

# High Non-GAAP Earnings Predict Abnormally High CEO Pay\*

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## Abstract

We document excessive CEO pay of almost two million dollars per year, on average, for the S&P 500 firms that report high non-GAAP earnings relative to GAAP earnings. These firms pay their CEO excessively despite (i) weak contemporaneous and future operating performance and (ii) lower contemporaneous stock returns relative to other firms in the S&P 500. As in prior research, we do not find that non-GAAP earnings mislead investors, nor do we find support for managers' typical assertion that non-GAAP earnings more accurately convey core performance. Specifically, non-GAAP earnings do not correlate more highly with contemporaneous stock returns or future performance than GAAP net income or operating income. Overall, our evidence suggests large non-GAAP earnings adjustments influence some boards of directors in approving a level of CEO pay that is otherwise not supported by the firm's stock price or GAAP earnings performance. We also note that although excessive pay for firms reporting high non-GAAP earnings is about 16% of total pay, the bulk of the pay represents reward for performance. Still, an economically meaningful fraction of CEO pay appears to be attributable to opportunistic non-GAAP reporting.

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## 1. Introduction

S&P 500 firms, on average, announce non-GAAP earnings that are 23% larger than their GAAP earnings (see Table 1; see also Bradshaw and Sloan, 2002, and Christensen, 2007). For almost two decades, regulators, academics, and investor activists have attempted to demystify the rationale for disclosing non-GAAP earnings, also commonly labeled “adjusted” or “pro forma” earnings. We hypothesize and find that when non-GAAP earnings are large relative to GAAP earnings, CEO pay is excessive. That is, our evidence suggests large differences between non-GAAP and GAAP earnings contribute to abnormally high CEO compensation. In estimating normal CEO pay, we use the state-of-the-art model of CEO compensation from the literature, which bases normal pay on earnings performance, stock-price performance, firm size, growth opportunities, CEO tenure, and industry effects (for example, Core, Guay, and Larcker, 2008).

Previous attention to non-GAAP reporting has primarily focused on two issues. First, regulators express concern that securities might be mispriced, and second, managers claim that non-GAAP earnings communicate their firms’ “core” earnings. We discuss these briefly here, but note that we do not find empirical support for either explanation, as also seen in previous research.

Regulators’ main concern has been that non-GAAP metrics might obscure GAAP results, misleading investors and resulting in mispriced securities. Prompted by this concern, the SEC has established a set of rules and guidelines governing non-GAAP reporting, such as requiring firms to reconcile GAAP and non-GAAP numbers (SEC, 2002; 2016). These regulations, combined with firms’ longstanding practice of providing detailed GAAP income statements in their earnings releases (Francis, Schipper, and Vincent, 2002), make the likelihood of mispricing low a priori. Several academic studies identify opportunistic reasons behind non-GAAP reporting, consistent with regulators’ fear (see Doyle, Lundholm, and Soliman, 2003; Doyle, Jennings, and Soliman,

2013; Lougee and Marquardt, 2004; McVay, 2006; Curtis, McVay, and Whipple, 2014; Brown, Christensen, Elliott, and Mergenthaler, 2012). However, research finds little evidence of mispricing induced by non-GAAP reporting (Zhang and Zheng, 2011). We extend tests from prior studies to a more recent period and do not find mispricing either.

Absence of mispricing raises the question, why do firms still produce and discuss non-GAAP earnings? Managers typically champion non-GAAP earnings as (i) a better indicator of economic reality and (ii) better reflective of the factors under their control than GAAP earnings. Conceptually, if managers' motivation were truly to help investors identify persistent performance then firms would frequently exclude both positive and negative transitory items. But a preponderance of exclusions is negative (see, e.g., Table 1; Bradshaw and Sloan, 2002; and Bhattacharya, Black, Christensen, and Larson, 2003). In any event, access to detailed income statements (Francis et al., 2002) and the fact that analysts' and managers' exclusions differ almost half the time (Christensen, 2007) both suggest market participants can identify transient earnings on their own. Finally, while some early studies conclude non-GAAP earnings are more informative than GAAP earnings (e.g., Brown and Sivakumar, 2003; Bhattacharya et al., 2003; Doyle et al., 2003; Lougee and Marquardt, 2004), Abarbanell and Lehavy (2007) find these results are not robust. Our evidence reinforces this conclusion over a more recent period. That is, we do not find non-GAAP earnings to be more informative or permanent than GAAP earnings post-2010. In summary, intuition and evidence both suggest non-GAAP earnings would neither impede nor facilitate investors' ability to grasp firms' actual financial performance.

In this study, we examine the influence of non-GAAP earnings adjustments on CEO compensation. CEO compensation for listed companies is typically governed by compensation contracts that include operating and stock-price performance metrics (e.g., Core, Guay, and

Verrecchia, 2003). For example, approximately 68% (\$39.5 million) and 28% (\$16.5 million) of Allergan Inc.'s 2014-2015 CEO pay (\$58 million) was granted for meeting stock return targets and non-GAAP earnings targets, respectively.<sup>1</sup> We hypothesize that large, positive differences between non-GAAP and GAAP earnings are associated with excessive CEO compensation. That is, the compensation committee of the board of directors behaves as if large, positive non-GAAP adjustments to GAAP earnings warrant high levels of compensation.

According to previous research, many companies use non-GAAP earnings as a key criterion in setting CEO pay (see Black, Black, Christensen, and Gee, 2018, and Curtis, Li, and Patrick, 2018). However, compensation committee reports are opaque in that they rarely offer a detailed explanation of the differences between GAAP and non-GAAP metrics they use in their compensation decisions. In addition, compensation committees, often supported by specialized consultants, have significant latitude in choosing adjusted performance metrics as criteria for compensating managers (Chu, Faasse and Rau, 2017). We therefore expect non-GAAP earnings, or each exclusion from GAAP earnings, to directly impact managers' compensation.

**Summary of findings.** We analyze GAAP and non-GAAP earnings and CEO compensation data for S&P 500 firms from 2010 to 2015. The period examined is relatively short because we gather all non-GAAP data by hand. Below, we briefly summarize the findings.

First, S&P 500 firms' non-GAAP earnings typically exceed GAAP earnings, often by huge magnitudes. The average difference is 23% of GAAP earnings.

Second, non-GAAP earnings exhibit a significant positive relation to CEO pay. While some variant of earnings is always included as a metric determining managers' compensation, non-

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<sup>1</sup>The other 4% was base salary and ancillary benefits (e.g., private jet, life insurance). In 2015, the company reported a \$3 billion GAAP loss from continuing operations, but a \$5 billion non-GAAP net income, which was 105% of the compensation committee's non-GAAP earnings target. The company omitted more than half of its operating expenses to achieve this \$8 billion non-GAAP difference, which the SEC later challenged (Shumsky, 2017a).

GAAP earnings are increasingly common in proxy statements describing CEO compensation (Curtis et al., 2018). We find that non-GAAP earnings are a stronger determinant of compensation than either GAAP net income or GAAP operating income.

Third, the compensation of CEOs of the firms reporting large positive non-GAAP earnings adjustments (top quartile) is abnormally high, as judged using an industry-standard model of normal compensation from academic research. Specifically, CEOs of firms making large positive adjustments to arrive at non-GAAP earnings are compensated an average of \$1.9 million, or 16%, more than their expected annual compensation.

Fourth, although their compensation is high, firms with the largest positive non-GAAP adjustments experience poor contemporaneous stock returns and subpar future operating performance. This inference is unchanged when we examine stock returns over three years (contemporaneous plus two prior years) to match the period over which many compensation committees compare a firm's stock returns to peers (see Pozen and Kothari, 2017).

The pattern of evidence that CEOs receive excessive pay in years with large non-GAAP adjustments yet poor stock returns and operating performance is difficult to reconcile with rational pay-for-performance theories (see Murphy, 1999). We explore whether Holmstrom's (1979) informativeness principle explains the observed excess pay. The principle predicts that compensation decisions will load on performance measures offering the most precise inference about managers' actions. However, we do not believe this principle is driving our results for two reasons. (a) Compensation committees are required to disclose measures used to compensate the CEO, and firms rarely disclose measures other than earnings and stock price in proxy statements (Core and Packard, 2017). (b) Assume the compensation committee decided to use, but not disclose an alternative (presumably more informative) metric to compensate the manager. While

such a metric would naturally be unobservable to outsiders, it would have to be unrelated to the company's earnings and stock prices because committees explicitly use these metrics in compensating managers. Note that these latter metrics are included in calculating managers' normal compensation in our model.

Fifth, we rule out restructuring activity as an alternative explanation for CEOs' excessive pay. The alternative explanation maintains that restructuring activity requires CEOs to temporarily exert more effort and it simultaneously creates transient expenses to the firm. This combination can lead to more CEO pay and more non-GAAP exclusions.

Sixth, non-GAAP earnings do not correlate any better with security returns than GAAP earnings. This finding (also documented previously) is inconsistent with firms' claims that non-GAAP earnings adjustments remove transient items from GAAP earnings.<sup>2</sup> The evidence also allays regulators' concern that non-GAAP earnings disclosures cause mispricing of securities and thereby mislead investors.

Finally, our comparison of the time-series properties of GAAP and non-GAAP earnings does not suggest that non-GAAP adjustments enhance earnings predictability. In particular, neither GAAP net income nor GAAP operating income predicts future earnings worse than non-GAAP earnings. These last two findings are not new (see review in Abarbanell and Lehavy, 2007), but they confirm the conclusion from previous research in our recent sample period.

**Inferences from the empirical analysis.** Our evidence of excess CEO pay when non-GAAP earnings significantly exceed GAAP earnings suggests non-GAAP adjustments influence

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<sup>2</sup> For an example of a firm claiming non-GAAP earnings exclude transient items, consider the following excerpt from the American Airlines earnings announcement on Jan. 29, 2016 (emphasis added): "The Company believes that the non-GAAP financial measures provide investors the ability to measure financial performance *excluding special items*, which is more indicative of the Company's *ongoing* performance and is more comparable to measures reported by other major airlines." See also the FirstEnergy example above and Coca-Cola example in Section 3.3.

compensation committees' decisions even though the adjustments are not associated with superior stock return or operating results. Our review of proxy statements of 62 firms reporting large non-GAAP adjustments shows that 61 used non-GAAP earnings in making their CEO compensation decisions. This reinforces the findings of Black et al. (2018) and Curtis et al. (2018) that compensation committees adopt the same adjustments that managements choose to make in the non-GAAP earnings press releases. This use of non-GAAP earnings persists despite the requirement during our sample period that the majority of the board and entire compensation committee be independent directors (Kumar and Sivaramakrishnan, 2008) and even after we control for board independence and several other measures of firm governance.

Naturally, this raises the question, why are shareholders not monitoring the boards? There is a voluminous literature, which we do not revisit, on the factors governing the (in)effectiveness of shareholder monitoring (see reviews by Shleifer and Vishny, 1997, and Armstrong, Guay, and Weber, 2010). Suffice to say that, despite shareholders' advisory votes on compensation committee reports, disclosure about the reasons for the earnings adjustments and how they affect compensation is opaque (see Bebchuk, Fried, and Walker, 2002; Pozen and Kothari, 2017; and Curtis et al., 2018). This lack of transparency, coupled with diffuse ownership, diminishes the effectiveness of the monitoring of boards' compensation decisions.

While the preceding evidence and discussion highlight the consequences of the opportunistic use of non-GAAP earnings for CEO pay, we want to be careful not to overstate the evidence. Specifically, we do not imply that all CEO pay is a result of managerial opportunism. In fact, the majority is likely to be a reward for skill and performance. Related to this caveat, our paper complements a few recent studies that allow for the possibility that non-GAAP use in CEO

compensation decisions is suggestive of managerial opportunism as well as efficient contracting (Black, Black, Christensen, and Gee, 2016; Black et al. 2018; Curtis et al., 2018).

The rest of the paper is organized as follows. Section 2 develops our hypotheses. Section 3 details our sample and data. Section 4 reports the evidence that high non-GAAP earnings predict abnormally high CEO pay. Section 5 examines alternative explanations. Section 6 concludes.

## **2. Hypothesis Development**

Several potential factors motivate firms to report non-GAAP metrics. In this section, we first consider the role of non-GAAP earnings in CEOs' compensation contracts. We then consider the role of non-GAAP earnings in influencing security price behavior, which has been previously examined, but allows us to update the evidence to a recent period.

### ***2.1 Compensation Contracting***

CEO compensation decisions are an outcome of the agency relationship between the CEO and board, which acts on behalf of typically diffuse shareholders. The compensation decisions are governed by compensation contracts that include operating and stock-price performance metrics (e.g., Murphy, 2013, and Core, Guay, and Verrecchia, 2003). These metrics play a central role in rational pay-for-performance theories (see Murphy, 1999), which predict that CEO pay is increasing in a firm's stock price performance and operating performance.

For the purpose of our hypothesis, at least three factors are relevant in understanding management compensation decisions. First, compensation contracts are designed to motivate managers to boost a firm's operating performance. However, compensation contracts do not provide a precise definition of the calculation of the performance metrics and compensation committees have latitude in choosing the performance metrics. This creates an opportunity for the management to influence the performance metrics in part through the inclusion or exclusion of



certain items, i.e., in developing a non-GAAP measure of performance. Second, compensation committee deliberations are private, and their reports are opaque in that they rarely offer a detailed explanation of the differences between GAAP and non-GAAP metrics they use in their compensation decisions (see Bebchuk et al., 2002; Pozen and Kothari, 2017; and Curtis et al., 2018). Finally, shareholder ownership of large US corporations is typically diffuse, which diminishes the effectiveness of the monitoring of boards' compensation decisions. While a full review of the factors governing the (in)effectiveness of shareholder monitoring is beyond the scope of this paper, a large body of literature concludes that shareholder monitoring is limited (see reviews by Shleifer and Vishny, 1997, and Armstrong, Guay, and Weber, 2010). Given the aforementioned factors, and to the extent managers' compensation is based on non-GAAP earnings (see evidence below), adjustments to GAAP earnings would impact managers' compensation. We predict that compensation committees of the board of directors behave as if large, positive non-GAAP adjustments to GAAP earnings warrant high levels of compensation. This leads us to the following hypothesis:

**H1:** CEO compensation is increasing in non-GAAP earnings, and CEO pay is excessive when non-GAAP earnings are large relative to GAAP earnings.

An alternative explanation for excessive pay associated with large non-GAAP earnings adjustments is the Holmstrom (1979) informativeness principle. In this model, the compensation decision loads on performance measures that offer the most precise inference about managers' actions. Managers often point to non-GAAP earnings adjustments as those attributable to non-controllable external reasons, and therefore non-GAAP earnings is touted as the best metric of the operating performance within their control. Some of the adjustments also arise from activities such as restructuring. Such activities tend to be effort intensive, and they are undertaken to create value even though they have an immediate negative earnings impact. The compensation committee

might implicitly invoke the Holmstrom informativeness principle and reward managers for such actions notwithstanding the associated negative current earnings impact that is excluded in calculating the non-GAAP earnings performance.<sup>3</sup> The testable prediction is that high CEO compensation associated with large non-GAAP earnings adjustments would be simultaneous with superior contemporaneous stock-price performance or superior future operating performance that would be indicative of managers' value-enhancing activities. Alternatively, a boost in non-GAAP earnings to mask weak economic performance would be associated with poor contemporaneous stock price performance and weak future operating performance. We state this latter prediction as a hypothesis:

**H2:** Contemporaneous stock price performance and future operating performance are weak for firms with excessive CEO pay associated with large non-GAAP earnings adjustments.

## ***2.2 Stock price behavior***

Regulators' principal concern regarding non-GAAP metrics has been that investors might get misled by managers' opportunistic reporting of non-GAAP earnings and this might result in mispriced securities. Consistent with regulators' belief, several studies identify opportunistic reasons behind managers' non-GAAP reporting, (Doyle et al., 2003; Doyle et al., 2013; Lougee and Marquardt, 2004; McVay, 2006; Curtis et al., 2014; Brown et al., 2012). Doyle et al. (2013) find some firms use non-GAAP earnings to strategically meet analysts' earnings targets. In 2002 the SEC established a set of rules and guidelines (known as "Regulation G") governing firms' non-GAAP reporting, including requiring firms to reconcile GAAP and non-GAAP numbers in the earnings press release (SEC, 2002). The agency recently expanded these requirements to include presenting GAAP metrics before comparable non-GAAP metrics (SEC, 2016). As a result, the

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<sup>3</sup> See Curtis et al. (2018), who find that boards are more likely to contract on non-GAAP earnings when GAAP earnings are less informative.

proportion of firms reporting GAAP earnings before non-GAAP earnings immediately rose from 52% to 81% (Shumsky, 2016). Consistent with the SEC monitoring individual firms' non-GAAP reporting, in 2017 Audit Analytics identified 51 (42) firms that received SEC comment letters questioning their non-GAAP earnings (revenue) measures (Shumsky, 2017b).

Whether firms' non-GAAP reporting, opportunistic or otherwise, in fact misleads investors is an empirical issue. To wit, Zhang and Zheng (2011) find limited evidence of mispricing before Regulation G of 2002 and no evidence of mispricing after. A priori, the likelihood of mispricing is low because firms have long provided detailed GAAP income statements in their earnings releases, enabling sophisticated investors to easily identify transient components of GAAP earnings even absent non-GAAP earnings (Francis et al., 2002).

Managers' rationale for non-GAAP earnings is that non-GAAP numbers portray firm's economic reality better than GAAP numbers, and that non-GAAP earnings reflect factors under their control better than GAAP earnings. For example, FirstEnergy Corp.'s fiscal 2013 earnings release reports non-GAAP earnings of \$1,268 million compared to GAAP earnings of \$392 million. In discussing non-GAAP measures, the press release states, "Management believes that the non-GAAP financial measure of 'Operating Earnings' provides a consistent and comparable measure of performance of its businesses to help shareholders understand performance trends."

Whether the non-GAAP adjustments are opportunistic or informative of firm's economic reality has been the subject of past research. The consensus is that (i) most of the non-GAAP exclusions are negative (see Table 1 below and studies as early as Bradshaw and Sloan, 2002, and Bhattacharya, Black, Christensen, and Larson, 2003), (ii) non-GAAP earnings are a slightly better descriptor of firms' economic performance, i.e., non-GAAP earnings surprises are incrementally correlated with earnings announcement returns (see Brown and Sivakumar, 2003; Bhattacharya et

al., 2003; Doyle et al., 2003; Lougee and Marquardt, 2004, and Bradshaw et al., 2018, for consistent evidence and Abarbanell and Lehavy, 2007, who do not find these results to be robust to several properties of the GAAP and non-GAAP earnings distributions), and (iii) negative non-GAAP earnings exclusions are more likely among firms experiencing negative surprises (e.g., Lougee and Marquardt, 2004). In summary, informative as well as opportunistic reasons appear to underlie non-GAAP earnings reporting, but investors are not misled. In our analysis focused on the influence of non-GAAP earnings reporting on compensation, we err in favor of assuming all non-GAAP earnings constitute management performance. Therefore, we estimate normal compensation using non-GAAP earnings that exclude a preponderance of negative GAAP earnings items.

### **3. Sample and Data**

#### ***3.1 Sample***

Most prior research on managers' non-GAAP earnings disclosures either (i) uses IBES earnings as a proxy or (ii) searches an earnings announcement database for a list of non-GAAP keywords. Christensen (2007) discusses weaknesses with both of these approaches, including that analysts often do not make the same non-GAAP exclusions as managers and that keyword searches miss many non-GAAP disclosures. We overcome these concerns by manually collecting non-GAAP earnings of S&P 500 firms from earnings press releases. S&P 500 firms collectively make up approximately 80% of the U.S. stock market's capitalization and thus represent an economically substantial portion of the public universe.

To identify firms' non-GAAP earnings reporting, we search the annual earnings press releases of every S&P 500 firm for the fiscal years 2010-2015. We record *GAAP* and *Non-GAAP*

$Net\ Income_{it}$  for all firms  $i$  and years  $t$ .<sup>4</sup> This task is relatively straightforward during our sample period because Regulation G requires firms that make non-GAAP disclosures to highlight and reconcile GAAP and non-GAAP measures. About 67% of the firms in our sample disclose *Non-GAAP Net Income<sub>it</sub>*. For the other third of the firms, there is no deviation from GAAP net income reported in their earnings press releases.

The use of non-GAAP numbers from firms' press releases presumes those numbers are similar to the non-GAAP earnings numbers in the proxy statements as used by compensation committees in making managerial remuneration decisions. This appears to be the case. Our own review of press releases and proxy statements, as well as findings from previous research, suggest firms that use non-GAAP numbers in press releases almost always use them in proxy statements as well. Specifically, we review proxy statements for a sample of 62 firms in the highest quartile of non-GAAP earnings adjustments. Recall that our main excess compensation findings are concentrated among the CEOs of these firms. We arbitrarily chose data for fiscal year 2012. We find that 61 of the 62 firms use non-GAAP earnings in compensating the CEO. The solitary firm (Devry, Inc.) does not provide sufficient information to determine whether they use non-GAAP earnings in compensation. As they explain in the proxy's compensation discussion and analysis, "We do not disclose the particular institution performance goals utilized... as its disclosure would cause competitive harm."

Moreover, most of these firms use the exact same non-GAAP earnings figure in their press release and proxy statement. Fourteen firms do not provide sufficient information to determine whether the non-GAAP number in the proxy exactly matches the earnings release, highlighting the opacity of non-GAAP use in proxies (e.g., Bebchuk et al., 2002). These firms typically mention

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<sup>4</sup> We gather only annual GAAP and non-GAAP net income and not non-GAAP adjustments to other financial items such as cash, EBITDA, or industry-specific measures such as funds from operations (FFO) used by REITs.

that non-GAAP earnings met a certain threshold, but do not report the specific non-GAAP figure used. Of the remaining 47 firms, 33 (or about 70%) report non-GAAP earnings in the proxy that exactly matches the press release, and the differences in the rest are generally small. Coincidentally, Black et al. (2018) also find that the non-GAAP earnings numbers in press releases and proxy statements are identical 70% of the time. For example, both the earnings press release and the proxy of FirstEnergy in fiscal 2013 reported non-GAAP earnings of \$3.04 per share. For Allergan in fiscal 2015, non-GAAP earnings differ in the earnings press release and proxy, but only just; the proxy makes an additional exclusion of shares issued pursuant to an acquisition. Otherwise, the two documents use the same definition of non-GAAP earnings.

We obtain CEO compensation, accounting, return, and corporate governance data for our sample firms from Compustat, CRSP, and Institutional Shareholder Services. These data are available for 2,848 of the 2,991 S&P 500 firm-years in our six-year sample period.

### **3.2 Financial Data**

Our independent variable of interest is the difference between non-GAAP and GAAP net income, which we refer to as *Non-GAAP Adjustment<sub>it</sub>*. We assign firm-year observations to five groups based on the existence and magnitude of *Non-GAAP Adjustment<sub>it</sub>*. Specifically, *Non-GAAP Adjustment<sub>it</sub>* group 0 includes 1,373 firm-years that do not report any *Non-GAAP Net Income<sub>it</sub>* or report *Non-GAAP Adjustment<sub>it</sub>*  $\leq 0$ . We sort the remaining 1,475 firm-years with *Non-GAAP Adjustment<sub>it</sub>*  $> 0$  into quartiles and assign them to groups 1 through 4 of 368 or 369 observations each, ranked within each year from the lowest to highest level of adjustment. Thus, group 4 is comprised of firms with the highest level of non-GAAP adjustments. We also consider *GAAP Operating Income<sub>it</sub>* (Compustat item OIADP) because firms often claim *Non-GAAP Net Income<sub>it</sub>*

is the best available measure of *operating* performance, and some prior research supports this assertion (Bhattacharya et al., 2003).

### 3.3 Compensation and Governance Data

We follow prior research on executive compensation in estimating expected and excess CEO compensation. These are estimated by regressing total CEO compensation on proxies for the firm's performance and other economic characteristics (e.g., Smith and Watts, 1992; Core, Holthausen, and Larcker, 1999; Core et al., 2008). Annual bonus payment is an alternative to explaining total compensation because annual bonus is generally based on accounting earnings. However, we choose CEOs' Total Compensation for multiple reasons. Most importantly, even components of pay other than the bonus, including equity grants, are frequently tied to accounting targets. For example, 38% of FirstEnergy's 2013 target CEO pay was granted for meeting a non-GAAP earnings target, 20% as an annual cash bonus and 18% as restricted stock. The remaining 62% was either base salary or tied to stock return and time served. More generally, Core and Packard (2017) find that during our sample period a large amount of equity compensation included in long-term incentive pay (i.e., not bonus) is granted on the basis of meeting accounting and other non-price targets. Also, total compensation has preferable econometric properties since it is positive for all CEOs, while bonus variables have a large mass at zero.<sup>5</sup>

We estimate CEOs' normal and excess compensation using the following regression:

$$\text{Log}(\text{Total Compensation}_{it}) = \beta' \mathbf{x}_{it} + \lambda_k + \alpha_t + u_{it}, \quad (1)$$

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<sup>5</sup> Some studies also consider a measure of *realized* CEO pay to abstract away from uncertainty associated with expected payouts. For example, Core et al. (2008) replace option grants with proceeds from option exercises. While this measure is sensible in the context of their analyses of media coverage of option exercises, it is not ideal in our setting because options exercised in the current period are typically granted several periods in the past and hence are not related to current non-GAAP earnings.

where  $i$  indexes firms;  $t$  indexes years;  $k$  indexes industries; *Total Compensation* is the sum of the CEO's salary, bonus, stock and option awards valued using the grant date fair value, non-equity incentives, and all other annual pay;  $\mathbf{x}_{it}$  is a vector including operating performance using *Log(Non-GAAP Net Income, GAAP Net Income, or GAAP Operating Income)*, *Return (for 2 years, current and immediate past year)*, *Log(Revenue)*, *Book-to-Market*, and *Log(CEO Tenure)*;  $\lambda_k$  is a set of industry fixed effects; and  $\alpha_t$  is a set of year fixed effects. To maintain a constant sample throughout our tests, we set the log variable to zero if income is negative. This applies to less than 10% of the observations (75, 161, and 61 for Non-GAAP Net Income, GAAP Net Income, and GAAP Operating Income, respectively). Our conclusions are unchanged if we instead delete these observations. We also perform analyses using return on assets instead of log of earnings. The excess compensation findings are unchanged, but the ROA variable is not consistently significant (in line with prior research, e.g., Table 4 of Core et al., 2008). We conjecture this is because compensation committees rarely use ROA in determining managers' compensation, but almost invariably use earnings (per share) as the target for managers' bonus. In using log of earnings, we are careful to always include log of revenues and/or market value to control for the effect of size on CEO compensation. Thus, the coefficient on log of earnings is not merely a manifestation of large firm CEOs earning higher compensation.

We estimate *Expected Compensation<sub>it</sub>* by exponentiating the predicted value of Eq. (1). *Excess Compensation<sub>it</sub> (\$)* is *Total Compensation<sub>it</sub> - Expected Compensation<sub>it</sub>*. *Excess Compensation<sub>it</sub> (%)* is  $\text{Log}(\text{Total Compensation}_{it}) - \text{Log}(\text{Expected Compensation}_{it})$ , multiplied by 100. For brevity, we omit  $i$ ,  $t$ , and  $k$  subscripts from the rest of the discussion.

We also control for several governance variables. *Compensation Consultant* is an indicator set to one if the firm employs a compensation consultant during the period. *CEO is Chair* is an



indicator set to one if the firm's CEO is also chair of the board of directors. *Independent Board* is the proportion of the firm's directors who are independent. *Busy Board* is the average number of other directorships held by the firm's directors. *CEO Ownership* and *Institutional Ownership* are the percentage of the firm's shares owned by the CEO and institutional investors, respectively.

### 3.4 Descriptive Statistics

The first set of descriptive statistics examine whether firms making non-GAAP earnings adjustments persistently make those adjustments over the years. Table 1, Panel A presents the transition matrix for the *Non-GAAP Adjustment Group* variable. The entries provide the probabilities that a firm in each group in year  $t$  is in each of the other groups in year  $t+1$ . We find that as many as 80% of the firms reporting positive non-GAAP earnings adjustments continue this practice in the following year (i.e.,  $1-(0.30+0.21+0.18+0.11)/4=0.80$ ). Similarly, 74% of firms that do not make positive non-GAAP adjustments continue this practice in the following year. Thus, firms' decision to present non-GAAP earnings, or not, is quite sticky. The stickiness is especially pronounced among firms reporting the largest positive non-GAAP adjustments (group 4). In particular, group 4 firms continue to report positive non-GAAP earnings adjustments 89% of the time, and 55% of the time they stay in the largest positive adjustment group. The overwhelming repeat behavior casts doubt on managers' claims that the non-GAAP exclusions are typically extraordinary.

Table 1, Panel B contains descriptive statistics for the main variables in our analysis. We deflate financial variables by lagged assets. Consistent with prior research, managers exclude expenses and losses from non-GAAP income more frequently than gains. The average difference between non-GAAP and GAAP net income is 1.5% of assets, or about 23% of net income. About 78% of non-GAAP firms (1,475/1,903) report non-GAAP net income that is higher than GAAP

net income. Several firms report enormous non-GAAP differences. For example, in 2015 Apache Corp. reported a \$130 million non-GAAP loss compared to a \$23,119 million GAAP loss, a \$23 billion difference that was due largely to excluded asset impairments. Also, in 2010 HP Inc. reported non-GAAP earnings of \$19,866 million compared to GAAP earnings of \$8,761, an \$11 billion difference that was largely accounted for by excluded amortization.

Non-GAAP net income ( $\mu = 0.081$ ) typically falls between GAAP net income ( $\mu = 0.070$ ) and GAAP operating income ( $\mu = 0.115$ ), consistent with managers' claims that non-GAAP adjustments move earnings closer to core operating earnings. As highlighted by the FirstEnergy example in the introduction, many firms refer to non-GAAP net income as "core operating earnings". Shumsky (2017b) provides additional examples, explaining that 35 of 51 firms convinced the SEC their non-GAAP exclusions from earnings did not mislead investors using logic such as "restructuring charges and charges related to our productivity and reinvestment program are not representative of the company's underlying operating performance and are thus appropriately excluded" (Coca-Cola). However, this explanation raises the question: why do firms not simply highlight GAAP *operating* earnings in their disclosures instead of non-GAAP earnings?

Finally, the median CEO receives \$10.3 million in total pay. The pay distribution is quite right-skewed, with a mean of \$12 million and 1% of CEOs making more than \$44 million.

Continuing with the descriptive evidence, in Panel C of Table 1, we report cross-correlations among all of the variables. *Non-GAAP Adjustment* is negatively correlated with all three earnings measures, especially *Log(GAAP Net Income)*, suggesting firms making the largest positive non-GAAP adjustments are performing poorly. The logs of *Non-GAAP Net Income*, *GAAP Net Income*, and *GAAP Operating Income* are all extremely positively correlated (all  $\rho > 0.74$ ), which runs counter to the managers' claim that non-GAAP adjustments are designed to

produce a core earnings number devoid of the one-time items that impart volatility into the GAAP earnings numbers. CEOs' *Total Compensation* is positively and significantly correlated with all three earnings measures. Finally, consistent with prior research, *Total Compensation* is positively correlated with contemporaneous stock returns, revenues, and CEO tenure, and negatively correlated with the book-to-market ratio.

Before moving to empirical tests, below we briefly note a few additional aspects of our research design. To avoid understating the standard errors of regression coefficients, we account for cross-sectional and time-series dependence in the error terms by clustering standard errors by industry and including year fixed effects.<sup>6</sup> Including year fixed effects also helps us avoid bias in our regression coefficients due to time trends or shocks in earnings and CEO pay. Finally, to limit the potential influence of outliers, we annually winsorize continuous variables, except for returns, at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.<sup>7</sup> However, our results are qualitatively unchanged and quantitatively slightly stronger when we perform our tests without winsorizing.

#### **4. Non-GAAP Reporting and Excess Compensation**

This section examines the link between non-GAAP reporting and CEO compensation. We predict that firms with large positive non-GAAP adjustments to GAAP net income compensate their CEOs excessively. This prediction, if true, would suggest that boards of directors'

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<sup>6</sup> We cluster by industry instead of by firm to allow for the well-known industry components in earnings expectations and executive compensation. Also, consistent with industry correlation being more important than time correlation in our setting, the industry single-clustered standard errors that we present are slightly larger (and hence more conservative) than standard errors that are single-clustered by year or double-clustered by industry and year (untabulated), following Thompson (2011).

<sup>7</sup> Table 1 presents descriptive statistics calculated *after* winsorizing to be consistent with our main analyses, which use the winsorized data. When we calculate means before winsorizing, the mean of total compensation increases to \$12.2 million, the mean of firm revenues increases to \$20.4 billion, and none of the other variables' means change significantly. Of course, winsorizing slightly decreases the standard deviation of all variables.

compensation decisions are influenced by non-GAAP earnings criteria that go beyond the use of other performance metrics in determining CEO compensation.

As a precursor to discussing results from regression analysis, we begin with descriptive findings. As noted earlier, we assign the sample of firms into five portfolios, where group 0 comprises firms with negative or zero non-GAAP earnings adjustments, and groups 1 to 4 consist of equal numbers of remaining firms ranked from lowest to highest non-GAAP earnings adjustments.

Figure 1 graphs *Non-GAAP Net Income* and *GAAP Net Income* across the five non-GAAP adjustment groups. We observe a negative correspondence between *Non-GAAP Adjustment* and *GAAP Net Income*, which is in line with the correlation in Table 1, Panel C. The figure shows that firms making the largest positive non-GAAP adjustments (group 4) exhibit the worst GAAP performance. Their average *GAAP Net Income* (about 4.8 percent of total assets) is considerably less than the overall sample median of 6 percent of total assets shown in Table 1, Panel B. On average, in Group 4, the non-GAAP adjustments more than double their GAAP earnings from less than 5% of total assets to non-GAAP earnings that are more than 10%. The findings indicate managers exploit the latitude in making non-GAAP adjustments during periods of otherwise poor (below median) GAAP earnings performance.

Figure 2 uses excess compensation estimates, i.e., residuals from the compensation regression model (1), averaged within each non-GAAP adjustment group. The top panel shows that CEOs of firms that make the largest positive non-GAAP adjustments to net income (group 4), on average, receive about 6% more compensation than predicted using the compensation model. The residuals are from a log compensation model, so they are in log dollars. When these residuals are transformed into raw dollars, the percentage excess compensation for the group 4 CEOs is

approximately 16% of the average CEO compensation of about \$12 million. The bottom panel of Figure 2 transforms excess compensation from log residuals into raw dollar amounts. The graph shows that CEOs of high Non-GAAP Adjustment firms are paid about \$1.9 million more than expected. We note that mean Excess Compensation (\$) is positive for all five Non-GAAP Adjustment groups because the model is fitted in log compensation to avoid undue influence of right skewness in compensation. That is, a few CEOs in each group receive large amounts of compensation, which results in positive excess compensation in raw dollars for all groups. Still, the firms in group 4 with highest non-GAAP adjustments stand out with nearly a half million dollars more in excess compensation than any other group.

Table 2 reports regression estimates for the CEO compensation model (1), which was the basis of the graphical portrayal in Figure 2. In Panel A of Table 2, we confirm that earnings and compensation are positively associated by regressing *Log(Total Compensation)* on the log of *Non-GAAP Net Income* and *GAAP Net Income*, as well as *Operating Income*. Hence, the regression coefficient on *Non-GAAP Net Income* represents the sensitivity of boards' compensation decisions to non-GAAP earnings. The coefficient on non-GAAP income (first column) is a highly significant 0.141 with a t-statistic of 7.00, suggesting an economically and statistically strong influence of non-GAAP earnings on management compensation. Because the dependent variable is log compensation, the 0.141 coefficient represents approximately 14.1% growth in log terms. Translating this estimate into raw dollars results in even higher sensitivity of compensation to non-GAAP earnings. This model, however, does not include other determinants of CEO compensation, so we turn to column 2. In this model, two-year stock return performance, firm's revenues, and CEO tenure are all highly significant determinants of CEO compensation. Non-GAAP earnings

continue to be a significant contributor to CEO compensation, albeit with diminished magnitude and significance.

GAAP net income and operating income, like non-GAAP earnings, by themselves are significantly correlated with compensation (see columns 3 and 5). However, neither GAAP net income nor operating income exhibits a significant association with compensation once other determinants are included in the regression. The coefficient on GAAP net income in column 4 is only 0.017 with a t-statistic of 1.14, whereas other determinants continue to behave as in column 2. A comparison of the results in columns 2 and 4 suggests non-GAAP earnings adjustments contribute to the association between income and compensation. This is seen directly from the regression model in the last column. In this model, we include all three earnings measures with all of the control variables. Non-GAAP earnings remain significant with a coefficient of 0.054 (t-statistic = 2.08). In contrast, the coefficients on GAAP net income and operating income are not significant.<sup>8</sup> The control variables exhibit little change in their coefficients compared to the other models. The evidence suggests non-GAAP earnings adjustments significantly influence CEO compensation.

We next assess whether large non-GAAP adjustments are associated with excess compensation. In Panel B of Table 2, we add a categorical variable Non-GAAP Adjustment group, which progressively increases from a zero or negative adjustment portfolio (portfolio 0) to the portfolio with the largest non-GAAP adjustment (portfolio 4). In various specifications, log of non-GAAP net income, GAAP net income, or operating income is included. All five specifications in Panel B show that *Non-GAAP Adjustment Group* is statistically significant with a coefficient ranging from 0.025 to 0.037. This is even after including non-GAAP income in the model (see

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<sup>8</sup> Because earnings variables are log transformed, it would be incorrect to include the log of non-GAAP adjustments with GAAP income. Instead, the model includes log of non-GAAP earnings and log of GAAP earnings.

column 5) in addition to the categorical earnings-adjustment variable. The evidence corroborates the visual evidence in Figure 2 that firms making large positive non-GAAP adjustments pay their CEOs excessively even when normal compensation is calculated using non-GAAP earnings and other determinants of compensation. Specifically, our most conservative estimate suggests CEOs in group 4 are paid about 10% ( $0.025 \times 4$ ) more excess compensation compared to CEOs who do not make non-GAAP adjustments (group 0). As noted earlier, because the dependent variable is log compensation, the 10% excess compensation is also in log terms, which means in raw dollar terms the percentage excess compensation is greater.

In Panel C of Table 2, we use indicator variables (instead of categorical variables in Panel B) to directly test the statistical significance of the differences in group means shown in Figure 2. Specifically, we replace *Non-GAAP Adjustment Group* with *Non-GAAP Adjustment = 4* and *Non-GAAP Adjustment > 0*, indicators for whether the firm-year is in the highest *Non-GAAP Adjustment Group* and whether *Non-GAAP Net Income* exceeded *GAAP Net Income*, respectively. Regressions with *Non-GAAP Adjustment = 4* as the indicator variable show CEOs of firms making the *largest* positive non-GAAP adjustments make approximately 8%-13% more excess compensation compared to all other CEOs. That is, extreme non-GAAP adjustments are associated with economically meaningful magnitudes of excess compensation to their CEOs. Also, the regressions using *Non-GAAP Adjustment > 0* confirm CEOs of firms that make positive non-GAAP adjustments receive a statistically significant 6-8% more excess compensation compared to CEOs of firms that do not make positive non-GAAP adjustments.

Consistent with prior research, Panels A and B show (and untabulated coefficients in Panel C confirm) positive associations between compensation and earnings, stock-price performance, size, growth opportunities, and CEO tenure. The statistical and economic significance of the

coefficient on *Non-GAAP Adjustment Group* is similar when we include governance variables (last column of each panel) to address concerns our results are explained by existing governance structures that have been the subject of much shareholder and academic attention. Consistent with prior governance research, CEO pay is significantly higher when the firm employs a compensation consultant, when the CEO is chair of the board, and when directors sit on more outside boards; while CEO pay is significantly lower when the board includes are more independent directors and the CEO owns a higher proportion of the firm's stock.

Finally,  $R^2$  values ranging from 0.34-0.40 are in line with previous research and suggest the model captures a non-trivial portion of the cross-sectional variation in CEO compensation. Collectively, these findings increase our confidence that the high pay of CEOs who make large positive non-GAAP adjustments represents excess compensation that is not explained by the firms' contemporaneous performance or other economic characteristics.

## **5. Alternative Explanations**

The results in the prior section are consistent with our hypothesis that large positive adjustments to GAAP income are associated with high CEO pay that is not supported by the traditional economic determinants of executive compensation. In this section, we examine whether three alternative explanations account for the observed positive correlation between excess pay and non-GAAP adjustments.

- (1) The additional compensation represents reward for restructuring related efforts. Note that the transient expenses generated due to restructuring are typically excluded in calculating non-GAAP earnings, which we use to estimate normal compensation.



- (2) The CEO compensation reflects anticipated superior future operating performance that is not captured by the expected compensation model, but is captured by high non-GAAP net income.
- (3) The non-GAAP adjusted income represents a more informative and more permanent measure of the firm's core economic earnings, which might justify high CEO compensation.

The evidence below does not support any of the alternative explanations. We reiterate that the hypotheses and tests of the last two alternative explanations confirm prior findings we summarized in Section 2, but we extend those findings to a more recent sample period.

### ***5.1 Restructuring Activity***

Losses associated with mergers, acquisitions, and other restructuring activities are a frequent non-GAAP earnings adjustment item (see Black, Christensen, Ciesielski, and Whipple, 2018, and our own evidence below). Restructuring activity typically entails an immediate hit to earnings even though restructuring might be a value-enhancing activity for the firm. To motivate managers to undertake such activities notwithstanding the associated losses, compensation committees might exclude restructuring charge in assessing CEO performance and thus in compensating managers. That is, since these activities require managerial effort and expose managers to additional risks, boards may optimally pay the CEO on the basis of earnings adjusted for the restructuring charge or they might pay an additional amount during periods of restructuring. In this section we control for restructuring activity to assess whether this possibility explains our results.

We begin by noting that the preceding analysis as well as analysis below estimates excess compensation where normal compensation is already based on non-GAAP earnings. That is, the

non-GAAP earnings number is grossed up for the amount of restructuring and other losses included in the adjustments. In addition, below (i) we allow for incremental compensation for merely the incidence of restructuring activity, or (ii) we perform compensation analysis excluding the subset of firms that reports restructuring activity.

We use two measures to ascertain whether a firm has engaged in a restructuring activity. First, whether the firm reports non-zero cash from acquisitions in the statement of cash flows (Compustat item AQC). Second, whether the firm discusses merger and acquisition activity in the footnotes to the financial statements (Compustat footnote dataset code AA, as well as any combination of AA with other footnote codes).<sup>9</sup> We set *Restructuring* to one if either of these is true, and zero otherwise. This measure identifies 907 firm-years, or about 32% of our sample, as having engaged in restructuring activities during the year.

The results in Table 3 show that notwithstanding our accounting for the restructuring activity, incidence of large non-GAAP earnings adjustments is associated with excess CEO pay. Specifically, in the first column in Table 3, we add *Restructuring* to the model that has non-GAAP earnings, stock returns, revenues, and various control variable (i.e., the model in column 5 of Table 2). The estimated model includes *Restructuring* interacted with the indicator for large positive non-GAAP adjustments (and the other explanatory variables).<sup>10</sup> In column 1, the restructuring interaction variable is insignificant, which means there is no incremental CEO pay for the restructuring activity. In contrast, the CEOs making the highest non-GAAP earnings adjustments continue to earn excess pay, as seen from the significant coefficient on the main effect of *Non-*

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<sup>9</sup> To be precise, footnote codes AR, AS, FA, FB, FC, FQ, and VC indicate combinations of codes that include restructuring (AA). See the Compustat manual for additional details.

<sup>10</sup> The main effect of *Restructuring* cannot be interpreted cleanly because of the many interaction terms in the model. That is, the coefficient is the marginal increase in CEO pay for a hypothetical firm that moves from no restructuring activity to restructuring activity and has a zero value for all of the other explanatory variables, which is unrealistic for some variables (e.g., revenue).

*GAAP Adjustment* = 4. In column 2, we re-estimate the compensation model without the 907 firm-years with restructuring activity. The CEOs for the subset of firms without any restructuring activity continue to earn excess pay, as seen from the significant coefficient on *Non-GAAP Adjustment* = 4.

Taken together, the evidence in this section suggests the excess compensation received by CEOs of firms with large, positive non-GAAP adjustments does not represent reward for restructuring related efforts. We also note that, in untabulated tests, we find that the results in the next two sections are qualitatively similar when we exclude firms with restructuring activity as well as when we focus exclusively on firms with restructuring activity. This evidence suggests that excluding restructuring expenses from non-GAAP earnings does not reflect anticipated superior future performance (Section 5.2) or produce a more informative earnings number (Section 5.3).

## ***5.2 Future Operating Performance and Contemporaneous Stock Price Performance***

The abnormally high pay of the CEOs of the firms reporting large positive non-GAAP adjustments to earnings may reflect compensation for superior future operating performance that would not be captured in the expected compensation model. However, the anticipated superior, but as-of-yet unrealized, performance would be capitalized in the firm's stock price in an informationally-efficient market. We thus would expect to find superior stock price performance contemporaneously and superior operating performance in future for the firms making large positive non-GAAP adjustments to earnings.

Figures 3 and 4 graph one-year contemporaneous stock-price performance and one-year-ahead GAAP earnings performance, respectively, for the five non-GAAP adjustment portfolios. Contemporaneous stock returns are measured concurrently with the year for which the CEO is being compensated; and future operating performance is measured over the year immediately

following the year for which the executive is being compensated. Compensation committees typically meet at least four times a year, including a meeting after the end of the relevant fiscal year when it has access to the firm's operating performance as well as stock-price performance.

Figure 3 shows that average annual return for the portfolio of firms making the largest positive non-GAAP adjustments (group 4) is about 12%. In comparison, the average annual returns for the remaining four portfolios, i.e., for firms that do not make positive non-GAAP adjustments or for firms that make small positive non-GAAP adjustments (groups 0-3), range from 15 to 17%. That is, the average returns to firms making the largest non-GAAP adjustments are 3-5% lower than other firms. This is an economically large magnitude of difference in annual returns and it runs counter to the hypothesis that CEOs making large positive non-GAAP adjustments are compensated for superior stock-price performance.

Figure 4 shows how the future one-year *GAAP Net Income* and *GAAP Operating Income* vary across the *Non-GAAP Adjustment* groups. According to both measures, we find below average future operating performance among the firms that make the largest positive non-GAAP adjustments (group 4). In fact, these firms achieve lower future operating performance than all other groups except for the firms that make the smallest positive non-GAAP adjustments (group 1).<sup>11</sup> Finally, untabulated results confirm that group 4's *current period* net income and operating income are also lower than all groups except group 1.

Taken together, we find that the firms with the largest positive non-GAAP adjustments and largest excess CEO pay exhibit worse future prospects compared to other firms. Thus, the two

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<sup>11</sup> This raises the question, why do firms with small positive non-GAAP adjustments perform so poorly? These may be the firms that use non-GAAP earnings to strategically meet earnings targets (Doyle et al., 2013). That is, poor performance likely magnifies the pressure to meet analysts' earnings targets. So we conjecture that the firms in group 1 are willing to make (relatively) small adjustments to GAAP earnings to meet analysts' targets but unwilling to make large adjustments to rationalize high CEO pay.

forward-looking performance metrics do not explain the high CEO pay of the firms making large non-GAAP earnings adjustments. In contrast, these findings are consistent with our main hypothesis that large deviations of non-GAAP earnings from GAAP earnings appear to influence compensation committees' decision to set high (or excessive) compensation to CEOs.

### ***5.3 Earnings Informativeness***

Managers often justify the use of non-GAAP earnings on the premise that they are superior in capturing their firms' economic reality than GAAP or operating earnings (see FirstEnergy, American Airlines, and Coca-Cola examples above). What makes one measure of earnings superior in reflecting a firm's economic reality is, however, a much debated issue in the literature without a clear consensus. Still, two metrics emerge as frequently used and possessing intuitive sensibility: (i) informativeness as inferred from the association of the earnings measures with contemporaneous stock returns, which assumes annual stock return in an efficient capital market accurately captures the value implications of a firm's operating performance for the year; and (ii) permanence of earnings as inferred from the time-series properties of various earnings measures.

#### ***5.3.1 Association with stock returns***

In comparing the informativeness of *Non-GAAP Net Income*, *GAAP Net Income*, and *GAAP Operating Income*, we follow the vast literature on return-earnings association (see Kothari, 2001). We regress contemporaneous stock returns on the three measures of accounting earnings, individually and in multivariate regressions. If the non-GAAP adjustments were to make the earnings measure superior in capturing the firm's operating performance for the year, then non-GAAP earnings would correlate more strongly with annual stock returns than the GAAP measures. The same prediction would also apply if the non-GAAP adjustments were designed to eliminate one-time influences on income that skew the GAAP earnings to be too high or too low. In

performing the regressions, we sidestep the influence of scale differences in the three measures of income (see Table 1) by standardizing all variables to have unit variance. This facilitates a direct comparison of the regression coefficients to infer relative informativeness of the various measures of earnings.

In Table 4, Panel A, we report estimates of contemporaneous return-earnings regressions using all three measures of earnings – *Non-GAAP*, *GAAP Net Income*, and *GAAP Operating Income*. The sample comprises all 2,848 firm-year observations.<sup>12</sup> All three earnings measures are individually significantly positively associated with contemporaneous returns in this subsample. *GAAP Net Income* is the most informative measure, with a one standard deviation increase in *GAAP Net Income* implying a 0.136 standard deviation increase in annual returns, compared to 0.114 for *Non-GAAP Net Income*. However, the hypothesis that the coefficient magnitudes are the same across the three earnings measures is not rejected. We reach the same conclusion when we simultaneously include *Non-GAAP* and *GAAP Net Income* or *GAAP Operating Income* in the regression. As expected, the standard errors increase substantially due to the extreme collinearity among the three earnings proxies and neither coefficient in the regression is statistically significant. The collinearity actually reinforces our point that managers would do just as well highlighting GAAP net or operating income if their primary objective were to inform investors. That being said, the coefficients on *Non-GAAP Net Income* and *GAAP Operating Income* decrease to less than 0.10 in these regressions, but the coefficient on *GAAP Net Income* is slightly larger (0.181), suggesting *GAAP Net Income* provides what little incremental information exists beyond the large common component of common information within the measures.

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<sup>12</sup> To avoid missing data and to be able to evaluate all firms in this and the following section (i.e., Tables 4-6), we set *Non-GAAP Net Income* = *GAAP Net Income* for firms not reporting non-GAAP earnings. That is, these firms' non-GAAP earnings and GAAP earnings are the same because they do not make adjustments to GAAP earnings.

In Panel B, we examine whether firms making extreme positive Non-GAAP Adjustments, i.e., group 4, produce an earnings measure that is more informative as a result of the large adjustments. We estimate regressions in the full sample of firms that include an interaction between *Non-GAAP Net Income* and *Non-GAAP Adjustment = 4*, an indicator for whether *Non-GAAP Adjustment* is extreme, i.e., group 4.<sup>13</sup> We find that, for group 4 of the *Non-GAAP Net Income* firms, the association with stock returns is negligible beyond that of *GAAP Net Income*. Specifically, the coefficient on Group 4 firms is the sum of the coefficients on *Non-GAAP Net Income* and the interaction term, i.e.,  $-0.083$  and  $0.138 = 0.055$ , compared to the coefficient on *GAAP Net Income* equal to  $0.180$ . Thus, the extreme adjustments to income in the Group 4 firms do not enhance earnings informativeness beyond the GAAP income measure. In fact, one might argue the adjustments render the non-GAAP measure less informative.

While the preceding analysis used contemporaneous annual returns, in Table 5, we repeat the analysis using earnings announcement window returns, which are defined as three-day market-adjusted return centered on the earnings announcement day. The evidence in Table 5 is largely consistent with the findings reported in Table 4. As a measure of unexpected earnings, we subtract last year's operating earnings from the *Non-GAAP* or *GAAP Net Income* or *GAAP Operating Income* measures. The results show that all three measures are individually positively correlated with announcement-period returns, but that when two measures are included in the regressions, *Non-GAAP Net Income* and *GAAP Operating Income* exhibit slightly greater correlation. We suspect this is because first difference in operating income is a better proxy for unexpected operating income whereas subtracting last year's operating income from other earnings measures

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<sup>13</sup> The results in Panel B of Table 4, as well as the respective results in Tables 5 and 6 (discussed below), are qualitatively similar when we instead condition on *Non-GAAP Adjustment Group < 0* (i.e., whether *Non-GAAP Net Income* exceeded *GAAP Net Income*).

yields noisier measures of unexpected earnings. Still, the overall conclusion that large non-GAAP adjustments do little to improve the informativeness of the earnings measure relative to *GAAP Net Income* is unaffected.

The evidence that non-GAAP earnings do not incrementally associate with security returns is inconsistent with firms' claim that the adjustments are designed to remove transient items from GAAP earnings. Equally, it is also inconsistent with regulators' concern that securities might be mispriced as a result of non-GAAP earnings disclosures. The latter finding reinforces the conclusion in Abarbanell and Lehavy (2007) that the results in the non-GAAP literature are not robust, generalizable, or consistent enough to support the firms' claims or the regulators' concern. Additionally, our paper complements prior research by examining a more recent time period and, as discussed in Section 3, by overcoming some of the weaknesses of prior research designs (albeit using a smaller sample of firms).

### **5.3.2 Earnings permanence**

Another desirable property of accounting earnings is its ability to predict future earnings, i.e., permanence of earnings. In this section, we examine the extent to which non-GAAP and GAAP earnings predict future earnings. The measure of future earnings we use is operating earnings, but untabulated results show that the conclusions are unaffected if we were to use future Non-GAAP or GAAP Net Income instead of future operating earnings.

Table 6 reports estimates from regressions of GAAP operating income for year  $t+1$ , which we refer to as *Future OI*, on the GAAP and non-GAAP measures of current earnings for year  $t$ . The first two columns of Panel A show that there is barely any difference between *Non-GAAP* and *GAAP Net Income* in their ability to forecast future operating income. The coefficient on *Non-GAAP Net Income* is 0.807 compared to 0.784 on *GAAP Net Income*. The difference is statistically



insignificant. The coefficient on *Operating Income* is greater at 0.892, but that is likely because we are forecasting future operating income. In column 4, when we include both *Non-GAAP* and *GAAP Net Income*, the coefficients on both are significant, which means each has incremental predictive power, but the coefficients on both are considerably smaller than when they were included individually, which suggests a high degree of collinearity.

In Panel B of Table 6, we examine whether the earnings permanence of firms making extreme non-GAAP earnings adjustment (i.e., Group 4 firms) is greater than for other firms. We find the opposite. Specifically, the coefficient on *Non-GAAP Net Income* interacted with Group 4 dummy is negative.

Overall, earnings permanence regression analyses do not suggest that non-GAAP earnings adjustments enhance the predictive power of non-GAAP earnings with respect to future earnings of the firm. These future earnings results complement the stock price associations from the prior section and suggest that non-GAAP earnings adjustments do not provide significant incremental information or mislead investors about the firm's economic performance.

## **6. Conclusions**

It is a common practice for publicly listed firms to report non-GAAP earnings that are substantially higher than their GAAP earnings. Much of the prior literature has focused on two hypotheses to explain this practice, whether investors are misled or whether non-GAAP adjustments convey firm's core earnings. However, neither hypothesis has been strongly supported by previous studies (e.g., Abarbanell and Lehavy, 2007). We offer an alternative explanation supported by data. Thus, our findings cast further doubt on both these hypotheses.

Company executives typically defend the exclusion of substantial expenses in GAAP earnings by alleging they do not reflect core financial performance. However, we find non-GAAP

earnings are not significantly correlated with traditional measures of financial performance – contemporaneous stock returns and future operating performance. In specific, non-GAAP earnings are not good predictors of a company’s net income as compared to GAAP earnings. Similarly, companies with the highest positive difference between their non-GAAP and GAAP earnings display inferior contemporaneous stock returns relative to companies with small differences.

Non-GAAP earnings adjustments have long attracted the attention of regulators. They have expressed concern that non-GAAP reporting can mislead investors and lead to the mispricing of securities. However, stock prices are influenced by sophisticated analysts and large institutional holders. These groups are not likely to be misled by press releases with non-GAAP numbers since these releases must clearly reconcile these numbers to GAAP net income.

In this study, we examine a different hypothesis -- that large positive differences between non-GAAP and GAAP earnings are significantly associated with abnormally high CEO pay as estimated according to the standard academic model of executive compensation. Consistent with our hypothesis, we find that CEO pay is excessive when non-GAAP earnings exceed GAAP earnings by large amounts.

Our findings raise the broader question: why do boards of directors – specifically, the compensation committees of boards – reward their CEOs with excessive pay based in large part on non-GAAP numbers that are not well correlated with the company’s financial performance? Concerns about CEO compensation have been on regulators’ and legislators’ radar screen for quite some time. Many shareholder activists and academics have also been strident in their complaints that CEO pay is disconnected to a company’s financial performance.

To better align CEOs’ pay with company performance, Congress and regulators have adopted many governance reforms over the past two decades. These reforms include: a) each board

must have a majority of independent directors; b) the compensation committee must be composed entirely of independent directors; c) the criteria for CEO pay must be described in the company's proxy statement; and d) a comparison of the company's stock price performance against its peers must also be disclosed in its proxy statement.

Nevertheless, while alignment has improved, there continue to be numerous examples of CEO pay that seems excessive relative to company performance. We offer a few plausible reasons that point to fruitful areas for future research and possible suggestions for further reforms.

First, firms' managers control the preparation of the earnings press release – especially, which GAAP expenses to exclude in such releases. Since the company has effectively announced that its version of non-GAAP earnings is the best way to understand the company's financial performance, it is only logical that the compensation committee would adopt a similar approach.

Second, almost all compensation committees hire consultants to help set CEO pay (95% in our sample; also see Murphy and Sandino, 2017). Current regulation requires that these consultants be different from those regularly employed by the company, unless extensive disclosures are made about conflicts of interest. Nevertheless, consultants tend to assess CEO pay relative to CEO pay at peer companies. And the peer group typically contains larger companies, which tend to have higher CEO pay (see Faulkender and Yang, 2010; Bizjak, Lemmon, and Nguyen, 2011; and Erickson, 2015). Moreover, compensation committees, with the help of their consultants, often pay CEOs in the 75th percentile of their peers, or at least in the top half (see Bizjak, Lemmon, and Naveen, 2008; and Bizjak, Lemmon, and Nguyen, 2011).<sup>14</sup>

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<sup>14</sup> For example, Bizjak et al. (2011) highlight the following statement from the 2008 proxy of JB Hunt: "Given the peer group's size disparity, the Committee decided that the appropriate comparative compensation target should be at the 75<sup>th</sup> percentile of the peer group."

Third, although the nominating or governance committee of the board formally appoints new directors and terminates existing directors, the CEO usually has a significant role in these processes. In some companies, the CEO vets new director candidates before the board interviews them. In other companies, the CEO effectively exercises a veto over board candidates put forth by the committee. Thus, directors, even though independent, in certain situations may defer to the compensation desires of their CEOs.

Finally, diffuse shareholders may not be effective monitors of CEO pay, despite the requirement of shareholder advisory votes on the compensation committee report. Over 97 percent of these votes approve such reports; negative votes occur only in cases where the CEO's pay is egregiously high or directly contrary to company performance. Moreover, as mentioned previously, the compensation committee reports are difficult to understand. In particular, they are not required to quantify the differences between their non-GAAP criteria and the company's GAAP numbers.

As to future reforms, the SEC may want to require that compensation committee reports give GAAP metrics "equal prominence" with non-GAAP metrics, as in earnings press releases. In particular, the SEC might consider requiring compensation committee reports of all public companies to (i) prominently disclose the amount of difference between the non-GAAP criteria used by the committee and the relevant GAAP numbers; and (ii) provide a justification for why the committee chose to use non-GAAP criteria in setting executive compensation.

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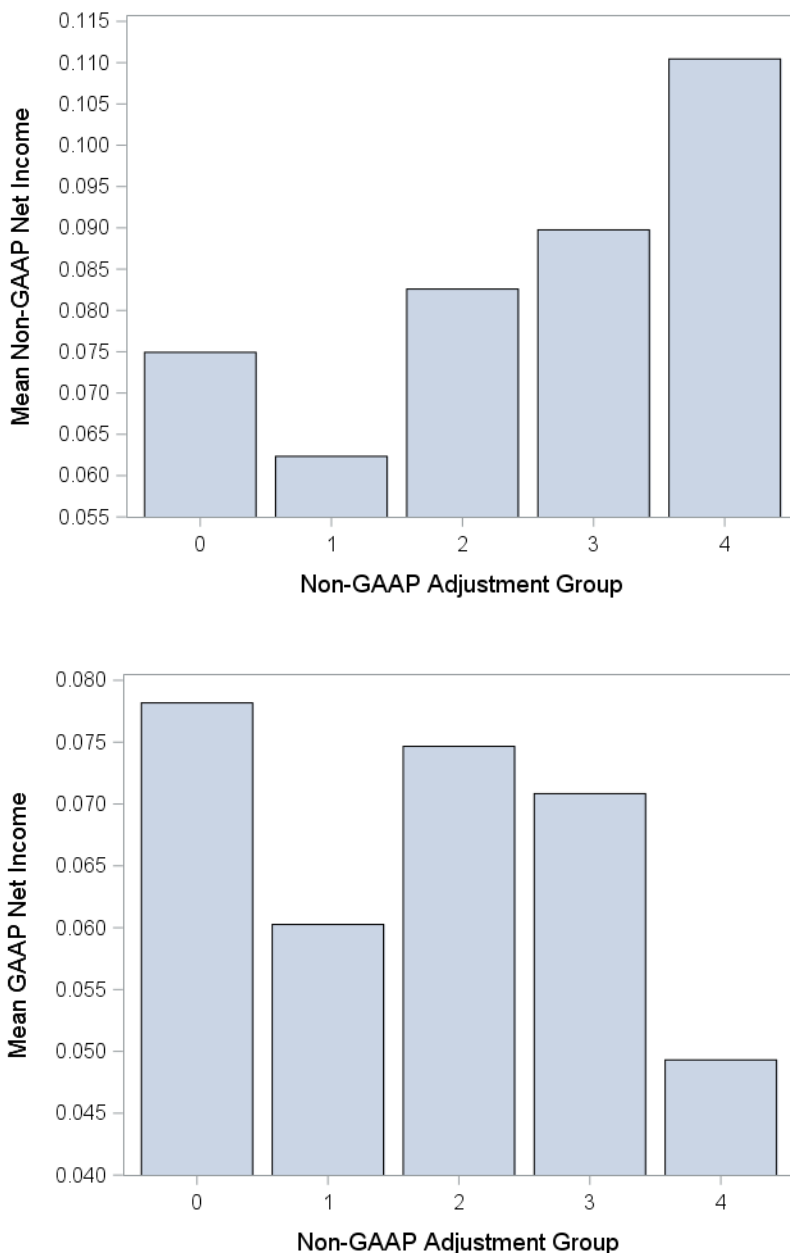
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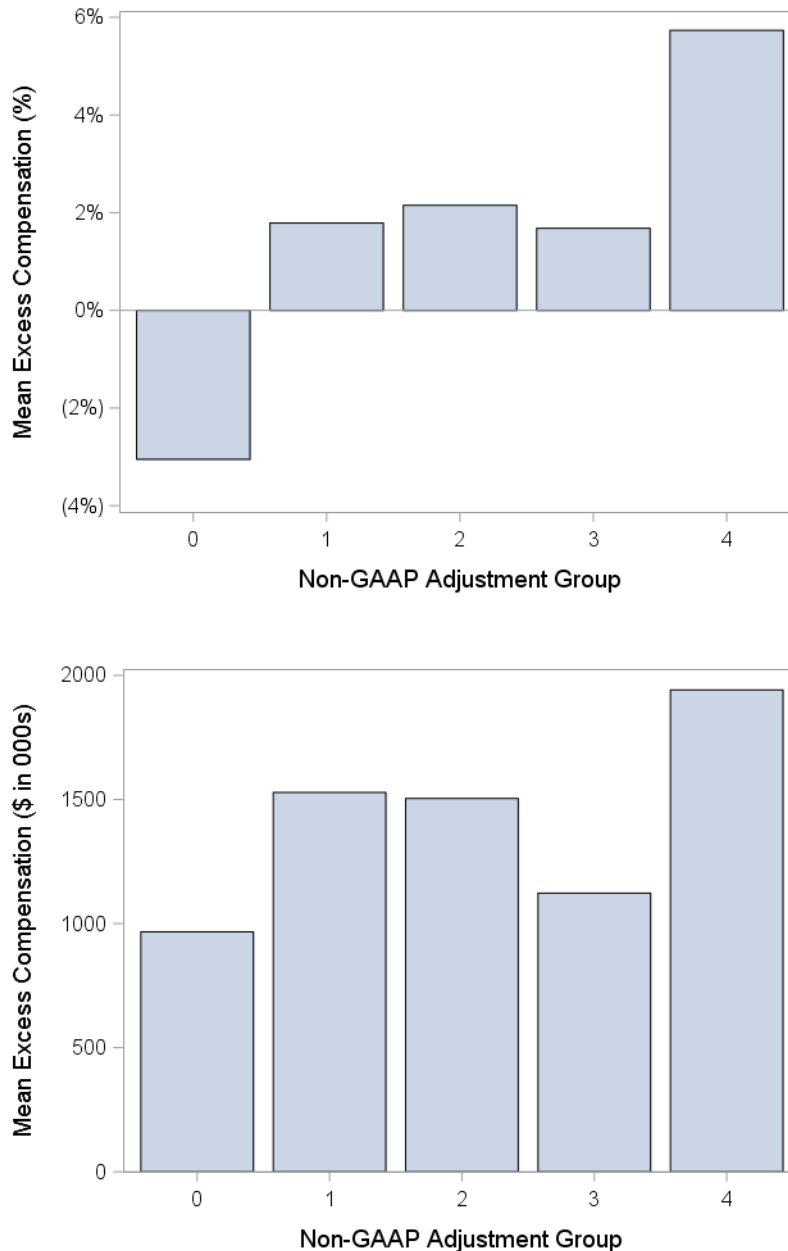
## Figure 1. Current Performance across Non-GAAP Adjustment Groups

This figure shows how mean current performance varies across non-GAAP adjustment groups. *Non-GAAP Net Income* and *GAAP Net Income* are collected from firms' annual earnings press release, as described in Section 3.1. *Non-GAAP Adjustment* is *Non-GAAP Net Income* - *GAAP Net Income*. *Non-GAAP Adjustment* group 0 includes 1,373 firm-years that do not report *Non-GAAP Net Income* or report *Non-GAAP Adjustment*  $\leq 0$ . We set *Non-GAAP Net Income* = *GAAP Net Income* for firms not reporting non-GAAP earnings. That is, these firms' non-GAAP earnings and GAAP earnings are the same because they do not make adjustments to GAAP earnings. The 1,475 firm-years with *Non-GAAP Adjustment*  $> 0$  are sorted into quartiles and assigned to groups 1 through 4.



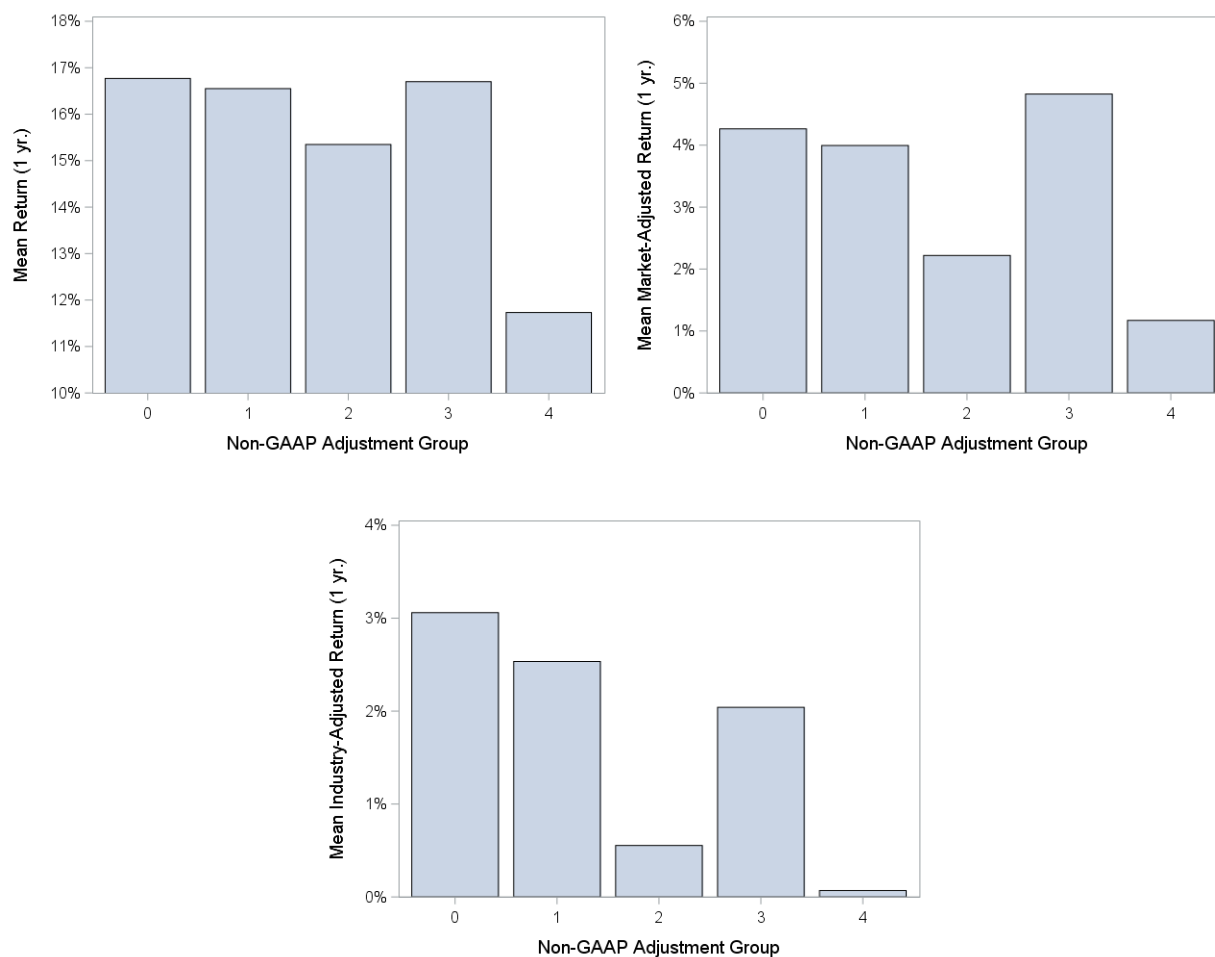
## Figure 2. Excess Compensation across Non-GAAP Adjustment Groups

This figure shows variation in mean CEO excess compensation across non-GAAP adjustment groups. *Expected Compensation* is the exponentiated predicted value of the regression  $\text{Log}(\text{Total Compensation}_{it}) = x_{it}\beta + \alpha_t + u_{it}$ , where  $i$  indexes firms,  $t$  indexes years,  $\alpha_t$  is a set of year fixed effects, and  $x_{it}$  is a vector including *Return (2 yr.)*, *Log(Revenue)*, *Book-to-Market*, and *Log(CEO Tenure)*, which are defined in Table 1. *Excess Compensation (\$ in 000s)* is *Total Compensation* - *Expected Compensation*. *Excess Compensation (%)* is  $\text{Log}(\text{Total Compensation}) - \text{Log}(\text{Expected Compensation})$ , multiplied by 100. *Non-GAAP Adjustment* is *Non-GAAP Net Income* - *GAAP Net Income*. *Non-GAAP Adjustment* group 0 includes 1,373 firm-years that do not report *Non-GAAP Net Income* or report *Non-GAAP Adjustment*  $\leq 0$ . The remaining 1,475 firm-years with *Non-GAAP Adjustment*  $> 0$  are sorted into quartiles and assigned to groups 1 through 4.



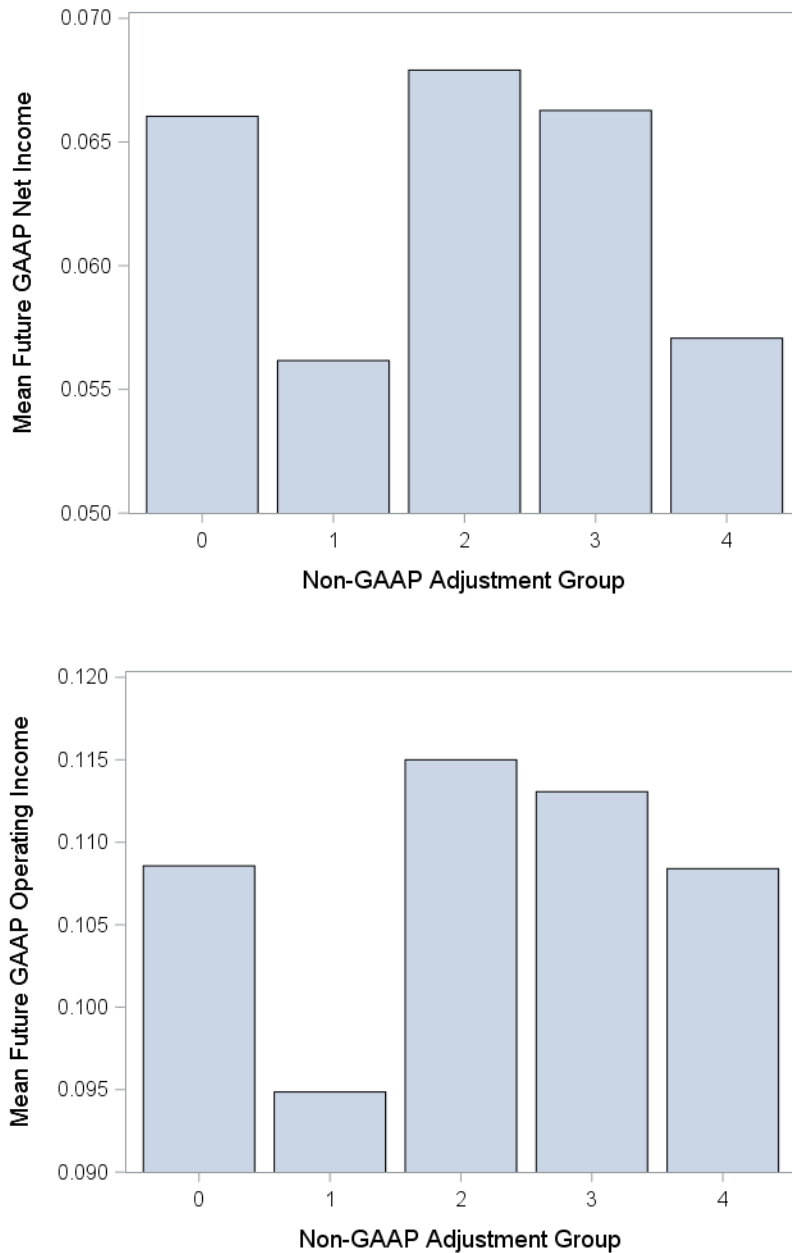
### Figure 3. Contemporaneous Returns across Non-GAAP Adjustment Groups

This figure shows how mean contemporaneous returns vary across non-GAAP adjustment groups. *Return (1 yr.)* is the firm's stock return during the current fiscal year. *Market-Adjusted Return (1 yr.)* is the difference between the firm's stock return and the return on the CRSP value-weighted market portfolio during the current fiscal year. *Industry-Adjusted Return (1 yr.)* is the difference between the firm's stock return and the return on the value-weighted portfolio of stocks in the firm's (Fama-French 48) industry during the current fiscal year. *Non-GAAP Adjustment* is *Non-GAAP Net Income - GAAP Net Income*. *Non-GAAP Adjustment* group 0 includes 1,373 firm-years that do not report *Non-GAAP Net Income* or report *Non-GAAP Adjustment*  $\leq 0$ . The remaining 1,475 firm-years with *Non-GAAP Adjustment*  $> 0$  are sorted into quartiles and assigned to groups 1 through 4.



**Figure 4. Future Performance across Non-GAAP Adjustment Groups**

This figure shows how mean future performance varies across non-GAAP adjustment groups. *Future GAAP Net Income* is Compustat item NI in the subsequent fiscal year, scaled by beginning-of-period assets. *Future GAAP Operating Income* is Compustat item OIADP in the subsequent fiscal year, scaled by beginning-of-period assets. *Non-GAAP Adjustment* is *Non-GAAP Net Income* - *GAAP Net Income*. *Non-GAAP Adjustment* group 0 includes 1,373 firm-years that do not report *Non-GAAP Net Income* or report *Non-GAAP Adjustment*  $\leq 0$ . The remaining 1,475 firm-years with *Non-GAAP Adjustment*  $> 0$  are sorted into quartiles and assigned to groups 1 through 4.



## Table 1. Descriptive Statistics

Panel A shows the transition matrix for *Non-GAAP Adjustment Group*. The entries provide the probabilities that a firm in each group in year  $t$  is in each of the other groups in year  $t+1$ . Panel B reports distributional statistics for the sample of 2,848 S&P 500 firm-years during the period 2010-2015. Panel C presents Pearson (raw) correlations above the diagonal and Spearman (rank) correlations below the diagonal. Correlations in bold are statistically significant at the 10 percent level. *Non-GAAP Adjustment* is *Non-GAAP Net Income* - *GAAP Net Income*. *Non-GAAP Adjustment* group 0 includes 1,373 firm-years that do not report *Non-GAAP Net Income* or report *Non-GAAP Adjustment*  $\leq 0$ . The remaining 1,475 firm-years with *Non-GAAP Adjustment*  $> 0$  are sorted into quartiles and assigned to groups 1 through 4. *Non-GAAP Net Income* and *GAAP Net Income* are collected from firms' annual earnings press release, as described in Section 3.1. *GAAP Operating Income* is Compustat item OIADP. All three measures of income are scaled by beginning-of-period assets. *Total Compensation (\$ in 000s)* is the sum of the CEO's salary, bonus, stock and option awards valued using the grant date fair value, non-equity incentives, and all other compensation. *Return (EA)* is market-adjusted buy-and-hold returns during the three trading day window centered on the annual earnings announcement. *Return (1 yr.)* is the firm's stock return during the current fiscal year. *Return (2 yr.)* is the firm's stock return during the current and prior fiscal years. *Revenue (\$ in millions)* is Compustat item SALE. *Book-to-Market* is book value of equity (Compustat item CEQ) divided by market value of equity (Compustat items CSHO x PRCC\_F) at the end of the fiscal year. *CEO Tenure* is the number of years since the current CEO became CEO (Execucomp items YEAR - BECAMECEO). *Compensation Consultant* is an indicator set to one if the firm employs a compensation consultant during the period. *CEO is Chair* is an indicator set to one if the firm's CEO is also chair of the board of directors. *Independent Board* is the proportion of the firm's directors who are independent. *Busy Board* is the average number of other directorships held by the firm's directors. *CEO Ownership* and *Institutional Ownership* are the percentage of the firm's shares owned by the CEO and institutional investors, respectively.

**Panel A: Transition Matrix for *Non-GAAP Adjustment Group***

		Year $t+1$ Group				
		0	1	2	3	4
Year $t$ Group	0	0.74	0.09	0.07	0.05	0.06
	1	0.30	0.32	0.20	0.11	0.06
	2	0.21	0.21	0.29	0.20	0.09
	3	0.18	0.10	0.17	0.37	0.19
	4	0.11	0.06	0.08	0.20	0.55

## Panel B: Distributional Statistics

Variable	N	Mean	Std. Dev.	1st	25th	Median	75th	99th
<i>Non-GAAP Adjustment</i>	1903	0.015	0.032	-0.071	0.001	0.007	0.022	0.181
<i>Non-GAAP Net Income</i>	1903	0.081	0.057	-0.004	0.039	0.070	0.110	0.277
<i>GAAP Net Income</i>	2848	0.070	0.065	-0.109	0.028	0.060	0.102	0.287
<i>GAAP Operating Income</i>	2848	0.115	0.083	-0.048	0.058	0.100	0.155	0.394
<i>Total Compensation (\$ in 000s)</i>	2848	12020	7403	1071	7125	10329	14864	44335
<i>Return (EA)</i>	2848	0.003	0.056	-0.149	-0.028	0.001	0.031	0.165
<i>Return (1 yr.)</i>	2848	0.159	0.288	-0.477	-0.011	0.146	0.304	1.027
<i>Return (2 yr.)</i>	2848	0.432	0.583	-0.537	0.093	0.350	0.657	2.651
<i>Revenue (\$ in millions)</i>	2848	19167	28688	1021	4171	8519	18337	155929
<i>Book-to-Market</i>	2848	0.455	0.340	-0.101	0.219	0.376	0.614	1.776
<i>CEO Tenure</i>	2848	6.557	5.800	0	2	5	9	30
<i>Compensation Consultant</i>	2848	0.949	0.221	0	1	1	1	1
<i>CEO is Chair</i>	2848	0.487	0.500	0	0	0	1	1
<i>Independent Board</i>	2848	0.826	0.098	0.538	0.778	0.857	0.900	0.929
<i>Busy Board</i>	2848	0.950	0.505	0.077	0.667	1.000	1.300	2.100
<i>CEO Ownership</i>	2848	0.803	2.280	0.022	0.071	0.192	0.515	15.919
<i>Institutional Ownership</i>	2848	68.246	22.318	46.367	62.071	72.927	82.328	97.581

**Panel C: Pearson (Above) and Spearman (Below) Correlations**

<b>Variable</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>
1. <i>Non-GAAP Adjustment</i>		<b>-0.15</b>	<b>-0.52</b>	<b>-0.31</b>	<b>-0.01</b>	<b>0.06</b>	<b>-0.09</b>	<b>-0.06</b>	<b>-0.13</b>
2. <i>Log(Non-GAAP Net Income)</i>	<b>-0.06</b>		<b>0.82</b>	<b>0.77</b>	<b>0.37</b>	<b>-0.04</b>	<b>0.08</b>	<b>0.07</b>	<b>0.57</b>
3. <i>Log(GAAP Net Income)</i>	<b>-0.34</b>	<b>0.93</b>		<b>0.74</b>	<b>0.30</b>	<b>-0.05</b>	<b>0.13</b>	<b>0.12</b>	<b>0.47</b>
4. <i>Log(GAAP Operating Income)</i>	<b>-0.19</b>	<b>0.92</b>	<b>0.89</b>		<b>0.33</b>	<b>-0.06</b>	<b>0.08</b>	<b>0.06</b>	<b>0.63</b>
5. <i>Log(Total Compensation)</i>	<b>-0.03</b>	<b>0.55</b>	<b>0.51</b>	<b>0.53</b>		<b>0.02</b>	<b>0.06</b>	<b>0.10</b>	<b>0.43</b>
6. <i>Return (EA)</i>	<b>0.03</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.03</b>	<b>0.04</b>		<b>0.00</b>	<b>0.03</b>	<b>-0.01</b>
7. <i>Return (1 yr.)</i>	<b>-0.08</b>	<b>0.05</b>	<b>0.08</b>	<b>0.04</b>	<b>0.05</b>	<b>-0.01</b>		<b>0.64</b>	<b>0.00</b>
8. <i>Return (2 yr.)</i>	<b>-0.09</b>	<b>0.08</b>	<b>0.10</b>	<b>0.05</b>	<b>0.11</b>	<b>0.05</b>	<b>0.67</b>		<b>-0.02</b>
9. <i>Log(Revenue)</i>	<b>-0.15</b>	<b>0.73</b>	<b>0.69</b>	<b>0.80</b>	<b>0.51</b>	<b>0.00</b>	<b>0.01</b>	<b>0.00</b>	
10. <i>Book-to-Market</i>	<b>-0.20</b>	<b>-0.01</b>	<b>-0.02</b>	<b>0.03</b>	<b>-0.03</b>	<b>-0.05</b>	<b>-0.22</b>	<b>-0.31</b>	<b>0.10</b>
11. <i>Log(CEO Tenure)</i>	<b>0.02</b>	<b>-0.02</b>	<b>-0.02</b>	<b>-0.04</b>	<b>0.12</b>	<b>0.01</b>	<b>0.04</b>	<b>0.06</b>	<b>-0.03</b>
12. <i>Compensation Consultant</i>	<b>-0.02</b>	<b>0.06</b>	<b>0.05</b>	<b>0.05</b>	<b>0.13</b>	<b>0.02</b>	<b>0.01</b>	<b>0.00</b>	<b>-0.01</b>
13. <i>CEO is Chair</i>	<b>-0.10</b>	<b>0.14</b>	<b>0.16</b>	<b>0.17</b>	<b>0.21</b>	<b>-0.02</b>	<b>0.01</b>	<b>0.03</b>	<b>0.16</b>
14. <i>Independent Board</i>	<b>-0.09</b>	<b>0.20</b>	<b>0.19</b>	<b>0.23</b>	<b>0.16</b>	<b>0.00</b>	<b>0.00</b>	<b>0.01</b>	<b>0.20</b>
15. <i>Busy Board</i>	<b>-0.01</b>	<b>0.24</b>	<b>0.22</b>	<b>0.24</b>	<b>0.22</b>	<b>0.01</b>	<b>-0.01</b>	<b>0.00</b>	<b>0.26</b>
16. <i>CEO Ownership</i>	<b>0.00</b>	<b>-0.31</b>	<b>-0.28</b>	<b>-0.32</b>	<b>-0.12</b>	<b>0.04</b>	<b>0.03</b>	<b>0.05</b>	<b>-0.25</b>
17. <i>Institutional Ownership</i>	<b>0.07</b>	<b>-0.26</b>	<b>-0.24</b>	<b>-0.27</b>	<b>-0.09</b>	<b>0.01</b>	<b>0.03</b>	<b>0.03</b>	<b>-0.25</b>

<b>Variable</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>13</b>	<b>14</b>	<b>15</b>	<b>16</b>	<b>17</b>
1. <i>Non-GAAP Adjustment</i>	<b>-0.11</b>	<b>0.00</b>	<b>0.00</b>	<b>-0.10</b>	<b>-0.05</b>	<b>-0.05</b>	<b>0.00</b>	<b>0.02</b>
2. <i>Log(Non-GAAP Net Income)</i>	<b>-0.10</b>	<b>0.01</b>	<b>0.04</b>	<b>0.10</b>	<b>0.08</b>	<b>0.15</b>	<b>-0.07</b>	<b>-0.10</b>
3. <i>Log(GAAP Net Income)</i>	<b>-0.11</b>	<b>0.03</b>	<b>0.02</b>	<b>0.12</b>	<b>0.10</b>	<b>0.15</b>	<b>-0.05</b>	<b>-0.06</b>
4. <i>Log(GAAP Operating Income)</i>	<b>-0.02</b>	<b>-0.03</b>	<b>0.01</b>	<b>0.11</b>	<b>0.11</b>	<b>0.19</b>	<b>-0.07</b>	<b>-0.09</b>
5. <i>Log(Total Compensation)</i>	<b>-0.05</b>	<b>0.10</b>	<b>0.18</b>	<b>0.18</b>	<b>0.07</b>	<b>0.19</b>	<b>-0.16</b>	<b>-0.03</b>
6. <i>Return (EA)</i>	<b>-0.05</b>	<b>0.01</b>	<b>0.02</b>	<b>0.00</b>	<b>0.02</b>	<b>0.01</b>	<b>0.05</b>	<b>0.00</b>
7. <i>Return (1 yr.)</i>	<b>-0.24</b>	<b>0.05</b>	<b>0.01</b>	<b>0.02</b>	<b>-0.01</b>	<b>0.01</b>	<b>0.06</b>	<b>0.03</b>
8. <i>Return (2 yr.)</i>	<b>-0.26</b>	<b>0.08</b>	<b>0.01</b>	<b>0.01</b>	<b>-0.02</b>	<b>0.00</b>	<b>0.07</b>	<b>0.04</b>
9. <i>Log(Revenue)</i>	<b>0.09</b>	<b>-0.05</b>	<b>-0.01</b>	<b>0.15</b>	<b>0.10</b>	<b>0.25</b>	<b>-0.04</b>	<b>-0.11</b>
10. <i>Book-to-Market</i>		<b>-0.10</b>	<b>0.02</b>	<b>-0.04</b>	<b>-0.02</b>	<b>-0.07</b>	<b>-0.06</b>	<b>-0.07</b>
11. <i>Log(CEO Tenure)</i>	<b>-0.10</b>		<b>-0.09</b>	<b>0.27</b>	<b>0.00</b>	<b>-0.02</b>	<b>0.30</b>	<b>0.05</b>
12. <i>Compensation Consultant</i>	<b>0.02</b>	<b>-0.10</b>		<b>0.08</b>	<b>0.23</b>	<b>0.22</b>	<b>-0.14</b>	<b>-0.03</b>
13. <i>CEO is Chair</i>	<b>-0.02</b>	<b>0.27</b>	<b>0.08</b>		<b>0.38</b>	<b>0.25</b>	<b>0.05</b>	<b>0.02</b>
14. <i>Independent Board</i>	<b>0.04</b>	<b>-0.03</b>	<b>0.21</b>	<b>0.36</b>		<b>0.64</b>	<b>-0.09</b>	<b>0.02</b>
15. <i>Busy Board</i>	<b>-0.07</b>	<b>-0.03</b>	<b>0.20</b>	<b>0.23</b>	<b>0.45</b>		<b>-0.09</b>	<b>0.01</b>
16. <i>CEO Ownership</i>	<b>-0.03</b>	<b>0.47</b>	<b>0.02</b>	<b>0.11</b>	<b>-0.11</b>	<b>-0.09</b>		<b>0.03</b>
17. <i>Institutional Ownership</i>	<b>-0.08</b>	<b>0.06</b>	<b>-0.04</b>	<b>-0.04</b>	<b>-0.05</b>	<b>-0.06</b>	<b>0.17</b>	

**Table 2. CEO Compensation Regressions**

This table shows OLS estimates from CEO compensation regressions. That is, we regress  $\text{Log}(\text{Total Compensation})$  on *Non-GAAP Adjustment Group* and proxies for the economic determinants of expected compensation. The sample consists of 2,848 firm-years in the period 2010-2015. *Non-GAAP Adjustment Group* is a categorical variable taking integer values between 0 and 4. *Non-GAAP Adjustment* group 0 includes 1,373 firm-years that do not report *Non-GAAP Net Income* or report *Non-GAAP Adjustment*  $\leq 0$ . The remaining 1,475 firm-years with *Non-GAAP Adjustment*  $> 0$  are sorted into quartiles and assigned to groups 1 through 4. *Non-GAAP Adjustment*  $> 0$  is one if the firm reports *Non-GAAP Net Income*  $>$  *GAAP Net Income*, and zero otherwise. *Non-GAAP Adjustment* = 4 is one if the firm reports *Non-GAAP Adjustment* = 4, and zero otherwise. Other variables are defined in Table 1. *t*-statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by industry. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent level, respectively.

**Panel A: Baseline Compensation-Income Relations**

Independent Variable	<i>Y = Log(Total Compensation)</i>						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Log(Non-GAAP Net Income)</i>	0.141*** (7.00)	0.040* (1.70)					0.054** (2.08)
<i>Log(GAAP Net Income)</i>			0.091*** (5.81)	0.017 (1.14)			-0.002 (-0.29)
<i>Log(GAAP Operating Income)</i>					0.135*** (4.43)	0.010 (0.38)	-0.022 (-0.80)
<i>Return (2 yr.)</i>		0.115*** (4.13)		0.114*** (4.10)		0.118*** (4.09)	0.116*** (4.18)
<i>Log(Revenue)</i>		0.239*** (8.60)		0.259*** (12.48)		0.265*** (11.98)	0.250*** (10.21)
<i>Book-to-Market</i>		-0.040 (-0.60)		-0.053 (-0.84)		-0.068 (-1.09)	-0.045 (-0.69)
<i>Log(CEO Tenure)</i>		0.083*** (5.03)		0.084*** (5.03)		0.085*** (5.09)	0.083*** (4.86)
Industry Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.2407	0.3431	0.2045	0.3399	0.2267	0.3383	0.3441
N	2848	2848	2848	2848	2848	2848	2848



## Panel B: Categorical Non-GAAP Adjustment Variable

Independent Variable	<i>Y = Log(Total Compensation)</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Non-GAAP Adjustment Group</i>	0.028** (2.58)	0.027** (2.51)	0.037*** (3.68)	0.030*** (3.11)	0.025** (2.04)
<i>Log(Non-GAAP Net Income)</i>		0.039* (1.70)			0.033* (1.86)
<i>Log(GAAP Net Income)</i>			0.026* (1.72)		
<i>Log(GAAP Operating Income)</i>				0.017 (0.63)	
<i>Return (2 yr.)</i>	0.122*** (4.30)	0.118*** (4.26)	0.116*** (4.17)	0.120*** (4.19)	0.122*** (3.74)
<i>Log(Revenue)</i>	0.277*** (14.36)	0.241*** (8.84)	0.253*** (11.92)	0.261*** (11.55)	0.230*** (9.98)
<i>Book-to-Market</i>	-0.077 (-1.35)	-0.044 (-0.68)	-0.047 (-0.76)	-0.067 (-1.13)	-0.017 (-0.33)
<i>Log(CEO Tenure)</i>	0.086*** (5.08)	0.084*** (5.06)	0.084*** (5.05)	0.086*** (5.14)	0.110*** (4.64)
<i>Compensation Consultant</i>					0.398*** (2.70)
<i>CEO is Chair</i>					0.119*** (3.27)
<i>Independent Board</i>					-0.174** (-2.47)
<i>Busy Board</i>					0.068* (1.96)
<i>CEO Ownership</i>					-0.047*** (-4.02)
<i>Institutional Ownership</i>					0.001 (1.35)
Industry Fixed Effects?	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.3411	0.3460	0.3450	0.3418	0.4017
N	2848	2848	2848	2848	2848

### Panel C: Indicator Non-GAAP Adjustment Variables

Independent Variable	<i>Y = Log(Total Compensation)</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Non-GAAP Adjustment = 4</i>	0.083*** (2.89)	0.089*** (3.39)	0.132*** (5.02)	0.095*** (4.84)	0.095** (2.40)
<i>Log(Non-GAAP Net Income)</i>		0.040* (1.76)			0.035* (1.94)
<i>Log(GAAP Net Income)</i>			0.026 (1.66)		
<i>Log(GAAP Operating Income)</i>				0.016 (0.62)	
Compensation Determinants?	Yes	Yes	Yes	Yes	Yes
Governance Controls?	No	No	No	No	Yes
Industry Fixed Effects?	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.3396	0.3449	0.3433	0.3403	0.4012
N	2848	2848	2848	2848	2848

Independent Variable	<i>Y = Log(Total Compensation)</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Non-GAAP Adjustment &gt; 0</i>	0.073** (2.33)	0.067** (2.12)	0.083** (2.64)	0.075** (2.40)	0.056* (1.95)
<i>Log(Non-GAAP Net Income)</i>		0.038 (1.64)			0.033* (1.78)
<i>Log(GAAP Net Income)</i>			0.021 (1.37)		
<i>Log(GAAP Operating Income)</i>				0.013 (0.48)	
Compensation Determinants?	Yes	Yes	Yes	Yes	Yes
Governance Controls?	No	No	No	No	Yes
Industry Fixed Effects?	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.3407	0.3454	0.3433	0.3412	0.4008
N	2848	2848	2848	2848	2848

### Table 3. Restructuring Activity

This table shows OLS estimates from CEO compensation regressions that account for restructuring (e.g., merger and acquisition) activity. That is, we regress  $\text{Log}(\text{Total Compensation})$  on  $\text{Non-GAAP Adjustment} = 4$ ,  $\text{Restructuring}$ , and proxies for the economic determinants of expected compensation and corporate governance. The sample for the regression in the first column consists of the full sample of 2,848 firm-years in the period 2010-2015. The sample for the regression in the second column consists of the 1,941 firm-years with  $\text{Restructuring} = 0$ .  $\text{Non-GAAP Adjustment} > 0$  is based on  $\text{Non-GAAP Adjustment Group}$ , which is a categorical variable taking integer values between 0 and 4.  $\text{Non-GAAP Adjustment}$  group 0 includes 1,373 firm-years that do not report  $\text{Non-GAAP Net Income}$  or report  $\text{Non-GAAP Adjustment} \leq 0$ . The remaining 1,475 firm-years with  $\text{Non-GAAP Adjustment} > 0$  are sorted into quartiles and assigned to groups 1 through 4.  $\text{Non-GAAP Adjustment} > 0$  is one if the firm reports  $\text{Non-GAAP Adjustment} > 0$ , and zero otherwise.  $\text{Restructuring}$  is one if the firm either reports non-zero cash from acquisitions in its statement of cash flows (Compustat item AQC) or discusses merger and acquisition activity in the footnotes to the financial statements (Compustat footnote dataset code AA, as well as any combination of AA with other footnote codes), and zero otherwise. Other variables are defined in Table 1.  $t$ -statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by industry. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent level, respectively.

Independent Variable	$Y = \text{Log}(\text{Total Compensation})$	
	(1)	(2)
$\text{Non-GAAP Adjustment} = 4$	0.104** (2.13)	0.097** (2.04)
$\text{Non-GAAP Adjustment} = 4 \times \text{Restructuring}$	-0.038 (-0.81)	
$\text{Restructuring}$	0.112 (0.28)	
Compensation Determinants?	Yes	Yes
Governance Controls?	Yes	Yes
$\text{Restructuring} \times (\text{Determinants} + \text{Controls})?$	Yes	No
Industry Fixed Effects?	Yes	Yes
Year Fixed Effects?	Yes	Yes
R <sup>2</sup>	0.4067	0.3835
N	2848	1941

**Table 4. Contemporaneous Informativeness Regressions**

This table shows OLS estimates from contemporaneous informativeness regressions. In Panel A, we regress *Return (1 yr.)* on multiple proxies for contemporaneously realized earnings. In Panel B, we include an indicator for firms with *Non-GAAP Adjustment = 4* and interact this indicator with *Non-GAAP Net Income*. Specifically, *Non-GAAP Adjustment = 4* is one if the firm reports *Non-GAAP Adjustment = 4*, and zero otherwise. Other variables are defined in Table 1. We standardize all variables to have unit variance to facilitate the interpretation of coefficients. *t*-statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by industry. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent level, respectively.

**Panel A: Baseline comparisons**

Independent Variable	<i>Y = Return (1 yr.)</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Non-GAAP Net Income</i>	0.114*** (4.23)			-0.049 (-0.51)	0.088* (1.72)
<i>GAAP Net Income</i>		0.136*** (4.53)		0.181* (1.80)	
<i>GAAP Operating Income</i>			0.109*** (3.87)		0.029 (0.52)
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.1817	0.1873	0.1806	0.1878	0.1819
N	2848	2848	2848	2848	2848

**Panel B: Indicator for firms with Non-GAAP Adjustment = 4**

Independent Variable	<i>Y = Return (1 yr.)</i>	
	(1)	(2)
<i>Non-GAAP Net Income</i>	-0.083 (-0.77)	0.089 (1.67)
<i>Non-GAAP Net Income x Non-GAAP Adjustment = 4</i>	0.138** (2.66)	0.135** (2.36)
<i>Non-GAAP Adjustment = 4</i>	-0.109*** (-2.72)	-0.160*** (-2.80)
<i>GAAP Net Income</i>	0.180 (1.67)	
<i>GAAP Operating Income</i>		-0.001 (-0.02)
Year Fixed Effects?	Yes	Yes
R <sup>2</sup>	0.1930	0.1898
N	2848	2848

**Table 5. Earnings Announcement Informativeness Regressions**

This table shows OLS estimates from earnings announcement informativeness regressions. In Panel A, we regress *Return (EA)* on multiple proxies for current earnings innovations. In Panel B, we include an indicator for firms with *Non-GAAP Adjustment = 4* and interact this indicator with *Non-GAAP Net Income - PastOI*. Specifically, *Non-GAAP Adjustment = 4* is one if the firm reports *Non-GAAP Adjustment = 4*, and zero otherwise. We subtract GAAP operating income in the prior year (*Past OI*) from the current earnings proxies to benchmark for expected earnings. Other variables are defined in Table 1. We standardize all variables to have unit variance to facilitate the interpretation of coefficients. *t*-statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by industry. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent level, respectively.

**Panel A: Baseline comparisons**

Independent Variable	<i>Y = Return (EA)</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Non-GAAP Net Income - PastOI</i>	0.063*			0.107	0.042
	(1.95)			(1.57)	(1.08)
<i>GAAP Net Income - PastOI</i>		0.030		-0.056	
		(1.03)		(-0.89)	
<i>GAAP Operating Income - PastOI</i>			0.062***		0.040
			(3.16)		(1.51)
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.0046	0.0016	0.0044	0.0057	0.0057
N	2848	2848	2848	2848	2848

**Panel B: Indicator for firms with Non-GAAP Adjustment = 4**

Independent Variable	<i>Y = Return (EA)</i>	
	(1)	(2)
<i>Non-GAAP Net Income - PastOI</i>	-0.002	0.007
	(-0.03)	(0.19)
<i>(Non-GAAP Net Income - PastOI) x Non-GAAP Adjustment = 4</i>	0.031	0.024
	(1.04)	(0.77)
<i>Non-GAAP Adjustment = 4</i>	0.082	0.075
	(1.67)	(1.52)
<i>GAAP Net Income - PastOI</i>	0.036	
	(0.63)	
<i>GAAP Operating Income - PastOI</i>		0.055*
		(1.93)
Year Fixed Effects?	Yes	Yes
R <sup>2</sup>	0.0091	0.0108
N	2848	2848

## Table 6. Permanence Regressions

This table shows OLS estimates from earnings permanence regressions. In Panel A, we regress GAAP operating income in the subsequent year (*Future OI*) on multiple proxies for current earnings. In Panel B, we include an indicator for firms with *Non-GAAP Adjustment* = 4 and interact this indicator with *Non-GAAP Net Income*. Specifically, *Non-GAAP Adjustment* = 4 is one if the firm reports *Non-GAAP Adjustment* = 4, and zero otherwise. Other variables are defined in Table 1. We standardize all variables to have unit variance to facilitate the interpretation of coefficients. *t*-statistics are reported in parentheses below coefficients and are based on standard errors that are clustered by industry. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10 percent level, respectively.

### Panel A: Baseline comparisons

Independent Variable	<i>Y = Future OI</i>				
	(1)	(2)	(3)	(4)	(5)
<i>Non-GAAP Net Income</i>	0.807*** (16.53)			0.543*** (6.37)	-0.026 (-0.84)
<i>GAAP Net Income</i>		0.784*** (18.90)		0.293*** (4.51)	
<i>GAAP Operating Income</i>			0.892*** (52.05)		0.916*** (28.55)
Year Fixed Effects?	Yes	Yes	Yes	Yes	Yes
R <sup>2</sup>	0.6562	0.6174	0.7985	0.6720	0.7986
N	2848	2848	2848	2848	2848

### Panel B: Indicator for firms with Non-GAAP Adjustment = 4

Independent Variable	<i>Y = Future OI</i>	
	(1)	(2)
<i>Non-GAAP Net Income</i>	0.756*** (6.72)	-0.012 (-0.39)
<i>Non-GAAP Net Income x Non-GAAP Adjustment = 4</i>	-0.128*** (-2.74)	-0.034 (-1.48)
<i>Non-GAAP Adjustment = 4</i>	-0.014 (-0.24)	0.026 (1.45)
<i>GAAP Net Income</i>	0.115 (1.18)	
<i>GAAP Operating Income</i>		0.910*** (30.44)
Year Fixed Effects?	Yes	Yes
R <sup>2</sup>	0.6827	0.7989
N	2848	2848