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Do Non-GAAP Earnings Influence Real Activities and Accounting Choices?

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Do Non-GAAP Earnings Influence Real Activities and Accounting Choices?

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Abstract

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Professor Richard G. Sloan, Chair

It is now common for firms to emphasize non-GAAP earnings metrics that exclude certain GAAP-based expenses, such as acquisition and restructuring expenses, intangible asset amortization, asset write-downs, and stock compensation expense. This study hypothesizes that managers become focused on non-GAAP earnings, causing them to underweight excluded expenses when making investment and accounting decisions. Consistent with the underweighting of acquisition-related expenses, firms with a history of reporting non-GAAP earnings over-invest relative to their peers, and engage in more acquisitions. With respect to accounting choices, excluded expenses such as write-downs and stock option expense are recorded and measured more conservatively when excluded from non-GAAP earnings. Using SFAS 141(R) and SFAS 123(R) as difference-in-differences settings, firms' choices are found to be less sensitive to accounting standard changes when the affected expense is excluded from non-GAAP earnings. The evidence suggests that the use of non-GAAP earnings can influence real activities and accounting choices.

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1 Introduction

U.S. generally accepted accounting principles (GAAP) are rules that govern the accounting and reporting of economic performance by U.S. publically-traded companies. The primary objective of U.S. GAAP is to provide useful information for investors and creditors to make reasoned financial decisions. The most generally-useful of all quantitative disclosures required under U.S. GAAP is net income. GAAP-based net income is useful because it is a valid measure of economic performance, can be calculated and audited reliably based on GAAP rules, and it is comparable across firms. Despite the usefulness of net income, it is now common for firms to report supplementary metrics that are grounded in GAAP-based net income, but that exclude certain GAAP-based expenses. These metrics are referred-to as non-GAAP earnings. Non-GAAP earnings are voluntarily-reported and are custom-made by each firm, but frequently exclude GAAP-based expenses such as acquisition and restructuring charges, intangible asset amortization, asset write-downs, and stock compensation expenses.[1] In 2014, non-GAAP earnings were reported in 74 percent of earnings announcements, up from 41 percent in 2004. This study hypothesizes that managers who report non-GAAP earnings, become focused on non-GAAP earnings as the primary performance goal, and effectively underweight the GAAP-based expenses that are excluded when making investment and accounting decisions.

Accounting research frequently advances the notion that managers alter their real activities and accounting choices to manage reported earnings. For example, many studies hypothesize that the presence of earnings benchmarks (e.g., positive earnings growth, earnings guidance, and analyst estimates of earnings) influences managers' behaviors (Dechow, Ge, and Schrand 2010). This dissertation builds on

[1] When recorded by a firm that reports non-GAAP earnings, acquisition expenses are excluded from non-GAAP earnings 86 percent of the time, restructuring expenses 87 percent, intangible asset amortization 80 percent, write-downs 93 percent, and stock compensation expenses 41 percent, based on hand-collected samples.

these past findings by incorporating the fact that different definitions of earnings exist for different firms. Some firms report only GAAP-based net income while others report and display prominently their own customized non-GAAP performance measures. The hypothesis of this dissertation is that managers who report non-GAAP earnings, become focused on non-GAAP earnings, reducing their motivation to minimize the excluded expenses. There are at least three non-mutually exclusive channels that could cause managers to focus on non-GAAP earnings and deprioritize GAAP-based net income. (1) Managers may desire a high stock price and believe that investors place more weight on non-GAAP earnings (e.g., Bradshaw and Sloan 2002; Hirshleifer and Teoh 2003; Brown and Sivakumar 2003; and Bradshaw, Christensen, Gee, and Whipple 2018), (2) managers may be compensated directly on the basis of non-GAAP earnings (e.g., Curtis, Li, and Patrick 2018), and/or (3) managers may honestly believe that the excluded expenses are unimportant.[2] This dissertation does not judge the appropriateness of managers' beliefs or test these mechanisms directly, but simply hypothesizes that managers focus on non-GAAP earnings, and tests predictions stemming from that hypothesis. Consistent with this hypothesis, the results suggest that managers are willing to incur and record larger expenses when those expenses are excluded from non-GAAP earnings.[3] Specifically, firms with a history of reporting non-GAAP earnings tend to over-invest and engage in more acquisitions. Additionally, firms with a history of reporting non-GAAP earnings record more asset write-downs, and firms that exclude stock option expense from their non-GAAP earnings metrics use more conservative expected volatility inputs to the Black Scholes option pricing model.

The hypothesized causal mechanism is that managers underweight excluded expenses and consequently alter their real activities and accounting choices. This motivation and causal inference may be useful to capital market regulators and boards of directors. For example, the U.S. Securities and Exchange Commission (SEC) has expressed concern that investors are misled by non-GAAP earnings. The SEC frequently discusses the possibility of increasing regulation on non-GAAP

[2] For example, with respect to acquisition and restructuring costs, in its June 7, 2016 press release, Valeant Pharmaceutical's management states that "Such costs are … not factored into management's evaluation of potential acquisitions or its performance after completion of acquisitions."

[3] In this paper, the term "excluded" means that the expense reduces GAAP-based net income, but is added back to arrive at non-GAAP earnings. For example, the popular non-GAAP earnings measure earnings before interest, taxes, depreciation, and amortization (EBITDA) excludes interest expense, tax expense, depreciation expense, and amortization expense.

reporting.[4] Additionally, the International Accounting Standards Board (IASB), which is the organization that sets International Financial Reporting Standards (IFRS) embarked on a project to consider whether alternative performance measures should be disclosed on the face of the income statement, increasing their prominence to investors. The findings in this paper suggest that regulation of non-GAAP reporting may also influence real activities and accounting choices.

Firms' boards of directors seek to resolve agency conflicts between managers and investors, in part, by aligning the two parties' incentives. Recent evidence from Armstrong, Chau, Ittner, and Xiao (2017) suggests that managers have stronger incentives to achieve externally-reported earnings goals than their internal incentive plan earnings goals. This evidence suggests that boards need to consider the externally-reported measure of earnings as a strong driver of managers' decisions.

In non-causal terms, this paper demonstrates the ability of non-GAAP earnings to predict real activities and accounting choices, which helps investors evaluate firms for investment. Investors should hesitate to invest in firms that report non-GAAP earnings metrics which exclude economically important expenses. This is because those managers' can be predicted to act as if they underweight the excluded expenses. Likewise, investors should hesitate to invest in firms that only report GAAP-based net income when some other non-GAAP performance measure ought to be maximized. In addition to predicting real activities, non-GAAP reporting choices are a cross-sectional predictor of earnings management, which helps investors evaluate financial statements for faithful representation. Because of these practical predictions, the tests in this paper may still be useful to the reader if they are interpreted without a causal inference. That is, it is useful to know that managers will seek to maximize non-GAAP earnings, potentially at the expense of GAAP-based net income, even if the act of reporting non-GAAP earnings is not the underlying cause. Therefore, non-GAAP earnings choices reveal new information about the firm that other commonly used observable characteristics do not.

To support a causal inference, it is crucial to properly condition on the factors that both cause firms to report non-GAAP earnings and also cause firms to invest, acquire, record asset write-downs and measure stock option expense conservatively.

[4] On March 16, 2016, when Mary Jo White was the SEC Chair, she noted, "[Non-GAAP earnings] is something that we are really looking at, as to whether we need to rein that in a bit even by regulation." This point was also captured in an article published in the Economist (2016). It states, "If regulators forced firms to focus on one 'correct' number, you can be sure that managers would find ways to massage it."

This study employs three design choices to build the case for a causal inference: the use of historical non-GAAP reporting practices to limit the possibility of reverse causality, selection-on-observables methodology, and difference-in-differences settings. First, certain outcome variables, such as acquisitions and asset write-downs, may cause firms to report non-GAAP earnings. To limit bias from reverse causality, the tests involving these outcome variables use only past non-GAAP reporting choices to predict future real activities and accounting choices. This design choice will be unsuccessful to the extent that the plan to engage in certain real activities or accounting choices three years in the future causes firms to adopt non-GAAP earnings measures in the current year.

The regressions in this study are entropy weighted (Hainmueller 2012) on all observable covariates, including the industry and year factors that determine selection. The effect of entropy weighting is to increase regression weights on control observations that are similar to treatment firms so that the treatment and control firms appear indistinguishable, on average, across all relevant and observable covariates. This design choice is important to this study because the firms that do not report non-GAAP earnings are being used to proxy for the choices that the non-GAAP-reporting firms would make if they did not report non-GAAP earnings.

Two accounting standard changes are used for difference-in-differences settings: SFAS 141(R) for acquisition restructuring activities and SFAS 123(R) for stock option expense measurement. SFAS 141(R) became effective in 2009 and required expensing of acquisition-related restructuring costs, which were previously capitalized in the acquisition purchase price. Restructuring costs are primarily incurred in mass layoffs of employees. For managers who have incentives to report high GAAP-based net income, SFAS 141(R) should reduce the propensity to engage in acquisitions that involve employee layoffs. Using a proprietary dataset of employee layoffs obtained from Challenger, Gray, and Christmas, Inc., results show that SFAS 141(R) is associated with fewer acquisitions that involve layoffs. However, firms with a history of reporting non-GAAP earnings (which commonly exclude restructuring costs) did not reduce their acquisition-layoff activity as much. This difference-in-differences result suggests that firms that report non-GAAP earnings are relatively less concerned about the effect of restructuring expenses on GAAP-based net income.

SFAS 123(R) became effective in 2005 and required expensing of stock option fair values, which were previously only required to be disclosed in the financial statement footnotes. Results show that the mandated expensing of stock option fair values is associated with less conservative volatility inputs to the Black Scholes option pricing model inputs (less conservative volatility inputs lead to greater stock option expense). This is consistent with managers responding SFAS 123(R) by attempting to reduce the magnitude of stock option expense (e.g., Choudhary 2011). However, firms that exclude stock option expense from non-GAAP earnings continued to use more conservative Black Scholes model inputs after SFAS 123(R) became effective. This result suggests that firms that exclude stock option expense from non-GAAP earnings are relatively less concerned about the impact of stock option expense on GAAP-based net income. Importantly, these difference-in-differences settings are useful in controlling for unobservable differences between treatment and control firms, but are not effective in controlling for reverse causality.

Overall, this study presents evidence that the choice to report non-GAAP earnings may have consequences to the firm through its influence on real activities and accounting choices. The results suggest that managers are willing to incur and record larger expenses when those expenses are excluded from non-GAAP earnings.

2 Research on Non-GAAP Earnings

Prior academic research on non-GAAP earnings generally fits into two research questions: how do managers define non-GAAP earnings? and how do investors use non-GAAP earnings? Particular attention has been paid to the manager-opportunism angle: do managers define non-GAAP earnings in an attempt to mislead investors? and are investors misled by non-GAAP earnings?

Hishleifer and Teoh (2003) provide an economic model of how limited attention may cause investors to become mislead by non-GAAP earnings. Several subsequent empirical studies show that adjustments made to arrive at non-GAAP earnings appear opportunistic. Doyle, Jennings, and Soliman (2013) document a positive association between excluding expenses from Street earnings and the propensity to beat analysts' Street earnings forecasts.[5] They conclude that managers opportunistically define non-GAAP earnings for the purpose of beating analyst expectations. Doyle, Lundholm, and Soliman (2003) show that expenses excluded from non-GAAP earnings predict future financial performance, suggesting that non-GAAP earnings exclude relevant data for investors. Kolev, Marquardt, and McVay (2008) show that the ability of non-GAAP exclusions to predict future financial performance increased after the SEC implemented Regulation G, which increased scrutiny and reporting requirements of non-GAAP earnings. They conclude that managers act as if they have incentives to produce misleading definitions of non-GAAP earnings.

On the other hand, non-GAAP earnings is credited with being more relevant than GAAP-based earnings. Bradshaw and Sloan (2002) show that the association between Street earnings surprises and quarterly stock returns increased during the

[5] Street earnings is similar to non-GAAP earnings in that it is an adjusted version of GAAP net income. However, Street earnings is defined by analysts and may in some cases differ from non-GAAP net income (e.g., Bentley, Christensen, Gee, and Whipple 2018). Academic studies commonly use Street earnings as a proxy for non-GAAP earnings.

1990s, and by the end of the 1990s that association was greater than that between GAAP-based earnings surprises and quarterly stock returns. Bradshaw, Christensen, Gee, and Whipple (2018) show that, on average, the short-window earnings announcement return is more highly associated with Street earnings surprise than GAAP-based earnings surprise. Brown and Sivakumar (2003) show that Street earnings are superior to GAAP earnings in predicting future operating performance. Finally, Zhang and Zheng (2011) fail to find any significant evidence, on average, that equity mispricing is associated with the difference between GAAP and non-GAAP earnings in the post-Regulation G time period. Overall, these studies make it reasonable to conclude that managers have incentives to opportunistically define non-GAAP earnings, but that non-GAAP earnings are relevant and useful to investors.

There are also a number of studies closely related to this paper. In a concurrent working paper, Kyung, Ng, and Lee (2016) examine the recognition of goodwill write-downs for non-GAAP firms and argue that non-GAAP improves the quality of GAAP net income by increasing the likelihood, information content, and size of write-downs. The results of Kyung et al. (2016) are consistent with the accounting choice predictions of this paper; However, asset write-downs may also be the result of over-investment which would be consistent with the real activities prediction in this paper. Therefore, asset write-downs are not the ideal setting for separating real activities from accounting choices.

Kolev, Marquardt, and McVay (2008) find that firms reporting non-GAAP earnings appear to classification-shift recurring expenses from operating expense captions into special item captions. Classification shifting is an accounting choice that increases non-GAAP earnings but has no effect on the bottom-line GAAP-based net income. In contrast, both accounting choices examined in this dissertation, asset write-downs and stock option expense measurement, do affect GAAP-based net income. Doyle, Jennings, and Soliman (2013) find that low discretionary accruals and low discretionary cash flows are associated with larger exclusions from non-GAAP earnings and that the magnitude of exclusions increases with the costs of engaging in accruals earnings management. Their findings suggest that constraints on accruals-based earnings management cause firms to make opportunistic choices in defining non-GAAP earnings. By contrast, this paper holds constant the definition of non-GAAP earnings with respect to certain expenses, and the real-activity and accounting-choice implications are examined.

3 Hypothesis Development

3.1 Overview of Hypothesis Motivation

The predictions tested in this study are generated from the hypothesis that managers focus on non-GAAP earnings. Practically speaking, the term "focus" implies that managers pay lower attention to those expenses excluded from non-GAAP earnings. This paper proposes (but does not test) three non-mutually exclusive channels that may bring about this non-GAAP earnings focus.

One channel is that managers may believe that investors are focused on non-GAAP earnings. This mechanism may operate in at least two different ways. Managers may believe that investors have limited attention and only process the most salient information, which is likely to be the non-GAAP earnings measure and not GAAP-based net income (e.g., Hirshliefer and Teoh 2003 and Bradshaw and Sloan 2002). Alternatively, managers may believe that non-GAAP earnings influences investors to effectively assign higher multiples to non-GAAP earnings and lower multiples to excluded items. This would be an important motivation for managers whose compensation or reputation is tied to stock price. Bradshaw and Sloan (2002) conclude that non-GAAP earnings, "has displaced GAAP earnings as a primary determinant of stock prices." There is also empirical support for managers to hold this belief in Brown and Sivakumar (2003, Table 2), which presents evidence that street earnings (defined as EPS reported by I/B/E/S) has a higher valuation multiple than GAAP items excluded from street earnings. Further, Bradshaw, Christensen, Gee, and Whipple (2018) show that the average short-window earnings announcement return is more highly associated with Street earnings surprise than GAAP earnings surprise. Finally, according the I/B/E/S data, analysts are twice as likely to forecast non-GAAP earnings compared to GAAP-based net income.[6]

[6] According to I/B/E/S data, when GAAP-based earnings and a different non-GAAP earnings metric are both forecasted, the mean (median) ratio of non-GAAP-based forecasts to GAAP-based forecasts is 2.0 (1.7).

Taken together, these conditions may cause managers to believe that investors place higher weight on non-GAAP earnings.

Another possible channel is the use of non-GAAP earnings for managers' incentive compensation. When this is the case, managers are predicted to underweight excluded expenses because their compensation structure does not incentivize them to avoid or minimize those expenses. For example, Dechow, Huson, and Sloan (1994) argue that shielding managers' compensation from restructuring charges encourages them to engage in restructuring activities. In support of this channel's existence, Curtis, Li, and Patrick (2018) find that the majority of firms in the S&P 500 use some earnings measure other than GAAP-based net income for performance compensation. Black, Black, Christensen, and Gee (2017) find that the use of non-GAAP earnings for financial reporting is positively associated with the use of non-GAAP earnings for executive compensation. Anecdotally, during Valeant Pharmaceuticals, Inc.'s acquisition spree ending in 2015, its executives' cash bonuses were based on the company's non-GAAP earnings measure called "Cash EPS", a measure which excluded acquisition costs, restructuring costs, intangible asset amortization, asset write-downs, and other acquisition-related expenses.

Finally, managers may honestly believe that the excluded expenses are unimportant. Anecdotally, the argument for this belief differs depending on the type of excluded expense. Some expenses such as acquisition costs, restructuring costs and asset write-downs are commonly labeled as non-recurring expenses and are said to be poor predictors of future performance. Recurring excluded expenses such as stock compensation expenses and intangible asset amortization are commonly said to be non-cash and therefore not reflective of true operating performance. For example, GoPro, Inc. presented a non-GAAP earnings metric in its May 3, 2018 earnings announcement press release called "adjusted EBITDA", which excluded amortization as well as stock compensation expenses, among many other expenses. GoPro stated that this metric helps management, "understand and evaluate our core operating performance and trends, to prepare and approve our annual budget, and to develop short-term and long-term operational plans." With respect to stock compensation expense, GoPro stated, "We exclude stock-based compensation expense because we believe that the non-GAAP financial measures excluding this item provide meaningful supplemental information regarding operational performance. In particular, we note that companies calculate stock-based

compensation expense for the variety of award types that they employ using different valuation methodologies and subjective assumptions. These non-cash charges are not factored into our internal evaluation of net income (loss) as we believe their inclusion would hinder our ability to assess core operational performance…".

The hypothesis that managers focus on non-GAAP earnings is also consistent with existing academic evidence that managers display non-GAAP earnings prominently in the earnings press release (e.g., Bradshaw and Sloan 2002; and Bowen, Davis, and Matsumoto 2005) and use non-GAAP earnings guidance to focus analysts' attention away from GAAP-based net income and onto non-GAAP earnings (Christensen, Merkley, Tucker, and Venkataraman 2011).

4 Identification of Non-GAAP Reporting Choices

This study makes cross sectional predictions about real activities and accounting choices based on firms' choices to report non-GAAP earnings. Therefore, it is necessary to know firms' non-GAAP reporting choices. These are collected using text searches of earnings announcement press releases in the SEC's EDGAR system. Form 8-K earnings press releases are matched to the fourth quarter earnings announcement date from Compustat. Therefore, firms that do not file Form 8-K (Item 2.02) when earnings are announced are excluded from the samples. For example, small firms may announce earnings in the 10-K rather than in a separate 8-K. Importantly, formatting and content requirements make it more difficult for managers to emphasize non-GAAP earnings in a 10-K, so the effect hypothesized in this study is expected to be weaker if there is no earnings announcement separate from the 10-K. The text strings used to indicate non-GAAP earnings are variations of, "non-gaap", "adjusted earnings", "ebitda", "core earnings", "pro-forma", and "earnings excluding". Figure 1 plots the percent of earnings announcements containing non-GAAP earnings over time, which was 41 percent in 2004 and increased to 74 percent in 2014.

In this paper, there is a simplifying assumption behind the corporate investment and asset write-down predictions that most non-GAAP earnings exclude acquisition and restructuring costs, intangible asset amortization and asset write-downs. To the extent that firms do not exclude these expenses from non-GAAP earnings, the results for these tests will become weaker. To provide support for this simplifying assumption, random 100-firm samples are examined of firms that report non-GAAP earnings and also record material levels (i.e., greater than 0.5 percent of lagged total assets) of each particular expense. Table 1 reports that 86 percent of firms reporting non-GAAP earnings and recording material acquisition expenses

exclude those acquisition expenses from their non-GAAP earnings. Using the same methodology, 87 percent exclude restructuring expenses, 80 percent exclude intangible asset amortization, and 93 percent exclude asset write-downs. The high percentages lend credibility to the assumption that the majority of firms reporting non-GAAP earnings exclude these expenses.

For stock option expense tests, earnings announcements of firms that record stock option expense are searched manually to determine whether the expense is excluded from non-GAAP earnings. To establish a sample that is feasible to collect by hand, firms are selected that record stock option expense and report non-GAAP earnings for the entire post-123(R) sample period (nine years). To further simplify hand collection, it is assumed that firms that exclude stock option expense in the first and last years of the sample period exclude for all nine years.

5 Corporate Investment

5.1 Research on Corporate Investment

The factors that affect corporate investment decisions are studied extensively in academic research. Properly conditioning on these previously-identified factors is essential for this study to the extent that they also cause firms to report non-GAAP earnings. The basic factor used to predict investment is Tobin's Q (Kaldor 1966 and Brainard and Tobin 1977), which is theoretically equal to the fair value of a firm divided by the replacement cost of the firm's assets in place. Most studies, including this dissertation, use the ratio of a firm's market value (market value of equity minus total liabilities) to its book value of assets to proxy for Tobin's Q. Subsequent corporate investment studies identified additional determining factors such as financing constraints (Fazzari, Hubbard, and Petersen 1988) and other agency frictions such as accounting quality (e.g., Cheng, Dhaliwal, and Zhang 2013 and Biddle, Hilary, and Verdi 2009) and executive compensation (e.g., Bizjak, Brickley, and Coles 1992), that predict investment.

5.2 Corporate Investment Prediction

If GAAP-based net income was the only performance measure for all firms, then the incentive to create growth in earnings through increased investment and acquisitions would be moderated by the earnings-decreasing recognition of acquisition costs, restructuring costs, intangible asset amortization, and potential future asset write-downs. Since acquisition costs, restructuring costs, intangible asset amortization, and asset write-downs are routinely excluded from non-GAAP earnings, the hypothesis of this paper predicts that managers who report non-GAAP earnings should be willing to over-invest relative to their peers, and engage in more acquisitions.

P1A: Firms that report non-GAAP earnings will invest more than their peers, and engage in more acquisitions.

Prior to SFAS 141(R) (effective for fiscal years beginning after December 15, 2008), expected restructuring costs, which are primarily costs associated with mass layoffs, were capitalized as part of the purchase price of the acquisition. Therefore, these costs would never be expensed, except through future goodwill write-downs. SFAS 141(R) disallows the capitalization of expected restructuring costs and requires firms to expense them as they become incurred. These expenses are usually material, with a mean (median) magnitude of 12.3 percent (5.9 percent) of pretax income. If GAAP-based net income were the only performance measure, then the incentive to create growth in net income through acquisitions involving mass layoffs would be moderated by the SFAS 141(R) requirement to recognize restructuring expense; however, firms that report non-GAAP earnings which routinely exclude such expenses should be less affected by the rule change.

P1B: For firms that report non-GAAP earnings, SFAS 141(R) will have a less negative effect on acquisitions that involve restructuring activities.

5.3 Corporate Investment Empirical Design

P1A predicts that firms that report non-GAAP earnings will invest more than their peers, and engage in more acquisitions. The following model is estimated by weighted least squares (WLS):

$$\begin{aligned} \textit{Investment}_t = \alpha &+ \beta_1 \textit{Nongaap}_{t\text{-}1 \text{ and } t\text{-}2} \\ &+ \beta_2 \textit{Tobins Q}_{t\text{-}1} \\ &+ \beta_3 \textit{Operating cash flow}_t \\ &+ \beta_4 \textit{Asset growth}_{t\text{-}1} \\ &+ \beta_5 \text{Log}(\textit{Market value}_{t\text{-}1}) \\ &+ \beta_6 \textit{Intangibles}_{t\text{-}1} \\ &+ \beta_7 \text{I}(\textit{Material weakness}_{t\text{-}1}) \end{aligned} \quad (1)$$

$$
\begin{aligned}
&+ \beta_8 \text{ Sd}(\textit{Abnormal accruals}_{t\text{-5 thru } t\text{-1}}) \\
&+ \beta_9 \textit{ Fitted probability of Nongaap}_{t\text{-1 and } t\text{-2}} \\
&+ \beta_{10} \text{ Industry fixed effects} \\
&+ \beta_{11} \text{ Year fixed effects} \\
&+ \varepsilon_t.
\end{aligned}
$$

P1A predicts that $\beta_1 > 0$. $\textit{Investment}_t$ is equal to the sum of capital expenditures and acquisition expenditures from the cash flow statement scaled by beginning-of-year total assets. Prior literature generally uses a more comprehensive measure of investment, which adds in research and development expenditures as well as net sales of property, plant, and equipment (e.g., Richardson 2006; Biddle, Hillary, and Verdi 2009; and Cheng, Dhaliwal, and Zhang 2013). However, *P1A* is motivated by those investments that give rise to expenses that are commonly excluded from non-GAAP earnings. Capital expenditures are relevant to firms that report non-GAAP earnings because depreciation expense is excluded from EBITDA, a very common non-GAAP earnings metric reported by 42 percent of non-GAAP firms in the corporate investment sample. Acquisition expenditures are relevant primarily because acquisition and restructuring charges are excluded from non-GAAP earnings 86 percent and 87 percent of the time, respectively. Further, acquisitions frequently give rise to intangible asset amortization and asset write-downs, which are excluded from non-GAAP earnings 80 percent and 93 percent of the time. Research and development expenditures are not commonly excluded from non-GAAP earnings (Black, Christensen, Ciesielski, and Whipple 2018). PP&E sales may be commonly excluded from non-GAAP earnings because they bring about non-operating gains and losses; however, there is no one-way prediction since these sales may relate to gains or losses.

Typical corporate investment studies run a first-stage model of investment separately within each industry-year. Then use the residual from that first-stage model as the dependent variable in the main test. The benefit of this methodology is that it allows the linear relationships between the prediction variables and investment to vary by industry-year. The downside is that this design may lead to incorrect coefficients and test statistics (Chen, Hribar, and Melessa 2018). To avoid this issue, this dissertation transforms the commonly-used residual into an indicator variable. I($\textit{Abnormal investment}_t > 0$) is an indicator variable equal to one when the residual from an investment prediction model is positive, and zero otherwise. Following McNichols and Stubben (2008), $\textit{Abnormal investment}_t$ is the residual from an ordinary least squares regression of $\textit{Investment}_t$ on $\textit{Tobins } Q_{t\text{-}1}$, $Q2_{t\text{-}1}$, $Q3_{t\text{-}1}$,

Q4$_t$, *Operating cash flow*$_t$, *Asset growth*$_t$, and *Investment*$_{t\text{-}1}$. The model is run separately within each industry-year.

P1A also predicts that that firms that report non-GAAP earnings will engage in more acquisitions than their peers. The acquisition-related outcome variables examined are *Value acquired*$_t$, which is equal to the sum of acquisition purchase prices for all acquisitions made during year *t*, scaled by beginning-of-period total assets, I(*Acquisition*$_t$), which is an indicator variable equal to one when the firm makes an acquisition during year *t*, and I(*Large acquisition*$_t$), which is an indicator variable equal to one when the aggregated acquisition purchase prices during year *t* exceed 10 percent of beginning-of-period total assets. Models are estimated using WLS for continuous variables and weighted logistic regression for indicator variables

Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$ is equal to one if the firm reported non-GAAP earnings in year *t*-1 and *t*-2 and zero if the firm only reported GAAP net income in years *t*-1 and *t*-2. It is important not to condition on whether firms report non-GAAP earnings in year *t* because it is possible that over-investment may simultaneously cause a firm to adopt a non-GAAP metric (i.e., reverse causality). The design choice to only condition on past non-GAAP reporting choices is necessary to avoid positively biased coefficient, but also biases against finding the predicted positive coefficient on β_1. That is, consistent with *P1A*, the ability to adopt a non-GAAP earnings measure in year *t*, may give managers additional motivation to engage in an acquisition or other significant investment; however, if non-GAAP earnings was not reported in years *t*-1 and *t*-2, this observation will be included in the control group (i.e., *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ = 0).[7] *Tobins Q*$_{t\text{-}1}$ is proxied by Market value of equity minus book value of debt divided by total assets, all in year *t*-1. *Operating cash flow*$_t$ is taken from the cash flow statement and is scaled by beginning-of-year total assets.[8] *Asset growth*$_{t\text{-}1}$ is equal to Total assets at the end of year *t*-1 divided by total assets at the end of year *t*-2. Log(*Market value*$_{t\text{-}1}$) is the natural logarithm of market value of equity at the end of year *t*-1. *Intangibles*$_{t\text{-}1}$ is equal to total intangible assets scaled by total assets all at the end of year *t*-1. I(*Material weakness*$_{t\text{-}1}$) is based on Cheng,

[7] Specifically, 17 percent of the control group (i.e., *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ = 0) begin reporting non-GAAP earnings in year *t*. These switching firms tend to have high levels of investment and acquisition activities in year *t*, but are included in the control group.

[8] *Operating cash flow*$_t$ is potentially a collider variable in this investment model. The consolidation of an acquired company or current-period capital expenditure that give rise to operating cash inflows may cause higher operating cash flow. This collider bias will operate against finding the result predicted in this paper. Inferences are unchanged when the beginning-of-period cash balance is used instead.

Dhaliwal, and Zhang's (2013) finding that over-investment is reduced after reporting a material weakness in internal controls. Sd(*Abnormal accruals*$_{t\text{-5 thru }t\text{-1}}$) is based on Biddle, Hilary, and Verdi's (2009) finding that over-investment is reduced when earnings quality is high. *Fitted probability of Nongaap*$_{t\text{-1 and }t\text{-2}}$ is equal to the fitted probability from a first-stage logistic regression of *Nongaap*$_{t\text{-1 and }t\text{-2}}$ on industry and year fixed effects. Industry and year fixed effects are also included in the main model. Entropy weights based on all covariates, including *Fitted probability of Nongaap*$_{t\text{-1 and }t\text{-2}}$ are applied and standard errors are clustered by industry and year.

5.3.1 SFAS 141(R) Setting

P1B predicts that SFAS 141(R) will affect the relationship between non-GAAP reporting and acquisitions that involve layoffs. SFAS 141(R) required expensing of acquisition-related restructuring costs, which prior to the rule change, were generally capitalized with the acquisition purchase price. Specifically, *P1B* predicts that SFAS 141(R) will have a less significant effect on firms that report non-GAAP earnings because they are hypothesized to care less about the effect of restructuring expenses on GAAP-based net income. To test this prediction, the following model is estimated by logistic regression within the sub-sample of firm-years in which an acquisition occurs:

$$\begin{aligned} \text{I}(\textit{Layoffs}_t) = \alpha &+ \beta_1 \textit{Nongaap}_{t\text{-1 and }t\text{-2}} \\ &+ \beta_2 \textit{ Post SFAS 141R}_t \\ &+ \beta_3 \textit{Nongaap}_{t\text{-1 and }t\text{-2}} * \textit{ Post SFAS 141R}_t \\ &+ \beta_4 \textit{ Tobins Q}_{t\text{-1}} \\ &+ \beta_5 \textit{ Operating cash flow}_t \\ &+ \beta_6 \textit{ Asset growth}_{t\text{-1}} \\ &+ \beta_7 \text{ Log}(\textit{Market value}_{t\text{-1}}) \\ &+ \beta_8 \textit{ Intangibles}_{t\text{-1}} \\ &+ \beta_9 \text{ I}(\textit{Material weakness}_{t\text{-1}}) \\ &+ \beta_{10} \text{ Sd}(\textit{Abnormal accruals}_{t\text{-5 thru }t\text{-1}}) \\ &+ \beta_{11} \textit{ Fitted probability of Nongaap}_{t\text{-1 and }t\text{-2}} \\ &+ \beta_{12} \text{ Industry fixed effects} \\ &+ \varepsilon_t. \end{aligned} \tag{2}$$

P1B predicts that $\beta_3 > 0$. I(*Layoffs*$_t$) is an indicator variable equal to one when a layoff is announced by the acquirer or target firm either in year *t* or in year *t*+1.

This two-year time frame is chosen because in order for restructuring costs to qualify for capitalization prior to SFAS 141(R), the layoffs must be expected by the acquiring firm at the time of the acquisition. The inferences are unchanged when layoffs in year *t* only are considered. *Post SFAS 141R*$_t$ is a dummy variable equal to one after the effective date of SFAS 141(R) and is predicted to be fitted with a negative coefficient. Industry fixed effects are included and entropy weights are applied.

5.2 Corporate Investment Results

5.2.1 Sample Construction

The relationship between non-GAAP reporting and corporate investment activities are examined for fiscal years from 2006 through 2015. Table 2 presents sample attrition based on the different sources of data. Compustat data are available for 50,061 firm-years. Further requiring SDC data on acquisition activity reduces the sample size to 36,528. Audit Analytics data on material weakness reporting further reduces the sample to 33,112. Historical non-GAAP reporting choices are determined based on text searches of firms' earnings press releases and are available for 24,507 firm-years. Based on the chosen empirical design, firms are excluded from the sample if either of the previous two years are missing data or if the non-GAAP reporting practices have not been consistent (e.g., if the firm reports non-GAAP earnings in *t*-2, but not in *t*-1). Therefore, the final sample to be used in examining corporate investment activities is 21,660 (7,643 with a consistent history of not reporting non-GAAP earnings and 14,017 with a consistent history of reporting non-GAAP earnings). Table 2, Panel B also documents that firms are approximately twice as likely (1,877/970 = 1.93) to adopt a non-GAAP earnings metric than to cease reporting one.

5.2.2 Descriptive Statistics

Table 3, Panel A presents means and medians for all corporate investment activities variables, partitioned on whether the firms report non-GAAP earnings measures in both of the previous two years (i.e. *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ = 1, or "non-GAAP firms") or neither of the previous two years (i.e. *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ = 0, or "GAAP-only firms"). The "Weighted Mean" column presents the weighted mean of each

variable for GAAP-only firms using entropy weights. Entropy weights are based on all variables below the dotted line of Panel A. Non-GAAP firms engage in higher levels of *Investment*$_t$ than GAAP-only firms, and are more likely to engage in positive *Abnormal investment*$_t$. Non-GAAP firms also engage in larger and more acquisitions, on average; however, these differences are less pronounced after entropy weights are applied. Non-GAAP firms have lower *Tobins Q*$_{t-1}$, higher *Operating cash flow*$_t$, and larger Log(*Market value*$_t$) than GAAP-only firms. Non-GAAP firms also have high *Asset growth*$_{t-1}$ and *Intangibles*$_{t-1}$, indicating that they have engaged in significant investment and acquisition activity in the past.

Table 3, Panel B presents pairwise correlations for all corporate investment activities variables. *Nongaap*$_{t-1 \text{ and } t-2}$ is positively and significantly correlated with all outcome variables. Pairwise correlations among corporate investment variables are generally high, which is evidence that these variables have been extensively developed through past academic research.

Table 3; panel C presents the percent of non-GAAP firms by fiscal year. Similar to Figure 1, an increasing trend is observed. Table 3; panel D presents the percent of non-GAAP firms by industry. Telecommunication Services, Media, and Software & Services are the industries with the largest fraction of firms reporting non-GAAP earnings.

5.2.3 Main Results

Table 4 presents evidence on the relationship between historical non-GAAP earnings reporting choices and corporate investment. Column (1) presents this relationship for the *Investment*$_t$ outcome variable. The positive and significant coefficient on *Nongaap*$_{t-1 \text{ and } t-2}$ indicates that firms with a history of reporting non-GAAP earnings engage in high levels of investment relative to their peers. This result is consistent with *P1A*, which predicts that reporting non-GAAP earnings will incentivize managers to grow earnings through investment, especially capital expenditures and acquisitions, by reducing the concern about recognition of non-recurring investment costs, potential future asset write-downs, intangible asset amortization, and, in some cases, depreciation expense (e.g., for firms that report EBITDA). The magnitude of the coefficient suggests that *Investment*$_t$ is higher by 1.5 percent of beginning-of-year assets. Column (2) documents that firms with a history of reporting non-GAAP earnings are 4 percent more likely to have higher-

than-expected investment.[9] Column (3) presents the relationship between past non-GAAP reporting choices and the aggregated purchase prices of all acquisitions during year *t*. The coefficient on $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ suggests that non-GAAP firms acquire more than GAAP-only firms by 1.2 percent of beginning-of-year assets. Columns (4) and (5) indicate that non-GAAP firms are 3.2 percent more likely to engage in an acquisition and 1.6 percent more likely to engage in a large acquisition.

5.2.4 SFAS 141(R) Setting Results

SFAS 141(R) became effective during 2009 and affected the accounting treatment for costs incurred engaging in restructuring activities at an acquired company. Previously, these expected costs were allowed to be capitalized in the acquisition purchase price. SFAS 141(R) required these costs to be expensed as incurred by the acquirer.

To test for the effect of SFAS 141(R) on restructuring, it is necessary to have data on when firms engage in restructuring activities. Compustat provides data on restructuring expense reported in the income statement; however, this variable is not useful in the SFAS 141(R) setting. Prior to SFAS 141(R) a firm may engage in restructuring activities at an acquired firm but not record any expense on the income statement. Therefore, some other data must be used to identify firms that engage in restructuring activities regardless of what is expensed on the income statement.

The most substantial restructuring activity is employee layoffs. Challenger, Gray and Christmas, Inc., a large outplacement and career transitioning firm, collects data on mass layoff announcements and provided their data for this study. The dataset contains the name of the company, the date of the layoff announcement, and the number of employees laid-off. In all, there are 29,447 layoff announcements between 2006 and 2016 contained in the dataset, and the median number of employees laid off is 80. To identify acquisitions that involve restructuring activities, company names from the Challenger, Gray, and Christmas, Inc. dataset are matched with acquirer and target firm names from the SDC database of acquisitions. If the acquirer or target announces layoffs in year *t* or *t*+1 for an

[9] Throughout this section these effects for indicator dependent variables, are computed as the effect of the treatment on the treated. That is, within the subsample of non-GAAP firms, the effect of the $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ coefficient on probability that the dependent variable is equal to one. For example, Table 3 reports that 36 percent of non-GAAP firms engage in positive $Abnormal\ investment_t$, which would be reduced to 32 percent (36 – 4) after subtracting the effect of treatment on the treated.

acquisition in year *t*, then that acquisition is coded as involving restructuring activities. The inferences are unchanged when layoffs in year *t* only are considered.

The tests of *P1A* established that non-GAAP firms are more likely to engage in acquisitions. Therefore, tests of *P1B* examine the choice to engage in restructuring activities only for firms that have already decided to engage in an acquisition. Table 5 presents descriptive statistics on the 39 percent of non-GAAP firm-years that contain an acquisition and the 22 percent of GAAP-only firm-years that contain an acquisition. Table 3, Panel A presents means and medians for all SFAS 141(R) variables, partitioned on whether the firms report non-GAAP earnings measures in both of the previous two years (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$, or "non-GAAP firms") or neither of the previous two years (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$, or "GAAP-only firms"). The "Weighted Mean" column presents the weighted mean of each variable for GAAP-only firms using entropy weights. Entropy weights are based on all variables below the dotted line of Panel A. Overall, 50 percent non-GAAP firms' acquisitions involve layoffs, compared to only 42 percent for GAAP-only firms. However, after entropy weighting, this unconditional difference is reduced to near zero. Non-GAAP firms that engage in acquisitions have lower $Tobins\ Q_{t\text{-}1}$, higher $Operating\ cash\ flow_t$, similar $Asset\ growth_{t\text{-}1}$ larger Log($Market\ value_{t\text{-}1}$), higher $Intangibles_{t\text{-}1}$, similar rates of I($Material\ weakness_{t\text{-}1}$), and higher Sd($Abnormal\ accruals_{t\text{-}5 \text{ thru } t\text{-}1}$).

Table 5, Panel B presents pairwise correlations of SFAS 141(R) variables. Importantly, I($Layoffs_t$) is negatively associated with $POST\ 141R_t$, indicating that firms, on average, became less likely to engage in layoffs when expensing the related costs became required. Table 5, Panel C shows the percent of acquisition firms that have a history of reporting non-GAAP earnings. Finally, Table 5, Panel D shows the concentration of non-GAAP firms by industry.

Table 6 tests *P1B* using logistic regressions with the odds of engaging in layoffs as the dependent variable. Column (1) documents that acquisition-related layoffs became less common after SFAS 141(R). This is consistent with firms' reacting to avoid the increased effect of restructuring activities on GAAP-based net income. Column (2) allows this effect to differ between GAAP-only firms and non-GAAP firms. The negative coefficient on $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ indicates that non-GAAP firms were surprisingly less likely to engage in acquisition-related layoffs prior to SFAS 141(R). The negative coefficient on $Post\ SFAS\ 141R_t$ along with the positive

coefficient on *Post SFAS 141R*$_t$***Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ indicates that non-GAAP firms changed their behavior less than GAAP-only firms in response to SFAS 141(R). This is consistent with non-GAAP firms being willing to incur more restructuring costs because those expenses are typically excluded from non-GAAP earnings. Column (3) documents that this effect is robust to the inclusion of additional controls as well as industry fixed effects.

Figure 2 presents a visualization of how SFAS 141(R) changed the relationship between non-GAAP reporting and acquisition-related layoffs. Panel A displays the annual average percent of acquisitions that involve a layoff, conditioning on whether the firm has a history of reporting non-GAAP earnings. The pre-SFAS 141(R) time period is relatively short, making a parallel trends assessment difficult to perform. Since SFAS 141(R) became effective during 2009, there are fiscal year 2009 observations both before and after the effective date. Specifically, 17 percent of non-GAAP firms and 20 percent of GAAP-only firms have their fiscal years during 2009, but before SFAS 141(R) became effective. Therefore, 2006 through 2008 are most useful for examining pre-SFAS 141(R) trends. To that end, it appears that acquisition-related layoffs jumped up slightly during 2007 for GAAP-only firms relative to non-GAAP firms, then returned to a lower level in 2008. Other than this 2007 jump, a generally increasing trend is observed for both groups in the pre-SFAS 141(R) time-period. The effect of SFAS 141(R) is fairly clear in the figure, reducing acquisition-related layoff activity more substantially for GAAP-only firms than for non-GAAP firms. Panel B reports the percent of acquisitions involving a layoff for the two groups for the entire pre- and post-SFAS 141(R) periods. Prior to SFAS 141(R), 58 percent of acquisitions by a non-GAAP firm involved a layoff, compared to 55 percent for GAAP-only firms. After SFAS 141(R) the probability of a layoff decreased by 9.8 percent for non-GAAP firms and 21.7 percent for GAAP-only firms.

6 Asset Write-Downs

6.1 Research on Asset Write-Downs

Asset write-downs are studied extensively in academic research. In practice, write-downs can be recorded against any non-cash asset, but accounting research is typically directed towards examining write-downs of goodwill and other long-lived intangible assets. One reason for significant academic interest in write-downs is that they have a significant effect on the both net income and book value, which are important summary measures of operating performance and financial position. Another reason that write-downs are frequently studied is that U.S. GAAP gives managers significant discretion over their timing and magnitude. As such, examining managers' decisions to record write-downs can potentially reveal information about factors that influence that decision-making process. The primary factors used to predict write-downs are economic indicators that suggest a firm ought to record a write-down. These are factors such as the book-to-market ratio, return on assets, and market returns. Prior research has found that managers use flexibility within impairment accounting standards to delay or avoid recording asset write-downs. Riedl (2004) finds that more subjective write-down standards led to write-downs that were less-closely associated with economic determinants and apparent "big bath" behavior, in which firms recorded larger write-downs than were necessary. Ramanna and Watts (2012) find evidence suggesting that asset write-downs are more likely to be avoided when CEOs' compensation, reputation, or the firms' debt contracts may be affected. Li and Sloan (2017) find that SFAS 142, which eliminated periodic amortization of goodwill resulted in inflated goodwill balances and write-downs that were not timely.

Asset write-downs have also been studied as the outcome of poor investment. Gu and Lev (2011) argue that firms seek to take advantage of their own overvaluation by using their stock to pay for an acquisition. They observe that

subsequent goodwill write-downs can be attributed to that overvaluation as well as the acquisitions being ill-advised. Similarly, Li, Shroff, Venkataraman, and Zhang (2011) find that goodwill impairments predict lower future profitability and are associated with overpayment in an acquisition. Overall, the choice to record an asset write-down is subject to significant discretion, but can also represent the quality of past investment choices.

6.2 Asset Write-Down Prediction

When they occur, asset write-downs are excluded from non-GAAP earnings 93 percent of the time. Managers generally have the incentive to delay or avoid recording asset write-downs because they have a large negative impact on GAAP-based net income (e.g., Ramanna and Watts 2012 and Lawrence, Sloan, and Sun 2013). On the other hand, firms also face the incentive to engage in "big bath" accounting, in which large write-downs are recorded in current periods in order to create the appearance of strong operating performance in the future. Since non-GAAP earnings usually exclude asset write-downs, managers who report non-GAAP earnings should be more willing to record asset write-downs on a timely basis. Therefore, firms reporting non-GAAP earnings should have greater incentives to record appropriate asset write-downs, but also to engage in big bath accounting behaviors. However, this prediction is potentially confounded with the related prediction that firms that over-invest (i.e., *P1A*) should be more likely to have assets that have book values which exceed their fair values, also leading them to record more asset write-downs.

> *P2: Firms that report non-GAAP earnings will be more inclined to record asset write-downs than firms that do not report non-GAAP earnings.*

6.3 Asset Write-Downs Empirical Design

P2 predicts that managers who report non-GAAP earnings will be more inclined to record asset write-downs. To test this prediction, the following model is estimated using a logistic regression:

$$
\begin{aligned}
\text{I}(\textit{Write-down}_t) = \alpha &+ \beta_1 \textit{Nongaap}_{t\text{-}1 \text{ and } t\text{-}2} \\
&+ \beta_2\ \textit{Abnormal investment}_{t\text{-}1} \\
&+ \beta_3\ \text{A}\textit{djusted BTM}_t \\
&+ \beta_4\ \text{I}(\text{A}\textit{djusted BTM}_t > 1) \\
&+ \beta_5\ \textit{Goodwill}_t \\
&+ \beta_6\ \textit{Other intangibles}_t \\
&+ \beta_7\ \textit{Weak}_t \\
&+ \beta_8\ \text{I}(\text{A}\textit{djusted BTM}_t > 1) * \textit{Adjusted BTM}_t \\
&+ \beta_9\ \text{I}(\textit{Adjusted BTM}_t > 1) * \textit{Goodwill}_{t\text{-}1} \\
&+ \beta_{10}\ \text{I}(\textit{Adjusted BTM}_t > 1) * \textit{Other intangibles}_{t\text{-}1} \\
&+ \beta_{11}\ \text{I}(\textit{Return}_t < 0) \\
&+ \beta_{12}\ \textit{Return}_t \\
&+ \beta_{13}\ \text{I}(\textit{Return}_t < 0) * \textit{Return}_t \\
&+ \beta_{14}\ \textit{New CEO}_t \\
&+ \beta_{15}\ \textit{Count of segments}_t \\
&+ \beta_{16}\ \text{Log}(\textit{Market value}_{t\text{-}1}) \\
&+ \beta_{17}\ \textit{New CEO}_t \\
&+ \beta_{18}\ \textit{Fitted probability of Nongaap}_{t\text{-}1 \text{ and } t\text{-}2} \\
&+ \beta_{19}\ \text{Industry fixed effects} \\
&+ \beta_{20}\ \text{Year fixed effects} \\
&+ \varepsilon_t.
\end{aligned}
\tag{3}
$$

P2 predicts that $\beta_1 > 0$. I(*Write-down*$_t$), is an indicator variable equal to one if an asset write-down (goodwill or other asset write-down) is recorded in year *t*, and zero otherwise. *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ is equal to one if the firm reported non-GAAP earnings in year *t*-1 and *t*-2 and zero if the firm only reported GAAP net income in years *t*-1 and *t*-2. Again, it is important not to condition on whether the firm reports non-GAAP earnings in year *t* because it is possible that recording a write-down may simultaneously cause a firm to adopt a non-GAAP measure (i.e., reverse causality). This design choice is necessary to avoid positively biased coefficient, but also biases against finding the predicted positive coefficient on β_1. That is, the ability to adopt a non-GAAP earnings measure in year *t*, may give managers additional motivation to record an asset write-down; however, if no non-GAAP measure was reported in years *t*-1 and *t*-2, this observation will be included in the control group (i.e., *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2} = 0$).[10] *Fitted probability of Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ is equal to the fitted

[10] Specifically, 16 percent of the control group (i.e., *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2} = 0$) begin reporting non-GAAP earnings in year *t*. These switching firms have a high incidence of asset write-down recognition in year *t*, but are included in the control group.

probability from a first-stage logistic regression of $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ on industry and year fixed effects. This variable represents the industry and year characteristics that influence selection. $Abnormal\ investment_{t\text{-}1}$ is an important control variable since non-GAAP firms are predicted to invest more, which may give rise to the increase probability of an asset write-down. Without properly conditioning on the effect of non-GAAP reporting on abnormal investment, a positive coefficient on $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ may be evidence that firms reporting non-GAAP earnings over-invest (i.e., *P1A*). $Adjusted\ BTM_t$ is equal to the year-end book-to-market ratio, where the book value is adjusted to reverse the effect of any current period asset write-down. This adjusted ratio is most likely observed by managers after year-end and during the preparation of the financial statements, when most asset write-down decisions are made. I($Adjusted\ BTM_t > 1$) is an indicator variable that is equal to one when $Adjusted\ BTM_t$ is greater than one, and is a strong indication that the market believes the firm's assets are impaired. $Goodwill_{t\text{-}1}$ and $Other\ intangibles_{t\text{-}1}$ are important control variables because non-GAAP firms may engage in more acquisitions, which give rise to goodwill and intangible assets. These assets are the most likely to require impairment through a special item. $Weak_t$ is equal to one if the average of the past two years (years t and t-1) of value-weighted market-adjusted return is less than 5 percent, or if the average of the past two years of return on assets is less than 5 percent, and zero otherwise. I($Return_t < 0$) and $Return_t$ are included separately and in an interaction term consistent with the conditional conservatism finding of Basu (1997). $New\ CEO_t$ is an indicator variable equal to one if the firm has a new person in the CEO role in year t, and zero otherwise. Past research (e.g., Costigan, Lovata, and Masters-Stout 2008 and Ramanna and Watts 2012) has found that CEOs act as if they are more willing to record asset write-downs early in their CEO tenure because it does not reflect poorly on their managerial ability and is has the effect of increasing return-on-assets in future years of their tenure. $Count\ of\ segments_t$ is a common control variable in asset write-down determinant studies; however, the relationship between number of segments and write-downs is not clear *ex ante*. Asset write-downs, particularly goodwill impairments, are tested at the reporting unit level, which is linked to firms' definitions of reporting segments. A large number of segments allows management to allocate goodwill to profitable segments to avoid write-downs. A small number of segment allows more profitable business operations to offset those that are less profitable when performing an impairment test. Log($Market\ value_{t\text{-}1}$) is included as a control variable since firms reporting non-GAAP earnings tend to be large. Industry and year fixed effects are included since these attributes tend to be associated with non-GAAP reporting as well as asset

write-downs. Entropy weights based on all covariates, including *Fitted probability of Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ are applied.

6.4 Asset Write-Down Results

6.4.1 Sample Construction

The relationship between non-GAAP reporting and asset write-down recognition is examined for fiscal years from 2006 through 2015. Table 7 presents sample attrition based on the different sources of data. Compustat data are available for 64,636 firm-years. Further requiring CRSP data to compute long-window returns reduces the sample size to 44,375. Audit Analytics data on CEO changes further reduces the sample to 43,880. Historical non-GAAP reporting choices are determined based on text searches of firms' earnings press releases and are available for 30,551 firm-years. Based on the chosen empirical design, firms are excluded from the sample if either of the previous two years are missing data or if the non-GAAP reporting practices have not been consistent (e.g., if the firm reports non-GAAP earnings in *t*-2, but not in *t*-1). Therefore, the final sample to be used in examining corporate investment activities is 27,078 (10,089 with a consistent history of not reporting non-GAAP earnings and 16,989 with a consistent history of reporting non-GAAP earnings).

6.4.2 Descriptive Statistics

Table 8, Panel A presents means and medians for the asset write-down variables, partitioned on whether the firms report non-GAAP earnings measures in both of the previous two years (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$, or "non-GAAP firms") or neither of the previous two years (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$, or "GAAP-only firms"). The "Weighted Mean" column presents the weighted mean of each variable for GAAP-only firms using entropy weights. Entropy weights are based on all variables below the dotted line of Panel A. Non-GAAP firms are much more likely to record asset write-downs; however, this difference is less pronounced after entropy weighting. The higher mean of I($Write\text{-}down_t$) is unusual in light of the fact that non-GAAP firms are significantly less likely to have their $Adjusted\ BTM_t$ greater than one. Non-GAAP firms have significantly more $Goodwill_{t\text{-}1}$ and $Other\ intangibles_{t\text{-}1}$, although these differences are reduced to zero when entropy weights

are applied. Non-GAAP firms are less $Weak_t$, have higher long-window contemporaneous returns, report more segments, and have higher Log(*Market value*$_t$) than GAAP-only firms. Table 8, Panel B presents pairwise correlations for all asset write-down recognition variables. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ is positively and significantly correlated with the likelihood of recording an asset write-down. Consistent with the notion that firms that over-invest are more likely to have future asset write-downs, I(*Write-down*$_t$) is positively and significantly correlated with *Abnormal investment*$_{t\text{-}1}$. In untabulated analyses, I(*Write-down*$_t$) is positively correlated with acquisition activity as well.

Table 8; Panel C presents the percent of non-GAAP firms by fiscal year. Similar to Figure 1, an increasing trend is observed. Table 8; Panel D presents the percent of non-GAAP firms by industry. Telecommunication Services, Media, and Software & Services are the industries with the largest fraction of firms reporting non-GAAP earnings.

6.4.3 Main Results

Table 9 presents evidence on the relationship between historical non-GAAP earnings reporting choices and the inclination to record an asset write-down. Consistent with *P2*, the magnitude of the positive and significant coefficient on $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ indicates that non-GAAP firms are 4.4 percent more likely to record a write-down in the current period, controlling for other known determinants of write-down recognition. [11] Figure 3 presents the percent of firms that record asset write-downs for different intervals of pre-write-down book-to-market, *Adjusted BTM*$_t$, conditional on past non-GAAP reporting choices. Non-GAAP firms appear more likely to record asset write-downs at all levels of *Adjusted BTM*$_t$. This relationship is examined in more detail in section 6.2.1 and it is found that the relationship between reporting non-GAAP earnings and recording write-downs is strongest when the *Adjusted BTM*$_t$ is less than one (i.e., discretionary asset write-downs).

[11] This effect is computed as the effect of the treatment on the treated. That is, within the subsample of non-GAAP firms, the effect of the $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ coefficient on probability that I(*Write-down*$_t$) is equal to one. For example, Table 8 reports that 24 percent of non-GAAP firms report an asset write-down, which would be reduced to 19.6 percent (24 – 4.4) after subtracting the effect of treatment on the treated.

7 Stock Option Expense

7.1 Research on Stock Option Expense

Regulation on the accounting measurement and recognition of employee stock option expense was a significant area of debate during the early 2000s. During this period, SFAS 123(R), which required expensing of estimated stock option fair values gave rise to a significant body of academic research. Choudhary (2011) found that SFAS 123(R) was associated with more aggressive measurement of stock option fair values. In the pre-SFAS 123(R) time period, Aboody, Barth, and Kasznik (2006) examine which inputs to the Black Scholes option pricing model are used to opportunistically reduce the magnitude of stock option fair values. They find that the expected option life and the expected stock price volatility inputs are most significantly subject to managerial discretion. However, the expected option life is difficult to examine in academic research because the correct value of the input cannot be observed. The expected volatility input is a better subject of examination because actual stock price volatility can be observed by researchers. In the post-SFAS 123(R) time period, Hodder, Mayew, McAnally, and Weaver (2006) find that some managers use discretion afforded in SFAS 123(R) to opportunistically reduce the magnitude of stock option expense, whereas others us it to convey a more accurate estimate of fair value. Finally, in the post-123(R) time period, Barth, Gow and Taylor (2012) find that the exclusion of stock option expense from non-GAAP earnings can be partially explained by managers' incentives to meet external analyst earnings benchmarks, and that analysts' exclusion of stock option expense from Street earnings can be partially explained by analysts' incentives to produce accurate earnings predictions.

7.2 Stock Option Expense Prediction

Managers have significant discretion in the measurement of stock option expense, primarily through the expected option life and expected future stock price volatility assumptions, both inputs to the Black Scholes valuation model (e.g., Aboody, Barth, and Kasznik 2006). It is difficult to test for aggressive accounting choices in the expected option life assumption because the true value of the input is never revealed; however, there is no such difficulty for the expected volatility input. Using their discretion over the expected volatility input, managers can opportunistically reduce the magnitude of stock option expense with a small downward adjustment to the input. For example, in the sample used for this paper, a 10 percent decrease in the option volatility input across all firms would have an 8 percent decrease, on average, in stock option expense. Therefore, a higher expected volatility input represents more conservative (i.e., income decreasing) measurement of stock option expense. The volatility input is subject to managerial discretion because firms are free to choose the value based, in part, on private expectations about future volatility. Prior literature has presented evidence that this input is subject to opportunistic bias (e.g., Aboody, Barth, and Kasznik 2006; Hodder, Mayew, McAnally, and Weaver 2006; Bartov, Mohanram, and Nissim 2007; and Choudhary 2011). The other inputs to the Black Scholes model: the risk free rate and the current share price, are less influential in terms of their impact on the dollar value of stock option expense and are significantly less discretionary because they can be independently validated, ex ante, by auditors and market participants.

The expected volatility input is supposed to represent management's best estimate of the firm's annualized stock price volatility over the life of the stock option. Therefore, the correct value is equal to the annualized stock price volatility over the life of the stock option, which becomes known to all *ex post*. Stock option expense is not a typical accrual because it never reverses, so it can be persistently understated, inflating net income in every period. As such, empirical testing of managerial opportunism does not need to be centered on any particular fiscal period. The desire to opportunistically reduce stock option expense is moderated by potential costs of engaging in earnings management, such as higher audit fees (through higher audit risk) and higher cost of capital (through greater market uncertainty about the reliability of accounting information). These costs are credible because persistent opportunistic bias in the expected volatility input can be observed *ex post* by comparing the chosen input to realized stock price volatility. In relation

to the hypothesis of this paper, managers who focus on a non-GAAP earnings metric that excludes stock option expense should feel a lower incentive to opportunistically bias the expected volatility input downward.

> *P3A: Managers who report a non-GAAP earnings measure that excludes stock option expense will select a more conservative (higher expense) expected volatility input.*

Prior to SFAS 123(R) (effective for fiscal years beginning after June 15, 2005) firms had the option to only disclose the fair values of stock options in the financial statement footnotes, rather than recognizing them as expenses in the income statement. SFAS 123(R) required firms to recognize stock option expense in the GAAP income statement. Income statement recognition of stock option expense increased the incentive for managers to understate the expected volatility input so as to record smaller stock option expense (e.g., Choudhary 2011). Managers who report non-GAAP earnings that excludes stock option expense should feel a lower incentive to aggressively bias the expected volatility input downward in the post-SFAS 123(R) period, but there should be no difference in the pre-SFAS 123(R) period.

> *P3B: For firms that exclude stock option expense from non-GAAP earnings, SFAS 123(R) will have a less negative effect on the selection of the expected volatility input.*

7.3 Stock Option Expense Empirical Design

P3A predicts that managers who report non-GAAP earnings that exclude stock option expenses will use more conservative volatility inputs. To test *P3A*, the following model is estimated by WLS:

$$\begin{aligned} \textit{Volatility forecast error}_t = \alpha &+ \beta_1 \textit{ Stock comp. excluded}_t \\ &+ \beta_2 \textit{ Benchmark adjustment}_t \\ &+ \beta_3 \textit{ Historical volatility}_t \\ &+ \beta_4 \textit{ Size of grant}_t \end{aligned} \tag{4}$$

$$
\begin{aligned}
&+ \beta_5 \textit{ Big four auditor}_t \\
&+ \beta_6 \textit{ Institutional ownership}_t \\
&+ \beta_7 \text{ Log}(\textit{Market value}_t) \\
&+ \beta_8 \textit{ Fitted probability of exclusion}_t \\
&+ \beta_9 \text{ Industry fixed effects} \\
&+ \beta_{10} \text{ Year fixed effects} \\
&+ \varepsilon_t.
\end{aligned}
$$

P3B predicts that $\beta_1 > 0$. *Volatility forecast error*$_t$ is the percentage deviation of the volatility input from future realized volatility and is calculated as (*Volatility input*$_t$ - *Future volatility*$_t$)/ *Future volatility*$_t$. The *Volatility forecast error*$_t$ captures the deviation of firms' option volatility inputs from their *ex post* correct values. If managers are able to accurately predict future volatility for their own firms' stock, on average, then the *Volatility forecast error*$_t$ represents the magnitude and directon of bias introduced to the expected volatility input. *Stock comp. excluded*$_t$ is a dummy variable equal to one if the firm's non-GAAP earnings measure excludes stock option expense in year *t*, and zero otherwise. *Benchmark adjustment*$_t$ is the percentage deviation of historical volatility from future volatility (i.e., *Benchmark adjustment*$_t$ = [*Historical volatility*$_t$ - *Future volatility*$_t$]/ *Future volatility*$_t$), and will exactly equal the *Volatility forecast error*$_t$ if the firm mechanically uses *Historical volatility*$_t$ as the *Volatility input*$_t$. *Historical volatility*$_t$ is included as a control variable since high volatility may be expected to reduce in the future. *Size of grant*$_t$ is an important control variable since the magnitude of stock option expense may cause a firm to exclude it from non-GAAP earnings. *Big four auditor*$_t$ is relevant as a control variable since larger auditors may be more effective in auditing Black Scholes inputs. *Institutional ownership*$_t$ is similarly relevant since institutional owners may be associated with improved governance and more appropriate Black Scholes inputs. Log(*Market value*$_t$) is included since size is associated with accounting quality. *Fitted probability of exclusion*$_t$ is equal to the fitted probability from a first-stage logistic regression of *Stock comp. excluded*$_t$ on industry and year fixed effects. This variable represents the industry and year factors that influence selection. Industry and year fixed effects are also included. Entropy weights based on all covariates, including *Fitted probability of exclusion*$_t$ are applied. Standard errors are clustered by industry and year.

7.3.1 SFAS 123(R) Setting

P3B predicts that SFAS 123(R) affects the *Volatility forecast error*$_t$ differently depending on whether the firm excludes stock option expense from non-GAAP earnings. Specifically, firms that do not exclude stock option expense from non-GAAP earnings are predicted to use a more aggressive volatility input after SFAS 123(R). In contrast, firms that do exclude stock option expense are predicted to be less concerned about the effect of stock option expense on GAAP-based net income. Therefore, excluding firms are predicted to remain conservative. Overall, SFAS 123(R) is expected to have a less negative effect on the choice of volatility input for firms that exclude stock option expense from non-GAAP earnings. The following model is estimated by ordinary least squares:

$$\begin{aligned} \textit{Volatility forecast error}_t = {} & \alpha + \beta_1 \textit{Post excluder}_t \\ & + \beta_2\ \textit{Post SFAS 123R}_t \\ & + \beta_3\ \textit{Post excluder}_t * \textit{Post SFAS 123R}_t \\ & + \beta_4\ \textit{Benchmark adjustment}_t \\ & + \beta_5\ \textit{Historical volatility}_t \\ & + \beta_6\ \textit{Size of grant}_t \\ & + \beta_7\ \textit{Big four auditor}_t \\ & + \beta_8\ \textit{Institutional ownership}_t \\ & + \beta_9\ \text{Log}(\textit{Market value}_t) \\ & + \beta_{10}\ \textit{Fitted probability of exclusion}_t \\ & + \beta_{11}\ \text{Industry fixed effects} \\ & + \beta_{12}\ \text{Year fixed effects} \\ & + \varepsilon_t. \end{aligned} \tag{5}$$

P3B predicts that $\beta_3 > 0$. *Post SFAS 123R*$_t$ is a dummy variable equal to one after the effective date of SFAS 123(R). Industry fixed effects are included, entropy weights are applied, and standard errors are clustered by industry and year.

7.4 Stock Option Expense Results

7.4.1 Sample Construction

The relationship between exclusion of stock option expense from non-GAAP earnings and stock option expense measurement is examined for fiscal years from

2006 through 2014. Table 10 presents sample attrition based on the different sources of data. Compustat data, including stock option grant data, are available for 48,147 firm-years. Further requiring CRSP data to compute historical and future stock price volatility reduces the sample to 21,558. Thomson Reuters data on institutional ownership further reduces the sample to 20,318. Current non-GAAP reporting choices are determined based on text searches of firms' earnings press releases and are available for 16,723 firm-years. To make the hand collection exercise more manageable, the final sample attrition step requires nine consecutive years of non-GAAP reporting choice. Therefore, firms in the final sample grant stock options in each year and either report non-GAAP earnings in all nine years or don't report non-GAAP earnings in any of the nine years between 2006 and 2014. The final sample contains 2,592 firm-years. For firms that report non-GAAP earnings, the earnings press releases are examined to determine whether stock option expense is excluded from non-GAAP earnings. To further simplify hand collection, it is assumed that firms that exclude stock option expense in the first and last years of the sample period exclude for all nine years.

7.4.2 Descriptive Statistics

Table 11, Panel A presents means and medians for the full sample of stock option expense variables, partitioned on whether firms exclude stock option expense from non-GAAP earnings (i.e. *Stock comp. excluded*$_t$ = 1, or "excluders") or not (i.e. *Stock comp. excluded*$_t$ = 0, or "includers"). The "Weighted Mean" column presents the weighted mean, based on entropy weights, of each variable for includers. Excluders and includers both have positive *Volatility forecast error*$_t$, on average, reflecting the fact that the distribution of *Volatility forecast error*$_t$ skews slightly positive, meaning that some small set of firms are very conservative in selecting the volatility input. Additionally, the *Benchmark adjustment*$_t$ is positive, on average, and is a very good predictor of the choice of volatility input. The *Benchmark adjustment*$_t$ will be exactly equal to the *Volatility forecast error*$_t$ if the firm mechanically uses the *Historical volatility*$_t$ as the volatility input. Unconditionally, the excluders are four percent more conservative than includers and the difference is greater after entropy weights are applied. Excluders are also five percent more likely to have a conservative volatility input. Excluders have higher *Historical volatility*$_t$ and *Size of grant*$_t$, but this difference is reduced to zero when entropy weights are applied. Table 5, Panel B presents pairwise correlations for the full sample of stock option expense variables. Pairwise correlations reveal

that *Stock comp. excluded*$_t$ is positively correlated with *Volatility forecast error*$_t$ at marginal levels of statistical significance (Pearson correlation p-value = 0.077), and positively correlated (Pearson correlation p-value = 0.016) with I(*Conservative volatility input*$_t$).

Table 11; Panel C presents the concentration by year of *Stock comp. excluded*$_t$. Not surprisingly, the concentration was highest in 2006, which was the first year that SFAS 123(R) was effective. Table 11; Panel D presents the concentration by industry, with Software & Services, Semiconductors & Semiconductor Equipment, and Media being the industries most likely to exclude stock compensation expense from non-GAAP earnings.

7.4.3 Main Results

Table 12 presents evidence on the relationship between the exclusion of stock option expense from non-GAAP earnings and stock option expense measurement. In column (1) the dependent variable is the *Volatility forecast error*$_t$, which is the percentage difference between the volatility input chosen by management and the realized future volatility of the firm's stock over the stated life of the option. Consistent with *P3A*, the positive coefficient on *Stock comp. excluded*$_t$ implies that firms that exclude stock option expense from non-GAAP earnings select a 5.2 percent more conservative expected volatility input. The magnitude of the coefficient translates to a 4.3 percent increase to the dollar value of stock option expense, on average. The highly significant coefficient of nearly one on *Benchmark adjustment*$_t$, confirms the importance of *Historical volatility*$_t$ in selecting the volatility input. Column (2) of Table 12 presents a logistic regression in which the dependent variable is I(*Conservative volatility input*$_t$), which is equal to one when the firm selects a volatility input that is higher than future realized volatility, and zero otherwise. The positive and significant coefficient implies that firms excluding stock option expense from non-GAAP earnings are more likely to select a conservative volatility input. The magnitude of the coefficient translates to a 7.5 percent higher probability of selecting conservative volatility input.[12]

[12] This effect is computed as the effect of the treatment on the treated. That is, within the subsample of excluder firms, the effect of the *Stock comp. excluded*$_t$ coefficient on the probability that the dependent variable is equal to one. Table 11 reports that 77 percent of non-GAAP firms engage in positive *Abnormal investment*$_t$, which would be reduced to 69.5 percent (77 – 7.5) after subtracting the effect of treatment on the treated.

Figure 5, Panel A presents kernel density plots of the *Volatility forecast error*$_t$ conditional on whether stock option expense is excluded from firms' non-GAAP earnings. The figure depicts a slight tendency for firms that do not exclude stock option expense (*Stock comp. excluded*$_t$ = 0; dotted line) to select more aggressive volatility inputs (stock option expense is too small in magnitude). Panel B presents a similar plot to Panel A, except that the horizontal axis now represents the percentage deviation of the volatility input from historical volatility. The smaller standard deviation observed in Panel B compared to Panel A indicates that historical volatility is a very strong benchmark for the volatility input. Firms that do not exclude stock option expense from non-GAAP earnings exhibit a tendency to select a more aggressive volatility inputs relative to their historical volatilities.

7.4.4 SFAS 123(R) Setting Results

SFAS 123(R) required firms to expense the fair value of stock options granted to their employees. *P3B* predicts that firms that exclude stock option expense from non-GAAP earnings should be less affected by SFAS 123(R). To test this prediction, this study estimates the difference in the effect of SFAS 123(R) between firms that exclude stock option expense from non-GAAP earnings in the post-SFAS 123(R) time period and those that do not. In the test of *P1A*, there were 96 firms that excluded non-GAAP earnings in both 2006 and 2007 (i.e., post-SFAS 123(R)) and have data available for 2004 and 2005 (i.e., pre-SFAS 123(R)). These firms are labeled as "Post excluders". Post excluders are matched to firms that either report non-GAAP earnings that does not exclude stock option expense or those that do not report non-GAAP earnings at all in 2006 and 2007. Matching is performed by computing the Mahalanobis (1936) distance between the post excluders and all available control firms. Mahalanobis (1936) distance is a multivariate distance measure that essentially standardizes variables before computing a Euclidian distance, also taking correlations between variables into account, which assists in matching on multiple dimensions. The Mahalanobis (1936) distance is computed using the pre-SFAS 123(R) *Volatility forecast error* and Log(*Market value*). Each post excluder is matched to the closest non-excluder firm. There are 96 post excluders with 96 matching firms over four years, which results in a final sample size of 768 firm-years (96 firms * 4 years * 2= 768).

Table 13; Panel A presents means and medians of stock option expense variables for the difference-in-differences sample. Post excluders have higher

average *Volatility forecast error*$_t$, which is entirely driven by the post period, since the firms were matched on the *Volatility forecast error*$_t$ and Log(*Market value*$_t$) in the pre-period. Table 13, Panel B presents pairwise correlations. *Post SFAS 123R*$_t$ is negatively associated with *Volatility forecast error*$_t$ and I(*Conservative volatility input*$_t$), which is consistent with the notion that firms became more aggressive in measuring stock option expense, on average, after SFAS 123(R). Table 13, Panel C clarifies the sample composition. The sample comprises 192 firms over four years, two years before and two years after SFAS 123(R) became effective. The dotted line represents the effective date of SFAS 123(R). The treatment firms (i.e., *Post excluders*) are the 50 percent of firms that exclude stock option expense (i.e., *Stock comp. excluded*$_t$ = 1) in the post-period. No firms excluded stock option expense in the pre-period because stock option fair value was generally not expensed. Table 13, Panel D reports the concentration by industry.

Table 14 reports results from the difference-in-differences setting. Column (1) examines the *Volatility forecast error*$_t$ dependent variable using an ordinary least squares regression. The negative coefficient on *Post SFAS 123R*$_t$ implies that firms become more aggressive after stock option expense recognition is mandated, on average. The positive coefficient on the interaction term, *Post SFAS 123R*$_t$* *Post excluder*$_t$, implies that firms that exclude stock option expense from non-GAAP earnings become relatively more conservative in the post-SFAS 123(R) period, consistent with *P3B*. Columns (2) of Table 14 documents a similar inference using a logistic regression with I(*Conservative volatility input*$_t$) as the dependent variable. The positive coefficient on *Post SFAS 123R*$_t$* *Post excluder*$_t$ implies that Post excluders are less likely to become aggressive after SFAS 123(R). Figure 4, Panel B depicts the *Volatility forecast error*$_t$ by period, conditional on whether stock option expense is excluded from firms' non-GAAP earnings in the post-SFAS 123(R) period. The figure indicates that post excluders (*Post excluder* = 1) remain somewhat conservative whereas post includers (*Post excluder* = 0) become more aggressive in the post-SFAS 123(R) period. Figure 4, Panel C depicts I(*Conservative volatility input*$_t$) by period, conditional on whether stock option expense is excluded from firms' non-GAAP earnings in the post-SFAS 123(R) period.

8 Supplementary Analyses

8.1 Corporate Investment Supplementary Analysis

8.1.1 Relationship between EBITDA and Capital Expenditures

P1A stated that firms with a history of reporting non-GAAP earnings will invest more than their peers. Capital expenditures are one component of investment for which this prediction is relatively weak. Whereas many types of acquisition-related expenditures are routinely excluded from non-GAAP earnings definitions, depreciation expense is the only expense associated with capital expenditures and is relatively rarely excluded from non-GAAP earnings.[13] For those non-GAAP firms that exclude depreciation expense (i.e., firms that report EBITDA), capital expenditures are predicted to be higher. This supplementary prediction is tested in a subset of the sample examined in section 5.2.3. Out of the 14,017 firms with a history of reporting non-GAAP earnings, 13,337 are found to have a consistent history of either reporting EBITDA or reporting some non-GAAP metric other than EBITDA. Table 15 reports these supplementary results. Column (1) of Table 15 examines whether firms with a history of reporting EBITDA engage in higher capital expenditures than those that report some other non-GAAP earnings metric. The positive and significant coefficient on $EBITDA_{t\text{-}1 \text{ and } t\text{-}2}$ indicates that firms with a history of reporting EBITDA engage in 0.6 percent higher capital expenditures, on average. Column (2) reports that firms with a history of reporting EBITDA are 3.1 percent more likely to engage in higher-than-expected capital expenditures.[14]

[13] Approximately 42 percent of firms reporting non-GAAP earnings report some version of earnings before interest, taxes, depreciation, and amortization (EBITDA).

[14] This effect is computed as the effect of the treatment on the treated. That is, within the subsample of firms that report EBITDA, the effect of the $EBITDA_{t\text{-}1 \text{ and } t\text{-}2}$ coefficient on the probability that the dependent variable is equal to one. Approximately 45.3 percent of firms that report EBITDA engage in positive *Abnormal* $Capex_t$, which would be reduced to 42.2 percent (45.3 – 3.1) after subtracting the effect of treatment on the treated.

8.1.2 Controlling for Prior Year Corporate Investment Activities

Typical investment prediction models use prior-year investment as an additional independent variable (e.g., McNichols and Stubben 2008). For the main tests in section 5.2.3, lagged investment was not included because it is a collider variable. That is, past non-GAAP reporting is expected to cause higher past investment as well as higher current-period investment. Despite being a potential collider variable, it is expected that a longer history of reporting non-GAAP earnings will cause a greater focus on non-GAAP earnings and away from GAAP-based net income. Therefore, the effect of non-GAAP reporting on corporate investment should become stronger over time and the relationship between prior non-GAAP reporting and current-period corporate investment is expected to be positive even after controlling for prior-year corporate investment. Table 16 re-estimates the tests in section 5.2.3 including the lagged value of the dependent variable as an additional independent variable. The positive and significant coefficients on $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ for all models indicates that there is still a positive relationship between past non-GAAP reporting and current-period investment, even after controlling for past investment.

8.2 Asset Write-Down Supplementary Analyses

8.2.1 Discretionary Vs. Non-Discretionary Asset Write-Downs

Lawrence, Sloan, and Sun (2013) examine the relationship between asset write-downs and the book-to-market-ratio, and document that a significant percentage of asset write-downs occur at firms whose book values exceed their market values. They say such write-downs are likely to represent non-discretionary conservatism since accounting rules generally state that a book-to-market ratio exceeding one is a triggering event for an impairment test. In this dissertation, the relationship between non-GAAP reporting and asset write-downs is predicted to be positive regardless of the level of the book-to-market ratio, and the test performed in section 5.3.3 is designed accordingly. However, it is possible that the effect between non-GAAP reporting and asset write-downs is stronger when the book-to-market ratio is lower than one (i.e., when the write-down would be discretionary).

To test this question, the test performed in section 5.3.3 is re-estimated including an additional interaction between $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ and I(*Adjusted* BTM_t > 1). Table 17 reports these results. The coefficient on $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ continues to be positive and significant. This coefficient is designed to represent the effect of non-GAAP reporting on discretionary asset write-downs (i.e., when *Adjusted* BTM_t < 1). The coefficient on I(A*djusted* BTM_t > 1) * $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$ is a very similar magnitude but negative in sign. This negative and significant coefficient indicates that the effect of non-GAAP reporting on the inclination to record an asset write-down is strongest for discretionary write-downs.

8.3 Stock Option Expense Supplementary Analyses

8.3.1 Percentage Deviation from Historical Volatility

The tests in section 5.4 examine firms' Black Scholes volatility inputs relative to their *ex post* correct values, future realized volatilities. Another common benchmark for the Black Scholes volatility input is historical volatility. Therefore, in a supplementary analysis, the stock option tests are re-estimated using the deviation of firms' volatility inputs from historical volatility. Table 18 presents a re-estimation of the main stock option tests. Column (1) presents a WLS regression with *Adjustment to historical volatility*$_t$ as the dependent variable. *Adjustment to historical volatility*$_t$ is equal to (*Volatility input*$_t$ – *Historical volatility*$_t$) / *Historical volatility*$_t$. The positive and significant coefficient on *Stock comp. excluded*$_t$ indicates that the main result is robust to the alternative benchmark. Table 19 presents a re-estimation of the SFAS 123(R) setting tests. The negative and marginally significant coefficient on *Post excluder*$_t$ * *Post SFAS123R*$_t$ indicates that the SFAS 123(R) setting finding is not robust to using this alternative volatility benchmark.

7 Conclusion

Non-GAAP earnings are adjusted versions of the GAAP-based measure of net income. Although firms are permitted to define non-GAAP earnings in almost any way they choose, most definitions of non-GAAP earnings exclude acquisition and restructuring expenses, asset write-downs, intangible asset amortization, and some definitions exclude stock compensation expenses. This dissertation proposes that managers become focused on non-GAAP earnings, reducing their motivation to minimize those excluded expenses. This proposition has implications for real activities and accounting choices. Specifically, managers who report non-GAAP earnings tend to engage in higher abnormal investment, especially involving acquisitions, and also act as if they are more willing to record asset write-downs. This result is consistent with the notion that managers who report non-GAAP earnings are less concerned about the effect of acquisition and investment-related expenses and asset write-downs on GAAP-based net income. Further, managers that exclude stock option expense from non-GAAP earnings measure stock option expense more conservatively, suggesting that they are less concerned about the effect of stock option expense on GAAP-based net income.

The hypothesized causal mechanism is that non-GAAP earnings causes managers to underweight excluded expenses and consequently influences real activities and accounting choices. This motivation and causal inference may be useful to regulators and boards of directors. The U.S. Securities and Exchange Commission (SEC) has expressed concern that investors are misled by non-GAAP earnings and frequently discusses the possibility of increasing regulation on non-GAAP reporting. Additionally, the International Accounting Standards Board (IASB), which is the organization that sets International Financial Reporting Standards (IFRS) embarked on a project to consider whether alternative performance measures should be disclosed on the face of the income statement, increasing their prominence to investors. The findings in this paper suggest that regulation of non-GAAP reporting may influence real activities and accounting

choices. Firms' boards of directors seek to resolve agency conflicts between managers and investors, in part, by aligning the two parties' incentives. This evidence suggests that boards need to consider the externally-reported measure of earnings as a strong driver of managers' decisions.

Investors may find use in the inference that firms' choices to report non-GAAP earnings has predictive ability over their real activities and accounting choices. A practical implementation of these results may cause an investor to hesitate before investing in a firm that reports a non-GAAP earnings measure that excludes economically relevant expenses. This is because managers can be predicted to act as if they are not seeking to minimize those costs.

Overall, this study presents evidence that the choice to report non-GAAP earnings may have consequences to the firm through its influence on real activities and accounting choices.

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Appendix

Variable Definitions

Corporate Investment Variables:

[Dependent variable]$_{t\text{-}1}$	Equal to one-year-lagged dependent variable of the regression.
Abnormal Capex$_t$	The residual from the investment prediction model used in McNichols and Stubben (2008), which only considers capital expenditures as total investment. The prediction model is run separately by industry and year. The variable is multiplied by 100 and can be interpreted as a percent of beginning-of-period total assets.
Abnormal investment$_t$	The residual from the investment prediction model used in McNichols and Stubben (2008), except that Total investment includes acquisition investment in addition to capital expenditures. The prediction model is run separately by industry and year. The variable is multiplied by 100 and can be interpreted as a percent of beginning-of-period total assets.
Asset growth$_{t\text{-}1}$	Total assets at the end of year *t*-1 divided by total assets at the end of year *t*-2 ($at_{t\text{-}1}/at_{t\text{-}2}$).
Capex$_t$	Equal to capital expenditure (*capx*) scaled by lagged total assets (*at*).
EBITDA$_t$	Equal to one if the term "ebitda" appears in the firms' year *t* fourth quarter earnings press release, and zero otherwise.
EBITDA$_{t\text{-}1 \text{ and } t\text{-}2}$	Equal to one if *EBITDA*$_{t\text{-}1}$ and *EBITDA*$_{t\text{-}2}$ are both equal to one, and zero if *EBITDA*$_{t\text{-}1}$ and *EBITDA*$_{t\text{-}2}$ are both equal to zero.
Fitted probability of EBITDA$_{t\text{-}1 \text{ and } t\text{-}2}$	Equal to the fitted probability from a first-stage logistic regression of *EBITDA*$_{t\text{-}1 \text{ and } t\text{-}2}$ on industry and year fixed effects.
Fitted probability of Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	Equal to the fitted probability from a first-stage logistic regression of *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ on industry and year fixed effects.
Intangibles$_{t\text{-}1}$	Compustat total intangible assets (*intan*) divided by total assets (*at*) in year *t*-1.
Investment$_t$	The sum of capital expenditure (*capx*) and acquisition expenditure (*aqc*), scaled by lagged total assets (*at*).
I(*Abnormal investment*$_t > 0$)	Equal to one if *Abnormal investment*$_t$ is greater than zero, and zero otherwise.
I(*Abnormal Capex*$_t > 0$)	Equal to one if *Abnormal Capex*$_t$ is greater than zero, and zero otherwise.

I(*Acquisition*$_t$)	Equal to one if the firm was a bidder in an acquisition year *t*, obtained from the Securities Data Corporation dataset, and zero otherwise.
I(Large acquisition$_t$)	Equal to one when the aggregated acquisition purchase prices during year *t* exceed 10 percent of beginning-of-period total assets.
I(*Layoffs*$_t$)	Equal to one when there is an acquisition in year *t* and a layoff is announced by the acquirer or target firm either in year *t* or in year *t*+1.
I(*Material weakness*$_{t-1}$)	Equal to one if the firm had a material weakness in year *t*-1 and zero otherwise, obtained from Audit Analytics.
Log(*Market value*$_{t-1}$)	The natural logarithm of market value at the end of year *t*-1, obtained Compustat ln(*csho*prcc_f*).
Nongaap$_t$	Equal to one if any of the following terms appear in the firms' year *t* fourth quarter earnings press release: "non-gaap", "nongaap", "adjusted earn", "adjusted ebi", "ebitda", "adjusted net inc", or "adjusted net los", and zero otherwise.
Nongaap$_{t-1 \text{ and } t-2}$	Equal to one if *Nongaap*$_{t-1}$ and *Nongaap*$_{t-2}$ are both equal to one, and zero if *Nongaap*$_{t-1}$ and *Nongaap*$_{t-2}$ are both equal to zero.
Operating cash flow$_t$	Operating cash flows in year *t* scaled by total assets at the end of year *t*-1 (*oancf*$_t$/*at*$_{t-1}$).
Post SFAS 141R$_t$	Equal to one if the fiscal year begins after December 15, 2008, the effective date of SFAS 141(R), and zero otherwise.
Q2$_{t-1}$	Equal to one if *Tobins Q*$_{t-1}$ is between the 25th and 50th quantile of *Tobins Q*$_{t-1}$ for that industry and year, and zero otherwise.
Q3$_{t-1}$	Equal to one if *Tobins Q*$_{t-1}$ is between the 50th and 75th quantile of *Tobins Q*$_{t-1}$ for that industry and year, and zero otherwise.
Q4$_{t-1}$	Equal to one if *Tobins Q*$_{t-1}$ is between the 75th and 100th quantile of *Tobins Q*$_{t-1}$ for that industry and year, and zero otherwise.
Sd(*Abnormal accruals*$_{t-5 \text{ thru } t-1}$)	Standard deviation of abnormal accruals over five years ending in year t-1, using the combined Dechow and Dichev (2002) and Dechow, Sloan, and Sweeney (1995) accrual models run within industry and year.
Tobins Q$_{t-1}$	Market value of assets (*csho*prcc_f* + *at* - *ceq*) divided by total assets (*at*) all in year *t*.
Value acquired$_t$	Equal to the sum of acquisition purchase prices for all acquisitions made during year *t*, scaled by beginning-of-period total assets. The

variable is multiplied by 100 and can be interpreted as a percent of beginning-of-period total assets.

Write-Down Variables:

Adjusted BTM$_t$	Compustat total assets (*at*), adding back any asset write-down (*wdp*) or goodwill impairment (*gdwlip*), all divided by market value of assets (*csho*prcc_f* + *at* - *ceq*), all in year *t*.
Count of segments$_t$	The number of business segments, operating segments, or geographic segments reported by the firm in year *t* according to the Compustat Historical Segments database.
Fitted probability of Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	Equal to the fitted probability from a first-stage logistic regression of *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$ on industry and year fixed effects.
Goodwill$_t$	Compustat total goodwill (*gdwl*) before the effect of any goodwill impairment (*gdwlip*), divided by total assets (*at*), all in year *t*-1.
I(*Adjusted BTM*$_t$ > 1)	Equal to one if *Adjusted BTM*$_t$ is greater than one and zero otherwise.
I(*Acquisition*$_t$)	Equal to one if the firm was a bidder in an acquisition year *t*, obtained from the Securities Data Corporation dataset, and zero otherwise.
I(*Return*$_t$ < 0)	Equal to one if *Return*$_t$ is negative, and zero otherwise.
I(*Write-down*$_t$)	Equal to one if Compustat pre-tax write-down (*wdp*), pre-tax goodwill impairment (*gdwlip*), or both are less than zero in year *t*, and zero otherwise.
Log(*Market value*$_{t\text{-}1}$)	The natural logarithm of market value at the end of year *t*-1, obtained Compustat (*csho*prcc_f*).
New CEO$_t$	Equal to one if a new CEO was appointed in year *t* according to the Audit Analytics Director and Officer Changes database, and zero otherwise.
Nongaap$_t$	Is equal to one if any of the following terms appear in the firms' year *t* fourth quarter earnings press release: "non-gaap", "nongaap", "adjusted earn", "adjusted ebi", "ebitda", "adjusted net inc", or "adjusted net los", and zero otherwise.
Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	Equal to one if *Nongaap*$_{t\text{-}1}$ and *Nongaap*$_{t\text{-}2}$ are both equal to one, and zero if *Nongaap*$_{t\text{-}1}$ and *Nongaap*$_{t\text{-}2}$ are both equal to zero.
Other intangibles$_t$	Compustat total intangible assets (*intan*) minus total goodwill (*gdwl*) plus goodwill impairment (gdwlip) plus other write-downs (wdp), all divided by total assets (*at*), all in year *t*-1.
Return$_t$	The firm's stock return for the 12 months of fiscal year *t* minus the value-weighted market return, obtained from CRSP.

$Weak_t$	Equal to one if the average of the past two years (years *t* and *t*-1) of value-weighted market-adjusted return, calculated with CRSP data from month -9 to month +3, is less than 5 percent, or if the average of the past two years of return on assets, calculated as Compustat pre-tax income (*pi*) adding back special items (*spi*) divided by total assets (*at*), is less than 5 percent, and zero otherwise

Stock Option Expense Variables:

Adjustment to historical volatility$_t$	(*Volatility input*$_t$ - *Historical volatility*$_t$) / *Historical volatility*$_t$
Benchmark adjustment$_t$	(*Historical volatility*$_t$ - *Future volatility*$_t$) / *Future volatility*$_t$
Big four auditor$_t$	Equal to one if the firm's auditor was PricewaterhouseCoopers, Deloitte & Touche, Ernst & Young, or KPMG and zero otherwise, obtained from Compustat (*au*).
Fitted probability of exclusion$_t$	Equal to the fitted probability from a first-stage logistic regression of *Stock comp. excluded*$_t$ on industry and year fixed effects.
Future volatility$_t$	The squared root of twelve multiplied by 100 multiplied by the standard deviation of the natural logarithm of monthly price relatives beginning on the balance sheet date of year *t* and ending *n* months after the balance sheet date, where the price relative for month *m* is the CRSP stock price at the end of month *m* divided by the CRSP stock price at the end of month *m*-1, and *n* is the number of months of the option life as reported by the company and obtained from Compustat (*optlife*).
Historical volatility$_t$	The squared root of twelve multiplied by 100 multiplied by the standard deviation of the natural logarithm of monthly price relatives beginning *n* months before the balance sheet date of year *t* and ending on the balance sheet date, where the price relative for month *m* is the CRSP stock price at the end of month *m* divided by the CRSP stock price at the end of month *m*-1, and *n* is the number of months of the option life as reported by the company and obtained from Compustat (*optlife*).
Institutional ownership$_t$	Equal to the percent of total shares outstanding held by reporting institutional owners, obtained from Thomson Reuters.
I(*Conservative adjustment to historical volatility*$_t$)	Equal to one if the *Volatility input*$_t$ is higher than *Historical volatility*$_t$, and zero otherwise.
I(*Conservative benchmark*$_t$)	Equal to one if the *Historical volatility*$_t$ is higher than *Future volatility*$_t$, and zero otherwise.
I(*Conservative volatility input*$_t$)	Equal to one if the *Volatility input*$_t$ is higher than *Future volatility*$_t$, and zero otherwise.
I(*Perfect information is conservative*$_t$)	Equal to one if the *Future volatility*$_t$ is higher than *Historical volatility*$_t$, and zero otherwise.
Log(*Market value*$_t$)	The natural logarithm of market value at the end of year *t*, obtained Compustat ln(*csho*prcc_f*).

Perfect information adjustment$_t$	(*Future volatility*$_t$ - *Historical volatility*$_t$) / *Historical volatility*$_t$
Post Excluder$_t$	Equal to one if the firm excludes stock compensation expense from its non-GAAP measure during fiscal years 2006 and 2007, and zero otherwise.
Post SFAS 123R$_t$	Equal to one if the fiscal year begins after June 15, 2005, the effective date of SFAS 123(R), and zero otherwise.
Size of grant$_t$	The number of options granted during year *t* (*optgr*) divided by the number of common shares outstanding at the end of year *t* (*csho*), both obtained from Compustat.
Stock comp. excluded$_t$	Equal to one if stock option expense is excluded from non-GAAP earnings in the fourth quarter of year *t*, and zero otherwise. This was hand collected from earnings press releases.
Volatility forecast error$_t$	(*Volatility input*$_t$ - *Future volatility*$_t$) / *Future volatility*$_t$
Volatility input$_t$	The expected volatility input chosen by the company in year *t* as the expected future annual volatility over the term of the option life, in percent, obtained from Compustat (*optvol*).

Table 1

Frequency of Excluded Items

Type of expense	Percent of non-GAAP firms reporting expense greater than 0.5 percent of *Total assets*$_{t-1}$	Percent of firms reporting the expense that exclude the expense from non-GAAP earnings
Acquisition expense	8%	86%
Restructuring expense	17%	87%
Intangible asset amortization	36%	80%
Asset write-down	13%	93%

This table presents estimates of the frequency that non-GAAP earnings excludes four types of expenses, conditional on the company having recorded material values of the expense (i.e., greater than 0.5 percent of beginning-of-period total assets). For each type of expense, 100 random firms are selected among those that have recorded material values of the expense. The middle column presents the percent of non-GAAP firms that record material values of each type of expense. The right column presents the percent of 100 non-GAAP firms that exclude the expense from non-GAAP earnings.

Table 2

Sample Construction - Corporate Investment Activities

Panel A: Data availability

	Firm-Years Remaining
Compustat variables (2006 – 2015):	
Log(*Market value*$_{t-1}$)	
Investment$_t$	
I(*Abnormal investment*$_{t-1}$ > 0)	
Tobins Q$_{t-1}$	
Operating cash flow$_t$	
Asset growth$_{t-1}$	
Intangibles$_{t-1}$	
Sd(*Abnormal accruals*$_{t-5 \text{ thru } t-1}$)	50,061
SDC Acquisition variables:	
Value acquired$_t$	
I(*Acquisition*$_t$)	
I(Large a*cquisition*$_t$)	36,528
Audit Analytics variable:	
I(*Material weakness*$_{t-1}$)	33,112
Earnings announcement press releases:	
Nongaap$_{t-1}$	
Nongaap $_{t-2}$	24,507

Panel B: Non-GAAP Reporting Histories

Nongaap $_{t-2}$	*Nongaap*$_{t-1}$	*Nongaap*$_{t-1 \text{ and } t-2}$	Firm-Years
0	0	0	7,643
1	1	1	14,017
0	1	N/A	1,877
1	0	N/A	970

Panel A presents sample attrition based on data availability from different data sources. Panel B presents the distribution of past non-GAAP reporting choices for firm-year observations with all data available.

Table 3

Descriptive Statistics - Corporate Investment Activities

Panel A: Conditional Means and Medians

	$Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$ (N = 14,017)		$Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$ (N = 7,643)		
	Mean	Median	Mean	Median	Weighted Mean
(1) $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$	1.00	1.00	0.00	0.00	0.00
(2) $Investment_t$	9.33	4.75	6.74	3.06	8.04
(3) I($Abnormal\ investment_t > 0$)	0.34	0.00	0.32	0.00	0.31
(4) $Value\ acquired_t$	3.70	0.00	2.37	0.00	2.53
(5) I($Acquisition_t$)	0.39	0.00	0.22	0.00	0.37
(6) I(Large a$cquisition_t$)	0.08	0.00	0.05	0.00	0.07
(7) $Tobins\ Q_{t\text{-}1}$	1.75	1.41	2.06	1.47	1.75
(8) $Operating\ cash\ flow_t$	8.88	8.61	2.69	6.32	8.88
(9) $Asset\ growth_{t\text{-}1}$	0.07	0.04	0.05	0.05	0.07
(10) Log($Market\ value_{t\text{-}1}$)	7.13	7.12	5.91	5.80	7.13
(11) $Intangibles_{t\text{-}1}$	0.21	0.14	0.09	0.02	0.21
(12) I($Material\ weakness_{t\text{-}1}$)	0.04	0.00	0.04	0.00	0.04
(13) Sd($Abnormal\ accruals_{t\text{-}5 \text{ thru } t\text{-}1}$)	0.33	0.14	0.42	0.16	0.33
(14) *Fitted probability of* $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$	0.69	0.70	0.58	0.58	0.69

Panel B: Pairwise Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)		**.07**	**.02**	**.04**	**.17**	**.05**	**-.12**	**.20**	**.02**	**.29**	**.29**	.00	**-.07**	**.33**
(2)	**.15**		**.35**	**.30**	**.20**	**.29**	**.08**	**.18**	**.12**	**.08**	**.02**	-.01	.01	**.09**
(3)	**.02**	**.47**		**.15**	**.18**	**.25**	.01	**-.04**	**-.03**	**-.04**	**-.03**	.00	-.01	.01
(4)	**.12**	**.30**	**.23**		**.27**	**.58**	**.08**	**.03**	**.06**	**-.03**	**.05**	.01	**.05**	*.01*
(5)	**.17**	**.31**	**.18**	**.71**		**.40**	.01	**.16**	**.10**	**.30**	**.26**	**-.03**	0	**.09**
(6)	**.05**	**.29**	**.25**	**.65**	**.40**		**.06**	**.07**	**.08**	-.01	**.09**	.00	**.02**	**.04**
(7)	**-.04**	**.29**	-.01	**.10**	**.12**	**.11**		.00	**.14**	**.18**	**-.02**	-.01	**.22**	**-.09**
(8)	**.13**	**.45**	.00	**.12**	**.18**	**.10**	**.38**		**.13**	**.32**	**.13**	**-.04**	**-.17**	**.27**
(9)	.00	**.21**	.00	**.12**	**.13**	**.09**	**.24**	**.20**		**.19**	**.07**	.00	**.04**	.01
(10)	**.30**	**.26**	**-.04**	**.14**	**.29**	.00	**.32**	**.36**	**.22**		**.21**	**-.09**	**-.09**	**.12**
(11)	**.33**	**.17**	**-.03**	**.18**	**.30**	**.10**	**.15**	**.20**	**.05**	**.26**		.02	**.07**	**.19**
(12)	.00	-.02	.00	-.01	**-.03**	.00	-.02	**-.06**	-.02	**-.10**	**.02**		*.01*	-.01
(13)	**-.03**	**.15**	-.01	**.06**	**.06**	**.08**	**.34**	**.11**	**.04**	**-.08**	**.19**	**.03**		**-.04**
(14)	**.33**	**.22**	*.01*	**.05**	**.08**	**.05**	**.03**	**.20**	.01	**.12**	**.20**	-.01	**.10**	

(continued on next page)

Panel C: Concentration by Year

Year	Total Number of Firms	Percent with $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$
2006	1,548	50%
2007	1,634	55%
2008	1,955	56%
2009	2,032	60%
2010	2,329	62%
2011	2,470	66%
2012	2,478	68%
2013	2,429	70%
2014	2,418	73%
2015	2,367	76%

Panel D: Concentration by Industry

Industry	Total Number of Firms	Percent with $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$
Telecommunication Services	288	92%
Media	549	85%
Software & Services	1,748	84%
Energy	1,494	78%
Insurance	572	76%
Consumer Services	852	76%
Commercial & Professional Services	776	74%
Semiconductors & Semiconductor Equipment	849	71%
Technology Hardware & Equipment	1,510	69%
Utilities	697	66%
Health Care Equipment & Services	1,534	66%
Materials	1,173	65%
Food, Beverage & Tobacco	706	64%
Diversified Financials	526	64%
Retailing	1,001	61%
Food & Staples Retailing	163	61%
Automobiles & Components	255	58%
Real Estate	376	57%
Capital Goods	1,955	57%
Household & Personal Products	218	57%
Consumer Durables & Apparel	821	56%
Transportation	444	55%
Banks	1,715	48%
Pharmaceuticals, Biotechnology & Life Sciences	1,438	33%

Panel A presents means and medians of all corporate investment activities variables conditional on whether the firm reported non-GAAP earnings in years *t*-1 and *t*-2 (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$). The 'Weighted Mean' column presents the weighted means for the control group (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$) using the weights developed in the entropy balancing procedure. Panel B presents Pearson/Spearman pairwise correlations above/below the diagonal. *Italics*, underline,

and **bold** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Panels C and D present the total number of firms and concentration of $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$ firms by industry and year.

Table 4

Non-GAAP Earnings and Corporate Investment Activities

	(1)	(2)	(3)	(4)	(5)
	Investment$_t$	I(*Abnormal investment*$_t$ >0)	*Value acquired*$_t$	I(*Acquisition*$_t$)	I(*Large acquisition*$_t$)
Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	1.477**	0.184***	1.210**	0.140***	0.226***
	(2.35)	(7.02)	(2.10)	(5.04)	(4.75)
Tobins Q$_{t\text{-}1}$	0.997***	0.107***	1.257***	-0.102***	0.160***
	(5.40)	(7.31)	(5.12)	(-6.24)	(7.01)
Operating cash flow$_t$	0.234***	-0.005***	0.054***	1.433***	2.576***
	(4.30)	(-3.97)	(3.67)	(8.59)	(10.03)
Asset growth$_{t\text{-}1}$	7.560***	0.073	5.440***	0.490***	1.277***
	(5.18)	(1.03)	(4.18)	(6.40)	(11.80)
Log(*Market value*$_{t\text{-}1}$)	-0.686***	-0.089***	-0.823***	0.339***	-0.210***
	(-4.10)	(-11.86)	(-7.70)	(40.61)	(-14.95)
Intangibles$_{t\text{-}1}$	1.739	0.307***	3.071***	1.897***	1.579***
	(1.03)	(4.25)	(3.81)	(25.37)	(13.34)
I(*Material weakness*$_{t\text{-}1}$)	-1.365***	-0.156**	-0.873*	-0.204***	-0.320***
	(-3.46)	(-2.41)	(-1.75)	(-2.85)	(-2.67)
Sd(*Abnormal accruals*$_{t\text{-}5 \text{ thru } t\text{-}1}$)	0.008	0.073**	0.400	0.006	0.016
	(0.02)	(2.49)	(1.24)	(0.19)	(0.33)
Fitted probability of Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	-2.108	-0.947	-6.041	3.781***	-0.543
	(-0.12)	(-1.24)	(-0.56)	(4.69)	(-0.43)
Industry and year fixed effects	Both	Both	Both	Both	Both
Entropy weights applied	Yes	Yes	Yes	Yes	Yes
Number of observations	21,660	21,660	21,660	21,660	21,660
Adjusted R^2 / Coefficient of Discrimination	0.11	0.01	0.03	0.17	0.04

This table presents evidence on the relationship between investment activities and past non-GAAP reporting choices. Variable definitions are presented in the Appendix. WLS models are fitted for continuous dependent variables and logistic regressions are fitted for indicator dependent variables. Coefficient estimates and t-statistics (WLS) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for WLS models and Coefficient of Discrimination is

presented for logistic models. WLS regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 5

Descriptive Statistics – SFAS 141(R)

Panel A: Conditional Means and Medians

	$Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$ (N = 5,397)		$Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$ (N = 1,676)		
	Mean	Median	Mean	Median	Weighted Mean
(1) $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$	1.00	1.00	0.00	0.00	0.00
(2) I($Layoffs_t$)	0.50	1.00	0.42	0.00	0.50
(3) $POST\ 141R_t$	0.76	1.00	0.59	1.00	0.76
(4) $Tobins\ Q_{t\text{-}1}$	1.85	1.55	1.95	1.59	1.85
(5) $Operating\ cash\ flow_t$	10.35	9.97	9.98	10.23	10.35
(6) $Asset\ growth_{t\text{-}1}$	0.09	0.06	0.09	0.07	0.09
(7) Log($Market\ value_{t\text{-}1}$)	7.73	7.64	6.95	6.89	7.73
(8) $Intangibles_{t\text{-}1}$	0.26	0.23	0.16	0.09	0.26
(9) I($Material\ weakness_{t\text{-}1}$)	0.04	0.00	0.04	0.00	0.04
(10) Sd($Abnormal\ accruals_{t\text{-}5 \text{ thru } t\text{-}1}$)	0.37	0.15	0.34	0.16	0.37
(11) $Fitted\ probability\ of\ Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$	0.78	0.81	0.70	0.71	0.78

Panel B: Pairwise Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)		**.07**	**.16**	**-.04**	.02	.01	**.18**	**.21**	.00	*.02*	**.29**
(2)	**.07**		**-.10**	**-.03**	**.06**	**-.09**	**.44**	**.09**	**-.04**	.00	**-.11**
(3)	**.16**	**-.10**		**-.11**	**-.05**	**-.10**	-.02	-.01	**-.10**	**.10**	**.55**
(4)	-.02	.03	**-.15**		**.41**	**.20**	**.23**	.02	-.01	**.12**	**.07**
(5)	.00	**.06**	**-.07**	**.54**		**.10**	**.26**	**.05**	**-.06**	.01	**.07**
(6)	*-.02*	**-.08**	**-.11**	**.25**	**.16**		**.07**	**.04**	.01	**.03**	.01
(7)	**.17**	**.44**	-.02	**.30**	**.25**	**.08**		**.15**	**-.09**	**-.04**	**.04**
(8)	**.23**	**.13**	-.02	**.16**	**.10**	.01	**.18**		.01	**.13**	**.13**
(9)	.00	**-.04**	**-.10**	-.01	**-.06**	-.01	**-.10**	.01		.03	-.02
(10)	.01	.01	-.01	**.24**	**.15**	**.05**	**-.05**	**.20**	.03		**.15**
(11)	**.28**	**-.11**	**.53**	**.11**	**.09**	.01	**.05**	**.13**	-.01	**.19**	

(continued on next page)

Panel C: Concentration by Year

Year	Total Number of Firms	Percent with $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$
2006	618	61%
2007	626	67%
2008	647	68%
2009	579	69%
2010	684	77%
2011	777	78%
2012	788	81%
2013	753	83%
2014	831	84%
2015	770	88%

Panel D: Concentration by Industry

Industry	Total Number of Firms	Percent with $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$
Telecommunication Services	107	94%
Software & Services	822	89%
Energy	500	86%
Media	211	82%
Consumer Services	196	81%
Household & Personal Products	46	80%
Semiconductors & Semiconductor Equipment	280	80%
Commercial & Professional Services	337	80%
Insurance	115	79%
Health Care Equipment & Services	658	77%
Materials	459	76%
Technology Hardware & Equipment	542	76%
Food, Beverage & Tobacco	212	75%
Pharmaceuticals, Biotechnology & Life Sciences	322	74%
Real Estate	115	74%
Retailing	223	73%
Diversified Financials	279	71%
Food & Staples Retailing	66	70%
Utilities	114	69%
Banks	307	64%
Capital Goods	780	64%
Consumer Durables & Apparel	207	63%
Automobiles & Components	68	63%
Transportation	107	58%

Panel A presents means and medians of all corporate investment activities variables conditional on whether the firm reported non-GAAP earnings in years *t*-1 and *t*-2 (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$). The 'Weighted Mean' column presents the weighted means for the control group (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$) using the weights developed in the entropy balancing procedure. Panel B presents Pearson/Spearman pairwise correlations above/below the diagonal. *Italics*, underline,

and **bold** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Panels C and D present the total number of firms and concentration of $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$ firms by industry and year

Table 6

Non-GAAP Earnings and SFAS 141(R)

	(1)	(2)	(3)
		I(*Layoffs*$_t$) | I(*Acquisition*$_t$) = 1	
Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	0.009	-0.181**	-0.199**
	(0.22)	(-2.26)	(-2.02)
Post SFAS 141R$_t$	-0.516***	-0.641***	-0.254**
	(-11.28)	(-9.83)	(-2.36)
Post SFAS 141R$_t$ * *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$		0.248***	0.289**
		(2.70)	(2.55)
Tobins Q$_{t\text{-}1}$			-0.520***
			(-15.84)
Operating cash flow$_t$			-0.002
			(-0.55)
Asset growth$_{t\text{-}1}$			-1.065***
			(-7.13)
Log(*Market value*$_{t\text{-}1}$)			0.841***
			(43.78)
Intangibles$_{t\text{-}1}$			-0.403***
			(-3.24)
I(*Material weakness*$_{t\text{-}1}$)			-0.358***
			(-2.66)
Sd(*Abnormal accruals*$_{t\text{-}5 \text{ thru } t\text{-}1}$)			0.048
			(0.91)
Fitted probability of Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$			-4.075***
			(-8.91)
Industry fixed effects	No	No	Yes
Entropy weights applied	Yes	Yes	Yes
Number of observations	7,073	7,073	7,073
Coefficient of Discrimination	0.01	0.01	0.31

This table presents logistic regressions examining the effect of SFAS 141(R), which became effective in 2009, on the relationship between layoffs and non-GAAP reporting choices in an acquisition. Variable definitions are presented in the Appendix. Coefficient estimates and z-statistics are presented within the columns. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 7

Sample Construction – Write-Down Recognition

Panel A: Data availability

	Firm-Years Remaining
Compustat variables (2006 – 2015):	
Log(*Market value*$_t$)	
I(*Write-down*$_t$)	
Abnormal investment$_{t-1}$	
Adjusted BTM$_t$	
I(*Adjusted BTM*$_t$ > 1)	
Goodwill$_t$	
Other intangibles$_t$	
Count of segments$_t$	64,636
CRSP variables:	
Weak$_t$	
I(*Return*$_t$ < 0)	
Return$_t$	44,375
Audit Analytics variable:	
New CEO$_t$	43,880
Earnings announcement press releases:	
Nongaap$_{t-1}$	
Nongaap $_{t-2}$	30,551

Panel B: Non-GAAP Reporting Histories

Nongaap $_{t-2}$	*Nongaap*$_{t-1}$	*Nongaap*$_{t-1 \text{ and } t-2}$	Firm-Years
0	0	0	10,089
1	1	1	16,989
0	1	N/A	2,255
1	0	N/A	1,218

Panel A presents sample attrition based on data availability from different data sources. Panel B presents the distribution of past non-GAAP reporting choices for firm-year observations with all data available.

Table 8

Descriptive Statistics – Write-Down Recognition

Panel A: Means and Medians

	$Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$ (N = 16,989)		$Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$ (N = 10,089)		
	Mean	Median	Mean	Median	Weighted Mean
(1) $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$	1.00	1.00	0.00	0.00	0.00
(2) I($Write\text{-}down_t$)	0.24	0.00	0.14	0.00	0.20
(3) $Abnormal\ investment_{t\text{-}1}$	2.64	-1.03	0.32	-0.99	2.64
(4) $Adjusted\ BTM_t$	0.73	0.73	0.74	0.77	0.73
(5) I($Adjusted\ BTM_t > 1$)	0.17	0.00	0.23	0.00	0.17
(6) $Goodwill_t$	0.14	0.07	0.06	0.00	0.14
(7) $Other\ intangibles_t$	0.07	0.03	0.03	0.00	0.07
(8) $Weak_t$	0.25	0.00	0.33	0.00	0.25
(9) I($Return_t < 0$)	0.43	0.00	0.46	0.00	0.43
(10) $Return_t$	0.12	0.05	0.09	0.03	0.12
(11) $New\ CEO_t$	0.11	0.00	0.10	0.00	0.11
(12) $Count\ of\ segments_t$	2.71	2.00	2.07	1.00	2.71
(13) Log($Market\ value_t$)	7.09	7.11	5.69	5.58	7.09
(14) $Fitted\ probability\ of\ Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$	0.68	0.71	0.53	0.54	0.68

Panel B: Pairwise Correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1)		**.11**	**.02**	-.01	**-.08**	**.25**	**.20**	**-.09**	**-.03**	**.02**	.01	**.16**	**.33**	**.39**
(2)	**.11**		.01	**.16**	**.13**	**.15**	**.17**	**.09**	**.10**	**-.06**	**.08**	**.15**	.01	**.05**
(3)	**.03**	**-.02**		-.01	-.01	**.03**	**.03**	*-.01*	.00	-.01	.00	.00	**.02**	.00
(4)	**-.02**	**.14**	**.12**		**.64**	**-.08**	**-.06**	**.32**	**.21**	**-.18**	**.03**	**.02**	**-.35**	**-.05**
(5)	**-.08**	**.13**	**.07**	**.68**		**-.11**	**-.06**	**.32**	**.20**	**-.15**	**.02**	**-.06**	**-.34**	**-.08**
(6)	**.29**	**.21**	.00	**-.14**	**-.13**		**.35**	**-.12**	**.02**	**-.03**	**.02**	**.16**	**.19**	**.19**
(7)	**.29**	**.27**	*-.01*	**-.15**	**-.12**	**.61**		**-.04**	**.02**	0	**.02**	**.08**	**.08**	**.14**
(8)	**-.09**	**.09**	.00	**.34**	**.32**	**-.15**	**-.10**		**.38**	**-.31**	**.08**	**-.14**	**-.35**	**-.13**
(9)	**-.03**	**.10**	-.01	**.20**	**.20**	.00	.01	**.38**		**-.52**	**.06**	**-.05**	**-.19**	-.01
(10)	**.03**	**-.12**	.00	**-.25**	**-.24**	.00	.00	**-.44**	**-.86**		**-.03**	**.02**	**.10**	.00
(11)	*.01*	**.08**	**-.03**	**.02**	**.02**	.01	**.02**	**.08**	**.06**	**-.07**		.01	**-.04**	.01
(12)	**.18**	**.15**	-.01	.01	**-.06**	**.25**	**.23**	**-.15**	**-.05**	**.04**	.01		**.36**	**.20**
(13)	**.34**	.02	*.01*	**-.34**	**-.34**	**.27**	**.18**	**-.35**	**-.19**	**.20**	**-.04**	**.35**		**.21**
(14)	**.38**	**.04**	**-.03**	**-.09**	**-.08**	**.17**	**.20**	**-.10**	.01	.00	**.02**	**.20**	**.21**	

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Panel C: Concentration by Year

Year	Total Number of Firms	Percent with $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$
2006	2,488	44%
2007	2,576	48%
2008	2,702	52%
2009	2,712	58%
2010	2,679	64%
2011	2,747	67%
2012	2,784	69%
2013	2,774	72%
2014	2,790	74%
2015	2,826	76%

Panel D: Concentration by Industry

Industry	Total Number of Firms	Percent with $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$
Telecommunication Services	330	92%
Media	600	85%
Software & Services	2,129	83%
Energy	1,785	79%
Insurance	904	77%
Consumer Services	949	76%
Real Estate	1,280	74%
Commercial & Professional Services	871	73%
Semiconductors & Semiconductor Equipment	942	70%
Technology Hardware & Equipment	1,713	66%
Utilities	714	66%
Materials	1,274	65%
Health Care Equipment & Services	1,777	63%
Food, Beverage & Tobacco	587	63%
Diversified Financials	1,036	62%
Retailing	1,106	61%
Food & Staples Retailing	180	61%
Automobiles & Components	268	58%
Capital Goods	2,183	57%
Transportation	484	56%
Consumer Durables & Apparel	912	55%
Household & Personal Products	249	54%
Banks	3,077	38%
Pharmaceuticals, Biotechnology & Life Sciences	1,728	31%

Panel A presents means and medians of all write-down recognition variables conditional on whether the firm reported non-GAAP earnings in years *t*-1 and *t*-2 (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2}$). The 'Weighted Mean' columns presents the weighted means for the control group (i.e. $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 0$) using the weights developed in the entropy balancing procedure. Panel B presents Pearson/Spearman pairwise correlations above/below the diagonal. *Italics*, underline, and **bold** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Panels C and D present the total number of firms and concentration of $Nongaap_{t\text{-}1 \text{ and } t\text{-}2} = 1$ firms by year and industry.

Table 9

Non-GAAP Earnings and Write-Down Recognition

	Logistic Regression I(*Write-down*$_t$)	
	Coefficient	z-statistic
Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	0.264***	(9.04)
Abnormal investment$_{t\text{-}1}$	-0.0005**	(-2.08)
I(*Adjusted BTM*$_t$ > 1)	0.824***	(6.07)
Adjusted BTM$_t$	1.078***	(12.49)
Goodwill$_t$	0.617***	(5.52)
Other intangibles$_t$	2.368***	(16.77)
Weak$_t$	0.268***	(5.75)
I(A*djusted BTM*$_t$ > 1) * *Adjusted BTM*$_t$	-0.685***	(-5.72)
I(*Adjusted BTM*$_t$ > 1) * *Goodwill*$_{t\text{-}1}$	2.048***	(8.84)
I(*Adjusted BTM*$_t$ > 1) * *Other intangibles*$_{t\text{-}1}$	1.200**	(3.01)
I(*Adjusted BTM*$_t$ > 1) * *Weak*$_t$	0.325***	(4.15)
I(*Return*$_t$ < 0)	-0.127***	(-2.94)
Return$_t$	0.030	(1.27)
I(*Return*$_t$ < 0) * *Return*$_t$	-1.488***	(-12.46)
New CEO$_t$	0.462***	(10.84)
Count of segments$_t$	0.122***	(14.83)
Log(*Market value*$_{t\text{-}1}$)	0.097***	(10.59)
Fitted probability of N*ongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$	-3.194***	(-4.51)
Industry and year fixed effects	Both	
Entropy weights applied	Yes	
Number of observations	27,078	
Coefficient of Discrimination	0.14	

This table presents evidence on the relationship between managers' choice to record asset write-downs and past non-GAAP reporting choices, using a logistic regression. Variable definitions are presented in the Appendix. Coefficient estimates and z-statistics are presented within the columns. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 10

Sample Construction – Stock Option Expense Measurement

	Firm-Years Remaining
Compustat variables (2006 – 2014):	
Size of grant$_t$	
Big four auditor$_t$	
Institutional ownership$_t$	
Log(*market value*$_t$)	48,147
CRSP variables:	
Volatility forecast error$_t$	
I(*Conservative volatility input*$_t$)	
Benchmark adjustment$_t$	
I(*Conservative benchmark*$_t$)	
Historical volatility$_t$	21,558
Thomson Reuters variable:	
Institutional ownership$_t$	20,318
Earnings announcement press releases:	
Nongaap $_t$	16,723
Nine consecutive years of non-GAAP reporting choice	2,592

This table presents sample attrition based on data availability from different data sources and nine consecutive years of observations for each firm.

Table 11

Descriptive Statistics – Stock Option Expense Measurement

Panel A: Means and Medians – Full Sample (N = 2,592)

	Stock comp. excluded$_t$ = 1 (N =815)		*Stock comp. excluded*$_t$ = 0 (N = 1,777)		
Main test:	Mean	Median	Mean	Median	Weighted Mean
(1) *Stock comp. excluded*$_t$	1.00	1.00	0.00	0.00	0.00
(2) *Volatility forecast error*$_t$	0.37	0.28	0.33	0.27	0.31
(3) I(*Conservative volatility input*$_t$)	0.77	1.00	0.72	1.00	0.72
(4) *Benchmark adjustment*$_t$	0.24	0.16	0.23	0.16	0.24
(5) I(*Conservative benchmark*$_t$)	0.68	1.00	0.66	1.00	0.68
(6) *Historical volatility*$_t$	0.44	0.42	0.42	0.37	0.44
(7) *Size of grant*$_t$	0.02	0.02	0.01	0.01	0.02
(8) *Big four auditor*$_t$	0.87	1.00	0.88	1.00	0.87
(9) *Institutional ownership*$_t$	0.73	0.76	0.69	0.73	0.73
(10) Log(*market value*$_t$)	7.18	7.09	7.61	7.49	7.18
(11) *Fitted probability of exclusion*$_t$	0.52	0.46	0.22	0.15	0.52

Panel B: Pairwise Correlations – Full Sample

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)		*.03*	.05	.01	-.01	**.06**	**.22**	-.01	**.09**	**-.10**	**.55**
(2)	.02		**.67**	**.83**	**-.63**	**.10**	**-.11**	**-.06**	.01	**.05**	**.06**
(3)	.05	**.76**		**.56**	**.67**	*.04*	**-.05**	-.04	.03	**.08**	**.07**
(4)	.00	**.85**	**.66**		**-.67**	**.32**	**-.08**	-.04	-.01	.05	.05
(5)	-.01	**-.70**	**.67**	**-.82**		**-.17**	.03	.04	-.01	*-.04*	**-.07**
(6)	**.12**	**.06**	*.04*	**.28**	**-.18**		**.28**	**-.21**	**-.34**	**-.57**	**.10**
(7)	**.22**	**-.16**	**-.08**	**-.12**	**.06**	**.32**		**-.09**	**-.16**	**-.38**	**.26**
(8)	-.01	-.04	-.04	-.04	.04	**-.22**	**-.10**		**.37**	**.40**	**-.09**
(9)	**.09**	.02	.03	.01	-.01	**-.24**	**-.10**	**.30**		**.35**	.03
(10)	**-.10**	**.10**	**.08**	**.07**	-.04	**-.61**	**-.45**	**.40**	**.28**		**-.17**
(11)	**.51**	.01	.03	.00	-.02	**.18**	**.27**	-.03	**.10**	**-.15**	

(continued on next page)

Panel C: Concentration by Year

Year	Total Number of Firms	Percent with *Stock comp. excluded*$_t$ = 1
2006	288	39%
2007	288	31%
2008	288	29%
2009	288	30%
2010	288	31%
2011	288	31%
2012	288	31%
2013	288	31%
2014	288	31%

Panel D: Concentration by Industry

Industry	Total Number of Firms	Percent with *Stock comp. excluded*$_t$ = 1
Software & Services	234	87%
Semiconductors & Semiconductor Equipment	117	78%
Media	36	56%
Diversified Financials	36	50%
Technology Hardware & Equipment	207	48%
Consumer Services	126	45%
Retailing	81	43%
Health Care Equipment & Services	279	33%
Real Estate	99	32%
Commercial & Professional Services	72	24%
Energy	135	22%
Pharmaceuticals, Biotechnology & Life Sciences	405	16%
Household & Personal Products	54	15%
Materials	225	10%
Capital Goods	198	8%
Insurance	135	7%
Food, Beverage & Tobacco	72	1%
Banks	81	1%

Panel A presents means and medians of all stock option expense measurement variables conditional on whether the firm excluded stock option expense from its non-GAAP earnings (i.e. *Stock comp. excluded*$_t$). The 'Weighted Mean' column presents the weighted means for the control group (i.e. *Stock comp. excluded*$_t$ = 0) using the weights developed in the entropy balancing procedure. Panel B presents Pearson/Spearman pairwise correlations above/below the diagonal. *Italics*, underline, and **bold** represent significance at the 10 percent, 5 percent, and 1

percent levels, respectively. Panels C and D present the total number of firms and concentration of *Stock comp. excluded*$_t$ = 1 firms by year and industry.

Table 12

Non-GAAP Earnings and Stock Option Expense Measurement

	(1)	(2)
	Volatility forecast error$_t$	I(*Conservative volatility input*$_t$)
Stock comp. excluded$_t$	0.052***	0.381**
	(2.88)	(2.18)
Benchmark adjustment$_t$	0.920***	
	(21.41)	
I(*Conservative benchmark*$_t$)		3.692***
		(16.71)
Historical volatility$_t$	-0.760***	2.111***
	(-4.56)	(3.44)
Size of grant$_t$	-1.469***	10.103**
	(-2.60)	(2.59)
Big four auditor$_t$	-0.015	0.583*
	(-0.58)	(1.85)
Institutional ownership$_t$	-0.040	-0.909**
	(-0.88)	(-2.00)
Log(*Market value*$_t$)	-0.040***	-0.023
	(-3.57)	(-0.37)
Fitted probability of exclusion$_t$	0.608	1.478
	(1.44)	(0.23)
Industry and year fixed effects	Both	Both
Entropy weights applied	Yes	Yes
Number of observations	2,592	2,592
Adjusted R^2 / Coefficient of Discrimination	0.791	0.546

This table presents evidence on the relationship between the exclusion of stock option expense from non-GAAP earnings and the measurement of the expected volatility input. Variable definitions are presented in the Appendix. A WLS model is fitted for *Volatility forecast error*$_t$ and a logistic regression is fitted for I(*Conservative volatility input*$_t$). Coefficient estimates and t-statistics (WLS) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for WLS models and Coefficient of Discrimination is presented for logistic models. WLS regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 13

Descriptive Statistics - SFAS 123(R)

Panel A: Means and Medians – Difference-in-Differences Sample (N = 768)

	Post excluder$_t$ = 1 (N = 384)		*Post excluder*$_t$ = 0 (N = 384)	
Difference-in-differences test:	Mean	Median	Mean	Median
(1) *Post Excluder*$_t$	1.00	1.00	0.00	0.00
(2) *Volatility forecast error*$_t$	0.21	0.12	0.19	0.10
(3) I(*Conservative volatility input*$_t$)	0.37	0.00	0.41	0.00
(4) *Benchmark adjustment*$_t$	0.19	0.08	0.10	0.01
(5) I(*Conservative benchmark*$_t$)	0.41	0.00	0.48	0.00
(6) *Historical volatility*$_t$	0.55	0.49	0.49	0.39
(7) *Size of grant*$_t$	0.03	0.03	0.02	0.01
(8) *Big four auditor*$_t$	0.90	1.00	0.89	1.00
(9) *Institutional ownership*$_t$	0.70	0.74	0.66	0.70
(10) Log(*market value*$_t$)	6.95	6.84	6.93	6.60
(11) *Post SFAS 123R*$_t$	0.50	0.50	0.50	0.50

Panel B: Pairwise Correlations – Difference-in-Differences Sample (N = 768)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)		.03	.04	**.10**	.07	**.13**	**.32**	.00	**.10**	.01	.00
(2)	.04		**.66**	**.76**	**.57**	**.44**	**.19**	.03	**-.16**	**-.24**	**-.32**
(3)	.04	**.84**		**.59**	**.65**	**.31**	**.15**	.04	-.09	**-.17**	**-.28**
(4)	.09	**.82**	**.68**		**.73**	**.65**	**.34**	-.02	**-.18**	**-.27**	**-.37**
(5)	.07	**.68**	**.65**	**.86**		**.45**	**.26**	-.01	-.08	**-.18**	**-.35**
(6)	**.17**	**.42**	**.30**	**.61**	**.47**		**.46**	**-.14**	**-.46**	**-.56**	**-.25**
(7)	**.39**	**.26**	**.19**	**.36**	**.30**	**.55**		**-.11**	**-.20**	**-.36**	**-.18**
(8)	.00	.03	.04	-.03	-.01	**-.17**	-.09		**.26**	**.32**	-.09
(9)	.09	**-.12**	*-.07*	**-.13**	*-.06*	**-.39**	**-.17**	**.25**		**.44**	**.16**
(10)	.01	**-.26**	**-.17**	**-.28**	**-.18**	**-.62**	**-.39**	**.32**	**.45**		.05
(11)	.00	**-.33**	**-.28**	**-.39**	**-.35**	**-.23**	**-.18**	-.09	**.16**	.05	

(continued on next page)

Panel C: Concentration by Year

Year	Total Number of Firms	Percent with *Stock comp. excluded*$_t$ = 1	Percent with *Post excluder*$_t$ = 1
2004	192	0%	50%
2005	192	0%	50%
2006	192	50%	50%
2007	192	50%	50%

Panel D: Concentration by Industry

Industry	Total Number of Firms	Percent with *Post excluder*$_t$ = 1
Media	12	100%
Diversified Financials	4	100%
Semiconductors & Semiconductor Equipment	76	79%
Technology Hardware & Equipment	92	78%
Software & Services	136	76%
Consumer Services	28	71%
Energy	20	60%
Real Estate	24	50%
Household & Personal Products	8	50%
Health Care Equipment & Services	72	44%
Commercial & Professional Services	40	30%
Pharmaceuticals, Biotechnology & Life Sciences	96	29%
Retailing	28	14%
Capital Goods	60	13%
Consumer Durables & Apparel	8	0%
Food, Beverage & Tobacco	12	0%
Transportation	8	0%
Materials	8	0%
Utilities	12	0%
Automobiles & Components	8	0%
Insurance	16	0%

Panel A presents means and medians of all stock option expense measurement variables conditional on whether the firm excluded stock option expense from its non-GAAP earnings (i.e. *Stock comp. excluded*$_t$). The 'Weighted Mean' column presents the weighted means for the control group (i.e. *Stock comp. excluded*$_t$ = 0) using the weights developed in the entropy balancing procedure. Panel B presents Pearson/Spearman pairwise correlations above/below the diagonal. *Italics*, underline, and **bold** represent significance at the 10 percent, 5 percent, and 1 percent levels, respectively. Panels C and D present the total number of firms and concentration of *Stock comp. excluded*$_t$ = 1 firms by year and industry.

Table 14

Non-GAAP Earnings and SFAS 123(R)

	(1)	(2)
	Volatility forecast error$_t$	I(*Conservative volatility input*$_t$)
Post excluder$_t$	-0.083	-0.574
	(-1.47)	(1.52)
Post SFAS 123R$_t$	-0.111***	-1.177***
	(-3.67)	(-3.57)
Post excluder$_t$ * *Post SFAS 123R*$_t$	0.091*	1.066**
	(1.78)	(2.44)
Benchmark adjustment$_t$	0.930***	
	(14.87)	
I(*Conservative benchmark*$_t$)		3.189***
		(11.87)
Historical volatility$_t$	-0.519***	-0.179
	(-5.78)	(-0.26)
Size of grant$_t$	-2.263**	-12.17**
	(-2.68)	(-2.31)
Big four auditor$_t$	0.125***	0.811**
	(6.29)	(2.23)
Institutional ownership$_t$	-0.157*	-0.269
	(-2.99)	(-0.49)
Log(*Market value*$_t$)	-0.035*	-0.163**
	(-1.86)	(-2.08)
Industry fixed effects	Yes	Yes
Entropy weights applied	Yes	Yes
Number of observations	768	768
Adjusted R^2 / Coefficient of Discrimination	0.625	0.498

This table presents evidence on the effect of SFAS 123(R) on the relationship between the exclusion of stock option expense from non-GAAP earnings and the measurement of the expected volatility input. Variable definitions are presented in the Appendix. An ordinary least squares model is fitted for *Volatility forecast errot*$_t$ and a logistic regression is fitted for I(*Conservative volatility input*$_t$). Coefficient estimates and t-statistics (ordinary least squares) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for ordinary least squares models and Coefficient of Discrimination is presented for logistic models. ordinary least squares regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 15

Relationship between EBITDA and Capital Expenditures

	(1) $Capex_t$	(2) I(*Abnormal* $Capex_t > 0$)
$EBITDA_{t\text{-}1 \text{ and } t\text{-}2}$	0.615**	0.127***
	(2.36)	(3.05)
Tobins $Q_{t\text{-}1}$	0.270***	0.017
	(3.25)	(0.81)
Operating cash flow$_t$	0.168**	-0.003
	(2.41)	(-1.35)
Asset growth$_{t\text{-}1}$	3.295***	0.531***
	(2.72)	(5.84)
Log(*Market value*$_{t\text{-}1}$)	-0.187	-0.027**
	(-1.50)	(-2.39)
Intangibles$_{t\text{-}1}$	-6.338***	-0.809***
	(-5.41)	(-7.62)
I(*Material weakness*$_{t\text{-}1}$)	0.086	0.078
	(0.47)	(0.88)
Sd(*Abnormal accruals*$_{t\text{-}5 \text{ thru } t\text{-}1}$)	-0.051	-0.014
	(-0.26)	(-0.35)
Fitted probability of $EBITDA_{t\text{-}1 \text{ and } t\text{-}2}$	-7.419	-1.591
	(-1.31)	(-1.21)
Industry and year fixed effects	Both	Both
Entropy weights applied	Yes	Yes
Number of observations	13,337	13,337
Adjusted R^2 / Coefficient of Discrimination	0.38	0.01

This table presents evidence on the relationship between capital and past non-GAAP reporting choices. Variable definitions are presented in the Appendix. WLS models are fitted for continuous dependent variables and logistic regressions are fitted for indicator dependent variables. Coefficient estimates and t-statistics (WLS) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for WLS models and Coefficient of Discrimination is presented for logistic models. WLS regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 16

Controlling for Prior Year Corporate Investment Activities

	(1)	(2)	(3)	(4)	(5)
	Investment$_t$	I(*Abnormal investment*$_t$ >0)	*Value acquired*$_t$	I(*Acquisition*$_t$)	I(*Large acquisition*$_t$)
Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	0.013**	0.184***	1.135**	0.126***	0.213***
	(2.34)	(7.12)	(2.04)	(4.44)	(4.47)
[Dependent Variable]$_{t\text{-}1}$	0.105***	0.323***	0.064***	1.037***	0.632***
	(2.90)	(11.61)	(2.84)	(34.07)	(9.39)
Tobins Q$_{t\text{-}1}$	0.010***	0.066***	1.241***	-0.069***	0.161***
	(5.78)	(4.47)	(5.10)	(-4.08)	(7.00)
Operating cash flow$_t$	0.228***	-0.783***	5.602***	1.489***	2.527***
	(4.41)	(-5.96)	(4.19)	(8.71)	(9.79)
Asset growth$_{t\text{-}1}$	0.031**	0.068	3.650***	-0.072	0.896
	(2.04)	(0.95)	(2.68)	(-0.92)	(7.63)
Log(*Market value*$_{t\text{-}1}$)	-0.006***	-0.058***	-0.768***	0.273***	-0.199***
	(-4.32)	(-7.77)	(-7.37)	(31.42)	(-13.93)
Intangibles$_{t\text{-}1}$	0.008	0.047	2.473***	1.357***	1.380***
	(0.45)	(0.65)	(3.23)	(17.37)	(11.38)
I(*Material weakness*$_{t\text{-}1}$)	-0.013***	-0.140**	-0.947*	-0.236**	-0.319**
	(-3.45)	(-2.17)	(-1.85)	(-3.23)	(-2.65)
Sd(*Abnormal accruals*$_{t\text{-}5 \text{ thru } t\text{-}1}$)	0.0003	0.075**	0.365	-0.012	0.022
	(0.08)	(2.56)	(1.25)	(-0.37)	(0.45)
Fitted probability of Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	0.002	2.428***	-5.634	3.837***	-0.400
	(0.01)	(3.19)	(-0.57)	(4.65)	(-0.32)
Industry and year fixed effects	Both	Both	Both	Both	Both
Entropy weights applied	Yes	Yes	Yes	Yes	Yes
Number of observations	21,660	21,660	21,660	21,660	21,660
Adjusted R^2 / Coefficient of Discrimination	0.11	0.02	0.03	0.21	0.05

This table presents evidence on the relationship between investment activities and past non-GAAP reporting choices. Variable definitions are presented in the Appendix. WLS models are fitted for continuous dependent variables and logistic regressions are fitted for indicator dependent variables. Coefficient estimates and t-statistics (WLS) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for WLS models and Coefficient of Discrimination is presented for logistic models. WLS regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 17

Discretionary Vs. Non-Discretionary Asset Write-Downs

	Logistic Regression I(*Write-down*$_t$)	
	Coefficient	z-statistic
Nongaap$_{t\text{-}1 \text{ and } t\text{-}2}$	0.318***	(9.69)
I(A*djusted BTM*$_t > 1$) * *Nongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$	-0.258***	(-3.56)
Abnormal investment$_{t\text{-}1}$	-0.001***	(-3.86)
I(*Adjusted BTM*$_t > 1$)	1.010***	(7.00)
Adjusted BTM$_t$	1.066***	(12.33)
Goodwill$_{t\text{-}1}$	0.619***	(5.53)
Other intangibles$_{t\text{-}1}$	2.381***	(16.84)
Weak$_t$	0.266***	(5.71)
I(A*djusted BTM*$_t > 1$) * *Adjusted BTM*$_t$	-0.717***	(-6.01)
I(*Adjusted BTM*$_t > 1$) * *Goodwill*$_{t\text{-}1}$	2.016***	(8.71)
I(*Adjusted BTM*$_t > 1$) * *Other intangibles*$_{t\text{-}1}$	1.272***	(3.19)
I(*Adjusted BTM*$_t > 1$) * *Weak*$_t$	0.313***	(4.00)
I(*Return*$_t < 0$)	-0.131***	(-3.03)
Return$_t$	0.031	(1.32)
I(*Return*$_t < 0$) * *Return*$_t$	-1.522***	(-12.72)
New CEO$_t$	0.460***	(10.78)
Count of segments$_t$	0.123***	(14.88)
Log(*Market value*$_{t\text{-}1}$)	0.098***	(10.63)
Fitted probability of N*ongaap*$_{t\text{-}1 \text{ and } t\text{-}2}$	-3.223***	(-4.55)
Industry and year fixed effects	Both	
Entropy weights applied	Yes	
Number of observations	27,078	
Coefficient of Discrimination	0.14	

This table presents evidence on the relationship between managers' choice to record asset write-downs and past non-GAAP reporting choices, using a logistic regression. Variable definitions are presented in the Appendix. Coefficient estimates and z-statistics are presented within the columns. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 18

Percentage Deviation from Historical Volatility – Main Test

	(1) *Adjustment to historical volatility$_t$*	(2) I(*Conservative adjustment to historical volatility$_t$*)
Stock comp. excluded$_t$	0.036***	0.713***
	(3.91)	(5.43)
Perfect information adjustment$_t$	0.051**	
	(2.35)	
I(*Perfect information is conservative$_t$*)		-0.478***
		(-2.88)
Historical volatility$_t$	-0.645***	-7.670***
	(-7.34)	(-13.01)
Size of grant$_t$	-0.880**	-5.350*
	(-2.42)	(-1.77)
Big four auditor$_t$	-0.012	-0.359
	(-0.79)	(-1.62)
Institutional ownership$_t$	-0.058	-0.491
	(-1.11)	(-1.47)
Log(*Market value$_t$*)	-0.029***	-0.364***
	(-3.74)	(-7.05)
Fitted probability of exclusion$_t$	0.309	13.607***
	(1.05)	(2.88)
Industry and year fixed effects	Both	Both
Entropy weights applied	Yes	Yes
Number of observations	2,592	2,592
Adjusted R^2 / Coefficient of Discrimination	0.343	0.223

This table presents evidence on the relationship between the exclusion of stock option expense from non-GAAP earnings and the measurement of the expected volatility input. Variable definitions are presented in the Appendix. A WLS model is fitted for *Adjustment to historical volatility$_t$* and a logistic regression is fitted for I(*Conservative adjustment to historical volatility$_t$*). Coefficient estimates and t-statistics (WLS) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for WLS models and Coefficient of Discrimination is presented for logistic models. WLS regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Table 19

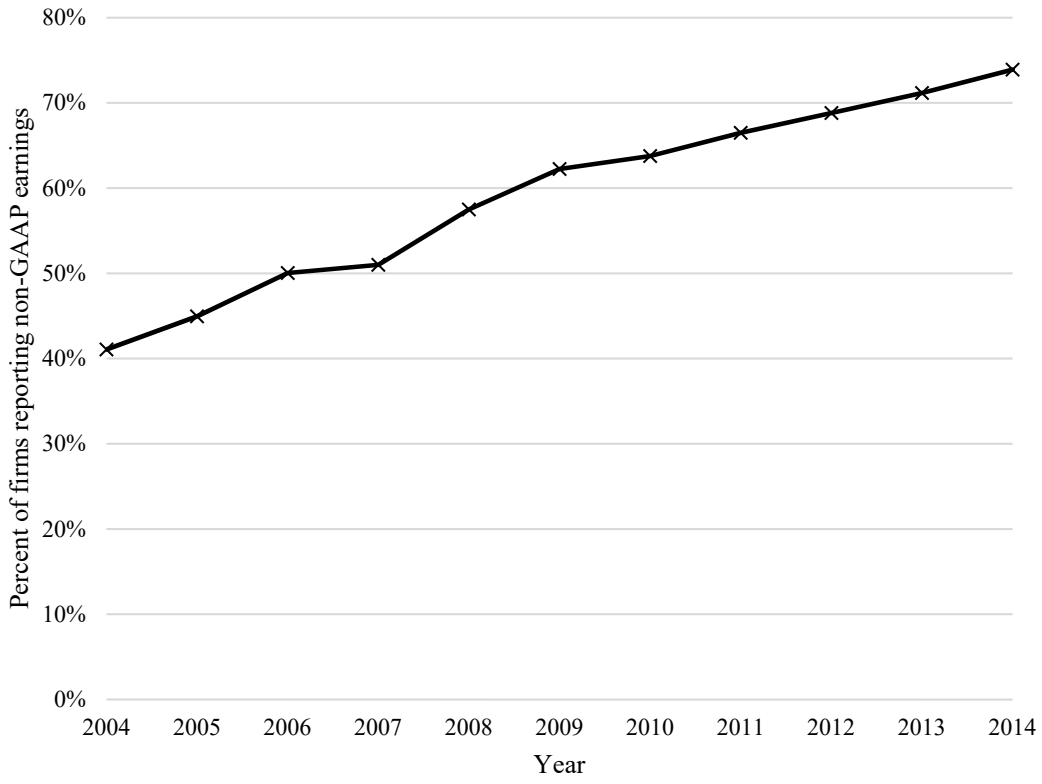
Percentage Deviation from Historical Volatility – SFAS 123(R)

	(1) *Adjustment to historical volatility$_t$*	(2) I(*Conservative adjustment to historical volatility$_t$*)
Post excluder$_t$	0.046	0.387
	(0.58)	(1.43)
Post SFAS 123R$_t$	0.021	0.599
	(0.67)	(2.56)
*Post excluder$_t$ * Post SFAS 123R$_t$*	-0.044	-0.548*
	(-1.22)	(1.70)
Perfect information adjustment$_t$	0.088**	
	(2.17)	
I(*Perfect information is conservative$_t$*)		-0.224
		(-1.10)
Historical volatility$_t$	-0.344***	-3.436***
	(-3.20)	(-6.05)
Size of grant$_t$	-1.490**	-7.670*
	(-2.26)	(-1.86)
Big four auditor$_t$	0.050*	0.145
	(1.80)	(0.53)
Institutional ownership$_t$	-0.112**	-0.104
	(-1.99)	(-0.26)
Log(*Market value$_t$*)	-0.021	-0.331***
	(1.36)	(-5.21)
Industry fixed effects	Yes	Yes
Entropy weights applied	Yes	Yes
Number of observations	768	768
Adjusted R^2 / Coefficient of Discrimination	0.134	0.170

This table presents evidence on the effect of SFAS 123(R), which became effective in 2005, on the relationship between the exclusion of stock option expense from non-GAAP earnings and the measurement of the expected volatility input. Variable definitions are presented in the Appendix. An ordinary least squares model is fitted for *Adjustment to historical volatility$_t$* and a logistic regression is fitted for I(*Conservative adjustment to historical volatility$_t$*). Coefficient estimates and t-statistics (ordinary least squares) or z-statistics (logistic) are presented within the columns. Adjusted R^2 is presented for ordinary least squares models and Coefficient of Discrimination is presented for logistic models. ordinary least squares regression standard errors are clustered by industry and year. *, **, and *** represent statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively, using two-tailed tests.

Figure 1

Non-GAAP Earnings Reporting Trend

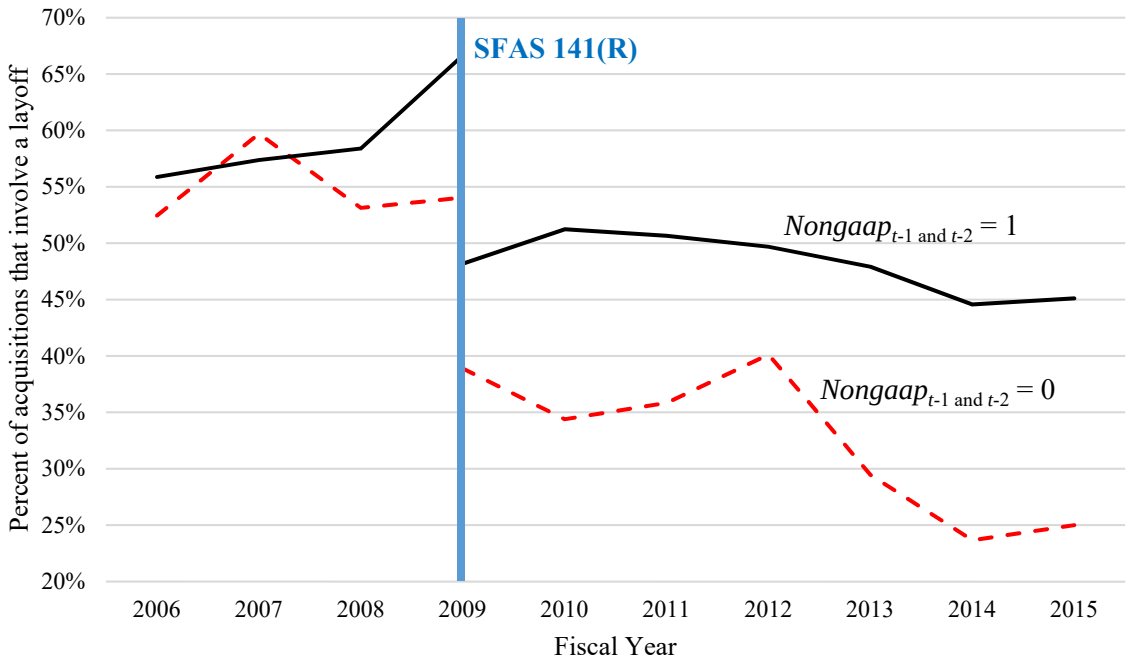


This figure presents the percent of firms reporting non-GAAP earnings in the population of firms that issue fourth quarter earnings press releases. The sample period starts in 2004 and ends in 2014.

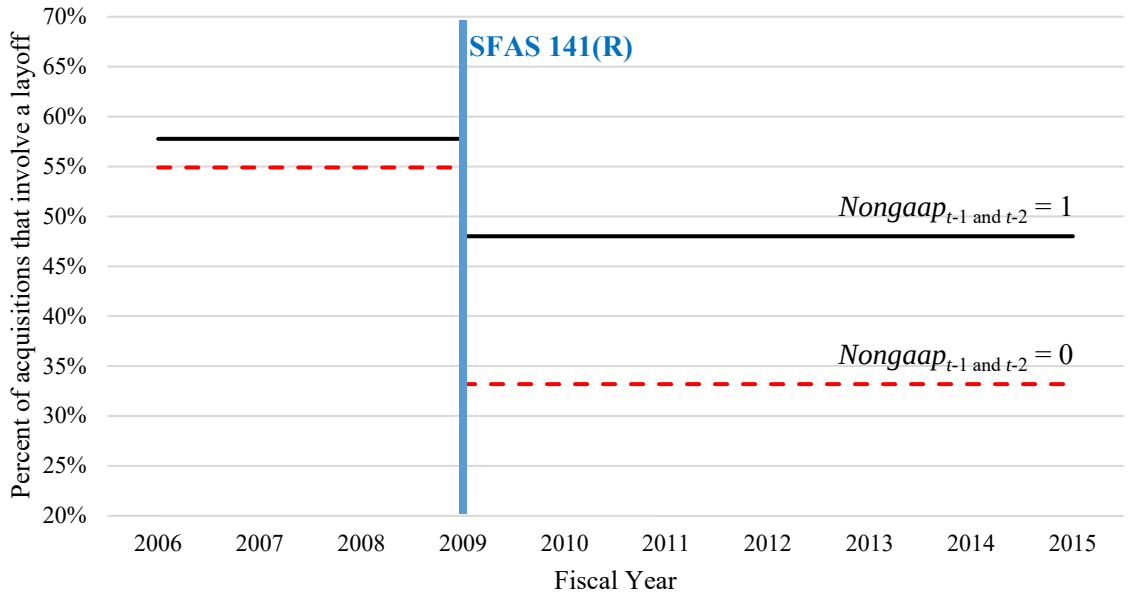
Figure 2

Effect of SFAS 141R on Layoff Acquisitions

Panel A: Yearly Averages



Panel B: Pre vs Post SFAS 141(R) Averages

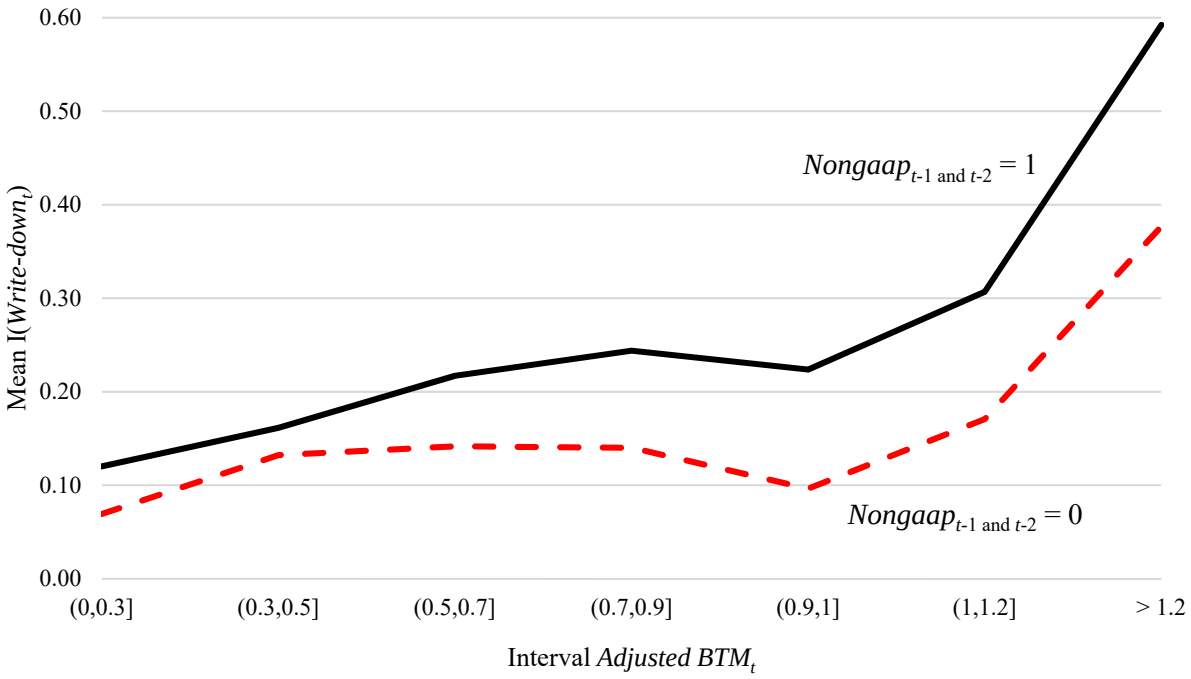


Panel A presents the yearly mean of I(*Layoffs*$_t$) for the sub-sample of 7,073 firms that made an acquisition in year *t* (i.e., I(*Acquisition*$_t$) = 1 for all firms), conditional on past non-GAAP reporting choices. The vertical bars at the year

2009 indicates the year that SFAS 141(R) became effective. Panel B presents horizontal bars for the conditional means for the entire pre- and post-periods.

Figure 3

Asset Write-Downs and Past Non-GAAP Reporting Choices

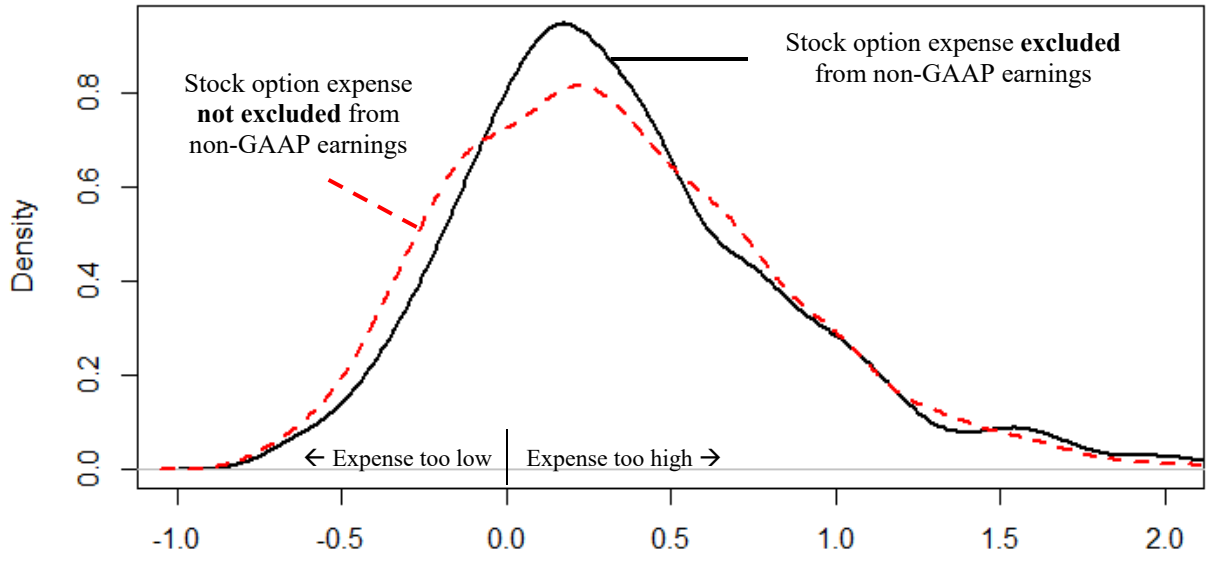


This figure presents the percent of firms that record asset write-downs, I(*Write-down*$_t$), for different intervals of pre-write-down book-to-market (i.e., *Adjusted BTM*$_t$) conditional on past non-GAAP reporting choices. Intervals are 0-0.3, 0.3-0.5, 0.5-0.7, 0.7-0.9, 0.9-1.0, 1.0-1.2, and greater than 1.2.

Figure 4

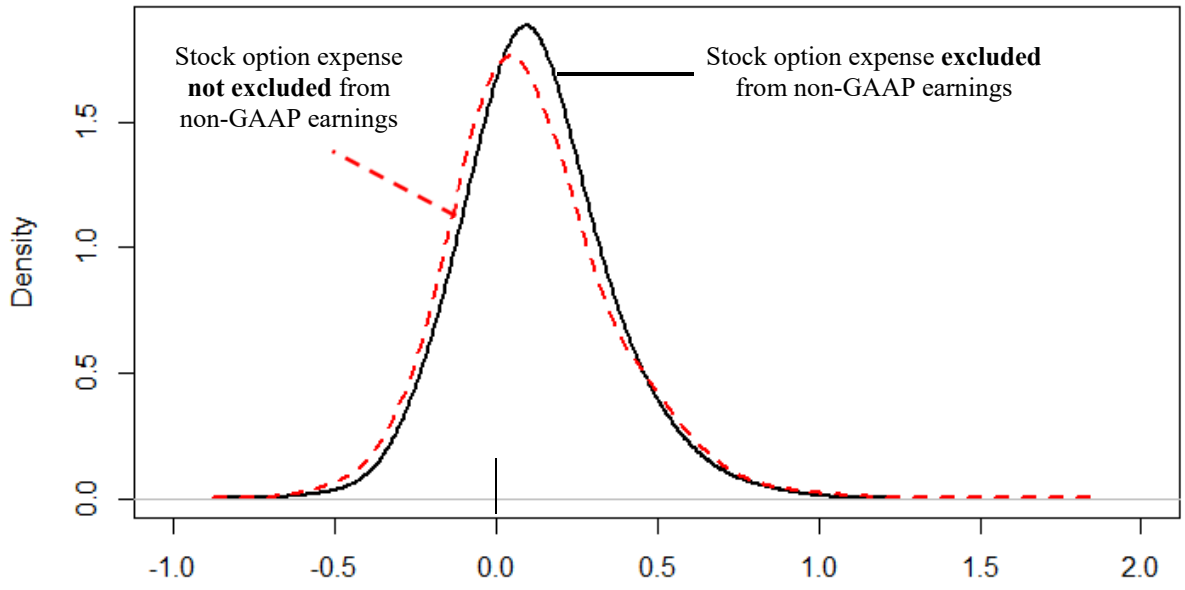
Volatility Input and Exclusion of Stock Option Expense from Non-GAAP Earnings

Panel A: (Volatility Input – Future Volatility) / Future Volatility



(Volatility Input$_t$ – Future Volatility$_t$) / Future Volatility$_t$

Panel B: (Volatility Input – Historical Volatility) / Historical Volatility



(Volatility Input$_t$ – Historical Volatility$_t$) / Historical Volatility$_t$

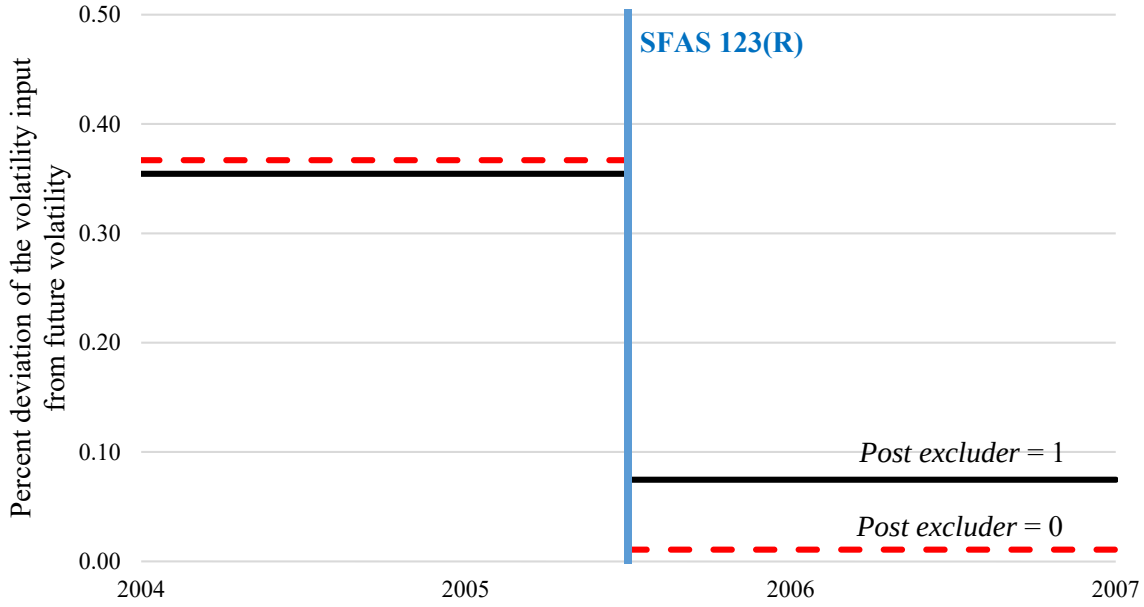
Panel A presents kernel density plots of the percent deviation of the volatility input from future realized volatility, *Volatility forecast error*$_t$, conditional on whether stock option expense is excluded (i.e. *Stock comp. excluded*$_t$ = 1) or not excluded (i.e., *Stock comp. excluded*$_t$ = 0) from firms' non-GAAP earnings. Panel B presents kernel density plots of the percent deviation of the volatility input from historical volatility conditional on whether stock option expense

is excluded (i.e. *Stock comp. excluded*$_t$ = 1) or not excluded (i.e., *Stock comp. excluded*$_t$ = 0) from firms' non-GAAP earnings.

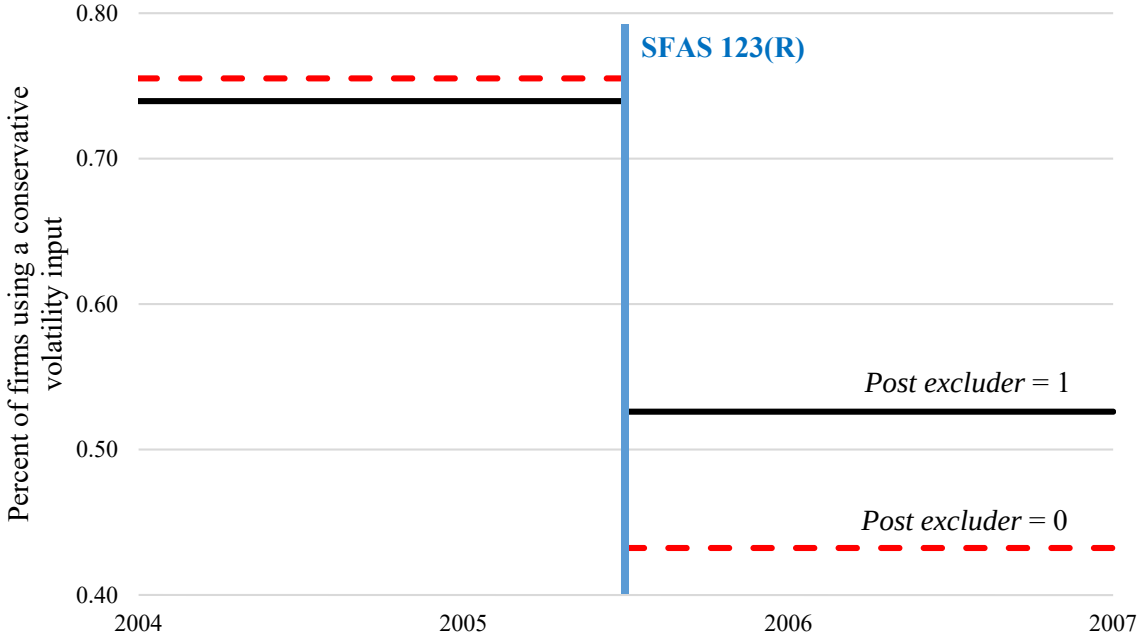
Figure 5

Effect of SFAS 123(R) on the Volatility Input

Panel A: Effect of SFAS 123(R) on Volatility Forecast Errors



Panel B: Effect of SFAS 123(R) on the Use of Conservative Volatility Inputs



Panel A presents the mean percent deviation of the volatility input from future realized volatility, *Volatility forecast error*$_t$, by time-period, conditional on whether stock option expense is excluded from firms' non-GAAP earnings in

the post-SFAS 123(R) period. Panel B presents the percent of firms using conservative volatility inputs, I(*Conservative volatility input*$_t$) by year, conditional on whether stock option expense is excluded from firms' non-GAAP earnings in the post-SFAS 123(R) period.