who want to hide low productivity of their firms must not only manage earnings but also hire and invest as if productivity was high. They provide empirical evidence consistent with the prediction.

2.5 Hypotheses development

To summarize, recent research and survey evidence from earnings management literature highlight the increasing popularity among firms to engage in real earnings management. This study investigates the use of real earnings management in a setting where earnings management is likely to have taken place. I anticipate that AAER firms should have conducted real activities manipulation for three reasons. First, real earnings management is hard to detect by auditors and regulators; second, their high accruals level in the years prior to the violation period limits the extent of accruals manipulation and leaves more room for real earnings management during violation years; and third, real earnings management often precedes the decision of accruals management. Since AAER firms are found to have engaged in fraudulent accruals management, they should have also engaged in real activities manipulation. Hence, my first hypothesis is:

H1a: *AAER firms have lower discretionary R&D than non-AAER firms in the manipulation period.*

Evidence from R&D literature and studies examining the determinants of financial misstatements suggest that AAER firms may increase R&D. First, investors view R&D as an investment, hence cutting it is potentially harmful to stock prices. Managers in AAER firms care strongly about stock prices, and thus would not consider the reduction of R&D a feasible earnings management tool. Second, these firms have strong incentives to improve market perception of firm growth. Increasing R&D allows them to create the impression that they have the opportunity and ability to grow. Third, AAER firms may increase R&D to mimic high productive firms. As suggested by prior work, these firms tend to overinvest in capital expenditures. These views lead to the competing hypothesis*:*

H1b: *AAER firms have higher discretionary R&D than non-AAER firms in the manipulation period.*

I predict that AAER firms will decrease SG&A for two reasons. First, a reduction of SG&A increases current earnings when the immediate revenues generated by such expenditures are smaller than the expenditures. Second, cutting SG&A is likely to be considered a signal of operating efficiency and management's efforts to control costs, and thus is viewed positively by investors. Therefore, my second hypothesis is:

H2**:** *AAER firms have lower discretionary SG&A than non-AAER firms in the manipulation period.*

The next two hypotheses concern the extent to which the market prices discretionary R&D and SG&A assuming support for *H1b* and *H2*. If AAER firms engage in expenditures management to maintain a higher stock value, do investors then anticipate managers' manipulation strategy or get fooled by it? I predict that if investors do not decipher the investment signal during manipulation years and price it as if firm growth is permanent, then there should be a positive relation between discretionary R&D and contemporaneous stock returns. After investors realize that the increase in R&D is used to create the impression of firm growth, they will be disappointed and lower the valuation. This will lead to a negative relation between discretionary R&D and subsequent stock returns. Investors' realization in the post-manipulation period can be triggered by various sources including SEC's formal or informal investigation and the release of AAERs. Investors may also reassess their valuation on R&D projects when they observe a significant R&D reversal, a decline of firm performance, or a slowdown of firms' growth.

In the case of SG&A, if the market prices the reduction in SG&A as if such operating efficiency is permanent, there will be a negative relation between discretionary SG&A and contemporaneous stock returns. Subsequently, when they realize that the reduction in SG&A is only temporary, I should observe a positive relation between discretionary SG&A and future stock returns. Therefore, the third and fourth hypotheses are:

H3**:** *Discretionary R&D is positively associated with contemporaneous stock returns and is negatively associated with future stock returns for AAER firms.*

H4**:** *Discretionary SG&A is negatively associated with contemporaneous stock returns and is positively associated with future stock returns for AAER firms.*

Chapter 3

Sample and variables definitions

3.1 Data and sample selection

The main empirical tests employ data from three sources. I obtain financial statement data from the *Compustat* annual database, stock return data from the *CRSP* monthly stock returns database, and financial misstatement data from SEC's AAERs.[9] The AAER sample includes all firms subject to the SEC enforcement actions between May 17, 1982 and September 1, 2010. It consists of 3,180 AAERs with 1,222 misstatement events. Since AAERs are not timely, the corresponding misstatement period of alleged fraud is between 1971 and 2008. To be included in the final sample, a firm must: (a) involve wrongdoing related to annual accounting misstatements, (b) have Gvkey and Permno in order to be matched with *Compustat* and *CRSP*, (c) be able to link to specific reporting periods, (d) not be in the financial industries (SIC 6000-6999), (e) have assets and book-to-market ratio available as I use these two criteria to match each manipulating firm with a control firm, (f) engage in overstatements of earnings, and (g) have AAER misstatement periods from 1980 to 2007 since some analyses require three years of data prior to and after the misstatement period. This gives me a sample of 456 AAER firms (1,005 firm-year observations). The final samples that require all control variables consist of 303 and 219 firms (648 and 526 firm-year observations, respectively), depending on the choice of the control samples. Panel A of Table 1 illustrates the sample selection procedure.

Table 1 Panel B reports the industry distribution of 456 misstatement firms and all available firms in *Compustat* between 1980 and 2007. The SIC industry classification is

[9] One issue of concern for using financial statement data of AAER firms is the proportion of firms that end up restating their financial statements. Compustat will backfill misstated numbers when a company files an amended 10-k. However this is very rare in my current setting. In Dechow et al. (2011), they randomly select a small sample that provides detailed information on misstated numbers, and find that one of the nine firms' financial data on Compustat has been backfilled with restatement numbers. Also, as many of the misstatements are discovered and revealed several years after they occur, they are less likely to file amended financial statements.

based on Dechow et al. (2011). The sample firms are clustered in durable manufacturers and computers industries (22.1% and 24.8%, respectively). In particular, the distribution for computer industry differs significantly from *Compustat*'s industry composition (24.8% and 14.0%, respectively). Retail and Services industries are also overrepresented among misstatement firms.

Table 1 Panel C provides the distribution of 1,005 misstatements over time. I show that the period 1999-2001 has by far the most misstatements (8.5%, 9.7%, and 8.5%, respectively). This may be driven by the internet bubble around that time, providing incentives for earnings management to mask declining performance. In the robustness test, I examine whether the internet bubble and overrepresented computer industry affect my results. The percentage of misstatements appears to decline after 2005, this is because my sample period for AAER releases ends at 2010 and AAERs are often released several years after the manipulation takes place.

Finally, I report the percentage of misstatement firms that involve an officer of the company. A higher percentage is more consistent with top managers' involvement in real transaction manipulation. Panel D of Table 1 shows the results. Among 456 firms, 86 percent involved an officer of the company (CEO or CFO). In 58 percent of the cases, both an officer and the company were charged by the SEC. In 10 percent of the cases, the SEC took actions against the firm itself. Auditors were involved in 24 percent of the cases. In 9 percent of the cases, the sued party was classified as "others" which includes consultants, company staff, and investment banks.

For each misstatement firm, I select a control firm following a three-step process. The first step creates a merged dataset from *Compustat* and *CRSP* that includes all firm-year observations from 1980 to 2007 with data for total assets and book-to-market ratio. In the second step, I select a matching firm from the merged dataset for each AAER firm such that the matching firm (a) is in the same industry as the AAER firm (two digit SIC code), (b) has the closest log assets and book-to-market ratio with the AAER firm for the year end prior to the first year of the manipulation, and (c) has data for the main variables of interest. Third, I require that the matched firm must not have been an AAER firm and must not serve as a control firm for more than one misstatement firm. This matching gives me a sample of 219 manipulators with 219 non-manipulators that have data available for all variables used in the analyses. Since the matching technique significantly reduces the number of misstatement firms, I also compare misstatement firms (303 manipulators) to the general population of all publicly listed firms in *Compustat* between 1980 and 2007.

3.2 Measures for discretionary expenditures

I measure discretionary expenditures on R&D and SG&A using the models specified in Gunny (2010). I also test the sensitivity of my findings to a simply random walk model, a prediction model for investment similar to McNichols and Stubben (2008), and an expenditure model developed in Roychowdhury (2006).

Specifically, based on Gunny (2010), the normal levels of R&D and SG&A are estimated using the following models:

$$RD_{i,t} = \alpha_0 + \alpha_1\, 1/AT_{i,t-1} + \alpha_2 MKTCAP_{i,t} + \alpha_3 BTMA_{i,t-1} + \alpha_4 INTFUND_{i,t} + \alpha_5 RD_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

$$SGA_{i,t} = \alpha_0 + \alpha_1\, 1/AT_{i,t-1} + \alpha_2 MKTCAP_{i,t} + \alpha_3 BTMA_{i,t-1} + \alpha_4 INTFUND_{i,t} + \alpha_5 CHSALE_{i,t} + \alpha_6 CHGSALE_{i,t} * DD_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$RES\_RD_{i,t} = RD_{i,t} - PRED\_RD_{i,t}$$

$$RES\_SGA_{i,t} = SGA_{i,t} - PRED\_SGA_{i,t}$$

RD_t and SGA_t are equal to R&D or SG&A expenditures for fiscal year *t* scaled by total assets at the end of year *t-1*. $MKTCAP_t$ is the natural log of market capitalization for fiscal year *t*. $BTMA_{t-1}$ is the inverse of Tobin's Q at the end of year *t-1*, defined as total assets scaled by the sum of market capitalization plus total assets minus common equity. $INFUND_t$ is income before extraordinary items plus the sum of R&D and depreciation scaled by total assets for fiscal year *t*. $CHSALE_t$ equals the changes in sales between fiscal year *t* and *t-1* scaled by total assets at the end of year *t-1*. Finally, DD_t is a dummy variable with a one when total sales decrease between *t-1* and *t*, and zero otherwise. I estimate these expectation models cross-sectionally for each industry-year with at least 15 observations using the *Compustat* population sample that excludes AAER and matched control firms. All explanatory variables are winsorized at the top and bottom one percent to avoid the influence of outliers. Discretionary R&D (RES_RD_t) and discretionary SG&A (RES_SGA_t) are the difference between actual value and the predicted value.

Table 2 Columns (1) and (2) present the estimation results for the prediction models specified in Equations (1) and (2). I report the mean and median coefficients from 913 and 1,442 separate industry-year regressions, respectively. The t-statistics are from Fama-Macbeth regressions and the adjusted R^2 are mean values across industry-years. I show that R&D is significantly positively related to firm size ($MKTCAP_t$) and R&D expenditure (RD_{t-1}) in the prior year, and significantly negatively related to book-to-market ratio ($BTMA_{t-1}$). These results are comparable to those reported in Gunny (2010). However, internal funds available for investment ($INTFUND_t$) is not significantly associated with R&D in my sample. In Column (2), I show that the level of SG&A is significantly negatively associated with firm size ($MKTCAP_t$), internal funds ($INTFUND_t$), and book-to-market ratio ($BTMA_{t-1}$). In addition, the significant and negative coefficient on the interaction between changes in sales and the dummy for sales decrease ($CHSALE_t * DD_t$) is consistent with the sticky cost behavior as predicted by Anderson, Banker, and Janakiraman (2003). The mean adjusted R^2 are 80.4% for the R&D prediction model and 50.6% for the SG&A prediction model.

Chapter 4

Results

4.1 The use of discretionary expenditures between AAER and control firms (H1 & H2)

To formally test the relation between discretionary expenditures and the likelihood of being charged by the SEC for earnings overstatement, I compare AAER firms with two control samples and estimate the following logistic regression:

$$\boldsymbol{AAER_{i,t} = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t} + \alpha_4 CHCSALE_{i.t} + \alpha_5 CHROA_{i,t} + \alpha_6 SOFTAT_{i,t} + \alpha_7 ISSUANCE_{i,t} + \alpha_8 XRET_{i,t} + \varepsilon_i} \quad \textbf{(3)}$$

$AAER_t$ is equal to one for financial misstatement firm-years, and zero for matched firm-years from a matched control sample or all non-AAER firms between 1980 and 2007 from the *Compustat* population.[10] $PRED\_EXP_t$ refers to predicted R&D ($PRED\_RD_t$) or predicted SG&A ($PRED\_SGA_t$), calculated as the fitted value obtained from the predication models (1) and (2). RES_EXP_t refers to residual R&D ($ABRD_t$) or residual SG&A ($ABSGA_t$), which are the residuals obtained from the predictions models. RES_RD_t and RES_SGA_t are proxies for discretionary R&D and discretionary SG&A, respectively. I incorporate predicted R&D or predicted SG&A in the regression analysis for two reasons. First, given that the prediction model may not perfectly separate the discretionary and non-discretionary components, the predicted component could capture some of the discretionary component. Second, it serves as a control for firms' expected R&D and SG&A given the economic conditions and investment opportunity set. Therefore, coefficients on RES_RD_t and RES_SGA_t capture the impact of R&D and SG&A on the likelihood of AAERs incremental to the predicted level of R&D and SG&A. In support of *H1a* and *H2,* I expect the coefficients on RES_RD_t and RES_SGA_t to be significantly negative. In contrast, to support *H1b*, I expect the coefficient on RES_RD_t to be significantly positive.

[10] It should be noted that my analyses can be interpreted a joint test of engaging in an accounting misstatement and receiving an enforcement action from the SEC. If the SEC selection criteria are highly correlated with discretionary expenditures, then my results could reflect SEC selection. However there is no clear reason for why the SEC identifies firms from R&D and SG&A expenditures which do not involve a lot of interpretations of accounting rules.

Working capital accruals ($WCACC_t$) equals changes in current assets minus changes in cash and changes in current liabilities, plus changes in short-term debt for fiscal year *t* scaled by beginning total assets. It controls for firms' accrual manipulation. $CHCSALE_t$ is the percentage change in cash sales, and controls for firm growth and possibly cash-based management. $CHGROA_t$ is the change in return on assets, and it controls for the degree of financial performance between AAER and control firms. $SOFTAT_t$ is the percentage of soft assets (neither cash nor PP&E) on the balance sheet. It controls for the extent of earnings management flexibility. $ISSUANCE_t$ is equal to one if the firm issued debt or securities during year *t*, and zero otherwise. Firms that have issued new debt or equity are more likely to manipulate and get caught by the SEC. $XRET_t$ is annual returns beginning nine months before fiscal year end to three months after fiscal year end, and it controls for firms' stock price incentives. In the test of comparing AAER firms with the population control sample, I also include AT_t and BTM_t to control for firm size and growth opportunities.

Table 3, Panel A presents descriptive statistics for all variables in the logistic analysis between AAER firms and the matched control sample. I observe that AAER firms and the matched firms are of similar size (log assets) and growth prospects (book-to-market of equity ratio) in the year prior to the violation period, suggesting that the matching procedure is successful. RES_RD_t has a mean of 0.009, indicating that, on average, AAER firms spend more than expected at the years of violation. Conversely, RES_SGA_t has a mean of -0.059, suggesting that they spend less than expected on SG&A over the same period. $PRED\_RD_t$ and $PRED\_SGA_t$ do not differ significantly between AAER firms and the matched control sample. AAER firms show significantly higher RES_RD_t and significantly lower RES_SGA_t than do the control firms, providing initial support of *H1b* and *H2*. Consistent with prior studies, AAER firms have higher working capital accruals. They also have higher increases in cash sales, implying that they are growth firms and possibly engage in cash-based manipulation. AAER firms and control firms differ reliably by the percentage of soft assets on the balance sheet and the occurrence of debt or equity issuance. Interestingly, they show similar changes in ROA, implying that they might care more about growing their business than generating large earnings growth. AAER firms also show similar mean annual returns with control samples. Table 3, Panel B provides the descriptive statistics between AAER firms and the population control sample. The number of AAER observations is larger in this panel due to fewer restrictions in selecting control firms. The results are very similar to those reported in Panel A except that SGA_t becomes insignificantly different between two samples and $PRED\_SGA_t$ and $XRET_t$ are significantly higher for AAER firms.

Table 3, Panel C shows the Pearson correlations for AAER firms and the matched control sample.[11] First, $AAER_t$ is positively correlated with RES_RD_t and is negatively correlated with RES_SGA_t, suggesting that AAER firms have higher discretionary R&D and lower discretionary SG&A than do the control firms. Second, the correlation between $AAER_t$ and other controls are consistent with the descriptive statistics reported in Panel A. Third, as expected, RD_t is positively associated with its components $PRED\_RD_t$ and

[11] The correlation matrix for AAER firms and the population control sample is omitted for brevity, but is very similar to Table 2, Panel C.

RES_RD_t, and the correlation coefficients are about 0.7. $SG\&A_t$ is also highly correlated with $PRED\_SGA_t$ and RES_SGA_t, and the correlation coefficients are about 0.58. Fourth, I observe a negative but insignificant relation between RES_RD_t and RES_SGA_t (*coef.* = -0.015). This finding has two important implications. One, it implies that classification shifting between R&D and SG&A is unlikely to be a complete explanation for my results of high discretionary R&D and low discretionary SG&A. Two, it is also unlikely that high discretionary R&D is financed by funds freed by having low discretionary SG&A expenditures. Finally, I show that the relation between $WCACC_t$ and RES_RD_t is positive but insignificant (*coef.* = 0.006). Therefore there is no clear evidence suggesting that high accruals are mostly used to master the short-fall associated with high discretionary R&D.

Table 4 shows the regression analysis of discretionary expenditures and the likelihood of financial misstatements. Panel A and Panel B report the results for the comparison between AAER firms and the matched control sample and population sample, respectively. I focus my discussion on Panel A and note differences when the results in the two panels differ. In Column (1) of Panel A, I first present the results for the model that includes the level of R&D and control variables. The coefficient on RD_t is significantly positive (*coef.* = 1.718; $p < 0.05$), suggesting R&D is positively associated with the likelihood of financial misstatements. In other words, AAER firms, on average, have higher R&D than the matched control firms. Column (2) reports the results for the decomposed predicted R&D and residual R&D. $PRED\_RD_t$ and RES_RD_t are both positively associated with $AAER_t$. However only the coefficient estimate on RES_RD_t is significantly positive (*coef.* = 2.094; $p < 0.05$). This result supports *H1b* that AAER firms have significantly higher discretionary R&D relative to the control sample during violation years.

Columns (3) and (4) examine the impact of SG&A on the likelihood of misstatements. In Column (3), the negative coefficient on SGA_t (*coef.* = -1.643; $p < 0.01$) suggests that low SG&A increases the likelihood of accounting misstatements. So relative to the control firms, AAER firms, on average, have lower SG&A. The negative coefficient on RES_SGA_t in Column (4) (*coef.* = -2.091; $p < 0.01$) indicates that AAER firms also have lower discretionary SG&A after controlling for the level of expected SG&A and other determinants of misstatements. These results, therefore, support *H2*, that AAER firms have lower discretionary SG&A than non-AAER firms to boost earnings as well as signal operating efficiency.[12]

In Columns (5) and (6), I include R&D and SG&A variables simultaneously in one regression. I replace all missing R&D with zero in order not to restrict the analysis to a subsample with non-missing R&D. One potential concern of this replacement is that

[12] Cohen, Pandit, Wasley, and Zach (2011) indicate that real earnings management measures such as those defined in Gunny (2010) and Roychowdhury (2006) tend to show the presence of abnormal real activities too often. They recommend future research to use a performance-matched approach to construct real earnings management measures. In this study, the matched control sample of AAER firms is not explicitly selected based on performance-matching. However, return on assets between AAER firms and matched control firms do not differ significantly after matching by firm size, growth, industry, and year. Furthermore, if the Gunny measures are biased in favor of the presence of real earnings management (cutting R&D expenditures), in which case my finding that managers in AAER firms overinvest in R&D would be understated.

firms that never had R&D expenditures will be given values for $PRED\_RD_t$ and RES_RD_t. Nevertheless, the results are qualitatively unchanged when I use the smaller sample which has non-missing R&D and SG&A. I find consistent evidence suggesting that AAER firms have significantly higher discretionary R&D and significantly lower discretionary SG&A than the control firms during manipulation years.

In addition, I show that $WCACC_t$ is significantly and positively associated with $AAER_t$, suggesting AAER firms may have manipulated earnings using accruals. The results for other controls are consistent with prior studies. Panel B shows qualitatively similar results when AAER firms are compared to the population sample with the exceptions that the positive coefficient on $PRED\_RD_t$ in Column (2) becomes marginally significant and the negative coefficient on $PRED\_SGA_t$ in Column (4) becomes insignificant.

4.2 A comparison of discretionary expenditures over time

Figure 1 provides a graphical presentation of the mean discretionary R&D and discretionary SG&A for AAER firms and the matched control sample from three years before the violation period to three years after. For the violation period *t*, I use the mean value of the first year instead of the mean value for all years.[13] The patterns are similar, though less pronounced, if I plot the average of discretionary R&D and SG&A during the misstatement period. In Panel A, I observe that discretionary R&D gradually increases as the alleged year of earnings manipulation approaches, and then experiences a sharp decline after manipulation years. In contrast, as shown in Panel B, discretionary SG&A decreases at least two years before the violation period and returns to the normal level on the second year after the manipulation. The reversals of discretionary R&D and SG&A are unlikely to be trigged by the enforcement announcements since only 15% of AAERs are released within the following two years after the manipulation period. These results, therefore, further suggest that the decision to increase R&D and decrease SG&A is opportunistic rather than business-driven.

One interesting observation is that the magnitude of discretionary SG&A (a mean value of -0.067) for AAER firms is larger than the magnitude of abnormal R&D (a mean value of 0.034) in the first year of the violation. This suggests that if I examine total discretionary expenditures instead of discretionary R&D and SG&A separately, then I will mistakenly conclude that AAER firms engage in real earnings management by cutting discretionary expenditures during violation years. I also plot mean market-adjusted returns through event time. Panel C reveals that market-adjusted returns gradually increase as the manipulation year approaches. They peak at the year prior to the manipulation and start to deteriorate thereafter. This pattern is consistent with managers

[13] More than half of the AAER firms engage in multiple-year manipulation, so the mean value for the entire manipulation period could understate the "true" level of the manipulation. Specifically, when firms' R&D level remains high and relatively stable during the manipulation period, residual R&D between manipulation year *t* and manipulation year *t-1* is small, although firms have significantly increased their R&D expenditure in the manipulation period relative to the year prior to the manipulation. The mean value of discretionary R&D for the first year in the manipulation period is not subject to this limitation.

accelerating R&D investment during violation years in the hopes of avoiding disappointing investors and losing high stock value.

4.3 Market valuation of discretionary expenditures (H3 & H4)

In this section, I examine the relation between discretionary expenditures and contemporaneous and future stock returns. The objective is to determine whether managers' actions to accelerate R&D investment and cut SG&A are consistent with their incentives to mislead investors and maintain a higher stock price during the manipulation period. Specifically, I start with a simple model by regressing returns on earnings controlling for firm size, growth, leverage, equity issuance, and AAER announcements by the SEC:

$$RET_i = \alpha_0 + \alpha_1 ROA_{i,t} + \alpha_2 AT_{i,t} + \alpha_3 BTM_{i,t} + \alpha_4 LEV_{i,t} + \alpha_5 ISSUANCE_{i,t} + \alpha_6 SECANN_i + \varepsilon_i \quad (4)$$

I then decompose ROA_t into working capital accruals, R&D, SG&A, and adjusted cash flows, which is the remaining portion after backing out R&D, SG&A, and working capital accruals from income before extraordinary items. All of these variables are scaled by total assets. In this test, R&D and SG&A are negative values as opposed to positive values used in preceding analyses. I further decompose R&D and SG&A into discretionary and non-discretionary components, which leads to the following equation:

$$RET_i = \beta_0 + \beta_1 PRED\_RD_{i,t} + \beta_2 RES\_RD_{i,t} + \beta_3 PRED\_SGA_{i,t} + \beta_4 RES\_SGA_{i,t} + \beta_5 WCACC_{i,t} + \beta_6 AdjCF_{i,t} + \beta_7 AT_{i,t} + \beta_8 BTM_{i,t} + \beta_9 LEV_{i,t} + \beta_{10} ISSUANCE_{i,t} + \beta_{11} SECANN_i + \varepsilon_i \quad (5)$$

I employ four return windows for this test: (a) annual returns during violation years (year(s) *t*), (b) annual returns in the first year after the violation period (year *t+1*), (c) two-year cumulative returns including the violation year and the first year after the violation year (years *t* and *t+1*), and (d) three-year cumulative returns including the violation year and two years after the violation year (years *t*, *t+1*, and *t+2*).[14] The time period for $SECANN_i$ corresponds with the time period for RET_i. *H3* predicts β_2 to be positive when the dependent variable is RET_t and negative when the dependent variable is RET_{t+1}. Conversely, H4 predicts β_4 to be negative when the dependent variable is RET_t and positive when the dependent variable is RET_{t+1}.

Table 5, Panel A presents the results for AAER firms. I use the sample that replaces all missing R&D with zero for this analysis. Results are qualitatively unchanged when I use the subsample that requires non-missing R&D. For comparative purposes, I also report the results for the matched control sample over the same period (Panel B) and for the population sample (Panel C). Columns (1) and (2) in Panel A report the results for the contemporaneous relation between discretionary expenditures and stock returns. I omit the control variables for brevity. In Column (1), I focus on the level of R&D and

[14] For the future return tests, I use observations in the last year of the manipulation period. This choice ensures that year *t+1* and *t+2* are the first and second years after the manipulation. Without this restriction, year *t+1* and year *t+2* could capture years during the manipulation period for AAER firms engaged in multiple-year manipulation.

SG&A. The negative coefficient on RD_t (*coef.* = -0.746; $p < 0.05$) and the positive coefficient on SGA_t (*coef.* = 0.746; $p < 0.05$) suggest a positive valuation for R&D and a negative valuation for SG&A. Column (2) shows the results for the decomposed discretionary and non-discretionary R&D and SG&A. The coefficient on RES_RD_t is significantly negative (*coef.* = -0.703; $p < 0.01$) and the coefficient on RES_SGA_t is significantly positive (*coef.* = 0.853; $p < 0.01$), suggesting that investors positively value high discretionary R&D and low discretionary SG&A after controlling for the predicted components and other determinants. The significantly negative coefficient on $SECANN_t$ indicates that AAER announcements in the manipulation period have a detrimental impact on stock returns.

Column (3) presents the results for the relation between the level of R&D and SG&A during the violation period and returns in the first year after the manipulation. I find that the coefficient on RD_t switches from significantly negative in Column (1) to significantly positive in Column (3), and the coefficient on SGA_t switches from significantly positive to significantly negative. I observe similar findings for the decomposed R&D and SG&A components as shown in Column (4). These results support *H3* and *H4* that investors overvalue high discretionary R&D and low discretionary SG&A during manipulation years, and lower their valuation in the year after the manipulation.

Columns (5)–(8) report the results for the relation between discretionary expenditures during manipulation years and two-year and three-year cumulative returns. Two observations are noteworthy. First, in Column (6), the relation between RES_RD_t and two-year cumulative returns is significantly positive (*coef.* = 0.869; $p < 0.01$), suggesting that high RES_RD_t has a negative impact on returns in a two-year horizon. The relation between RES_SGA_t and two-year cumulative returns is insignificant (*coef.* = -0.109; $p = 0.76$). This suggests that the significant market response during the violation period is offset by opposite market response in the following year. Second, when I lengthen the return window to include two years after the violation period, the coefficient on RES_RD_t remains significantly positive (*coef.* = 1.703; $p < 0.01$) in Column (8). The coefficient on RES_SGA_t becomes significantly negative (*coef.* = -0.887; $p < 0.01$). These results indicate that both unusually high discretionary R&D and unusually low discretionary SG&A during manipulation period have a detrimental effect on long-term cumulative returns.

Figure 2 plots the coefficients on $PRED\_RD_t$, RES_RD_t, $PRED\_SGA_t$, and RES_SGA_t obtained from Table 5, Columns (2), (6), and (8). The signs of the coefficients and t-values in Table 5 are inverted in these two panels. For example, a positive coefficient for year *t* indicates that high R&D expenditure in year *t* is positively associated with contemporaneous stock returns. Negative coefficients for year *t* to *t+1* and year *t* to *t+2* indicate that high R&D expenditure in year *t* is negatively associated with cumulative returns from year *t* to *t+1* and from year *t* to *t+2*, respectively.

Panel B presents the results for the matched control sample. I find no evidence suggesting that the level of R&D is positively valued by investors during pseudo-manipulation years for these firms. There is also no price reversal in the pseudo first year after the manipulation period. The results for discretionary SG&A are mostly statistically insignificant.

Panel C reports the results for the population control sample. I find that R&D is positively and contemporaneously valued by investors, and so is the predicted component of R&D. In contrast, SG&A is negatively valued by investors, so are discretionary and non-discretionary SG&A. Unlike the AAER sample, I find no evidence of over-valuation for high discretionary R&D and low discretionary SG&A in the population sample. The significant and negative coefficients on RD_t and $PRED\_RD_t$ in Columns (3) and (4) suggest a delayed positive market reaction to high R&D. The significant and positive coefficients on SGA_t and its discretionary and non-discretionary components in Columns (3) and (4) suggest a delayed positive reaction to low SG&A.

Chapter 5

Additional analyses

5.1 Analyses of SEO firms

This section examines whether SEO firms engage in real earnings management around equity offerings. I choose this sample because, similar to AAER firms, it is a useful setting to examine earnings management given SEOs' extensive use of accruals management (Rangan 1998; Teoh et al. 1998; DuCharme et al. 2004; Shivakumar 2000). Managers in SEO firms also care about stock prices as they raise capital, and thus their tension to not cut R&D around the offerings is likely to be even stronger. My SEO sample consists of 6,932 firm-year observations between 1980 and 2010 from the SDC database.[15]

5.1.1 A comparison of discretionary expenditures between SEO and non-SEO firms

I first examine the relation between discretionary expenditures and the likelihood of SEOs using the following specification:

$$\begin{aligned} \boldsymbol{SEO_{i,t}} = {} & \boldsymbol{\alpha_0 + \alpha_1 PRED\_EXP_{i,t-1} + \alpha_2 RES\_EXP_{i,t-1} + \alpha_3 WCACC_{i,t-1} + \alpha_4 CHCSALE_{i.t-1}} + \\ & \boldsymbol{\alpha_5 BTM_{i,t-1} + \alpha_6 MKTCAP_{i,t-1} + \alpha_7 XRET_{i,t-1} + \alpha_8 XRET_{i,t+1} + \alpha_9 CFO_{i,t-1}} + \\ & \boldsymbol{\alpha_{10} LEV_{i,t-1} + \alpha_{11} TAX_{i,t-1} + \alpha_{12} \varepsilon_{i,t}} \qquad \textbf{(6)} \end{aligned}$$

where *t* is the year of the offerings and *t-1* is considered the year of expenditures manipulation. I also test discretionary expenditures in the year of the offerings by replacing $PRED\_EXP_{t-1}$ and RES_EXP_{t-1} with $PRED\_EXP_t$ and RES_EXP_t, respectively. Dependent variable SEO_t is an indicator variable that equals one for firms with equity issues and zero for non-SEO firms between 1980 and 2010.

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[15] The SEO sample initially consists of 27,257 US issuances between 1980 and 2010 from the *SDC* database. Following Cohen and Zarowin (2010), I require the following criteria for the final sample. The issuer must: (a) be listed on NYSE, NASDAQ or AMEX; (b) have Gvkey and Permno in order to be matched with *Compustat* and *CRSP*; (c) have offer prices greater than $5; and (d) I exclude spin-offs, reverse LBOs, closed-end funds, unit investment trusts, REIT and limited partnership, rights and standby issues, simultaneous or combined offers of several classes of securities such as unit offers of stocks and warrants, and non-domestic and simultaneous domestic-international offers. This gives me a final sample of 6,932 firm-year SEO observations.

Equation (6) builds on prior research that develops a model for equity issuance decision (Jung, Kim, and Stulz 1996; Rangan 1998). First, I include working capital accruals ($WCACC_{t-1}$), changes in cash sales ($CHCSALE_{t-1}$), book-to-market ratio (BTM_{t-1}), and past stock returns ($XRET_{t-1}$) to capture firms' growth opportunity in the year prior to the issuance. The probability that a firm will issue equity increases with its investment opportunity. I also include market-adjusted returns in the year after the issuance ($XRET_{t+1}$) to account for over-valuation. This is based on the assumption that management knows that future performance will be poor and stock price will drop, and thus issues accordingly. Second, I include CFO_{t-1} and LEV_{t-1} to proxy for the cost of financial distress. As cash flow decreases and leverage increases, financial distress becomes more likely, and thus firms are more likely to issue equity. Third, prior studies (e.g., Jung et al. 1996) suggest that the gain from equity financing relative to debt financing decreases with the firm's tax rate. As a proxy for the tax benefit, I use tax payments divided by total assets for fiscal year *t*. Finally, I include $MKTCAP_t$ to control for firm size.

Table 6 reports the descriptive statistics comparing the growth and expenditure variables between SEO observations and non-SEO sample. I show that SEO observations have higher working capital accruals, changes in cash sales, and past annual stock returns than non-SEO firms. SEO observations also show lower book-to-market ratio and one-year-ahead annual returns. These findings are consistent with the notion that firms tend to issue equity when they have experienced strong past growth. I also show that SEO firms, on average, have higher R&D, discretionary and nondiscretionary R&D in the year prior to and during the year of the issuance. They also have lower SG&A and discretionary SG&A than non-SEO firms over the same period.

Table 7 presents the results for the logistic regression specified in Equation (6). I show two panels of tests depending on the year of expenditures manipulation, where Panel A focuses on discretionary expenditures in the year prior to the offerings and Panel B focuses on discretionary expenditures in the year of the offerings. I examine both years because SEO firms could engage in expenditure management in the year immediately preceding the issuance as well as during the year of the issuance but prior to offering announcements.

To summarize the results, I first focus on Panel A. In Column (1), the positive coefficient on RD_{t-1} suggests that SEO firms on average have higher R&D than non-SEO firms in the year immediately preceding the issuance. In Column (2), I find significantly positive coefficients on $PRED\_RD_{t-1}$ and RES_RD_{t-1}. This indicates that after controlling for the level of predicted R&D and other determinants of SEOs, there is evidence of high discretionary R&D for SEO firms. Columns (3) and (4) report the results for SG&A. The significant and negative coefficient on SGA_t in Column (3) indicates that SEO firms have lower SG&A than non-SEO firms. In Column (4), the significant and negative coefficient on RES_SGA_t is consistent with the expectation that SEO firms reduce SG&A aggressively in the year prior to the issuance.[16] In addition, the

[16] Cohen and Zarowin (2010) examine firms' use of real earnings management around seasoned equity offerings by reporting the median discretionary expenditures, defined as the sum of abnormal R&D and SG&A following Roychowdhury (2006), from *t-3* to *t+3* relative to year of the offering (*t=0*). They find that SEO firms show a negative discretionary expenditure in the year of the offering, suggesting that they

control variables are in accord with expectations except for the positive coefficient on cash flow.

Panel B of Table 7 replicates the analysis in Panel A using expenditures in the year of the issuance in place of expenditures in the year prior to the issuance. I again find support for high discretionary R&D and low discretionary SG&A for SEO firms. Specifically, the coefficients on RD_t, $PRED\_RD_t$, and RES_RD_t are all significantly positive, and the coefficient on RES_SGA_t is significantly negative.

5.1.2 A comparison of discretionary expenditures for SEO firms over time

Figure 3 contains plots in event time of the mean discretionary R&D, discretionary SG&A, and market-adjusted annual returns for SEO firms. Year *t* is the year (or years when there are successive issuances) of the offerings. Panel A shows that discretionary R&D gradually increases to a peak in the year of the offerings and declines thereafter. Conversely, abnormal SG&A gradually declines to a trough in the year immediately following the offerings and increases thereafter. Similar to Figure 1 Panel A and Panel B, I observe that the magnitude of the trough is larger than that of the peak prior to the year and at the years of the offerings, implying that if I focus on the total discretionary expenditures instead of discretionary R&D and SG&A separately, then I will incorrectly conclude that SEO firms engage in real earnings management by cutting discretionary expenditures.[17] Panel B reveals the trend of market-adjusted returns over time. As expected, the behavior of R&D investment corresponds with their return pattern during the years leading up to the year of issuance, consistent with managers increasing R&D to maintain a high stock value.

5.1.3 Market valuation of discretionary expenditures for SEO firms

Table 8 summarizes the results of the relation between discretionary expenditures and stock returns for SEO firms using the model specified in Equation (5). Specifically, Panel A considers discretionary expenditures in the year prior to the offerings. Panel B focuses on discretionary expenditures in the year of the offerings. As with Table 4, I use four return windows: the year of the manipulation (Columns (1) and (2)), the year following the manipulation year (Columns (3) and (4)), cumulative returns including the year of the manipulation and the year following the manipulation (Columns (5) and (6)), and cumulative returns including the year of the manipulation and two years following the manipulation (Columns (7) and (8)).

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engage in real earnings management by cutting discretionary expenditures. They also find a positive but small discretionary expenditure in the years immediately preceding and immediately following the issuance. My analysis differs from theirs in two ways. First, to identify whether SEO firms cut discretionary expenditures, I benchmark SEO firms with non-SEO firms in addition to focus on the time-series behavior of discretionary expenditures for SEO firms. Second, I develop separate predictions for discretionary R&D and SG&A given their differential valuation implications.

[17] Cohen and Zarowin (2010) find that SEO firms show a negative discretionary expenditure in the year of the offering, and conclude they engage in real earnings management by cutting discretionary expenditures. The actual pattern for R&D, however, could be overlooked in their analysis because they sum abnormal R&D and abnormal SG&A.

In Panel A, Columns (1) and (2), the coefficients on R&D variables are all significantly negative and the coefficients on SG&A variables are all significantly positive. This suggests that high R&D and low SG&A in the year immediately preceding the offerings are associated with positive valuation contemporaneously. I then test whether these responses reflect an overreaction by examining their impact on one-year-ahead stock returns. *A priori*, I do not anticipate a significant return reversal in the year of the offerings as this defeats the purpose of manipulation to maintain a high offering proceed. As shown in Columns (3) and (4), I observe a small and insignificant return reversal in the year of the offerings. Specifically, the signs of the coefficients on RD_{t-1}, $PRED\_RD_{t-1}$, and RES_RD_{t-1} are switched from negative in the contemporaneous returns test to positive in one-year-ahead returns test. Further, the positive coefficients on SGA_{t-1}, $PRED\_SGA_{t-1}$, and RES_SGA_{t-1} in Columns (3) and (4) suggest that the reduction of SG&A in the year prior to the offerings has a positive but delayed price impact in the offering year. This positive effect is also not statistically significant. Finally, In Columns (5)–(8), I find no significant relation between R&D investment in the year prior to the offerings and cumulative future returns. In contrast, the coefficients on SGA_t in Columns (5) and (7) and the coefficients on $PRED\_SGA_t$ in Columns (6) and (8) are positively and significantly associated with two-year and three-year cumulative returns, suggesting an under-reaction of SG&A.

In Panel B, I consider discretionary expenditures in the year of the offerings. The results for SG&A are very similar to those reported in Panel A. In the case of R&D, I observe that the coefficient on discretionary R&D is negatively and significantly associated with contemporaneous stock returns (Column (2)) and is significantly and positively associated with one-year-ahead returns (Column (4)). This result is consistent with the mispricing of R&D investment during the issuance year. Figure 4 Panels A and B plot the coefficients on $PRED\_RD_t$, RES_RD_t, $PRED\_SGA_t$, and RES_SGA_t from Table 7, Panel A Columns (2), (6), and (8). Similarly, Figure 4 Panels C and D plot the coefficients on $PRED\_RD_t$, RES_RD_t, $PRED\_SGA_t$, and RES_SGA_t from Table 7, Panel B Columns (2), (6), and (8).

To summarize, Tables 6-8 show three key results: first, SEO firms show higher discretionary R&D and lower discretionary SG&A than non-SEO firm in the year prior to and at the year of the offerings; second, this finding is consistent with management incentives to increase the offering proceeds; third, there is weak evidence that investors overvalue discretionary R&D in the year of the offerings. Thus, together with results from the AAER sample, I present evidence that firms demanding high stock prices accelerate R&D and cut SG&A during the manipulation period because they understand that investors price these activities as if they increase firm value.

5.2 Analysis of revenue manipulation versus earnings manipulation in the AAER setting

This section and Section 5.3 provide two additional tests to address the concern about whether AAER firms are an appropriate setting to examine real earnings management, in particular, the reduction of R&D. Specifically, this section examines whether revenue manipulation is perceived more important than earnings management by managers and investors. If managers care more about top-line revenue than bottom-line earnings, then it is almost certain that they will not cut R&D as an attempt to boost earnings. Instead they will keep investing in R&D to sustain revenue growth.

Prior research provides evidence supporting the existence of revenue manipulation and the information content of revenue surprises. For example, Marquardt and Wiedman (2004) show that firms manipulate revenue to increase (decrease) earnings prior to equity issuances (management buyouts). Caylor (2010) finds evidence that firms use discretion in revenue that affects both accounts receivable and deferred revenue to report positive earnings surprises. Stubben (2010) shows that a revenue model outperforms accrual models in detecting earnings management. Moreover, Ertimur, et al. (2003) find that for short return windows around earnings announcements, market reactions are stronger for revenue surprises than for expense surprises. Jegadeesh and Livnat (2006) find that post-earnings announcement drift is stronger when revenue surprise is in the same direction as the earnings surprise.

I perform three tests. First, I identify the extent of revenue misstatements among all types of misstatements in the AAER setting. Second, I test the information content and the value relevance of revenue surprises and earnings surprises using AAER firms that are followed by analysts and have sales and earnings forecasts data. The purpose is to determine whether investors react more strongly to the revenue surprises or to the expense surprises. Third, I investigate the percentage of firms that have met their sales forecasts or earnings forecasts or a combination of both using analyst data.

Table 9 Panel A presents the results for the first analysis. I report the percentage of revenue misstatements for AAER firms with at least one misstated annual financial statement (total AAER sample) and the final AAER firms that are used in the main analyses (usable sample), respectively. I find that 62.5 percent of firms have misstatements relating to revenue recognition for the total AAER sample, and 59.8 percent of financial misstatements relate to revenue recognition in the final usable sample. The prevalence of revenue manipulation, however, does not necessarily imply revenue being viewed more importantly than earnings by management. Managers may still care more about bottom-line earnings, but find it easier to manipulate revenue than expenses.

To understand whether investors of AAER firms view revenue as being more important than bottom-line earnings, I examine the value relevance and the information content of revenue surprises (RS_t) and earnings surprises (ES_t) for AAER firms. I estimate revenue and earnings surprises using *IBES* analyst forecasts consensus. Specifically, I define ES_t as actual EPS from *IBES* minus the most recent mean analyst EPS forecast consensus, scaled by the dispersion of analyst forecasts or the stock price three days prior to the earnings announcement date. Therefore this analysis is limited to firms that are followed by analysts. This restriction is particularly severe when I estimate revenue surprises as analysts' revenue forecasts are only available from 1999 onward. Similar to the definition of ES_t, I estimate RS_t as actual revenue from *IBES* minus the most recent mean analyst sales forecast consensus, scaled by the dispersion of analyst forecasts or the stock price three days prior to the earnings announcement date.

Panel B of Table 9 presents the results for the relation between revenue and earnings surprises and contemporaneous market-adjusted annual stock return for AAER firms. Columns (1) and (2) show the results when revenue and earnings surprises are calculated using the dispersion of analyst forecast as the deflator. Columns (3) and (4) report the results when I use the price three days prior to the earnings announcement date as the deflator. In Column (1), I regress returns on RS_t and ES_t and find that earnings surprise is significantly and positively associated with contemporaneous returns, whereas revenue surprise is not. This result remains qualitatively unchanged when I add control variables including log value of total assets, book-to-market ratio, and return on assets, and when the surprise variables are calculated using stock price as the deflator. An F-test of the coefficient difference between RS_t and ES_t further suggests that the positive relation between earnings surprises and stock returns is significantly stronger than the positive relation between revenue surprises and stock returns.

Panel C of Table 9 replicates the analysis in Panel B but replaces the dependent variable with cumulative abnormal returns (CAR). I compute CAR by summing three-day cumulative returns, centered on the date of the earnings announcements. In Column (1), the results show that both RS_t and ES_t are significantly and positively associated with CAR when surprise variables are scaled by the dispersion of analyst forecast (Column 2). The same results hold after controlling for firm size, growth, and profitability. Furthermore, an F-test suggests that the coefficients for RS_t and ES_t are not significantly different from each other. Columns (3) and (4) show a significantly positive relation between ES_t and CAR when surprise variables are scaled price. However, RS_t is not significantly associated with CAR. An F-test shows that ES_t coefficient is significantly larger than the RS_t coefficient.

Finally, I investigate the percentage of meeting or beating analysts' sales or earnings forecasts in the AAER sample. I define meet or beat when a sales/EPS forecast is equal to or greater than the most recent mean analysts forecast consensus. Table 9 Panel D reports the results. Group 1 refers to the sample that has met or beat both sales and earnings forecasts. I show that among 383 firm-year observations that have sales and earnings forecasts data between 1999 and 2007, 43 percent of the sample has met both forecasts. Group 4 represents the sample that has failed to meet both forecasts, and 19% fall into this category. Groups 2 and 3 are the two groups of interest. Group 2 shows that 16 percent of the sample have met sales forecasts but not earnings forecasts, and Group 3 shows that 22 percent of the sample have met earnings forecasts but not sales forecasts. A chi-square goodness of fit test between these two groups indicates that the proportion of meeting earnings forecasts but not sales forecasts is significantly higher than the proportion of meeting sales forecasts but not earnings forecasts (Chi-square = 3.648, P-val = 0.056). This result suggests that meeting sales forecasts does not appear to be more important than meeting earnings forecasts.

To summarize, this section documents three main findings. First, the AAER sample is not predominated by manipulation in the revenue account. About 60 percent of the AAERs involve revenue misstatements; however, the primary objective of manipulating revenue could be to boost bottom-line earnings, top-line sales, or both. Second, the results from both short-window and long-window return analyses suggest that investors react more strongly to earnings surprises than revenue surprises. This finding is inconsistent with the argument that AAER firms care more about boosting sales than boosting earnings. Third, an analysis of meeting or beating analysts' sales and EPS forecasts suggests that there are more AAER firms that meet analysts' earnings forecasts but fail to meet sales forecasts than firms that meet sales forecasts but not earnings forecasts. Taken together, these results support the premise that the AAER firms are concerned about bottom-line earnings, and thus are an appropriate and interesting setting to examine real earnings management. These results also reinforce the competing tension these managers face when it comes to R&D decisions.

5.3 Analysis of subsamples of AAERs that meet earnings benchmarks

This section tests my primary results using more stringent earnings management samples: AAER firm-years with earnings just meeting or beating analyst consensus forecasts, zero earnings, and the prior year's earnings. While AAER sample in general is considered a setting where earnings management is more likely to have occurred, AAER firms in these subsamples have even stronger incentives to manipulate earnings.

Specifically, I define AAERs just meeting or beating analyst forecasts as firm-years with actual EPS less the most recent mean analyst forecast consensus between 0 and 2 cents; AAERs just meeting or beating zero earnings benchmark as firm-years with earnings before extraordinary items over lagged assets between 0 and 0.03; and AAERs just meeting or beating last year's earnings as firm-years with change in basic EPS excluding extraordinary items between 0 and 10 cents. I select these benchmarks following prior research and in an attempt to identify earnings manipulators without restricting the analyses to very small samples (I require at least 200 firm-years observations each for AAERs and the matched control sample). During the sample period, there are 251 firm-years (48.6%) just meeting or beating analyst forecast consensus, 229 firm-years (44.4%) just meeting or beating zero benchmark, and 263 firm-years (51.0%) just meeting or beating last year's earnings.

Table 10 reports the results. The first two columns show the results for firm-years just meeting or beating analyst forecast consensus. Consistent with the findings in Table 4, I find that firm-years that just meet or beat their EPS forecasts have significantly higher discretionary R&D and significantly lower discretionary SG&A than the matched control sample. This result suggests that even for a sample with very strong incentives to meet earnings targets, there is no evidence of using the reduction of R&D as a real earnings management tool. Columns (3) and (4) show similar results when I focus on firm-years that meet or beat zero benchmark. In the last two columns, for firm-years that meet or beat last year's earnings, the coefficients of R&D variables are positive but insignificant. Overall, in addition to the findings from the general AAER sample, the results in this section suggest that AAER firms also have higher discretionary R&D than their control counterparts when they just meet or beat earnings benchmarks.

Chapter 6

Robustness tests

In this section, I conduct sensitivity tests of my results to alternative variable definitions, model specifications, and subsamples.

6.1 Alternative proxies for discretionary expenditures

To corroborate the results, I calculate discretionary R&D and SG&A using alternative approaches: (1) a prediction model for investment expenditures following McNichols and Stubben (2008), (2) a prediction model as in Roychowdhury (2006) that estimates the normal R&D and SG&A level as a function of prior year's sales, and (3) a simple random walk model that assumes the prior year R&D and SG&A as the normal expenditure level. First, I find that the R&D and SG&A prediction models following Roychowdhury (2006) have adjusted R^2 of 17.9% and 45.8%, respectively. The explanatory power of these alternative models is lower than the models I used in the main analysis (80.4% for the R&D model and 50.6% for the SG&A model as shown in Table 2).[18] Second, all of the results associated with R&D analyses are essentially no different using these three alternative proxies. In the case of SG&A analyses, I find that relative to non-AAER firms, AAER firms have unusually low discretionary SG&A calculated following proxies (1) and (2) but not (3). I also find no evidence that SEO firms have significantly lower discretionary SG&A than non-SEO firms following proxies (2) and (3).

6.2 Analysis of advertising expense

The analysis to this point has included advertising expense as a component of SG&A; however, advertising is a unique item which warrants separate investigation of its own. On the one hand, advertising is likely to be a cash-based expense, and thus serves a cleaner proxy for real expenditure earnings management. A finding of substantially low abnormal advertising expenditure would be a stronger evidence of real earnings

[18] Roychowdhury (2006) defines discretionary expenditures as the sum of R&D and other SG&A expenditures, and thus does not provide a separate estimation for the normal levels of R&D and SG&A. Since the focus of the current study is to examine the differential effects between R&D and SG&A, as a robustness check I also follow Roychowdhury's approach to estimate the normal level of R&D and SG&A, respectively.

management. On the other hand, a firm can capitalize some advertising expenses such as "direct response advertising cost" provided it demonstrates from past experience that future net revenues from customers obtained through the advertising will exceed the amount of capitalized costs (Statement of Position 93-7). Therefore low abnormal advertising expenditures may simply reflect more capitalization, which is an example of accruals management rather than real earnings management. This remains a limitation of this study. Nevertheless, the general results for SG&A are qualitatively unchanged regardless of the inclusion of advertising expense.

The above two explanations suggest that AAER firms would have lower abnormal advertising expenses than the control sample. However, if advertising is viewed as an investment, I would expect AAER firms to show significantly higher abnormal advertising expenses than the control firms during the manipulation years. The literature provides mixed evidence about the performance consequences and market valuation of advertising expenses. For example, Graham and Frankenberge (2000) report that, depending upon the type of product, changes in advertising are positively associated with future earnings and market values. However, Core (2003) finds no influence of advertising on market value.

I test whether AAER firms and SEO firms show higher or lower abnormal advertising expenses during years of manipulation using abnormal advertising proxies identified in either equation (1) or (2). The results show that abnormal advertising expenses do not differ significantly between AAER firms and the matched control firms. However, there is weak evidence that SEO firms cut advertising expenditure in the year prior to and during the year of the offerings.

6.3 Impact of the Sarbanes Oxley Act

Cohen et al. (2008) provide evidence suggesting a switch from accruals management to real earnings management in the post-SOX period. I test whether SOX might explain the reduction of SG&A in my sample by estimating Models (3), (5), and (6), and including a SOX dummy and an interaction between a SOX dummy and discretionary SG&A. I find that the results of AAER and SEO firms cutting SG&A around the manipulation period remain unchanged for both the pre- and post- SOX periods. Consistent with Cohen et al. (2008), I show that accruals management declined significantly following the passage of SOX in 2002.

6.4 Industry analysis

I subject my primary results to various subsamples. First, I examine whether the R&D results are driven by firms in R&D intensive industries. I define R&D intensive firms as those in the following industries: chemicals and pharmaceuticals (SIC = 28), machinery and computer hardware (SIC = 35), electrical and electronics (SIC = 36), transportation equipment (SIC = 37), and scientific instruments (SIC = 38). I find that the positive relation between discretionary R&D and the likelihood of financial misstatements is stronger for high R&D intensive firms, but is not significantly stronger than non R&D intensive firms.

Second, I rerun the analysis for firms in computer industry, which comprise one fourth of my sample. I find similar results that the coefficient on discretionary R&D for computer firms is larger, but not significantly larger than the coefficient for non-computer firms.

Third, to test whether my results are driven by the internet bubble of 1999-2001, I perform a subsample analysis for that period. I find no evidence that discretionary R&D is significantly higher for AAER firms relative to control firms during that sample period. However, the results show that AAER firms are less likely to cut SG&A than control firms during the bubble period.

Four, firms in the software industry (SIC 7370-7374) can capitalize some of the R&D expenditure when technological feasibility for a software product is established. Therefore, including software firms may blur the analyses for real earnings management related to R&D, which is affected by firms' accrual choices. I repeat the analysis in Table 4 by excluding firms in the software industry. The results show a stronger positive association between discretionary R&D and the likelihood of financial misstatements. This result is expected because by excluding software firms, I remove firms with potentially lower reported R&D.

Finally, I repeat all regression analyses by including industry fixed effects at the two-digit SIC industry classification to control for biases introduced by industry-specific omitted variables, and my results are qualitatively unchanged.

6.5 Analysis of significant equity issuance

I examine the behavior of R&D and SG&A for firms with significant equity issuance in addition to the SEO sample. This sample differs from the SEO sample in that it captures not just the presence of issuance but also the magnitude of issuance. Specifically, I compare firm-year observations that have equity issuance to the lagged assets ratio in the top decile from the *Compustat/CRSP* population with firm-year observations in other deciles. I again find support for unusually higher spending for R&D and unusually lower spending for SG&A in the year prior to and in the year of significant equity issuance for firm-year observations in the top decile than observations in other deciles. The results are also qualitatively unchanged when I use debt issuance in place of equity issuance to capture firms that are growing fast and demand high stock prices.

Chapter 7

Conclusions

Recent research in earnings management literature has documented the existence of real earnings management in various contexts and a preference for real earnings management over accruals management (Graham, et al. 2005; Roychowdhury 2006; Cohen et al. 2008; Cohen and Zarowin 2010; Zang 2012). Managers prefer real earnings management because it is less likely to draw auditor or regulatory scrutiny, less constrained by accruals manipulation in prior years, and often used before accruals management.

This study investigates the use of real earnings management in a sample of firms targeted by the SEC for allegedly overstating earnings. I anticipate that if these firms' primary objective is to boost current earnings and they prefer real over accrual-based earnings management, then they would cut R&D and SG&A and show lower discretionary R&D and SG&A than control firms during years in which they have attempted to boost earnings using accruals. There is, however, a competing hypothesis suggesting that AAER firms might show higher discretionary R&D. This is because they also have strong incentives to improve market perception of firm growth and support higher stock prices. Increasing R&D allows them to create such an impression. This study contributes to an understanding of the trade-off managers face in making their investment decision associated with R&D, namely, whether financial misstatement firms would decrease R&D to show higher earnings, or increase R&D to support high stock prices.

I find that AAER firms have significantly higher discretionary R&D and significantly lower discretionary SG&A than control samples during misstating years. I also investigate whether this result is consistent with management incentives to maintain a higher stock price by examining the relation between discretionary expenditures and current and future stock returns. I find supporting evidence that investors temporarily overvalue high discretionary R&D and low discretionary SG&A during the violation period, and lower their valuation in subsequent years.

As an additional analysis, I examine the expenditure decisions for SEO firms. I find reliable evidence that they have higher discretionary R&D and lower discretionary SG&A in the year prior to and during the years of the offerings than non-SEO firms. Also, the market positively reacts to high discretionary R&D and low discretionary SG&A in the year of the offerings. Finally, I provide two additional tests reinforcing the AAER sample as being a useful setting to test real earnings management. While many financial misstatements occur at the revenue level, implying that these firms may care more about revenue growth and thus boost R&D at the expense of lower earnings, there is no clear evidence suggesting that AAER firms or investors view top-line revenue as being more important than bottom-line earnings. My primary results also remain largely unchanged to subsamples of AAERs that have just met or beat analyst consensus forecasts, zero earnings, and the prior year's earnings.

Similar to other research in real earnings management, my results must be interpreted with due regard for its limitations. First, my test of real earnings management hinges on empirical models of discretionary R&D and SG&A. These models may be subject to specification issues as identified in Cohen et al. (2011). Nevertheless, I include the predicted component of R&D and SG&A in all analyses and note any inconsistency in the results between the predicted and the residual components. I also test the robustness of my results using alternative models available in the literature.

Second, a related issue of concern about discretionary expenditures proxies is their ability to separate manipulation from firms' optimal strategy. However, I believe the discretionary or abnormal components of R&D and SG&A are less likely to be mistakenly classified as normal expenditures in the context of AAERs than other settings. These firms were struggling to sustain their growth rate and accused of engaging in severe manipulation by the SEC, and thus their likelihood of having many promising R&D projects during the manipulation period could be small. These firms also significantly reversed their discretionary expenditures after the alleged manipulation period. If discretionary R&D or SG&A represents positive net present value R&D projects or optimal expenditure cutting, then I would not expect such a significant reversal. Furthermore, the reversal is unlikely to be trigged by the enforcement announcements since only 15 percent of AAERs are released within the following two years after the manipulation period.

Third, these expenditure models do not perfectly isolate real earnings management from accruals management. For example, bad debt and deferred tax which are included in SG&A can be a result of firms' accrual decisions. Other items in SG&A, such as advertising, can also be affected by firms' capitalization rules. I leave a more thorough development of real earnings management proxies associated with separate SG&A components to future researchers.

Finally, my result that firms increasing R&D during periods when they are concerned with current earnings is more specific to AAER and SEO firms. These firms are fast-growing and have strong incentives to increase stock prices, and thus my results cannot be readily generalized to the full population.

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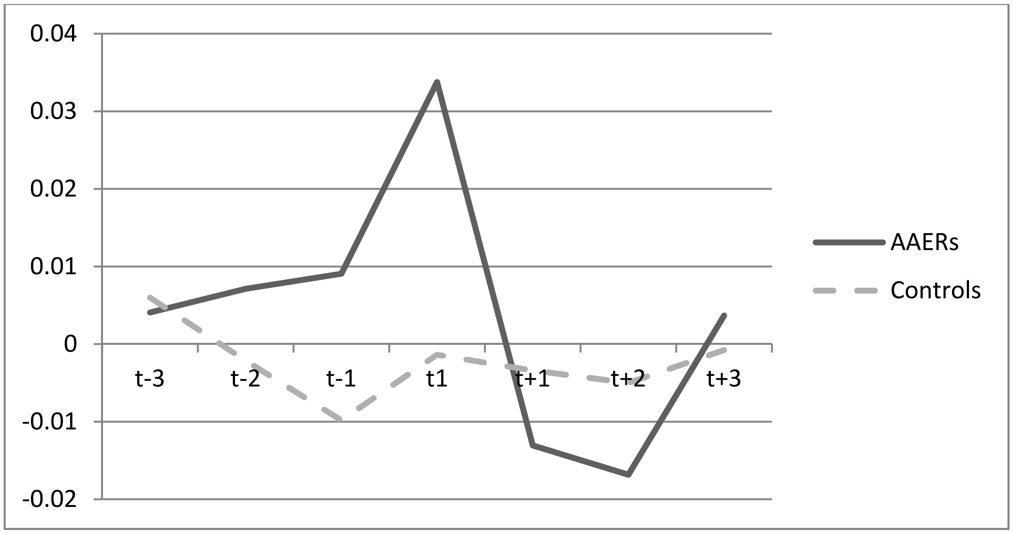
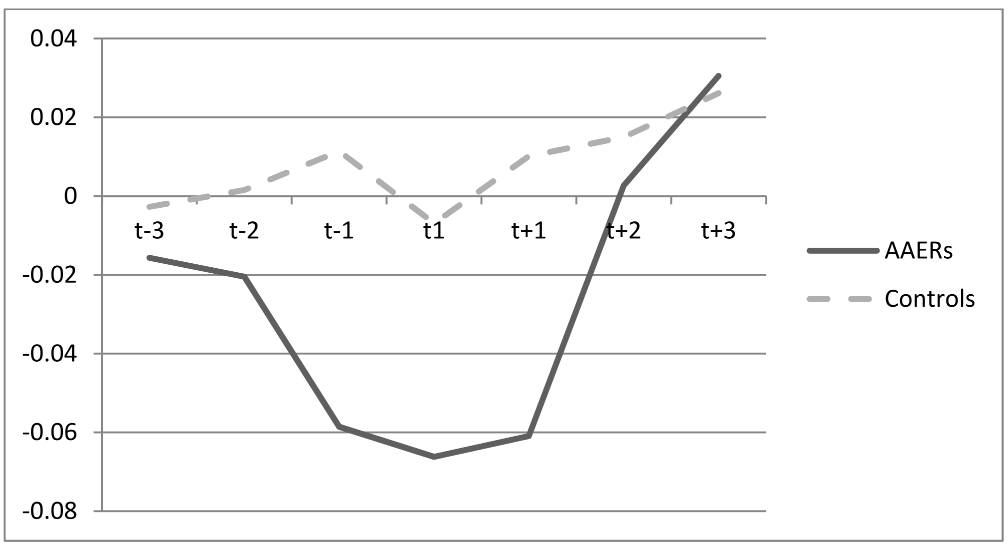
FIGURE 1

Discretionary R&D and SG&A Expenditures for AAER and the Matched Control Firms through Event Time

Panel A: Mean Discretionary R&D around the Violation Period



Panel B: Mean Discretionary SG&A around the Violation Period



Panel C: Mean Market-Adjusted Returns around the Violation Period

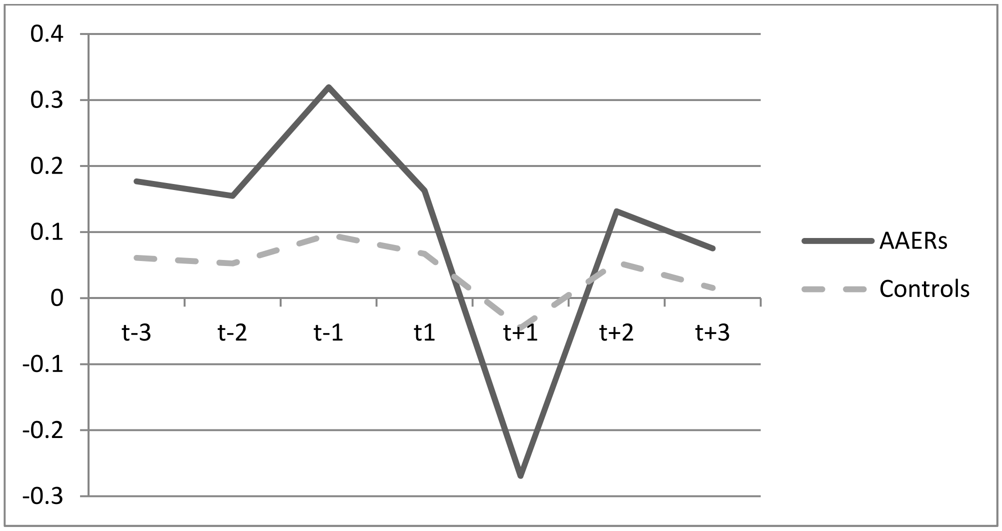
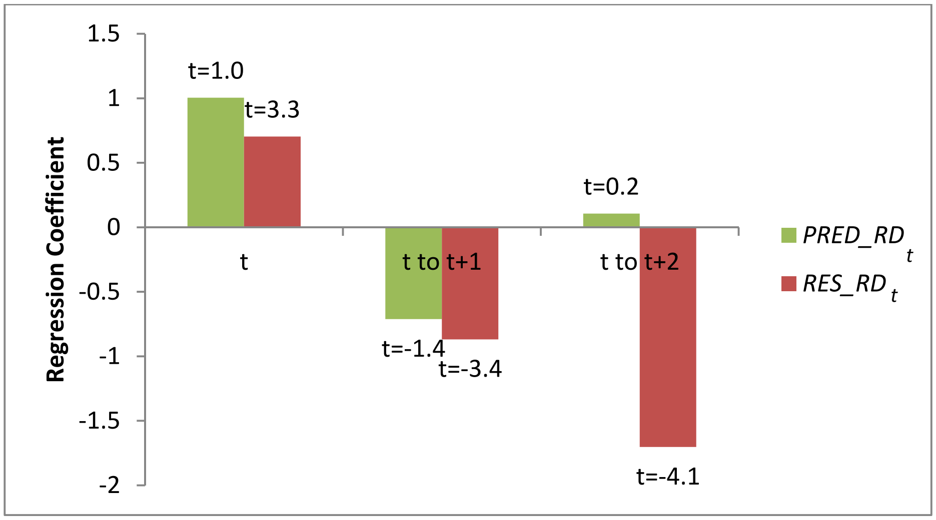


Figure 1 presents the trend of discretionary R&D (RES_RD_t), discretionary SG&A (RES_SGA_t), and market-adjusted annual returns ($XRET_t$) from three years before the violation years (*t-3*) to three years after the violation years (*t+3*) for the AAER sample and the matched control sample, respectively. Year *t1* refers to the first year in the violation period *t*, and year *t+1* refers the first year following the violation period. Following Gunny (2010), RES_RD_t is calculated as the residuals obtained from industry-year regressions of RD_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, and RD_{t-1}. RES_SGA_t is calculated as the residuals obtained from industry-year regressions of SGA_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, $CHSALE_t$, and $CHSALE_t * DD_t$. $XRET_t$ is calculated as the cumulative market-adjusted returns beginning nine months before fiscal year-end *t* to three months after fiscal year-end *t*.

FIGURE 2

The Relation between Expenditure Variables and Cumulative Stock Returns for AAER Firms

Panel A: Relation between Predicted and Residual R&D in the Violation Period and Cumulative Stock Returns



Panel B: Relation between Predicted and Residual SG&A in the Violation Period and Cumulative Stock Returns

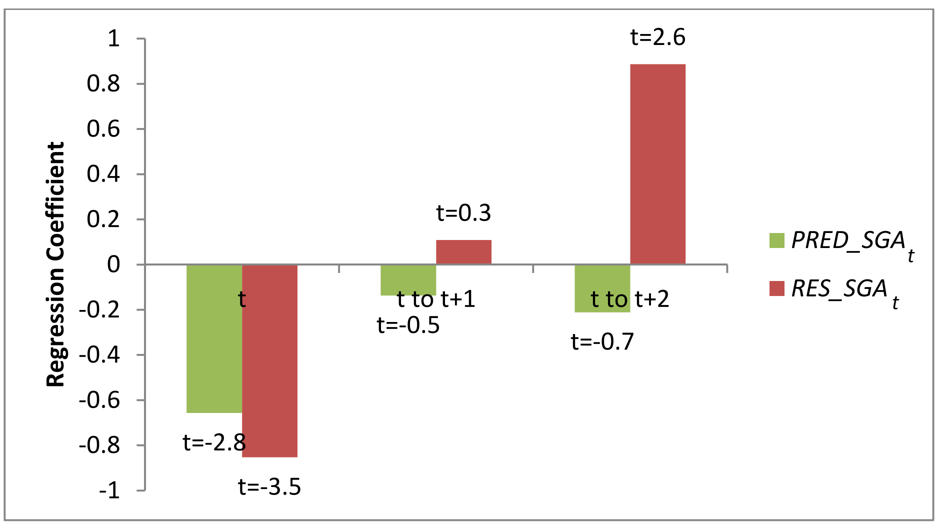
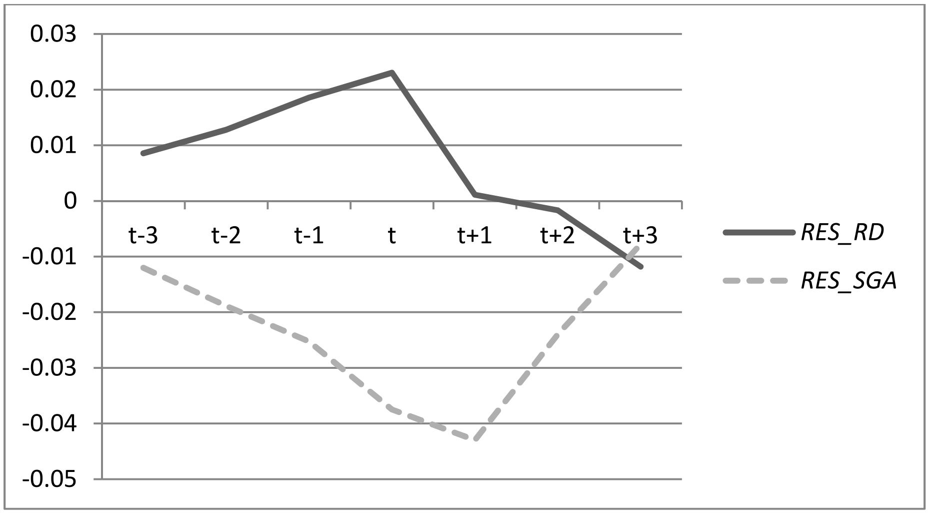


Figure 2 presents two panels that plot the relation between predicted and residual R&D and SG&A and contemporaneous returns, two-year cumulative returns, and three-year cumulative returns for AAER firms. Year *t* refers to the violation period. Years *t* to *t+1* refer to the violation year and the first year after the violation period. Years *t* to *t+2* refer to the violation year and the first and second year after the violation period. Panel A plots the coefficients on *PRED_RD* and *RES_RD* as shown in Columns (2), (6), and (8) in Table 4. The signs of the coefficients and t-values in Table 4 are inverted in this panel for easy interpretation. Positive coefficients for year *t* indicate that high R&D in year *t* is positively associated with stock returns in year *t*. Negative coefficients for years *t* to *t+1* and years *t* to *t+2* indicate that high R&D in year *t* is negatively associated with cumulative returns from year *t* to *t+1* and from year *t* to *t+2*, respectively. Panel B plots the coefficients on *PRED_SGA* and *RES_SGA* as shown in Columns (2), (6), and (8) in Table 4. The signs of the coefficients and t-values in Table 4 are also inverted in this panel. Negative coefficients for year *t* indicate that high SG&A in year *t* is negatively associated with stock returns in year *t*. Positive coefficients for year *t* to *t+1* and year *t* to *t+2* indicate that high SG&A in year *t* is positively associated with cumulative returns from year *t* to *t+1* and from year *t* to *t+2*, respectively.

FIGURE 3

Discretionary R&D and SG&A Expenditures for SEO Firms through Event Time

Panel A: Mean Discretionary R&D and SG&A Expenditures around the Offering Period



Panel B: Mean Market-Adjusted Returns around the Offering Period

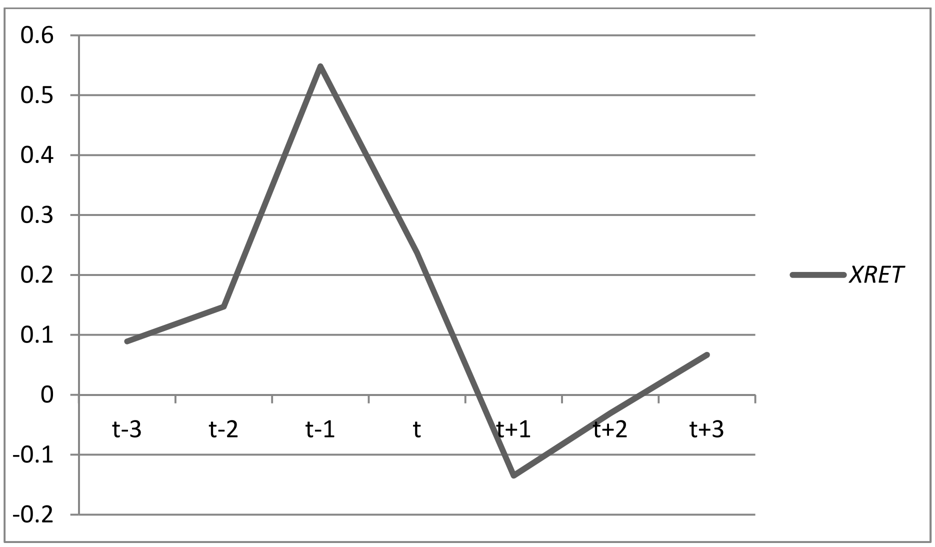
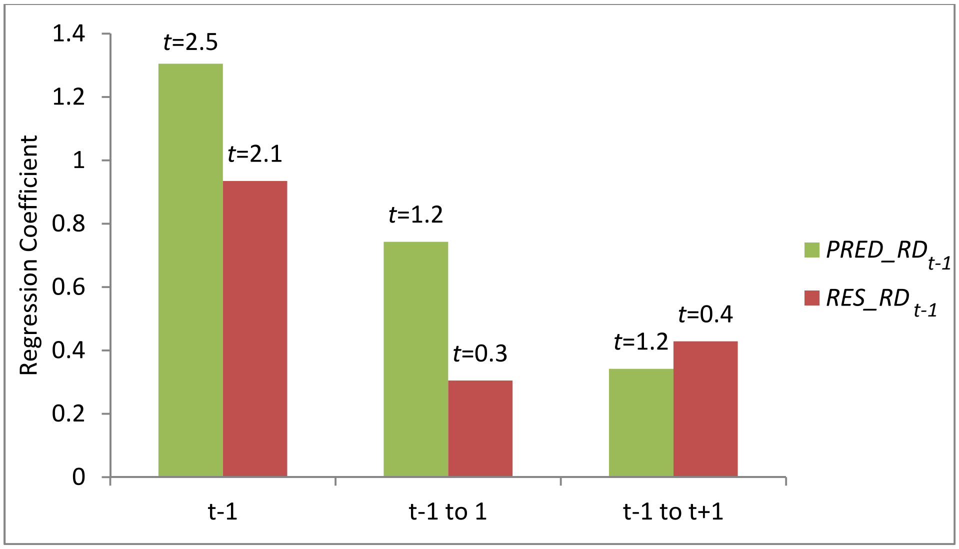


Figure 3 presents the trend of discretionary R&D (RES_RD_t), discretionary SG&A (RES_SGA_t), and market-adjusted annual returns ($XRET_t$) from three years before the offering year (*t-3*) to three years after (*t+3*) for SEO firms. Year *t* is the year of the offerings. Following Gunny (2010), RES_RD_t is calculated as the residuals obtained from industry-year regressions of RD_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, and RD_{t-1}. RES_SGA_t is calculated as the residuals obtained from industry-year regressions of SGA_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, $CHSALE_t$, and $CHSALE_t * DD_t$. $XRET_t$ is calculated as the cumulative market-adjusted returns beginning nine months before fiscal year-end *t* to three months after fiscal year-end *t*.

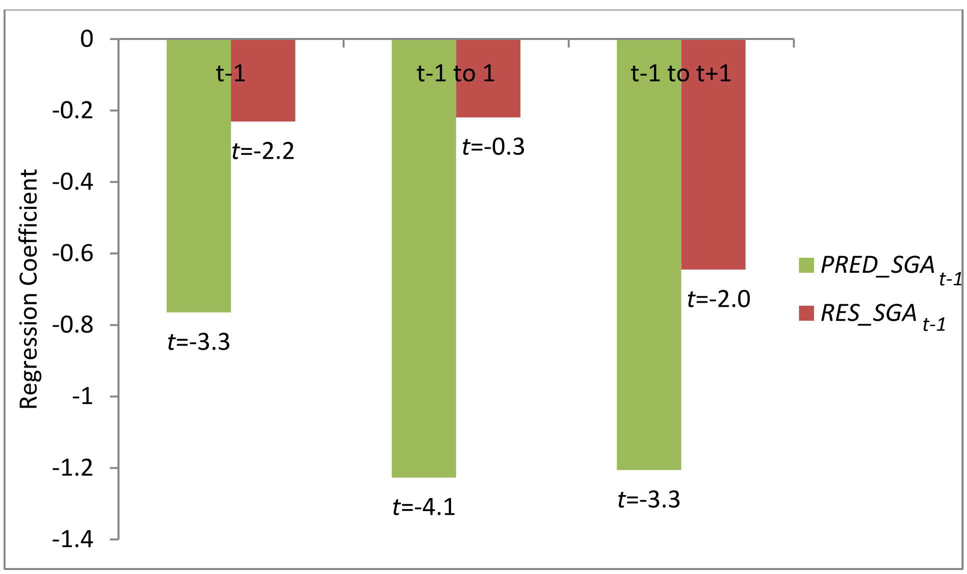
FIGURE 4

The Relation between Expenditures Variables and Cumulative Stock Returns for SEO Firms

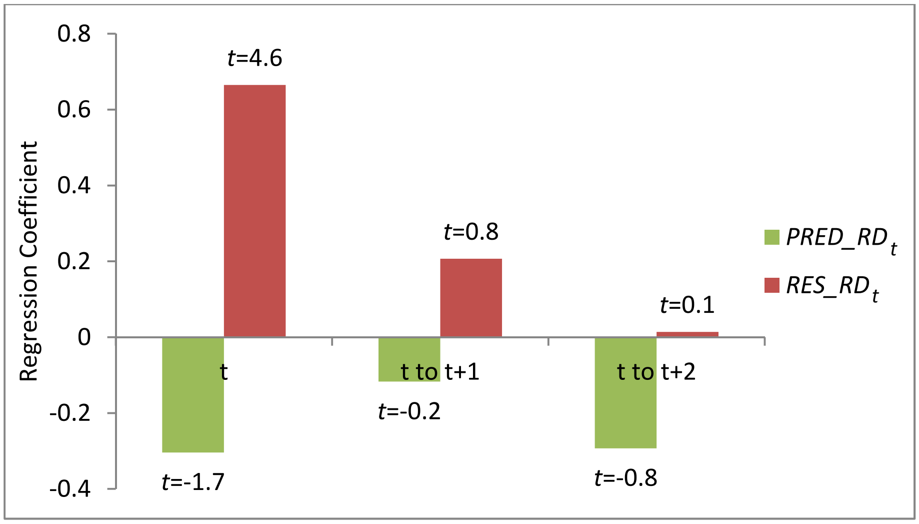
Panel A: Relation between Predicted and Residual R&D in the Year Prior to the Offerings and Cumulative Stock Returns



Panel B: Relation between Predicted and Residual SG&A in the Year Prior to the Offering and Cumulative Stock Returns



Panel C: Relation between Predicted and Residual R&D in the Year of the Offerings and Cumulative Stock Returns



Panel D: Relation between Predicted and Residual SG&A in the Year of the Offerings and Cumulative Stock Returns

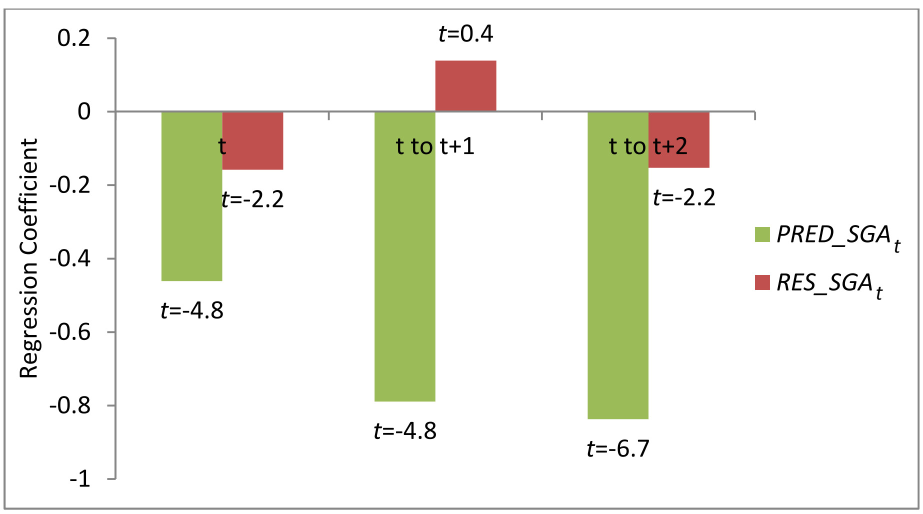


Figure 4 presents four panels that plot the relation between predicted and residual R&D and SG&A and contemporaneous returns, two-year cumulative returns, and three-year cumulative returns for SEO firms. Year *t* is the year of the offerings. Panel A focuses on R&D in the year prior to the offerings and plots the coefficients on *PRED_RD* and *RES_RD* as shown in Columns (2), (6), and (8) in Table 7, Panel A. The signs of the coefficients and t-values in Panel A of Table 7 are inverted in this panel for easy interpretation. Positive coefficients for year *t-1*, years *t-1* to *t*, and years *t-1* to *t+1* indicate that high R&D in year *t-1* is positively associated with contemporaneous stock returns, cumulative returns from *year t-1* to *t*, and cumulative returns from *year t-1* to *t+1*, respectively. Panel B focuses on SG&A in the year prior to the offerings and plots the coefficients on *PRED_SGA* and *RES_SGA* as shown in Columns (2), (6), and (8) in Table 7, Panel A. The signs of the coefficients and t-values in Panel A of Table 7 are also inverted in this panel. Negative coefficients for year *t-1*, years *t-1* to *t*, and years *t-1* to *t+1* indicate that high SG&A in year *t-1* is negatively associated with contemporaneous stock returns, cumulative returns from year *t* to *t+1*, and cumulative returns from year *t* to *t+2*, respectively. Similarly, Panel C focuses on R&D at the year of the offerings and plots the coefficients on *PRED_RD* and *RES_RD* as shown in Columns (2), (6), and (8) in Table 7, Panel B. Panel D focuses on SG&A at the year of the offerings and plots the coefficients on *PRED_SGA* and *RES_SGA* as shown in Columns (2), (6), and (8) in Table 7, Panel B.

TABLE 1

Sample Description

Panel A: Sample selection of AAERs	No. of firms	Firm-year obs.
AAER No.1-No.3180 from May 1982 to Sep 2010	1,222	
Less: enforcements that are unrelated to earnings misstatement	-339	
Earnings misstatement firms	883	
Less: firms without permno	-177	
Firms with at least one quarter of misstatement numbers	706	
Less: firms with quarterly misstatement only	-107	
	599	
Less: firms in financial industries (SIC 6000-6999)	-74	
	525	
Less: firms with no total assets available and book-to-market ratio	-47	
Less: firms with understatements	-19	
Less: AAER prior to 1980 or after 2007	-3	
Firms with at least one misstated annual financial statement	456	1,005
Common sample (for AAER firms) incorporating variables used for all analyses	303	648
Common sample (for both AAER and matched control firms) incorporating variables used for all analyses	219	516

Panel B: Frequency of misstatement firms by industry

Industry	Misstatement Firms	*Compustat* Population
Agriculture	0.2%	0.5%
Mining & Construction	2.9%	4.7%
Food & Tobacco	2.9%	2.6%
Textile and Apparel	2.0%	1.6%
Lumber, Furniture, & Printing	2.6%	3.9%
Chemicals	2.6%	2.5%
Refining & Extractive	1.8%	6.4%
Durable Manufacturers	22.1%	23.0%
Computers	24.8%	14.0%
Transportation	4.2%	7.3%
Utilities	2.4%	5.3%
Retail	14.0%	11.4%
Services	14.0%	11.9%
Pharmaceuticals	3.5%	4.9%
Total	100.0%	100.0%

Panel C: Frequency of AAERs by year					
Year	Firm-year obs.	Percentage	Year	Firm-year obs.	Percentage
1980	14	1.4%	1994	31	3.1%
1981	14	1.4%	1995	32	3.2%
1982	21	2.1%	1996	37	3.7%
1983	15	1.5%	1997	48	4.8%
1984	17	1.7%	1998	59	5.9%
1985	14	1.4%	1999	85	8.5%
1986	24	2.4%	2000	97	9.7%
1987	18	1.8%	2001	85	8.5%
1988	20	2.0%	2002	69	6.9%
1989	28	2.8%	2003	58	5.8%
1990	23	2.3%	2004	41	4.1%
1991	32	3.2%	2005	31	3.1%
1992	34	3.4%	2006	12	1.2%
1993	38	3.8%	2007	8	0.8%
			Total	1,005	100%

Panel D: Percent of the 456 AAERs that involve officer of the company		
Party	Number	Percent
Officer of the company	394	86%
Officer and company	263	58%
Company only	47	10%
Auditor	111	24%
Other	43	9%
Total	456	100%

This table presents sample description. Panel A describes the sample selection of AAER. Panel B shows the frequency of misstatement firms by industry. Following Dechow et al. (2011), the industry classification, is based on the following SIC codes: Agriculture: 0100-0999; Mining and Construction: 1000–1299, 1400–1999; Food & Tobacco: 2000–2141; Textiles and Apparel: 2200–2399; Lumber, Furniture, & Printing: 2400-2796; Chemicals: 2800–2824, 2840–2899; Refining & Extractive: 1300–1399, 2900–2999; Durable Manufacturers: 3000–3569, 3580-3669, 3680-3999; Computers: 3570–3579, 3670–3679, 7370–7379; Transportation: 4000–4899; Utilities: 4900–4999; Retail: 5000–5999; Services: 7000–7369, 7380–9999; Banks & Insurance: 6000–6999; Pharmaceuticals: 2830–2836. I eliminate firms in financial (6000-6999) and utility industries (4400-5000). Panel C shows the frequency of misstatement firms by fiscal year. Panel D shows the percent of AAERs that are against various parties. Panels B-D are calculated based o the sample of 456 misstatement firms (1,005 firm-year observations, as shown in Table 1 Panel A) with at least one misstated annual financial statement.

TABLE 2

Estimation of the Normal Level of R&D and SG&A Expenditures Using All Firms in 1980-2010

	(1) Dep Var: RD_t			(2) Dep Var: SGA_t		
	Mean estimate	Median estimate	t-stat	Mean estimate	Median estimate	t-stat
Intercept	0.005	0.000	1.20	0.632	0.541	30.42
$1/AT_{t-1}$	-0.006	0.000	-0.77	0.759	0.286	9.15
$MTKCAP_t$	0.001	0.000	4.44	-0.016	-0.013	-17.26
$BTMA_{t-1}$	-0.018	-0.005	-13.47	-0.117	-0.099	-19.91
$INTFUND_t$	0.001	0.000	0.61	-0.101	-0.145	-5.78
RD_{t-1}	0.849	0.892	46.67			
$CHSALE_t$				0.273	0.222	21.08
$CHSALE_t * DD_t$				-0.347	-0.256	-7.27
No. of regressions	913			1,442		
$Adj\ R^2$	0.8046			0.5058		

Model (1): $RD_{i,t} = \alpha_0 + \alpha_1\, 1/AT_{i,t-1} + \alpha_2 MKTCAP_{i,t} + \alpha_3 BTMA_{i,t-1} + \alpha_4 INTFUND_{i,t} + \alpha_5 RD_{i,t-1} + \varepsilon_{i,t}$

Model (2): $SGA_{i,t} = \alpha_0 + \alpha_1\, 1/AT_{i,t-1} + \alpha_2 MKTCAP_{i,t} + \alpha_3 BTMA_{i,t-1} + \alpha_4 INTFUND_{i,t} + \alpha_5 CHSALE_{i,t} + \alpha_6 CHSALE_{i,t} * DD_{i,t} + \varepsilon_{i,t}$

This table presents summary statistics from industry-year regressions of R&D and SG&A expenditures. All models are estimated cross-sectionally over the period from 1980 to 2010 for every industry-year with more than 15 observations. Column (1) shows the mean and median estimates of 913 separate coefficient estimates from Model (1); t-stat is the Fama-MacBeth t-statistics, and $Adj\ R^2$ is the mean adjusted R^2 across the industry-years. Column (2) shows the mean and median estimates from Model (2). See the Appendix for variable definitions.

TABLE 3

Descriptive Statistics and Correlations for AAER Firms and Two Control Samples in 1980-2007

Panel A: Descriptive statistics of AAER firms versus matched control firms

	AAER sample				Matched Control sample				t-test of mean diff.	
	N	Mean	Median	Std. Dev	N	Mean	Median	Std. Dev	Diff	P-val
Matching variables for the AAER and control sample										
BTM_{t-1}	219	0.472	0.349	0.542	219	0.479	0.338	0.454	-0.007	0.89
AT_{t-1}	219	18.729	18.586	2.234	219	18.735	18.542	2.242	-0.006	0.98
Expenditures variables										
RD_t	352	0.101	0.057	0.143	299	0.082	0.050	0.098	0.019	0.05
$PRED\_RD_t$	352	0.092	0.078	0.077	299	0.091	0.069	0.098	0.001	0.91
RES_RD_t	352	0.009	0.004	0.063	299	-0.009	-0.004	0.049	0.018	0.01
SGA_t	516	0.308	0.234	0.255	477	0.378	0.315	0.310	-0.070	0.00
$PRED\_SGA_t$	516	0.367	0.322	0.257	477	0.340	0.315	0.234	0.026	0.83
RES_SGA_t	516	-0.059	-0.062	0.227	477	0.037	0.003	0.254	-0.097	0.00
Control variables										
$WCACC_t$	516	0.046	0.020	0.164	477	0.015	0.007	0.102	0.031	0.02
$CHCSALE_t$	516	0.365	0.152	0.944	477	0.153	0.081	0.630	0.212	0.00
$CHROA_t$	516	-0.003	-0.006	0.323	477	0.011	0.002	0.256	-0.014	0.36
$SOFTAT_t$	516	0.650	0.692	0.206	477	0.564	0.569	0.198	0.086	0.00
$ISSUANCE_t$	516	0.922	1.000	0.268	477	0.851	1.000	0.356	0.071	0.00
$XRET_t$	516	0.138	-0.113	1.114	477	0.073	-0.059	0.707	0.066	0.26

Panel B: Descriptive statistics of AAER firms versus population control firms

	AAER sample				Population Control sample				t-test of mean diff.	
	N	Mean	Median	Std. Dev	N	Mean	Median	Std. Dev	Diff	P-val
Expenditures variables										
RD_t	422	0.096	0.054	0.134	60,739	0.079	0.040	0.122	0.017	0.00
$PRED\_RD_t$	422	0.089	0.075	0.076	60,739	0.082	0.055	0.105	0.007	0.15
RES_RD_t	422	0.007	0.004	0.055	60,739	-0.003	-0.001	0.067	0.010	0.00
SGA_t	648	0.321	0.247	0.279	106,677	0.329	0.256	0.312	-0.007	0.50
$PRED\_SGA_t$	648	0.369	0.330	0.256	106,677	0.324	0.285	0.254	0.045	0.00
RES_SGA_t	648	-0.048	-0.052	0.225	106,677	0.005	-0.012	0.228	-0.053	0.00
Control variables										
$WCACC_t$	648	0.060	0.022	0.194	106,677	0.016	0.007	0.132	0.044	0.00
$CHCSALE_t$	648	0.353	0.160	0.895	106,677	0.189	0.085	0.774	0.164	0.00
$CHROA_t$	648	0.013	-0.009	0.552	106,677	0.008	-0.002	0.388	0.005	0.74
$SOFTAT_t$	648	0.648	0.689	0.202	106,677	0.545	0.571	0.231	0.103	0.00
$ISSUANCE_t$	648	0.915	1.000	0.279	106,677	0.801	1.000	0.399	0.114	0.00
BTM_t	648	0.526	0.364	0.552	106,677	0.661	0.534	1.007	-0.135	0.00
AT_t	648	19.643	19.786	2.272	106,677	18.735	18.618	2.148	0.908	0.00
$XRET_t$	648	0.122	-0.129	1.088	106,677	0.042	-0.090	0.909	0.080	0.02

Panel C: Pearson correlations

	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13
1	$AAER_t$	1												
2	RD_t	0.084	1											
3	$PRED\_RD_t$	**0.004**	0.694	1										
4	RES_RD_t	0.101	0.714	**-0.008**	1									
5	SGA_t	-0.123	**0.046**	0.088	**-0.024**	1								
6	$PRED\_SGA_t$	0.054	**0.049**	0.029	**-0.012**	0.582	1							
7	RES_SGA_t	-0.197	**0.003**	0.070	**-0.015**	0.576	-0.229	1						
8	$WCACC_t$	0.110	**-0.046**	**-0.027**	**0.006**	0.161	0.173	**0.014**	1					
9	$CHCSALE_t$	0.130	0.226	0.211	0.095	0.129	0.392	-0.244	0.169	1				
10	$CHROA_t$	**-0.023**	-0.118	0.115	-0.271	**0.011**	0.060	**-0.047**	0.123	0.351	1			
11	$SOFTAT_t$	0.208	-0.182	-0.308	**0.030**	0.070	0.095	**-0.014**	0.219	**-0.006**	**-0.052**	1		
12	$ISSUANCE_t$	0.113	0.122	0.136	**0.032**	**0.023**	0.066	**-0.040**	**0.042**	0.097	**0.016**	-0.065	1	
13	$XRET_t$	**0.035**	0.120	0.104	0.086	**0.037**	**-0.003**	**0.046**	**-0.033**	**0.018**	0.101	-0.098	0.056	1

This table presents the descriptive statistics for variables used in the logistic regression analyses (Table 3). Panel A provides descriptive statistics for AAER firms and the matched control sample. Each AAER firm is matched with a control firm that is in the same industry, same fiscal year, and has similar book-to-market ratio and log total assets for the year-end prior to the first year of the violation. Panel B provides descriptive statistics for AAER firms and the population control sample. The number of AAER observations is smaller in Panel A due to the matching procedure. Panel C presents Pearson correlations for the AAER and the matched control sample. The insignificant correlation coefficients are bolded. The correlation matrix for the AAER and the population control sample is omitted for brevity, but is very similar to Panel C. See the Appendix for variable definitions.

TABLE 4

Analysis of the Relation between Discretionary Expenditures and Financial Misstatements in 1980-2007

$$AAER_{i,t} = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t} + \alpha_4 CHCSALE_{i,t} + \alpha_5 CHROA_{i,t} + \alpha_6 SOFTAT_{i,t} + \alpha_7 ISSUANCE_{i,t} + \alpha_8 XRET_{i,t} + \varepsilon_i$$

Panel A: A comparison between AAER firms and the matched control sample

	Pred. Sign	(1)	(2)	(3)	(4)	(5)	(6)
RD_t		1.718**				2.360***	
		(3.92)				(7.78)	
$PRED\_RD_t$			1.192				1.932*
			(1.21)				(3.72)
RES_RD_t	+/-		2.904**				3.983***
			(3.88)				(6.35)
SGA_t				-1.643***		-1.716***	
				(31.83)		(33.71)	
$PRED\_SGA_t$					-1.056***		-1.068***
					(8.10)		(8.14)
RES_SGA_t	-				-2.091***		-2.191***
					(36.31)		(37.87)
Control variables							
$WCACC_t$	+	0.511	0.519	1.228**	1.156**	1.335**	1.234**
		(0.56)	(0.57)	(4.93)	(4.25)	(5.62)	(4.66)
$CHCSALE_t$	+	0.438***	0.425***	0.570***	0.463***	0.501***	0.369***
		(9.05)	(8.84)	(18.95)	(11.85)	(14.53)	(7.51)
$CHROA_t$	-	-0.657*	-0.598*	-0.676**	-0.626**	-0.625**	-0.518*
		(3.71)	(2.88)	(-5.29)	(-4.63)	(4.38)	(2.82)
$SOFTAT_t$	+	2.794***	2.727***	2.335***	2.307***	2.519***	2.476***
		(34.92)	(32.6)	(44.45)	(43.19)	(49.38)	(46.85)
$ISSUANCE_t$	+	0.782***	0.791***	0.864***	0.841***	0.819***	0.802***
		(6.79)	(6.91)	(14.18)	(13.41)	(12.65)	(12.05)
$XRET_t$	+	0.116	0.109	0.173**	0.182**	0.141*	0.146*
		(1.50)	(1.29)	(4.57)	(5.08)	(2.98)	(3.17)
Misstating N		352	352	516	516	516	516
Non-misstating N		299	299	477	477	477	477
Pseudo R^2		0.0983	0.0997	0.1181	0.1236	0.1253	0.1327

$$AAER_{i,t} = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t} + \alpha_4 CHCSALE_{i,t} + \alpha_5 CHROA_{i,t} + \alpha_6 SOFTAT_{i,t} + \alpha_7 ISSUANCE_{i,t} + \alpha_8 XRET_{i,t} + \alpha_9 BTM_{i,t} + \alpha_{10} AT_{i,t} + \varepsilon_i$$

Panel B: A comparison between AAER firms and the population control sample

	Pred. Sign	(1)	(2)	(3)	(4)		
Intercept		-11.623***	-11.699***	-10.632***	-10.790***	-10.908***	-11.104***
		(525.68)	(515.82)	(618.23)	(650.70)	(643.74)	(671.28)
RD_t		1.068***				1.734***	
		(14.04)				(38.93)	
$PRED\_RD_t$			0.818*				1.908***
			(3.63)				(20.37)
RES_RD_t	+/-		1.342***				1.433***
			(9.87)				(11.25)
SGA_t				-0.297*		-0.352**	
				(3.35)		(5.04)	
$PRED\_SGA_t$					-0.046		-0.101
					(0.10)		(0.44)
RES_SGA_t	-				-0.711***		-0.736***
					(15.73)		(16.98)
Control variables							
$WCACC_t$	+	0.581**	0.587**	1.266***	1.121***	1.225***	1.118***
		(3.80)	(3.92)	(26.09)	(20.98)	(25.12)	(21.75)
$CHCSALE_t$	+	0.189***	0.188***	0.168***	0.113***	0.131***	0.077*
		(17.81)	(17.98)	(18.63)	(7.03)	(10.24)	(3.05)
$CHROA_t$	-	-0.045	-0.065	-0.003	0.074	0.06	0.108
		(0.16)	(0.30)	(0.01)	(0.90)	(0.51)	(2.41)
$SOFTAT_t$	+	2.199***	2.219***	2.259***	2.215***	2.345***	2.309***
		(64.76)	(65.35)	(124.18)	(120.85)	(131.70)	(127.56)
$ISSUANCE_t$	+	0.831***	0.822***	0.756***	0.751**	0.703***	0.692***
		(16.51)	(16.12)	(28.10)	(27.72)	(24.16)	(23.34)
$XRET_t$	+	0.070**	0.069**	0.067**	0.068**	0.064**	0.065**
		(5.80)	(5.73)	(5.31)	(5.84)	(4.61)	(5.13)
BTM_t	-	-0.075*	-0.071	-0.066**	-0.061**	-0.061**	-0.056*
		(2.75)	(2.36)	(6.08)	(5.20)	(4.53)	(3.66)
AT_t	+	0.232***	0.234***	0.186***	0.192***	0.196***	0.204***
		(111.45)	(112.14)	(90.71)	(98.25)	(101.32)	(109.99)
Misstating N		422	422	648	648	648	648
Non-misstating N		60,739	60,739	106,677	106,677	106,677	106,677
Pseudo R^2		0.0041	0.0041	0.0034	0.0036	0.0037	0.0038

This table presents the analysis of the relation between discretionary R&D and SG&A and the likelihood of financial misstatements. Panel A provides a conditional logistic analysis using AAER sample and the matched control sample. $AAER_t$ is equal to one for misstatement firm-years, and zero for matched firm-years from the matched control sample. The standard error estimates are clustered by industry and year. Columns (1)-(2) show the results using the sample with no missing R&D. Columns (3)-(4) show the results using the sample with no missing SG&A. Columns (5)-(6) show the results for the sample that has no missing SG&A and sets missing R&D to zero. Panel B provides a logistic analysis using AAER sample and the population control sample. $AAER_t$ is equal to one for misstatement firm-years, and zero for non-AAER firms between 1980 and 2007. The standard error estimates are clustered by firm and year. $PRED\_EXP_t$ represents predicted R&D ($PRED\_RD_t$) or predicted SG&A ($PRED\_SGA_t$), following Gunny (2010). RES_EXP_t represents residual R&D (RES_RD_t) or residual SG&A (RES_SGA_t). RD_t represents total R&D scaled by total assets. SGA_t represents total SG&A scaled by total assets. Regression coefficients and Chi-square values (in parentheses) are reported. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively, using two-tailed tests. See the Appendix for variable definitions.

TABLE 5

Analysis of the Relation between Discretionary Expenditures and Stock Returns for AAER and Control Firms

$$RET_i = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t} + \alpha_4 AdjCF_{i.t} + \alpha_5 AT_{i,t} + \alpha_6 BTM_{i,t} + \alpha_7 LEV_{i,t} + \alpha_8 ISSUANCE_{i,t} + \alpha_9 SECANN_i + \varepsilon_i$$

Panel A: AAER firms

		(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
		Contemporaneous returns			*One-year-ahead returns*			*Cumulative returns*		
	Pred. Sign	*t*	*t*	Pred. Sign	*t+1*	*t+1*	*t to t+1*	*t to t+1*	*t to t+2*	*t to t+2*
Intercept		1.333	1.144*		-1.487***	-1.411**	-1.010	-0.932	-1.676**	-1.307
		(2.33)	(1.85)		(-3.74)	(-3.56)	(-1.58)	(-1.40)	(-2.28)	(-1.63)
RD_t		-0.764**			0.465*		0.848***		0.598	
		(-2.25)			(2.06)		(3.29)		(1.50)	
$PRED\_RD_t$			-1.004			0.36		0.712		-0.106
			(-1.02)			(1.00)		(1.38)		(-0.15)
RES_RD_t	-		-0.703***	+		0.467*		0.869***		1.703***
			(-3.29)			(1.79)		(3.40)		(4.07)
SGA_t		0.746**			-0.198		0.074		-0.051	
		(2.81)			(-1.26)		(0.28)		(-0.24)	
$PRED\_SGA_t$			0.657**			-0.138		0.137		0.211
			(2.79)			(-0.93)		(0.50)		(0.74)
RES_SGA_t	+		0.853***	-		-0.370*		-0.109		-0.887**
			(3.53)			(-2.05)		(-0.31)		(-2.57)
$SECANN$	-	-0.494***	-0.465***	-	-0.362*	-0.353	-0.252	-0.239	-0.334**	-0.316**
		(-8.84)	(-7.18)		(-1.85)	(-1.71)	(-0.95)	(-0.85)	(-2.65)	(-2.44)
Controls		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
N		516	516		211	211	211	211	111	111
Adj R^2		0.0865	0.0763		0.0802	0.0790	0.0251	0.0205	0.0397	0.0907

Panel B: Matched control firms					
	Pred. Sign for (1) & (2)	(1)	(2)	(3)	(4)
		Contemporaneous returns		*One-year-ahead returns*	
		t	*t*	*t+1*	*t+1*
Intercept		0.307	0.334	-1.102***	-0.927***
		(0.94)	(0.99)	(-3.45)	(-3.75)
RD_t		-0.094		-0.009	
		(-0.31)		(0.02)	
$PRED\_RD_t$			-0.300		-0.250
			(-0.72)		(-0.62)
RES_RD_t	-		0.187		0.102
			(1.15)		(0.90)
SGA_t		0.288		-0.475	
		(1.22)		(-1.78)	
$PRED\_SGA_t$			0.384		-0.247
			(1.59)		(-0.89)
RES_SGA_t	+		0.191		-0.539*
			(0.87)		(-2.02)
Controls		Yes	Yes	Yes	Yes
N		498	498	196	196
Adj R^2		0.0132	0.0126	0.0135	0.0140

Panel C: Population control firms					
	Pred. Sign for (1) & (2)	(1)	(2)	(3)	(4)
		Contemporaneous returns		*One-year-ahead returns*	
		t	*t*	*t+1*	*t+1*
Intercept		-0.233***	-0.237***	-0.129***	-0.129***
		(-6.40)	(-6.41)	(-4.33)	(-4.30)
RD_t		-0.222***		-0.326***	
		(-4.27)		(-7.59)	
$PRED\_RD_t$			-0.193***		-0.405***
			(-3.14)		(-7.93)
RES_RD_t	-		-0.292		-0.094
			(-1.62)		(-1.21)
SGA_t		0.212***		0.061***	
		(5.22)		(4.63)	
$PRED\_SGA_t$			0.205***		0.067***
			(5.08)		(4.87)
RES_SGA_t	+		0.223***		0.050***
		-0.233***	-0.237***	-0.129***	-0.129***
Controls		Yes	Yes	Yes	Yes
N		106,677	106,677	106,677	106,677
Adj R^2		0.0245	0.0245	0.0101	0.0103

This table presents an analysis of the relation between discretionary R&D and SG&A and contemporaneous stock returns, one-year-ahead stock returns, cumulative two-year stock returns, and cumulative three-year stock returns for AAER firms, the matched control sample, and the population control sample, respectively. R&D and SG&A are included as negative values. Panel A reports the results for the AAER sample. Model (1) shows the relation between the level of R&D and SG&A, and contemporaneous stock returns. Model (2) shows the relation between the decomposed R&D and SG&A (i.e., predicted R&D, residual R&D, predicted SG&A, and residual SG&A) and contemporaneous returns. Models (3) – (4) are similar to Models (1) – (2), but replace the dependent variable with one-year-ahead stock returns. Similarly, Models (5) – (6) and Models (7) – (8) replace the dependent variable with cumulative two-year stock returns and cumulative three-year stock returns, respectively. For AAER firms with multiple years of manipulation, the analyses for Models (3) – (8) are performed using the last year in the manipulation period to ensure that year *t+1* and year *t+2* are the first and second year after the violation period. This analysis uses the AAER sample that has no missing SG&A and sets missing R&D to zero. Panel B and Panel C report the results for the matched control sample and the population control sample, respectively. Models (1) – (2) show the contemporaneous relation between expenditure variables and stock returns. Models (3) – (4) show the relation between expenditure variables and one-year-ahead returns. $PRED\_EXP_t$ represents predicted R&D ($PRED\_RD_t$) or predicted SG&A ($PRED\_SGA_t$), following Gunny (2010). RES_EXP_t represents residual R&D (RES_RD_t) or residual SG&A (RES_SGA_t). RD_t represents total R&D scaled by total assets. SGA_t represents total SG&A scaled by total assets. $SECANN_t$ is a dummy variable with one if a firm's Accounting and Auditing Enforcement Releases is released in fiscal year *t*. The control variables include $WCACC_t$, $AdjCF_t$, AT_t, BTM_t, and LEV_t. Results for control variables are omitted for brevity. Regression coefficients and t-stat (in parentheses) are reported. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively, using two-tailed tests. The standard error estimates are clustered by firm and year. See the Appendix for variable definitions.

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TABLE 6

Descriptive Statistics for SEO Firms and Non-SEO Firms in 1980-2010

	SEO sample				Non-SEO sample				t-test of mean diff.	
	N	Mean	Median	Std. Dev	N	Mean	Median	Std. Dev	Diff.	Sig.
Growth variables										
$WCACC_{t-1}$	2,343	0.048	0.016	0.143	57,020	0.020	0.009	0.130	0.028	0.00
$CHCSALE_{t-1}$	2,343	0.380	0.201	0.831	57,020	0.181	0.082	0.737	0.199	0.00
BTM_{t-1}	2,343	0.426	0.363	0.611	57,020	0.701	0.556	0.806	-0.275	0.00
$XRET_{t-1}$	2,343	0.559	0.236	1.332	57,020	0.037	-0.081	0.867	0.522	0.00
$XRET_{t+1}$	2,343	-0.034	-0.119	0.595	57,020	0.030	-0.084	0.871	-0.064	0.00
Expenditure variables										
RD_{t-1}	1,521	0.158	0.074	0.227	34,117	0.084	0.040	0.145	0.073	0.00
$PRED\_RD_{t-1}$	1,521	0.139	0.087	0.177	34,117	0.087	0.054	0.126	0.052	0.00
RES_RD_{t-1}	1,521	0.018	0.000	0.111	34,117	-0.002	-0.002	0.075	0.021	0.00
SGA_{t-1}	2,343	0.306	0.222	0.303	57,020	0.338	0.267	0.313	-0.033	0.00
$PRED\_SGA_{t-1}$	2,343	0.331	0.291	0.256	57,020	0.326	0.289	0.251	0.005	0.33
RES_SGA_{t-1}	2,343	-0.025	-0.032	0.225	57,020	0.012	-0.007	0.222	-0.037	0.00
RD_t	1,521	0.175	0.077	0.265	34,117	0.083	0.040	0.143	0.092	0.00
$PRED\_RD_t$	1,521	0.151	0.092	0.185	34,117	0.087	0.054	0.126	0.065	0.00
RES_RD_t	1,521	0.023	0.000	0.135	34,117	-0.004	-0.002	0.069	0.027	0.00
SGA_t	2,343	0.305	0.224	0.305	57,020	0.332	0.263	0.291	-0.027	0.00
$PRED\_SGA_t$	2,343	0.333	0.293	0.283	57,020	0.318	0.283	0.232	0.015	0.01
RES_SGA_t	2,343	-0.027	-0.021	0.259	57,020	0.015	-0.005	0.216	-0.052	0.00

This table presents the descriptive statistics for the growth and expenditure variables used in the logistic regression relating discretionary expenditures to the likelihood of SEOs (Table 6). SEO sample represents firm-year observations with equity issues, and non-SEO sample represents all non-SEO firms between 1980 and 2010. See Appendix for variable definitions.

TABLE 7

Analysis of the Relation between Discretionary Expenditures and the Likelihood of SEOs in 1980-2010

$$SEO_{i,t} = \alpha_0 + \alpha_1 PRED\_EXP_{i,t-1} + \alpha_2 RES\_EXP_{i,t-1} + \alpha_3 WCACC_{i,t-1} + \alpha_4 CHCSALE_{i,t-1} + \alpha_5 BTM_{i,t-1} + \alpha_6 MKTCAP_{i,t-1} + \alpha_7 XRET_{i,t-1} + \alpha_8 XRET_{i,t+1} + \alpha_9 CFO_{i,t-1} + \alpha_{10} LEV_{i,t-1} + \alpha_{11} TAX_{i,t-1} + \varepsilon_{i,t}$$

Panel A: The relation between discretionary expenditures in the year prior to the offerings and SEOs

	Pred. Sign	(1)	(2)	(3)	(4)
Intercept		-5.966***	-5.981***	-6.608***	-6.847***
		(611.68)	(610.51)	(1076.55)	(1105.13)
RD_{t-1}		2.227***			
		(167.02)			
$PRED\_RD_{t-1}$			2.301***		
			(131.99)		
RES_RD_{t-1}	+/-		2.051***		
			(72.18)		
SGA_{t-1}				-0.345***	
				(16.30)	
$PRED\_SGA_{t-1}$					0.003
					(0.01)
RES_SGA_{t-1}	-				-0.658***
					(38.04)
Control variables					
$WCACC_{t-1}$	+	1.032***	1.038***	1.680***	1.652***
		(28.53)	(28.89)	(86.87)	(87.10)
$CHCSALE_{t-1}$	+	0.133***	0.133***	0.209***	0.182***
		(36.00)	(35.62)	(98.44)	(68.59)
BTM_{t-1}	-	-0.256***	-0.251***	-0.191***	-0.179***
		(38.74)	(37.05)	(61.66)	(50.89)
$MKTCAP_{t-1}$	+	0.136***	0.137***	0.174***	0.180***
		(122.91)	(123.18)	(306.55)	(324.68)
$XRET_{t-1}$	+	0.269***	0.269***	0.304***	0.304***
		(202.93)	(202.68)	(344.02)	(342.56)
$XRET_{t+1}$	-	-0.128***	-0.128***	-0.091***	-0.090***
		(9.21)	(9.26)	(6.65)	(6.56)
CFO_{t-1}	-	0.679***	0.681***	0.426***	0.547***
		(41.74)	(41.85)	(15.01)	(24.32)
LEV_{t-1}	+	1.250***	1.254***	1.299***	1.329***
		(75.63)	(75.90)	(154.80)	(161.32)
TAX_{t-1}	-	-18.427***	-18.395***	-12.068***	-12.366***
		(68.26)	(68.00)	(48.80)	(51.14)
SEO N		1,521	1,521	2,343	2,343
Non-SEO N		34,117	34,117	57,020	57,020
Pseudo R^2		0.0254	0.0254	0.0220	0.0224

$$SEO_{i,t} = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t-1} + \alpha_4 CHCSALE_{i,t-1} + \alpha_5 BTM_{i,t-1} + \alpha_6 MKTCAP_{i,t-1} + \alpha_7 XRET_{i,t-1} + \alpha_8 XRET_{i,t+1} + \alpha_9 CFO_{i,t-1} + \alpha_{10} LEV_{i,t-1} + \alpha_{11} TAX_{i,t-1} + \varepsilon_{i,t}$$

Panel B: The relation between discretionary expenditures in the year of the offerings and SEOs

	Pred. Sign	(1)	(2)	(3)	(4)
Intercept		-6.282***	-6.298***	-6.829***	-7.042***
		(655.43)	(657.18)	(1110.21)	(1172.34)
RD_t		2.108***			
		(246.37)			
$PRED\_RD_t$			2.325***		
			(157.50)		
RES_RD_t	+/-		1.791***		
			(61.63)		
SGA_t				-0.037	
				(0.20)	
$PRED\_SGA_t$					0.292***
					(10.88)
RES_SGA_t	-				-0.498***
					(22.26)
Control variables					
$WCACC_{t-1}$	+	1.077***	1.141***	1.552***	1.578***
		(30.81)	(33.12)	(79.37)	(82.45)
$CHCSALE_{t-1}$	+	0.153***	0.152***	0.201***	0.193***
		(50.86)	(49.95)	(90.56)	(82.88)
BTM_{t-1}	-	-0.236***	-0.228***	-0.181***	-0.177***
		(33.38)	(30.58)	(55.56)	(52.32)
$MKTCAP_{t-1}$	+	0.152***	0.151***	0.180***	0.185***
		(149.93)	(147.97)	(322.97)	(341.19)
$XRET_{t-1}$	+	0.265***	0.264***	0.299***	0.290***
		(193.03)	(192.71)	(333.47)	(311.04)
$XRET_{t+1}$	-	-0.122***	-0.123***	-0.091***	-0.086**
		(8.49)	(8.60)	(6.74)	(6.08)
CFO_{t-1}	-	0.449***	0.505***	0.472***	0.600***
		(21.72)	(23.96)	(19.84)	(30.87)
LEV_{t-1}	+	1.232***	1.256***	1.363***	1.376***
		(75.45)	(77.70)	(170.50)	(174.35)
TAX_{t-1}	-	-17.593***	-17.629***	-12.715***	-12.642***
		(62.12)	(62.44)	(54.03)	(53.52)
SEO N		1,521	1,521	2,343	2,343
Non-SEO N		34,117	34,117	57,020	57,020
Pseudo R^2		0.0275	0.0276	0.0217	0.0226

This table presents the logistic regression analysis of the relation between discretionary R&D and SG&A and the likelihood of SEOs. Panel A shows the relation between discretionary expenditures in the year prior to the offerings and the likelihood of SEOs. Panel B shows the relation between discretionary expenditures in the year of the offerings and the likelihood of SEOs. SEO_t is equal to one for SEO firm-years, and zero for non-SEO firms from the *Compustat /CSRP* population sample between 1980 and 2010. $PRED\_EXP_t$ represents predicted R&D ($PRED\_RD_t$) or predicted SG&A ($PRED\_SGA_t$), following Gunny (2010). RES_EXP_t represents residual R&D (RES_RD_t) or residual SG&A

(RES_SGA_t). RD_t represents total R&D scaled by total assets. SGA_t represents total SG&A scaled by total assets. Regression coefficients and Chi-square values (in parentheses) are reported. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively, using two-tailed tests. The standard error estimates are clustered by firm and year. See the Appendix for variable definitions.

TABLE 8

Analysis of the Relation between Discretionary Expenditures and Stock Returns for SEO firms

$$RET_i = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t} + \alpha_4 AdjCF_{i,t} + \alpha_5 AT_{i,t} + \alpha_6 BTM_{i,t} + \alpha_7 LEV_{i,t} + \varepsilon_i$$

Panel A: The relation between discretionary expenditures in the year prior to the offerings and stock returns

		(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
		Contemporaneous returns			*One-year-ahead returns*			*Cumulative returns*		
	Pred. Sign	*t-1*	*t-1*	Pred. Sign	*t*	*t*	*t-1 to t*	*t-1 to t*	*t-1 to t+1*	*t-1 to t+1*
Intercept		3.086***	3.185***		1.398***	1.480***	4.889***	5.339***	4.117***	4.404***
		(6.47)	(6.25)		(3.47)	(3.95)	(6.96)	(6.66)	(8.08)	(5.89)
RD_{t-1}		-1.199**			0.083		-0.556		-0.348	
		(-2.25)			(0.22)		(-0.69)		(-0.79)	
$PRED\_RD_{t-1}$			-1.305**			0.075		-0.743		-0.342
			(-2.53)			(0.15)		(-1.16)		(-1.17)
RES_RD_{t-1}	-		-0.935*	+		0.082		-0.305		-0.4288
			(-2.11)			(0.48)		(-0.29)		(-0.42)
SGA_{t-1}		0.472**			0.168		0.827**		0.992***	
		(2.81)			(0.78)		(3.03)		(4.17)	
$PRED\_SGA_{t-1}$			0.765***			0.234		1.227***		1.206***
			(3.33)			(0.84)		(4.08)		(3.30)
RES_SGA_{t-1}	+		0.231*	-		0.062		0.219		0.645*
			(2.02)			(0.45)		(0.32)		(1.96)
Controls		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
N		1,343	1,343		1,339	1,339	1,339	1,339	1,331	1,331
Adj R^2		0.0573	0.0673		0.0091	0.0079	0.0277	0.0298	0.0174	0.0134

Panel B: The relation between discretionary expenditures in the year of the offerings and stock returns										
		(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)
		Contemporaneous returns			*One-year-ahead returns*		*Cumulative returns*			
	Pred. Sign	*t*	*t*	Pred. Sign	*t+1*	*t+1*	*t to t+1*	*t to t+1*	*t to t+2*	*t to t+2*
Intercept		-1.124	-0.66		-0.879***	-0.950***	-3.036***	-2.512***	-3.079***	-2.679***
		(-1.79)	(-1.17)		(-6.18)	(-7.06)	(-5.83)	(-6.85)	(-15.92)	(-11.74)
RD_t		0.074			0.028		0.017		0.182	
		(0.39)			(0.83)		(0.07)		(1.31)	
$PRED\_RD_t$			0.304			-0.213		0.117		0.293
			(1.65)			(-1.72)		(0.21)		(0.80)
RES_RD_t	-		-0.665***	+		0.230***		-0.207		-0.014
			(-4.61)			(3.51)		(-0.78)		(-0.04)
SGA_t		0.390***			0.124*		0.497***		0.621***	
		(3.53)			(1.97)		(4.40)		(5.69)	
$PRED\_SGA_t$			0.461***			0.133		0.789***		0.837***
			(4.76)			(1.50)		(4.84)		(6.70)
RES_SGA_t	+		0.158*	-		0.116		-0.139		0.153
			(2.24)			(1.39)		(-0.43)		(0.99)
Controls		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
N		1,478	1,478		1,372	1,372	1,372	1,372	1,353	1,353
Adj R^2		0.0518	0.0571		0.0318	0.0326	0.0315	0.0361	0.0429	0.0458

This table presents an analysis of the relation between discretionary R&D and SG&A and contemporaneous stock returns, one-year-ahead stock returns, cumulative two-year stock returns, and cumulative three-year stock returns for SEO firms. Panel A focuses on discretionary expenditures in the year prior to the offerings. Panel B focuses on discretionary expenditures in the year of the offerings. For SEO firms with consecutive offerings years, the analyses for Models (3) – (8) are performed using the last year of the offering period to ensure that year *t+1* and year *t+2* are the first and second year after the offerings period. Year *t* refers to the year of the offerings. Model (1) shows the relation between the level of R&D and SG&A and contemporaneous stock returns. Model (2) shows the relation between the decomposed R&D and SG&A (i.e., predicted R&D, residual R&D, predicted SG&A, and residual SG&A) and contemporaneous returns. Models (3) – (4) are similar to Models (1) – (2), but replace the dependent variable with one-year-ahead stock returns. Similarly, Models (5) – (6) and Models (7) – (8) replace the dependent variable with cumulative two-year and cumulative three-year stock returns, respectively. $PRED\_EXP_t$ represents predicted R&D ($PRED\_RD_t$) or predicted SG&A ($PRED\_SGA_t$), following Gunny (2010). RES_EXP_t represents residual R&D (RES_RD_t) or residual SG&A (RES_SGA_t). RD_t represents total R&D scaled by total assets. SGA_t represents total SG&A scaled by total assets. The control variables include $WCACC_t$, $AdjCF_t$,

AT_t, BTM_t, and LEV_t. Results for control variables are omitted for brevity *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively, using two-tailed tests. The standard error estimates are clustered by firm and year. See the Appendix for variable definitions.

TABLE 9

Analysis of Revenue and Earnings Manipulation for AAER Firms

Panel A: Percentage of revenue misstatements identified by the SEC in the AAERs

	Total AAER sample		Usable Sample	
Revenue misstatement	285	62.5%	131	59.8%
Non-revenue misstatement	171	37.5%	88	40.2%
	456	firms	219	firms

Panel B: Regression results: Market-adjusted annual return for revenue and earnings surprises

	(1)	(2)	(3)	(4)
	Surprise is scaled by std.dev		Surprise is scaled by price	
Intercept	0.102	2.099***	0.174***	2.893***
	(1.65)	(2.84)	(2.98)	(3.77)
RS_t	0.001	0.001	0.001	0.001
	(0.53)	(0.47)	(1.54)	(0.39)
ES_t	0.016***	0.015***	1.948***	1.490**
	(3.06)	(2.98)	(5.15)	(2.46)
Controls	No	Yes	No	Yes
N	267	267	368	368
Adj R^2	0.0182	0.0860	0.0100	0.0763
F-test for the significant difference between RS_t and ES_t				
Z-val	5.23	4.89	3.19	2.92
P-val	0.023	0.028	0.075	0.088

Panel C: Regression results: CAR for revenue and earnings surprises				
	(1)	(2)	(3)	(4)
	Surprise is scaled by std.dev		Surprise is scaled by price	
Intercept	-0.008	0.07	-0.005	0.058
	(-1.15)	(0.78)	(-0.80)	(0.89)
RS_t	0.002***	0.002***	-0.001	-0.001
	(3.19)	(2.84)	(-0.44)	(-0.69)
ES_t	0.002**	0.002**	0.275***	0.217**
	(2.43)	(2.37)	(4.02)	(2.44)
Controls	No	Yes	No	Yes
N	264	264	364	364
Adj R^2	0.0481	0.0932	0.0107	0.0514
F-test for the significant difference between RS_t and ES_t				
Z-val	0.01	0.03	5.8	3.52
P-val	0.938	0.858	0.016	0.061

Panel D: The percent of meeting or beating analysts revenue and earnings forecasts for AAER firms between 1999 and 2007				
Group	Revenue	Earnings		
1	Meet	Meet	164	43%
2	Meet	Not Meet	61	**16%**
3	Not Meet	Meet	84	**22%**
4	Not Meet	Not Meet	74	19%
		Total	383	100%
Goodness of fit test between Group 2 and Group 3				
Chi-Square	3.6483			
P-val	0.056			

This table presents an analysis of revenue manipulation in the AAER setting. Panel A shows the extent of revenue misstatements among all types of misstatements. Total AAER sample refers to AAERs with at least one misstated annual financial misstatement. Usable sample refers to the sample for main analyses. Panel B presents an analysis of the relation between revenue surprises (RS_t) and earnings surprise (ES_t) and contemporaneous market-adjusted annual returns. RS_t is defined as actual revenue minus the most recent mean analysts' revenue consensus forecast before the earnings announcement for the fiscal year end t, deflated by the standard deviation of analysts' revenue forecast or the stock price 3 days prior to the announcement date. ES_t is defined as actual EPS minus the most recent mean analysts' EPS consensus forecast before the earnings announcement for the fiscal year end t, deflated by the standard deviation of analysts' EPS forecast or the stock price 3 days prior to the announcement date. The control variables include AT_t, BTM_t, and ROA_t. Results for control variables are omitted for brevity. Panel B presents an analysis of the relation between revenue surprises (RS_t) and earnings surprise (ES_t) and three-day cumulative abnormal returns (CAR). Panel D shows the percent of meeting or beating analysts' revenue and earnings forecast. Meeting/beating is defined as actual revenue/EPS equal to or greater than the mean analysts forecast consensus.

TABLE 10

Analysis of the Relation between Discretionary Expenditures and Financial Misstatements in Subsamples of AAERs that Meet Earnings Benchmarks

$$AAER_{i,t} = \alpha_0 + \alpha_1 PRED\_EXP_{i,t} + \alpha_2 RES\_EXP_{i,t} + \alpha_3 WCACC_{i,t} + \alpha_4 CHCSALE_{i,t} + \alpha_5 CHROA_{i,t} + \alpha_6 SOFTAT_{i,t} + \alpha_7 ISSUANCE_{i,t} + \alpha_8 XRET_{i,t} + \varepsilon_i$$

A comparison between AAER firms and the matched control sample

Benchmarks	Pred. Sign	Analyst forecast (1)	Analyst forecast (2)	Zero profit (3)	Zero profit (4)	Last year (5)	Last year (6)
RD_t		2.737**		2.302*		1.636	
		(4.17)		(3.35)		(1.83)	
$PRED\_RD_t$			2.622*		-0.485		1.573
			(2.83)		(0.05)		(1.23)
RES_RD_t	+/-		4.184*		3.904***		2.389
			(2.73)		(6.17)		(1.09)
SGA_t		-3.266***		-2.039***		-1.578***	
		(35.64)		(16.53)		(14.31)	
$PRED\_SGA_t$			-2.541***		-1.649***		-1.282***
			(13.41)		(7.88)		(6.21)
RES_SGA_t	-		-3.625***		-2.523***		-1.839***
			(35.14)		(17.68)		(12.85)
Control variables							
$WCACC_t$	+	1.394	1.256	1.570*	1.441*	1.216	1.168
		(1.85)	(1.48)	(3.67)	(2.90)	(2.19)	(2.01)
$CHCSALE_t$	+	1.417***	1.188***	0.471***	0.425**	0.324*	0.263
		(18.56)	(11.56)	(7.55)	(5.28)	(3.09)	(1.84)
$CHROA_t$	-	-0.940**	-0.719	-1.009**	-1.224**	-0.752*	-0.704
		(4.55)	(2.18)	(4.23)	(5.83)	(2.71)	(2.30)
$SOFTAT_t$	+	2.481***	2.461***	1.685***	1.788***	1.305***	1.298***
		(20.57)	(19.94)	(10.53)	(11.56)	(6.55)	(6.17)
$ISSUANCE_t$	+	1.209***	1.164***	0.619**	0.533*	0.812***	0.772***
		(8.25)	(7.69)	(4.00)	(2.90)	(6.53)	(5.83)
$XRET_t$	+	0.240*	0.250*	0.13	0.137	0.181	0.185
		(2.76)	(2.92)	(1.20)	(1.33)	(2.48)	(2.58)
Misstating N		251	251	263	263	229	229
Non-misstating N		238	238	238	238	224	224
Pseudo R^2		01934	0.1980	0.0993	0.1066	0.0809	0.0828

This table presents the analysis of the relation between discretionary R&D and SG&A and the likelihood of financial misstatements in subsamples of AAERs that meet earnings benchmarks. Three earnings benchmarks are examined: (1) AAER firm-years with earnings just meeting or beating analyst consensus forecast, (2) AAER firm-years with earnings just meeting or beating zero benchmark, and (3) AAER firm-years with earnings just meeting or beating the prior year's earnings. A conditional logistic analysis is performed using AAER sample that has no missing SG&A and sets missing R&D to zero and the matched control sample. $AAER_t$ is equal to one for misstatement firm-years, and zero for matched firm-years from the matched control sample. The standard error estimates are clustered by industry and year. $PRED\_EXP_t$ represents predicted R&D ($PRED\_RD_t$) or predicted SG&A ($PRED\_SGA_t$), following Gunny (2010). RES_EXP_t represents residual R&D (RES_RD_t) or residual SG&A (RES_SGA_t). RD_t represents total R&D scaled by total assets. SGA_t represents total SG&A scaled by total assets. Regression coefficients and Chi-square values (in parentheses) are reported. *, **, *** indicate significance at the 0.10, 0.05, and 0.01 levels, respectively, using two-tailed tests. See the Appendix for variable definitions.

APPENDIX A

Variables Definitions

$AAER_t$	=	"1" if firm *i* is accused of accounting manipulation by the SEC for fiscal year *t*, "0" for matched firm-years from a matched control sample, or non-AAER firms from the *Compustat* population;
$ADJCF_t$	=	Firm *i*'s income before extraordinary items plus R&D and SG&A and minus working capital accruals for fiscal year *t* scaled by its total assets as of fiscal *t-1*'s year-end. SG&A expenditure equals to SG&A in *Compustat* minus R&D when R&D is not missing;
AT_{t-1}	=	Firm *i*'s natural log of total assets as of fiscal *t-1*'s year-end;
BTM_t	=	Firm *i*'s book value of equity scaled by its market capitalization as of fiscal year *t*'s year-end;
$BTMA_{t-1}$	=	Firm *i*'s total assets as of fiscal *t-1*'s year-end scaled by the sum of market capitalization plus total assets minus the book value of common equity as of fiscal *t-1*'s year-end;
$CHCSALE_t$	=	Firm *i*'s cash sale for fiscal year *t* minus its cash sale for fiscal year *t-1* scaled by its cash sale for fiscal year *t-1*. Cash sale equals to sales minus changes in receivables;
$CHROA_t$	=	Firm *i*'s ROA for fiscal year *t* minus ROA for fiscal year *t-1*. ROA equals to firm *i*'s income before extraordinary items for fiscal year *t* scaled by total assets as of fiscal *t-1*'s year-end;
$CHSALE_t$	=	Firm *i*'s sales for fiscal year *t* minus sales for fiscal year *t-1* scaled by its total assets as of fiscal *t-1*'s year-end;
DD_t	=	"1" if firm *i*'s sales decrease between fiscal year *t-1* and year *t*, "0" otherwise;
ES_t	=	Firm i's actual EPS minus the most recent mean analysts' EPS consensus forecast before the earnings announcement for the fiscal year end t, deflated by the standard deviation of analysts' EPS forecast or the stock price 3 days prior to the announcement date;
$INTFUND_t$	=	Firm *i*'s income before extraordinary items plus the sum of R&D and depreciation for fiscal year *t* scaled by its total assets as of fiscal *t-1*'s year-end;
$ISSUANCE_t$	=	"1" if firm *i*'s debt issuance or equity issuance is greater than zero, "0" otherwise;
LEV_t	=	Firm *i*'s long-term debt scaled by its total assets as of fiscal year *t*'s year-end;
$MKTCAP_t$	=	Firm *i*'s natural log of market capitalization as of fiscal *t*'s year-end. Market capitalization equals to shares outstanding multiply by the price as of fiscal *t*'s year-end;
$PRED\_RD_t$	=	Firm *i*'s predicted R&D expenditure for fiscal year *t*, calculated as the fitted value obtained from industry-year regressions of RD_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, and RD_{t-1}, following Gunny (2010);
$PRED\_SGA_t$	=	Firm *i*'s predicted SG&A expenditure for fiscal year *t*, calculated as the fitted value obtained from industry-year regressions of SGA_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, $CHSALE_t$, and $CHSALE_t * DD_t$, following Gunny (2010);
RD_t	=	Firm *i*'s R&D expenditure for fiscal year *t* scaled by its total assets as of fiscal *t-1*'s year-end;
RES_RD_t	=	Firm *i*'s residual R&D expenditure for fiscal year *t*, calculated as the residuals obtained from industry-year regressions of RD_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, and RD_{t-1}, following Gunny (2010);
RES_SGA_t	=	Firm *i*'s residual SG&A expenditure for fiscal year *t*, calculated as the residuals obtained from industry-year regressions of SGA_t on $MKTCAP_t$, $BTMA_{t-1}$, $INTFUND_t$, $CHSALE_t$, and $CHSALE_t * DD_t$, following Gunny (2010);

RS_t	=	Firm i's actual revenue minus the most recent mean analysts' revenue consensus forecast before the earnings announcement for the fiscal year end t, deflated by the standard deviation of analysts' revenue forecast or the stock price 3 days prior to the announcement date;
$SECANN_t$	=	"1" if firm *i*'s Accounting and Auditing Enforcement Releases is released in fiscal year *t*, "0" otherwise;
SEO_t	=	"1" if firm *i* issues equity for fiscal year *t*, "0" for non-SEO firms;
SGA_t	=	Firm *i*'s SG&A expenditure for fiscal year *t* scaled by its total assets as of fiscal *t-1*'s year-end. SG&A expenditure equals to SG&A in *Compustat* minus R&D when R&D is not missing;
$SOFTAT_t$	=	Firm *i*'s total assets minus the sum of PP&E and cash as of fiscal *t'*s year-end scaled by its total assets as of fiscal *t-1*'s year-end;
TAX_t	=	Firm *i*'s tax payable scaled by its total assets as of fiscal year *t*'s year-end; and,
$WCACC_t$	=	Firm *i*'s change in current assets minus changes in cash minus change in current liabilities and plus change in short-term debt as of fiscal *t'*s year-end scaled by its total assets as of fiscal *t-1*'s year-end;
$XRET_t$	=	Firm *i*'s cumulative market-adjusted returns beginning nine months before fiscal year-end *t* to three months after fiscal year-end *t*.