Descriptive and Informational Properties of Accounting Numbers in Compensation Contracts

Hansol Jang
University of Illinois at Urbana-Champaign
jang39@illinois.edu

Oktay Urcan
University of Illinois at Urbana-Champaign
ourcan@illinois.edu

Hayoung Yoon
Southern Methodist University
hayoungy@smu.edu

October 2019

Abstract

This paper provides an in-depth look into the tailoring and informational properties of accounting numbers used in compensation contracts for S&P 500 firms from 2006 to 2017. We find that accounting performance measures used in compensation contracts are not systematically greater than their GAAP-based counterparts. Investigating specific adjustments made to GAAP-based financial measures to arrive at compensation performance measures, we identify 26 different types of adjustments and find that these contractual adjustments generally help improve the accounting numbers' association with contemporaneous stock returns and positively predict future cash flows. Further, we find that for earnings-based measures, contractual adjustments are sensitive to uncontrollable macroeconomic factors, such that more gains or fewer losses are excluded during economic expansions. Finally, an examination of specific adjustments reveals manager-controllable items that are excluded by the managers positively predict future cash flows.

Keywords: Compensation; GAAP; Non-GAAP; Adjustment

We appreciate helpful comments and suggestions from Lakshmanan Shivakumar and thank the University of Illinois at Urbana-Champaign for financial support.

1. Introduction

Accounting numbers (e.g., sales, net income, earnings per share, operating cash flow, free cash flow, etc.) are used to evaluate and award the performance of managers (Murphy 1999, 2013). Existing theory in the context of a principal-agent relationship provides rationale behind the use of accounting numbers in compensation contracts (Holmstrom 1979; Paul 1992; Feltham and Xie 1994). While managerial effort may be unobservable, accounting numbers sensitive to managerial effort are valuable information to the principal. Using these accounting numbers, the principal can better motivate her agent to increase effort intensity and/or help steer the allocation of the agent's effort towards actions that have high marginal productivity. For instance, Feltham and Xie (1994) highlight the desirability of compensating the agent on the performance of accounting numbers that shield the agent from uncontrollable profitability shocks and that bring about actions that influence the principal's expected payoff. Despite the role accounting numbers play in compensation contracts, the absence of standardized data has limited the literature's knowledge on the empirical characteristics of compensation performance measures. In this study, we show both descriptive and informational properties of accounting numbers used in compensation contracts for a sample of S&P 500 firms from 2006 to 2017.

Notwithstanding a lack of descriptive examination of compensation performance measures, the media has been forming its own opinion on corporations' seemingly discretionary use of accounting numbers in awarding executive compensation. The following statement by Rapoport (2014) aptly captures the media's characterization of the use of these compensation performance measures.

> U.S. companies increasingly are using unconventional earnings measures in determining bonuses, making it easier for them to appear more profitable when they reward executives with big paydays. Last year, 542 companies said they determine compensation using financial measurements that differ from U.S. accounting standards, according to an analysis performed by consultant Audit Analytics for The Wall Street Journal. That is more than double the 249 companies that

> did so in 2009. The practice can be controversial because it strips out various costs—from employee stock payments to asset write-downs—that can depress profits.

The media's concern over the use of accounting numbers that deviate from the Generally Accepted Accounting Principles (GAAP) in compensation contracts is also shared by academics. Although Pozen and Kothari (2017) do not suggest the presence of abuse in the use of accounting performance measures, the authors do call for more transparency with respect to the reporting of these non-GAAP performance measures. Unlike pro forma earnings for which the disclosure/release of non-GAAP financial measures are required under the Securities and Exchange Commission (SEC) Regulation G to accompany a presentation of and a reconciliation to comparable GAAP financial measures, non-GAAP compensation performance measures disclosed in proxy statements as performance targets or the realizations of performance against those targets are not required to accompany a reconciliation to comparable GAAP financial measures (SEC 2003; Deloitte 2019). A natural consequence of the difference in SEC rules' treatment of the use of non-GAAP financial measures and of non-GAAP compensation performance measures is reduced transparency for compensation performance measures. While our study's aim is to provide information useful in understanding the empirical characteristics of compensation performance measures, findings documented herein are also useful in evaluating the validity of concerns like those expressed by the media.

The interest in understanding both descriptive and informational properties of accounting numbers used in disclosure outlets other than annual financial statement (i.e., 10-K) is not new. For example, prior literature examines the properties of pro forma earnings which are frequently adjusted to exclude items not representative of "core earnings" (Bradshaw and Sloan 2002; Bhattacharya, Black, Christensen, and Larson 2003; Brown and Sivakumar 2003; Doyle, Lundholm, and Soliman 2003). Compensation performance measures, as opposed to pro forma earnings, have also been gaining attention in the literature. There are studies on the use of non-GAAP earnings per share (EPS) in both performance evaluation

and earnings announcement (Black, Black, Christensen, and Gee 2018); on conservatism and persistence of actual earnings numbers used in compensation contracts (Na and Zhang 2017); on riskier CEO pay packages relating to CEO compensation (Albuquerque, Albuquerque, Carter, and Dong 2018); and on firm and board characteristics and bonus target beating relating to the use of adjusted earnings in performance evaluation (Curtis, Li, and Patrick 2018). Despite the recent interest in earnings numbers used in compensation contracts, a major challenge the literature still faces is the unavailability of archival dataset on (1) realized accounting performance at the end of the performance evaluation period for a wide variety of compensation performance measures (not just earnings) and (2) the types and the magnitudes of adjustments that are made to financial statement accounting numbers (hereafter "GAAP-based benchmarks" or "GAAP-based financial measures"). Limited knowledge on these basic descriptive properties of compensation performance measures has hindered researchers from examining the informational properties of these measures as well. Our study advances the literature by providing a first look into both descriptive and informational properties of a large set of compensation performance measures together with a detailed analysis of line-by-line adjustments made to GAAP-based performance measures to arrive at corresponding compensation performance measures.[1]

We examine the properties of compensation performance measures by constructing a hand-collected dataset of accounting numbers used in compensation contracts from proxy statements of S&P 500 firms for fiscal years 2006-2017. Effective for fiscal years ending on or after December 15, 2006, the SEC required a disclosure of "Compensation Discussion and Analysis" section (CD&A) in firms' proxy statements. Most relevant to our study, CD&A contains information on following items: (1) the type of accounting numbers used in deter-

[1]Compensation and pro forma measures do not necessarily overlap. For example, we check the extent of an overlap between EPS compensation performance measure and management-provided pro forma EPS. We hand-collect annual pro forma EPS from Form 8-K and find that there is a meaningful difference between the EPS measures used in compensation contracts and earnings releases. That is, conditional on EPS measures being disclosed in both reporting outlets, the two EPS measures are different for 44.8% of the observations. This suggests that better understanding of both descriptive and informational properties of compensation performance measures are needed.

mining executive's annual and long-term compensation (i.e., earnings, operating and/or free cash flow, sales, etc.), (2) realized performance at year-end, calculated based on the management's contractual definition of accounting performance, and (3) either narrative disclosure on or reconciliation table(s) for items that are excluded from GAAP-based benchmarks to arrive at the compensation performance. We manually look through all S&P 500 firms' proxy statements from 2006 to 2017 to identify the above three items for the firms' annual compensation of their CEOs. This hand-collection effort yields 6,440 CEO-firm-year observations for which we have complete data on both the type of compensation performance measures and realized performance at year-end. Of 6,440 CEO-firm-year observations, we are able to identify the magnitude of adjustments made to GAAP financial measures for 1,992 observations. We match our hand-collected dataset on compensation performance measures with GAAP-based benchmarks obtained from Compustat. This is a first dataset to contain detailed information on contractual definitions of a large set of compensation performance measures (not just earnings) and line-by-line adjustments made to GAAP-based performance measures to arrive at corresponding compensation performance measures.

Armed with our dataset, we sequentially tackle the following main research agenda: for each compensation performance measure (1) present and test the difference between compensation performance measures and their GAAP-based benchmarks, (2) show both the types and the amounts of adjustments (e.g., restructuring charges and goodwill impairments) made to GAAP-based benchmarks to arrive at the corresponding compensation performance measures, and (3) examine incremental informativeness of compensation performance measures to GAAP-based benchmarks. The compensation performance measures of interest are: earnings, earnings before interest and/or taxes (EBIT & EBT), earnings before interest, taxes, depreciation, and amortization (EBITDA), free cash flows (FCF), operating cash flows (OCF), operating income (OI), and sales. Figure 1 shows the use-intensity of each of these compensation performance measures over our sample period.

In the first set of results, we provide descriptive evidence on the types of performance

measures used for compensation contracts, and contractual definitions of these measures. Our data reveal a wide variety in the types of measures used, with the mix becoming more varied in recent years. For example, while earnings (i.e. net income and EPS) measures were most frequently used in 2006, comprising 55% of our sample, they account for less than 30% in 2017. This decrease has coincided with a substantial increase in the use of other profit-based measures and the sales measure. Our data also reveal that, for each of these measures, contractual definitions of accounting performance used for compensation contracts are rarely the same as GAAP-based definitions. For example, EPS is adjusted to arrive at adjusted EPS, EBITDA is adjusted to arrive at adjusted EBITDA, sales is adjusted to arrive at adjusted sales, and so forth. We find that only 5% of our sample compensation performance measures are the same as their GAAP benchmarks, suggesting a marked prevalence of the tailoring of accounting numbers in compensation contracts. We further find that such tailoring is not systematically performance-increasing. Although, in our sample, compensation performance numbers are greater than their GAAP-based financial measures for 57% of our observations, performance-increasing and performance-decreasing adjustments occur statistically equally contrary to the widely held notion that a majority of firms compensate their CEOs based on performance measures that are inflated relative to those defined by GAAP.

Focusing on 1,992 observations for which the magnitudes of adjustments made to GAAP-based financial measures are disclosed in firms' proxy statements, we identify 26 different types of adjustments and group unidentified adjustment types into an "others" category. Of the 26 types, following are the top five adjustment categories ordered by their frequency: restructuring charges (33% of our sample observations), merger and acquisition-related (M&A) charges (26%), tax-related charges (24%), gain and loss (G&L) from asset transactions (22%), and write-down of assets other than goodwill (18%). In terms of the pooled-average magnitude of adjustments, following are the top five adjustment categories: goodwill impairment charges (3.5% of beginning-of-year book assets), depreciation and amortization charges (1.6%

of beginning-of-year book assets), stock compensation charges (1.4% of beginning-of-year book assets), lawsuit settlement charges (1.1% of beginning-of-year book assets), and debt interest payments (1.1% of beginning-of-year book assets). While we remain agnostic as to whether making adjustments to GAAP-based financial measures is an optimal or suboptimal compensation practice, an interesting fact we observe is that categories seemingly related to stewardship of assets, such as charges related to write-down and goodwill impairment, are excluded from the determination of executive compensation.

In our second set of results, we empirically test informational properties of compensation performances. First, we test whether the tailoring of accounting measures enhances the measures' contemporaneous association with shareholder returns. We find that GAAP-based earnings and other profit measures are significantly associated contemporaneous stock returns. More importantly, we find that contractual adjustments made to five out of seven compensation performance measures are incrementally informative about contemporaneous returns. We also find that the informational value of adjustments varies widely across the seven compensation performance measures. Specifically, adjustments made to earnings exhibit the greatest incremental association with contemporaneous returns, followed by FCF and OI. Adjustments made to EBIT, EBT and EBITDA provide economically smaller but still statistically significant incremental information about contemporaneous returns. Adjustments made to OCF and sales do not exhibit incremental association with contemporaneous returns.

Next, we test whether contractual tailoring increases predictability of future cash flows. We find that GAAP-based earnings, profit, and sales measures all positively predict future cash flows. Turning to adjustments, we find that for four out of seven compensation performance measures, adjustments are positively and significantly associated with future cash flows, suggesting that contractual adjustments that increase (decrease) current performance are associated with higher (lower) cash flows in the future period. Similar to the return test results, we find variation across measures. Adjustments made to earnings provide the

greatest predictive ability, followed by FCF, EBIT, EBT, and EBITDA. Adjustments made to OCF, OI and sales do not convey incremental information about future cash flows.

Third, prior studies suggest that compensation performance measures shield managers from uncontrollable profitability shocks (e.g., Feltham and Xie 1994; Lambert 2001; Demski 2013). Consistent with these arguments, we find that for the earnings, EBIT and EBT measures, contractual adjustments are sensitive to macroeconomic factors that likely influenced firm performance during the manager's evaluation period. Specifically, we provide evidence that during periods of economy-wide and industry-wide growth, firms make more negative or less positive adjustments, or equivalently speaking, firms exclude more gains and fewer losses from GAAP numbers during economic expansions compared to economic downturns. However, we do not find such evidence for other performance measures.

Fourth, using our data on specific adjustments, we provide evidence that excluded restructuring, M&A, integration and separation related items, and write-down of assets are significantly associated with higher future cash flows. Together with descriptive evidence on specific adjustments, these findings shed light on potential reasons why certain items are excluded in compensation contracts. For instance, an economically significant fraction of adjustments comes from items that are less controllable by manager. Approximately 34% of our sample observations adjust for the impact of items such as accounting rule change, natural disaster, and foreign exchange rate. Our analysis suggests that excluding these items from performance measurement does not enhance but also does not weaken the measure's informational usefulness. Second, the most frequent types of adjustments appear to be non-transitory and controllable by manager. Our empirical results suggest that the exclusion of these presumably controllable items may indicate manager's effort-related current expenses with a potential for positive payoffs being realized in future periods and provide a rationale for the evidence in prior literature on why compensation committees do not necessarily penalize managers for some losses (Abdel-Khalik 1985; Dechow, Huson, and Sloan 1994; Gaver and Gaver 1998).

Our paper has a number of contributions and implications. First, how GAAP and the practice of financial reporting are shaped by the demands of different user groups (e.g., shareholders, lenders, employees, and regulators) are extensively researched and discussed topics in the prior literature (Armstrong, Guay, and Weber 2010; Beyer, Cohen, Lys, and Walther 2010; Kothari, Ramanna, and Skinner 2010). Kothari et al. (2010) suggest that one potential way to meet the demands of different financial statement user groups is to "provide a single set of general-purpose financial statements and allow different user groups to tailor (or adjust) the financial statements to suit their own purposes." Our study shows that there is significant tailoring/adjustment of accounting numbers to suit the purpose of evaluating and awarding managerial performance. This conclusion parallels Dyreng, Vashishtha, and Weber's (2017) finding on the tailoring of the earnings number to fit the informational demands of lenders. Overall, we add to the literature by investigating (1) both the types and extent of tailoring in accounting numbers in compensation contracts and (2) the informational properties of these tailored accounting numbers.

Second, the media and academics show signs of skepticism regarding the quality of compensation performance measures disclosed in proxy statements due to the exclusions made to these accounting numbers and the lack of transparency related to the exclusions. For instance, Lahart (2016), in his Wall Street Journal article, calls earnings performance measures "earning before the bad stuff." Guest, Kothari, and Pozen (2019) examine the relation between CEO pay and the reporting of non-GAAP earnings in press releases that are higher than GAAP-defined earnings and report that at least some fraction of CEO pay levels in the cross-section are associated with inflated non-GAAP pro forma earnings. Our descriptive results on the distribution of the difference between compensation performance measures and their benchmark financial measures do not suggest that a significant portion of adjustments are performance increasing. Moreover, the results on the informational properties of accounting performance measures suggest that these accounting numbers' average qualities—measured as their ability to explain stock return and future cash flow, and adjustments'

sensitivity to uncontrollable performance shocks—do not indicate the presence of such opportunism.

The remainder of the paper is organized as follows. Section 2 discusses background literature, research questions, and data. Section 3 describes the descriptive properties of accounting performance measures. Section 4 presents informational properties of accounting performance measures. Section 5 concludes.

2. Background

2.1. Accounting performance measures and existing evidence

Accounting performance measures are widely used to evaluate and reward managerial performance (Murphy 1999, 2013). However, compensation committees do not necessarily use GAAP financial measures to evaluate managerial performance. Compensation committees commonly adjust GAAP financial measures to arrive at year-end performance measures used to evaluate and compensate their managers. While there could be large cross-sectional variation in the motive behind adjustments, two often cited reasons are: (1) to increase compensation performance measures' "controllability" and (2) to better link the performance measure with shareholder value creation.

In the literature, "controllability" is defined as the extent to which managerial effort can influence the probability distribution of the outcome of a performance measure (Lambert 2001; Demski 2013). Intuitively, using a "controllable" performance measure in compensation contracts translates to evaluating a manager with a performance measure that is sensitive to her effort. If adjustments made to GAAP financial measures reduce noise or the effect of random events (i.e., events out of managers' control) on accounting performance measures, then such adjustments would make the accounting performance measures more controllable. Furthermore, noise or the effect of random performance shocks on accounting performance measures exposes managers to risk with respect to their compensation payoffs;

therefore, adjustments that eliminate noise in accounting performance measures may reduce risk premium in managerial compensation contracts (Feltham and Xie 1994).

Managerial accounting theory also views a performance measure's sensitivity to both shareholder value and managerial effort as an important characteristic in building an optimal compensation contract (Feltham and Xie 1994; Lambert 2001; Demski 2013). Thus, the practice of adjusting GAAP financial measures to arrive at accounting performance measures may be welfare improving for both shareholders and managers.

Critics of the practice of adjustments to GAAP financial measures, however, suggest that such practice can be abused by self-serving managers. Specifically, the critics argue that exclusions made to GAAP financial measures may inflate accounting performance measures, resulting in "big paydays" to managers. Lending credibility to critics' skepticism about the quality of accounting performance measures, Pozen and Kothari (2017) report that one of Fortune 500 company's non-GAAP earnings, used to evaluate its manager(s), was $7.5 billion higher than its GAAP earnings over the same reporting period. The critics' skepticism is also amplified by the fact that there is a lack of transparency in disclosure of how accounting performance measures are calculated at the year-end. Firms are currently not required to provide reconciliations to comparable GAAP financial measures for non-GAAP financial measures used as compensation targets. On the other hand, under Regulation G, firms are required to provide a presentation of and a reconciliation to comparable GAAP financial measures for non-GAAP financial measures presented in pro forma financial statements. The Council of Institutional Investors (CII), whose members manage assets totaling approximately $30 trillion, has noticed the discrepancy in the required level of transparency for non-GAAP financial measures used as (1) compensation targets in proxy statements and (2) as alternative, summary firm performance measures in pro forma statements. On April 29, 2019, the CII petitioned the SEC to consider the expansion of disclosure requirements for accounting performance measures. The stated rationales behind CII's petition are twofold: (1) to furnish investors with information useful for advisory votes on executive compensa-

tion and (2) to improve investors' understanding on the link between pay structure and firm performance. By constructing a dataset on the use of accounting performance measures by S&P500 firms, our study aims to inform investors and corporate governance organizations (e.g., CII) on the practice of adjusting GAAP financial measures in compensation contracts.

While our study is the most comprehensive in its scope for examining firms' use of accounting performance measures, recent studies provide some evidence on the determinants and consequences of the use of non-GAAP earnings in compensation contracts. For example, Na and Zhang (2017) find that earnings that are used in compensation contracts do not exhibit conditional conservatism and are more persistent than GAAP earnings. Black et al. (2018) document that non-GAAP EPS released in earnings announcements are of higher quality when managers are evaluated based on non-GAAP EPS. With the assumption that (1) compensation committees and managers use the same non-GAAP earnings in both compensation contracts and earnings announcements and (2) compensation committees reward their managers on performance measures that capture core operations, Black et al. (2018) argue the use of non-GAAP earnings in earnings announcements provides investors with earnings measures that are more persistent. Curtis et al. (2018) use year 2013's cross-section of CEO compensation contract information and find that CEOs are more likely to be evaluated with non-GAAP earnings when their firms have high level of intangibles, high debt-to-equity ratios, and more volatile earnings. In addition, CEO tenure is found to be negatively associated with the likelihood of the use of non-GAAP earnings in compensation contracts. The paper interprets these determinants analyses as being consistent with the idea that firms are more likely to use adjusted earnings in compensation contracts when the firms possess firm-level and executive-level characteristics that would produce less informative GAAP earnings. The paper also finds that the use of adjusted earnings is positively associated with the beating of CEOs' compensation target threshold and with CEO bonus compensation when adjusted earnings in compensation contracts differ from analysts' forecasts.

These findings are informative in understanding (1) properties of earnings numbers used in compensation contracts, (2) whether firms use non-GAAP earnings for both internal evaluation and external reporting purposes, (3) firm-level and executive-level characteristics that drive the use of adjusted earnings in compensation contracts, and (4) whether the disclosure of adjusted earnings is associated with higher pay for CEOs. However, evidence on non-earnings measures (which account for over 70 percent of our sample in 2017), and exact contractual definitions and informational properties of compensation performance measures for a large panel of US firms is still absent in the literature. We extend the existing research by providing evidence on whether accounting performance measures used in compensation contracts are systematically inflated just as critics conjecture. We also examine specific items that are excluded from GAAP-based financial measures to arrive at those accounting performance measures. Examining the items that are excluded from GAAP-based financial measures is important in understanding whether the excluded items represent value creating or value destroying components for shareholders and whether the excluded items are controllable or non-controllable components for managers. Finally, we provide evidence on compensation performance measures' incremental ability (i.e., incremental to GAAP-based financial measures) to explain contemporaneous stock returns and future cash flows.

2.2. Data

Our sample starts with S&P500 firms in 2006 and successively includes firms that are added to the S&P500 list until 2017 without excluding firms that are later dropped from the list. For proxy statements filed for fiscal years ending on or after December 15, 2006, the SEC required a disclosure of "Compensation Discussion and Analysis" section (CD&A). Since the CD&A and corresponding appendices contain detailed information on the use of accounting numbers in compensation contracts, our sample period starts in 2006. We focus on S&P500 firms' CEOs to economize our hand-collection effort while examining the compensation contracts of the leaders of firms that represent 73% of the market capitalization

of US-listed companies as of 2017 calendar year-end. CEOs of S&P500 firms are compensated with three different types of pay: salary, incentive bonus, and others (e.g., pension, perquisites, etc.). Of the three types, incentive bonuses are paid out to CEOs in cash and/or equity, and the payout of these bonuses is contingent on the time/duration that CEOs serve as executives and/or on the operating performance of firms that they manage. For those bonuses contingent on the operating performance of firms, the payout is typically tied to one or more measures of accounting numbers and/or stock return performance. Finally, the bonus payout can be tied to either annual performance or long-term performance (e.g., three-year performance) as well.

Our goal in this study is to investigate the practice of using accounting numbers in bonus plans. While both annual and long-term bonus plans use accounting numbers as performance targets for their respective periods, we focus on the use of accounting numbers in annual bonus plans. Comparing both descriptive and informational properties of accounting performance numbers and their GAAP-based financial measures are cleaner when adjustments made to GAAP-based financial measures can be associated with a specific period. For annual bonuses, adjustments made to GAAP-based financial measures to arrive at accounting performance measures are clearly associated with what transpired over the year. For long-term compensation plans, on the other hand, disclosures in proxy statements explaining the adjustments made to GAAP-based financial measures are not explicit on which of the long-term performance periods (e.g., first year; second year; third year) the adjustments are related. Overall, our analyses focus on the use of accounting performance measures in annual bonus plans for CEOs of S&P500 firms from 2006 to 2017.

For each CEO-firm-year in our sample, we hand-collect the following information from the proxy statements of her respective firm: (1) the type of accounting numbers (i.e., earnings, operating and/or free cash flow, sales, etc.) used in determining her annual compensation and the GAAP-based benchmark that the firm uses as the starting point, (2) realized accounting performance at year-end, and (3) items that are excluded from GAAP-based

benchmarks to arrive at the accounting performance measures and the amounts of these items. While there is a wide range of accounting numbers used in annual compensation, we focus our hand-collection effort on the accounting performance measures that have readily available, comparable GAAP-based financial measures. Specifically, the accounting performance measures of interest are: earnings, earnings before interest and/or taxes (EBIT & EBT), earnings before interest, taxes, depreciation, and amortization (EBITDA), free cash flow (FCF), operating cash flow (OCF), operating income (OI), and sales. Not all CD&A of proxy statements for S&P500 firms contain information on specific adjustments made to GAAP-based financial measures to arrive at accounting performance measures.[2] Therefore, our presentation of the types of adjustments to GAAP-based financial measures are limited to those firms that disclose the adjustments in their proxy statements. Finally, we organize and classify the adjustments into 27 categories. For example, any research and development-related (R&D) expenses excluded from GAAP-based financial measures are categorized as R&D-related adjustment. In summary, our hand-collection scheme described above yields 6,440 CEO-firm-year observations with complete data on realized accounting performance measures at year-end. Of 6,440 observations, we identify the magnitude of adjustments made to GAAP-based financial measures for 1,992 observations.[3] For our empirical tests, there is some sample attrition after requiring Compustat and CRSP data be available, resulting in 6,372 observations for conducting empirical tests. Table 1 summarizes our sample selection procedure.

[2] As discussed in Sections 1 and 2, firms are not required to provide a reconciliation of non-GAAP performance measures disclosed in proxy statements as performance targets or the realization of performance targets to GAAP financial measures. Therefore, some CD&A of proxy statements do not have information on adjustments made to GAAP-based financial measures.

[3] Appendix A provides examples of proxy statement disclosure on the types of compensation performance measures, the realization of performance, and the adjustments made to GAAP-based financial measures to arrive at compensation performance measures.

3. Descriptive properties

In this section, we start by investigating the descriptive properties of accounting performance measures used in compensation contracts. Specifically, this section examines three questions: (1) what are the types of accounting performance measures used; how frequently are they used; and how has the usage of different types of accounting performance measures evolved over time?, (2) how do compensation contract performance measures compare with GAAP-based financial measures? and (3) what exactly are contractual definitions of accounting performance measures used in compensation contracts?

3.1. Compensation performance measures

While a wide range of accounting measures are used in compensation contracts, we find that the most frequently used measures are: earnings, earnings per share (EPS), earnings before interest and/or taxes (EBIT & EBT), earnings before interest, taxes, depreciation, and amortization (EBITDA), free cash flow (FCF), operating cash flow (OCF), operating income (OI), and sales. As can be seen in Table 1, these nine measures account for approximately 93% of all performance measured used in our sample of CEO bonus plans. The remaining 7% include measures such as funds from operations, economic value added, selling and administrative expenses, and working capital.

Figure 1 shows the evolution of the types and the frequency of accounting performance measures used by our sample firms over the past decade. We find that during earlier years, firms predominantly used "bottom-line numbers". For example, in 2006, EPS was the most frequently used performance measure (41.8%), and the usage of EPS and earnings together accounted for 54.8% of our sample observations. However, the use of these bottom-line measures has steadily decreased, and by 2017, 29.5% of executive bonuses are tied to EPS or earnings. Other profit-based measures, however, have seen a steady increase in their usage. The frequencies of EBITDA and OI increased most during the sample period. They

comprised 0.7% (EBITDA) and 9.6% (OI) of our sample observations in 2006. The frequency of using these performance measures increased to 9.6% and 17.3% respectively in 2017. Another important trend in accounting performance measure usage is increase in frequency of sales from 11.6% in 2006 to 19.6% in 2017. Other measures such as FCF and EBT are also being more frequently used in later years compared to earlier years. The use of OCF and EBIT have stayed relatively constant during the sample period. Overall, there has been a trend toward greater variation in the mix of performance measures, resulting in bottom-line measures being increasingly replaced by the other profit-based measures and the sales measure.

In Table 2, we show the distribution of the number of accounting performance measures each firm uses. We find a secular increase in the number of accounting performance measures used from 1.14 measures in 2006 to 1.73 measures in 2017.

3.2. Compensation performance versus GAAP financial performance

How do performances measured under compensation contracts compare with comparable financial performances measured under GAAP? In Table 3, we find that only 5.08% of compensation performances are the same as GAAP benchmarks. Among the seven measures, Sales is the least likely to deviate from GAAP sales (13.18%), followed by OCF (9.12%). Measures that almost always deviate from GAAP are Earning and EBITDA – in our sample, only 1.31% of compensation Earning measures are the same as GAAP defined earnings, while none of compensation performance EBITDA is the same as GAAP EBITDA. This indicates that GAAP numbers are rarely used in executive compensation contracts, and substantial tailoring to GAAP numbers is done for contractual purposes.

The table further shows that overall, compensation performances are greater than their comparable GAAP benchmarks for 56.71% of our sample, suggesting that the majority of firms seem to compensate their CEOs based on numbers that are inflated relative to GAAP numbers. Examining each measure suggests that for all measures except Sales, compensation

performance measures are greater than their GAAP counterparts.

The media's concern over compensation managers based on non-GAAP measures suggests that such a practice may be reflective of self-serving opportunism. To provide more formal evidence of the presence/absence of compensation performance inflation, we empirically test whether the density distribution exhibits significant discontinuity around the zero cutoff (Cheng, Fan, and Marron 1997; McCrary 2008; Cattaneo, Jansson, and Ma 2018; Cattaneo, Jansson, and Ma 2019). In our context, the idea is that if firms systematically make performance-increasing adjustments to GAAP benchmarks, the density of units is likely discontinuous around the cutoff of zero difference between compensation performance and GAAP performance.

Panels A through G of Figure 2 plot the results of the test of continuity in density around the zero-cutoff using local polynomial density estimation developed in Cattaneo et al. (2019), where the running variable is the difference between compensation performance and respective GAAP performance scaled by total assets. Figure 2 reveals that for all measures except for sales, the distributions show slightly fatter right-tails, suggesting that compensation performances are generally higher than GAAP performances. However, testing for discontinuity in the density of observations around zero difference between compensation performance measures and the GAAP-based benchmarks shows that there are no detectable discontinuities. Table 4 presents the details of the estimation inputs and the test-statistic.[4] Specifically, the table shows the bandwidth choices and the effective sample size on each side of the cutoff that is used to estimate the density function. Rejecting the null indicates the presence of discontinuity. We find that for all measures except for Earnings and Sales, discontinuities are statistically insignificant; results for Earnings and Sales indicate

[4]The methodology uses local-polynomial estimation to first estimate the density function of the running variable within the chosen bandwidths around the cutoff and then testing the null that the estimated densities are equal on both sides of the cutoff point. We use optimal bandwidths that are chosen to minimize the asymptotic mean squared errors of the density estimators as proposed in Cattaneo et al. (2018). This method allows for different bandwidths on the two sides. The manipulation test statistic is constructed using the jackknife standard errors estimator corrected for boundary bias. We implement the test using the Stata command *rddensity*.

that there is abnormally high density of observations left of the zero-difference cutoff, not right of the cutoff. All results are robust to using common bandwidths on either side of the cutoff, instead of the bandwidths selected based on asymptotic mean squared error minimization. Although, in our sample, compensation performance numbers are greater than their GAAP-based financial measures for 57% of our observations, there does not appear to be an economically or statistically significant difference in the frequencies of performance-increasing and performance-decreasing adjustments, contrary to the widely held notion that a majority of firms compensate their CEOs based on performance measures that are inflated relative to those defined by GAAP.

3.3. The nature of adjustments to GAAP performance measures

We now focus on 1,992 observations for which complete data on the types and the magnitudes of adjustments are disclosed in companies' proxy statements and investigate contractual definitions of compensation performance measures firms use to determine CEO compensation.

Figure 3 presents the types and the frequencies of adjustments made to GAAP-based financial measures to arrive at the final compensation performance numbers. Panel A presents the frequencies for our entire sample. Firms most frequently exclude restructuring charges (33% of all compensation performances), followed by merger and acquisition-related items (26%), tax-related items (24%), gains and losses from asset transactions (22%), and write-down of assets (18%). Panels B through G present the frequencies for each measure. Table 5 presents the magnitudes of the adjustments. The category, which results in the largest performance-increasing adjustment, is goodwill impairment charges, the exclusion of which on average results in an increase in performance in the amount of 3.5% of total beginning assets. Other notable performance-increasing adjustments are depreciation and amortization of certain assets (1.6%), stock compensation charges (1.4%), lawsuit settlement charges (1.1%), and debt interest payments (1.1%). Among the categories that are on-average performance-

decreasing, the largest in magnitude is capital costs. Although relatively infrequent in occurrence, the exclusion results in a decrease in performance in the amount of 4% of beginning total assets. Tax adjustments also decrease compensation performance by 2.6% of beginning total assets.

We term adjustments that are not classified into the twenty-six categories as "others". Figure 3 shows that over 50% of companies make at least one such adjustment. Examples of Other adjustments include: impacts of law and regulation changes, transaction costs, charitable contribution, environmental charges, insurance recovery, and other generic terms such as "certain items" or "non-recurring items". A detailed list of items is provided in Appendix B.

4. Informational properties

In this section, we examine informational properties of compensation performance measures. Specifically, we empirically test whether the tailoring of accounting measures enhances the contemporaneous association with shareholder returns, the ability to predict future cash flows, and whether the tailoring is sensitive to uncontrollable macroeconomic factors that affect firm performance. In the last set of analysis, we examine the extent to which specific adjustment items explain the informativeness of contractual adjustments.

4.1. Descriptive statistics

In Table 6, we present descriptive statistics for compensation performance (CompPerf) and GAAP-based benchmarks (GAAP). CompPerf is compensation performance as reported in companies' proxy statements. GAAP is comparable GAAP-based performance. We define comparable GAAP-based benchmark as the GAAP-based metric that firms identify as the starting point for the calculation of their compensation performance in their contracts. Each GAAP performance is then calculated as follows: earnings is Compustat item NI; EBIT is

calculated as NI+XINT+TXT; EBT is calculated as NI+TXT; EBITDA is calculated as NI+XINT+TXT+DP; free cash flow is calculated as OANCF−CAPX; operating cash flow is OANCF; operating income is OIADP; and sales is SALE. CompPerf and GAAP are scaled by the market value of equity at the beginning of the period. In Panel A of Table 6, we find that the mean values of compensation Earning, EBIT, EBT, EBITDA, and FCF are greater, while the mean values of compensation OCF, OI and Sales are slightly less than their GAAP counterparts. To provide some perspective on how CompPerf compares with GAAP in magnitude, in Panel B of Table 6, we calculate the ratio of CompPerf to GAAP and provide descriptive statistics. For the average company, compensation Earnings is 110.3% of GAAP Earnings. This suggests that for the average company in our sample, which reports $1.552 billion of GAAP Earnings, its compensation earnings would be $1.712 billion. The measure with the highest ratio is FCF – compensation FCF is approximately 118.7% of FCF calculated under GAAP. Compensation EBITDA and OI are on-average 104.2% and 105.7% of GAAP, respectively. Compensation EBIT & EBT, OCF, and Sales are 87.6%, 98.9%, and 96.7% of GAAP counterparts, respectively.

4.2. Return tests

In this subsection, we examine whether compensation performances are tailored so that they yield higher association with contemporaneous shareholder returns. We investigate whether GAAP performance numbers are adjusted so that compensation performance measures better reflect shareholder-manager incentive alignment resulting in stronger relationship with contemporaneous shareholder returns. In other words, we ask whether managers' compensation is tied to a performance measure, which tracks shareholder returns. We focus on contemporaneous returns rather than future returns because compensation targets are given to the managers at the beginning of a year and firm performance for compensation is measured at the end of the year. Specifically, we estimate the following regression for each

compensation performance measure:

$$Return_t = \beta_0 + \beta_1 GAAP_t + \beta_2 Adj_t + \varepsilon_t, \quad (1)$$

Return is one-year buy-and-hold stock return. Compensation performance (CompPerf) is disaggregated into GAAP and Adj (CompPerf = GAAP+Adj), where, CompPerf is compensation performance as reported in the company's proxy statement, GAAP is comparable GAAP-based performance, and Adj is the difference between CompPerf and GAAP. CompPerf and GAAP are scaled by the market value of equity at the beginning of the period. β_2, the coefficient on Adj, show the association between the adjustments and contemporaneous stock returns and whether the association is incremental to the relation between GAAP-based financial measures and contemporaneous stock returns.

Table 7 reports the results of estimation. We find that for all measures except for Sales, GAAP numbers are significantly and positively associated with contemporaneous returns. Importantly, we find that the coefficient on Adj is positive and statistically significant for five out of the seven measures, suggesting that adjustments are incrementally informative about contemporaneous returns. We also find that the informational value of adjustments varies widely across measures. Specifically, adjustments made to GAAP Earnings exhibit the greatest incremental association with contemporaneous returns – every dollar of adjustment is incrementally associated with \$2.68 return during the contemporaneous period. The coefficients on Adj for FCF and OI are slightly smaller, \$1.55 and \$1.40, respectively. Adjustments made to EBIT&EBT and EBITDA provide economically smaller but still incremental information about contemporaneous returns, \$0.79 and \$0.41, respectively. Adjustments made to OCF and Sales are not informative incremental to the GAAP-based OCF and Sales.

In sum, Table 7 provides evidence that adjustments made to GAAP performance to arrive at compensation performance generally provide statistically significant information about contemporaneous returns, incremental to information provided by GAAP numbers;

however, the extent of their informational value varies across measures.

4.3. Predicting future cash flows

We next examine why adjustments to compensation measures predict contemporaneous returns. If GAAP performance numbers are adjusted so that compensation performance measures better reflect shareholder-manager incentive alignment, we expect these adjustments to predict future cash flows. We estimate the following regression model to test this conjecture:

$$CashFlow_{t+1} = \gamma_0 + \gamma_1 GAAP_t + \gamma_2 Adj_t + \varepsilon_t, \tag{2}$$

We measure CashFlow as earnings before extraordinary items and depreciation (OIBDP) scaled by market value of equity at the beginning of the period. γ_2, the coefficient on Adj, captures the extent to which the adjustments to the GAAP-based financial measures are associated with future cash flows.

Table 8 presents our findings. The results show that all GAAP-based financial measures positively predict one-year ahead cash flows. More importantly, the coefficient on Adj is positive and significant for Earnings, EBIT&EBT, EBITDA and FCF, suggesting that contractual exclusions made to these measures for executive compensation purposes significantly predict future cash flows, and that adjustments that increase (decrease) current performance are associated with higher (lower) cash flows in the future period. This potentially explains why adjustments are positively associated with contemporaneous stock returns in our previous analyses. The coefficient on Adj for OCF, OI, and Sales is not statistically significant, suggesting that adjustments made to GAAP OCF, OI, and Sales under compensation contracts do not incrementally predict future cash flows.

4.4. Sensitivity of contractual adjustments to macroeconomic factors

Prior literature suggests that using "controllable" performance measures in compensation contracts essentially translates into evaluating a manager with a performance measure that is sensitive to her effort and reduces the risk that managers are exposed to the impact of uncontrollable random events on their compensation payoffs. If adjustments made to GAAP financial measures reduce noise or the effect of random events (i.e., events out of managers' control such as economy-wide or industry-wide profitability shocks) on accounting performance measures, then such adjustments would make the accounting performance measures more controllable. In this subsection, we examine whether contractual adjustments are sensitive to macroeconomic factors that potentially impact firm performance during the manager's performance evaluation period. To this end, we estimate the following regression:

$$Adj_t = \theta_0 + \theta_1 GDP_t + \theta_2 IndRet_t + \varepsilon_t, \tag{3}$$

Adj is the difference between CompPerf and GAAP (Adj = CompPerf−GAAP). We include two proxies of macroeconomic factors: percentage growth in real gross domestic income (GDP) and industry returns (IndRet), calculated as the equal weighted stock returns of firms in the same SIC 2-digit industry portfolio excluding the returns of the firm itself. Both variables are measured over the manager's evaluation period.

Table 9 presents the results. We find evidence which partially supports our conjecture. Specifically, we find that for the Earnings and EBIT&EBT measures, contractual adjustments are sensitive to macroeconomic conditions. Moreover, we find that adjustments are more performance-decreasing and/or less performance-increasing when the economy or industry is experiencing growth, as captured by negative and significant coefficients on GDP and IndRet. In other words, compensation committees appear to exclude more gains and/or include more losses during periods of macroeconomic growth, compared to other times. In sum, compensation committees seem to employ a counter-cyclical GAAP performance ad-

justment policy. We also note that for the other five measures, we do not find evidence that adjustments reflect changes in macroeconomic conditions.

4.5. Do individual items matter?

Our analyses so far treat all adjustments to be equal. However, one might argue that an operations related adjustment (e.g., restructuring charges, asset write-downs) might be more informative than an adjustment outside of managers' control (e.g., exchange rate movements). We next exploit a major advantage of our data and explore the extent to which specific adjustment items explain the informativeness of contractual adjustments that we have documented in previous sections. We split our sample into 8 groups based on the frequency of adjustments: 1) restructuring, 2) M&A and integration and separation related items, 3) write-down of assets other than goodwill, 4) gains and losses from asset transactions, 5) depreciation and amortization, 6) impact of foreign exchange rate change, 7) fair value adjustments, and 8) other idiosyncratic adjustments.[5] For each adjustment category, we form a subsample of firm-years that report a non-zero value of that adjustment. We then estimate the following regressions:

$$Return_t = \delta_0 + \delta_1 GAAP_t + \delta_2 AdjItem_t + \delta_3 AllOtherAdj_t + \varepsilon_t, \tag{4a}$$

$$CashFlow_{t+1} = \delta_0 + \delta_1 GAAP_t + \delta_2 AdjItem_t + \delta_3 AllOtherAdj_t + \varepsilon_t, \tag{4b}$$

The above models are the same as models 1 and 2, except in these models, we further disaggregate Adj into two components. AdjItem is the amount of the adjustment of interest (e.g. restructuring) and AllOtherAdj is the sum of all other adjustments. δ_2 is the coefficient of our interest and captures the extent to which each adjustment category is associated with contemporaneous returns and future cash flows.

First, we examine whether and to what extent each of adjustment items is associated with

[5]While tax-related adjustments are the fourth most frequently adjusted item, we do not examine this category, as these are commonly aggregate tax impact of other adjusted items.

contemporaneous returns. Table 10 presents the regression results. We find that adjustments for gains and losses from asset transactions are significantly and positively associated with contemporaneous stock returns. However, we do not find evidence that the other individual categories are incrementally associated with stock returns.[6]

Next, we examine the predictive ability of individual adjustments for future cash flows. Table 11 presents the results. We find a statistically significant and positive coefficient on AdjItem for the following excluded items: restructuring, M&A, integration and separation related items, write-down of assets, gains or losses from asset transactions, and depreciation and amortization of assets. Moreover, this effect is economically large. For each of these models, while the coefficient on AdjItem is between 0.806 and 4.240, the coefficient on GAAP is between 0.007 and 0.274, and the coefficient on AllOtherAdj is between -0.237 and 0.303. We find that exclusions related to foreign exchange rate changes or fair value, however, do not convey incremental information about future cash flows.

We next investigate whether and to what extent the results in Table 11 are driven by the predictive ability of individual adjustments as reported in financial statements for future cash flows. The purpose of this test is to examine whether the portions that are contractually excluded exhibit predictive ability incremental to similar measures as reported in financial statements. To do this, we control for GAAPItem in the regression model. GAAPItem represents the amount reported in the firm's financial statements for the corresponding AdjItem. Table 12 reports the results. We find that for restructuring, M&A and integration and separation related items, and write-down of assets, the association between these items and future cash flows is statistically significant only for the contractually adjusted portion, but not for the amounts reported in financial statements. For the gains and losses category,

[6]We note that the coefficients on *AllOtherAdj* are not statistically significant in Table 10. In robustness analyses, we find that these results are partially driven by the fact that we include all eight performance measures, including the measures for which adjustments do not provide incremental information about stock returns or future cash flows. When we limit our sample to only *Earnings* measure, we find that *AdjItem* continues to be significantly associated with contemporaneous returns for the gains and losses from asset transactions, while *AllOtherAdj* is now significantly associated with contemporaneous returns in all models except for write-down, gains and losses, foreign exchange rate, and fair value adjustments.

amounts reported under GAAP significantly predict future cash flows; however, contractually adjusted portions also incrementally predict future cash flows. For depreciation and amortization, we find that the predictive ability of adjustments for future cash flows that we find in Table 12 is driven largely by the predictive ability of reported depreciation and amortization.

The evidence provided in Tables 10 through 12 sheds light on reasons why certain items might be excluded from performance measurement in compensation contracts. First, an economically significant fraction of adjustments come from items that are less controllable by managers. Approximately 34% of our sample observations adjust for the impact of items such as accounting rule change, natural disaster, and foreign exchange rate. Our results suggest that excluding these items from performance measurement does not enhance but also does not significantly weaken the measure's informational usefulness. Second, the most frequent types of adjustments appear to be non-transitory and controllable by manager (e.g. restructuring, M&A related adjustments). Our results suggest that the exclusion of these seemingly controllable items may indicate manager's effort-related current expenses with a potential for positive payoffs to be realized in future periods. That is, activities such as business restructuring, M&A, business reorganization might result in higher current expenses but are likely to have future benefits to the firm. Compensation committees may adjust compensation performance measures for the adverse effect of these expenses on current performance to better incentivize managers to take long-term value-increasing activities (Abdel-Khalik 1985; Dechow et al. 1994; Gaver and Gaver 1998).

5. Conclusion

Recent business press and academic research question the use of non-GAAP accounting numbers in compensation contracts. One concern specifically relates to how compensation committees may award "big paydays" to managers by measuring managerial performance

using non-GAAP accounting numbers, which are inflated as compared to their GAAP counterparts. Our paper provides an in-depth look into the tailoring and informational properties of accounting numbers used in compensation contracts for S&P 500 firms from 2006 to 2017 to (1) present empirical characteristics of accounting performance measures and (2) to shed light on whether the empirical characteristics warrant the concern related to the use of non-GAAP accounting numbers in compensation contracts. We find that there exists frequent tailoring of GAAP performance measures when they are used to measure CEO performance. Moreover, the results on the informational properties of accounting performance measures suggest that these accounting numbers' average qualities–measured as their ability to explain stock return and future cash flow, and adjustments' sensitivity to uncontrollable performance shocks–do not indicate the presence of managerial opportunism.

Our collective evidence supports the notion that compensation committees adjust GAAP performance numbers to (1) shield executives from uncontrollable events and (2) reward executives on performance measures that remove adverse effects of firm value increasing activities (e.g., business restructuring, M&A, and business reorganization) when they measure managerial performance, and such contractual tailoring results in measures that generally help improve the accounting numbers' association with contemporaneous stock returns and positively predict future cash flows. This finding is in line with Kothari et al. (2010) who suggests that one potential way to meet the demands of different financial statement user groups is to "provide a single set of general-purpose financial statements and allow different user groups to tailor (or adjust) the financial statements to suit their own purposes."

Appendix A. Examples

Example 1: ALCOA INC FY2010 DEF 14A

ADJUSTED INCOME

(in millions)	Year ended December 31, 2010	Year ended December 31, 2009
Net income (loss) attributable to Alcoa	$ 254.00	$ (1151.00)
Loss from discontinued operations	(8.00)	(166.00)
Income (loss) from continuing operations attributable to Alcoa	262.00	(985.00)
Restructuring and other charges	130.00	152.00
Discrete tax items[1]	40.00	(110.00)
Special items[2]	127.00	258.00
Income (loss) from continuing operations attributable to Alcoa – as adjusted	559.00	$ (685.00)
Adjustments for incentive compensation[3]	(21.00)	
Income from continuing operations attributable to Alcoa – as adjusted for incentive compensation	$ 538.00	

---

1 Discrete tax items include the following:

- for the year ended December 31, 2010, a charge for a change in the tax treatment of federal subsidies received related to prescription drug benefits provided under certain retiree health benefit plans ($79), a benefit for the reversal of a valuation allowance related to net operating losses of an international subsidiary that are now realizable due to a settlement with a tax authority ($57), a benefit for a change in a Canadian provincial tax law permitting tax returns to be filed in U.S. dollars ($24), a charge based on settlement discussions of several matters with international taxing authorities ($18), a charge for a tax rate change in Brazil ($11), a charge for interest due to the IRS related to a previously deferred gain associated with the 2007 formation of the former soft alloy extrusions joint venture ($6), a charge for a change in the anticipated sale structure of the Transportation Products Europe business ($5), and a net charge for other small items ($2); and
- for the year ended December 31, 2009, a benefit for the reorganization of an equity investment in Canada ($71), a charge for the write-off of deferred tax assets related to operations in Italy ($41), a benefit for a tax rate change in Iceland ($31), a benefit for a change in a Canadian national tax law permitting tax returns to be filed in U.S. dollars ($28), and a benefit for the reversal of a valuation allowance on net operating losses in Norway ($21).

2 Special items include the following:

- for the year ended December 31, 2010, unfavorable mark-to-market changes in derivative contracts ($29), recovery costs associated with the São Luís, Brazil facility due to a power outage and failure of a ship unloader in the first half of 2010 ($23), power outages at the Rockdale, TX and São Luís, Brazil facilities ($17), restart costs and lost volumes related to a June 2010 flood at the Avilés smelter in Spain ($13), a charge for costs associated with the potential strike and successful execution of a new agreement with the USW ($13), an additional environmental accrual for the Grasse River

remediation in Massena, NY ($11), a net charge for the early repayment of Notes set to mature in 2011 through 2013 due to the premiums paid under the tender offers and call option (partially offset by gains from the termination of related "in-the-money" interest rate swaps) ($9), a charge related to an unfavorable decision in Alcoa's lawsuit against Luminant related to the Rockdale, TX facility ($7), and the write off of inventory related to the permanent closures of certain U.S. facilities ($5); and

- for the year ended December 31, 2009, a charge related to the European Commission's ruling on electricity pricing for smelters in Italy ($250), a gain on the Elkem/SAPA AB swap ($133), a loss on the sale of Shining Prospect ($118), a gain on an acquisition in Suriname ($35), a charge for a tax settlement related to an equity investment in Brazil ($24), a charge for an estimated loss on excess power at the Intalco smelter ($19), and a charge for an environmental accrual for smelters in Italy ($15).

3 Adjustments for incentive compensation include the reversal of the add-back included in the Special items line above for the recovery costs associated with the São Luís, Brazil facility due to a power outage and failure of a ship unloader in the first half of 2010 ($23), power outages at the Rockdale, TX and São Luís, Brazil facilities ($17), and a charge related to an unfavorable decision in Alcoa's lawsuit against Luminant related to the Rockdale, TX facility ($7). Additionally, this line item includes amounts related to the normalization of the effects of changes in the LME prices and foreign currency exchange rates contemplated in the targets for 2010 as compared to actual results. All of these adjustments are being made for incentive compensation purposes only.

(in millions)	ADJUSTED FREE CASH FLOW Year ended December 31, 2010					
	Alumina	Primary Metals	Flat-Rolled Products	Engineered Products and Solutions	Corporate	Alcoa
Cash provided from operations	$ 512	$ 565	$ 580	$ 587	$ 17	$ 2,261
Adjustments*	257	287	(59)	(20)	(366)	99
Adjusted cash provided from operations	769	852	521	567	(349)	2,360
Capital expenditures	(294)	(380)	(104)	(125)	(112)	(1,015)
Adjusted free cash flow	$ 475	$ 472	$ 417	$ 442	$ (461)	$ 1,345

* Adjustments represent changes in accrued expenses, non-current assets and liabilities, certain non-cash components of net income, and various other items that are reflected in the determination of cash provided from operations under accounting principles generally accepted in the United States of America. Additionally, this line item includes amounts related to the normalization of the effects of changes in the LME prices and foreign currency exchange rates contemplated in the targets for 2010 as compared to actual results. All of these amounts are being excluded from cash provided from operations determined under accounting principles generally accepted in the United States of America in order to derive the cash provided from operations used for incentive compensation purposes. It is important to note that Adjusted free cash flow does not represent the residual cash flow available for discretionary expenditures since other non-discretionary expenditures, such as mandatory

debt service requirements, are not deducted from the measure.

Example 2: NRG ENERGY INC FY2010 DEF 14A

Results for 2010 AIP — The Company's AIP Threshold and AIP Target levels are based on the Company's audited financial statements. The achievement towards the threshold and targets described in the table above is calculated beginning with the Company's audited financial statements and is adjusted based on the impact of non-recurring events that may impact Consolidated Adjusted Free Cash Flow and/or Consolidated Adjusted EBITDA, but have a positive impact on the Company's business objectives of increasing stockholder value and improving corporate performance. Alternatively, transactions may occur throughout the year that may impact Consolidated Adjusted Free Cash Flow and/or Consolidated Adjusted EBITDA positively or negatively but were not due to direct Company management or not part of the composition of the asset portfolio when the AIP targets were created. The Committee approved the following adjustments to Consolidated Adjusted EBITDA and Consolidated Adjusted Free Cash Flow as they relate to the AIP performance:

- decrease of $8 million and $2 million to 2010 Consolidated Adjusted EBITDA and Consolidated Adjusted Free Cash Flow, respectively, for the acquisitions of Green Mountain Energy Company and Cottonwood Generating Station to ensure the composition of the asset portfolio is consistent with AIP targets;
- increase of $6 million to Consolidated Adjusted Free Cash Flow for the efficiency of managing margin calls during 2010;
- decrease of $18 million to Consolidated Adjusted Free Cash Flow to adjust for the deferral of budgeted environmental and maintenance capital expenditures; and
- an adjustment reducing Consolidated Adjusted EBITDA by $11 million to reverse the impact of realization of a foreign currency gains to ensure the composition of the asset portfolio is consistent with AIP targets.

The net impact of these four adjustments reduced 2010 performance compared to the AIP Target level by $19 million for Consolidated Adjusted EBITDA and $14 million for Consolidated Adjusted Free Cash Flow. Based on the calculations described above, both the Consolidated Adjusted Free Cash Flow and Consolidated Adjusted EBITDA AIP Targets were exceeded for 2010 with results of $1,327 million in Consolidated Adjusted Free Cash Flow and $2,495 million in Consolidated Adjusted EBITDA. The Chief Executive Officer provided documentation to the Committee and the Board regarding the qualitative and quantitative achievement for each NEO. The Committee evaluated the performance of the Chief Executive Officer based on his achievement compared to goals established for him for 2010. Subsequently, the Committee reviewed and approved the annual incentive awards for the NEOs based on individual performance goals along with the Consolidated Adjusted Free Cash Flow and Consolidated Adjusted EBITDA criteria. Bonus payments were paid after the release of the Company's audited financial results for 2010.

Appendix B. Examples of other adjustments

Adjustment for purchase transactions
Annuity contract conversion premium
Bankruptcy charges
Benefit from modifications to vacation policy
Biodiesel credit
Business/Geographic segment related charges
Business/Geographic segment related proceeds
Capital loss valuation allowance
Capitalized software
Carbon capture
Cash flow impact of adjustment items
Cash paid for capitalized software and intangible assets
Change in Japanese law
Changes in accrued expenses
Changes in operating assets and liabilities
Changes in reserve
Charges related to infusion pumps
Civil unrest in Libya on production
Coal contract termination
Collection of certain reserved [year] billings
Commercialization rights
Commodities and commercial market adjustments
Contingent liability
Contract settlement
Contract termination lump sum payment
Cost of employee buyouts
Cost of goods sold
Costs of licensing and maintenance
Credit loss accounting reserve change
Data breach
Debt refinancing
Debt restructuring
Deferred charges
Department of energy award from government
Donation
Drug fee
Early termination of distributor arrangement
Employee disaster relief support costs
Environmental charges
Environmental remediation provision
Equity contribution to joint venture
Human capital management expenses
Impact of share repurchase programs
Impact of Venexuelan operations
Insurance proceeds
IPO proceeds
Items affecting comparability
Joint venture actions
Joint venture net income
Joint venture termination
Lease termination/exit costs
Medicare D subsidy
Non-recurring items
One-time transactions
Outsourcing contract and software
Philanthropic contribution
Power supply costs
Price adjustment
Principal payment on capital lease
Product liability expense
Product withdrawal adjustment
Promotional marketing
Provision for loan losses
Purchase accounting
Purchase of software
Recall
Reduction of reserve for anticipated future losses
Regulatory and compliance matters
Regulatory charge
Regulatory recovery for prior year charges
Rent expense
Repatriation of foreign earnings
Resolution of contingencies
Resolution of investigation
Reversal of allowance of reinsurance recoverable
Risk corridor allowance
Royalty prepayments
SEC inquiry
Segment reporting change
SP rating services adjustments and other charges
Spain solar projects
Strike

References

Abdel-Khalik, A. R., 1985. The effect of lifo-switching and firm ownership on executives' pay. Journal of Accounting Research pp. 427–447.

Albuquerque, A. M., Albuquerque, R. A., Carter, M. E., Dong, F., 2018. Are ceos paid extra for riskier pay packages? Working paper.

Armstrong, C. S., Guay, W. R., Weber, J. P., 2010. The role of information and financial reporting in corporate governance and debt contracting. Journal of Accounting and Economics 50, 179–234.

Beyer, A., Cohen, D. A., Lys, T. Z., Walther, B. R., 2010. The financial reporting environment: Review of the recent literature. Journal of Accounting and Economics 50, 296–343.

Bhattacharya, N., Black, E. L., Christensen, T. E., Larson, C. R., 2003. Assessing the relative informativeness and permanence of pro forma earnings and gaap operating earnings. Journal of Accounting and Economics 36, 285–319.

Black, D. E., Black, E. L., Christensen, T. E., Gee, K. H., 2018. The use of non-gaap performance metrics for compensation contracting and financial reporting Working paper.

Bradshaw, M. T., Sloan, R. G., 2002. Gaap versus the street: An empirical assessment of two alternative definitions of earnings. Journal of Accounting Research 40, 41–66.

Brown, L. D., Sivakumar, K., 2003. Comparing the value relevance of two operating income measures. Review of Accounting Studies 8, 561–572.

Cattaneo, M. D., Jansson, M., Ma, X., 2018. Manipulation testing based on density discontinuity. The Stata Journal 18, 234–261.

Cattaneo, M. D., Jansson, M., Ma, X., 2019. Simple local polynomial density estimators. Journal of the American Statistical Association pp. 1–11.

Cheng, M.-Y., Fan, J., Marron, J. S., 1997. On automatic boundary corrections. The Annals of Statistics 25, 1691–1708.

Curtis, A., Li, V., Patrick, P. H., 2018. The use of adjusted earnings in performance evaluation Working paper.

Dechow, P. M., Huson, M. R., Sloan, R. G., 1994. The effect of restructuring charges on executives' cash compensation. The Accounting Review pp. 138–156.

Deloitte, 2019. A roadmap to non-gaap financial measures .

Demski, J., 2013. Managerial uses of accounting information. Springer Science & Business Media.

Doyle, J. T., Lundholm, R. J., Soliman, M. T., 2003. The predictive value of expenses excluded from pro forma earnings. Review of Accounting Studies 8, 145–174.

Dyreng, S. D., Vashishtha, R., Weber, J., 2017. Direct evidence on the informational properties of earnings in loan contracts. Journal of Accounting Research 55, 371–406.

Feltham, G. A., Xie, J., 1994. Performance measure congruity and diversity in multi-task principal/agent relations. The Accounting Review pp. 429–453.

Gaver, J. J., Gaver, K. M., 1998. The relation between nonrecurring accounting transactions and ceo cash compensation. The Accounting Review pp. 235–253.

Guest, N. M., Kothari, S. P., Pozen, R., 2019. High non-gaap earnings predict abnormally high ceo pay Working paper.

Holmstrom, B., 1979. Moral hazard and observability. Bell journal of Economics 10, 74–91.

Kothari, S. P., Ramanna, K., Skinner, D. J., 2010. Implications for gaap from an analysis of positive research in accounting. Journal of Accounting and Economics 50, 246–286.

Lahart, J., 2016. Ceo bonuses: How pro forma results boost them. Wall Street Journal 5, 2016.

Lambert, R. A., 2001. Contracting theory and accounting. Journal of Accounting and Economics 32, 3–87.

McCrary, J., 2008. Manipulation of the running variable in the regression discontinuity design: A density test. Journal of Econometrics 142, 698–714.

Murphy, K. J., 1999. Executive compensation. Handbook of Labor Economics 3, 2485–2563.

Murphy, K. J., 2013. Executive compensation: Where we are, and how we got there. In: *Handbook of the Economics of Finance*, Elsevier, vol. 2, pp. 211–356.

Na, K., Zhang, Y., 2017. Direct evidence on earnings used in executive compensation performance measurement. Working paper.

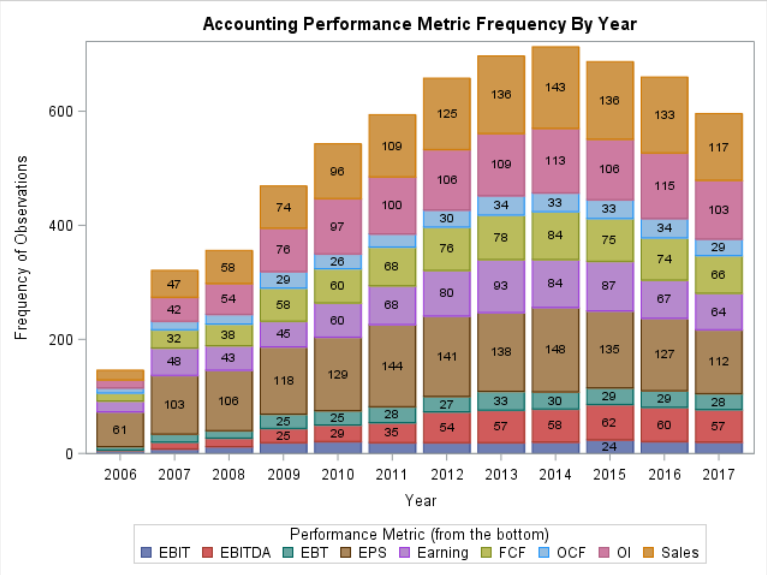
Paul, J. M., 1992. On the efficiency of stock-based compensation. The Review of Financial Studies 5, 471–502.

Pozen, R. C., Kothari, S. P., 2017. Decoding ceo pay. Harvard Business Review 95, 78–84.

Rapoport, M., 2014. Some companies alter the bonus playbook: More us firms use nonstandard accounting measures to figure executive payouts. Wall Street Journal .

SEC, 2003. Final rule: Conditions for use of non-gaap financial measures. Release Nos. 33-8176; 34-47226; FR-65. Washington, D. C.: Government Printing Office.

Panel A



Panel B

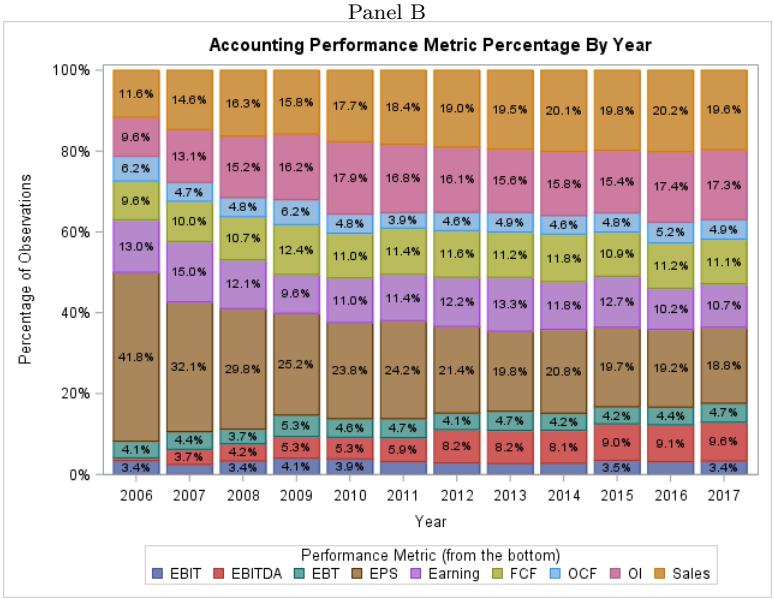
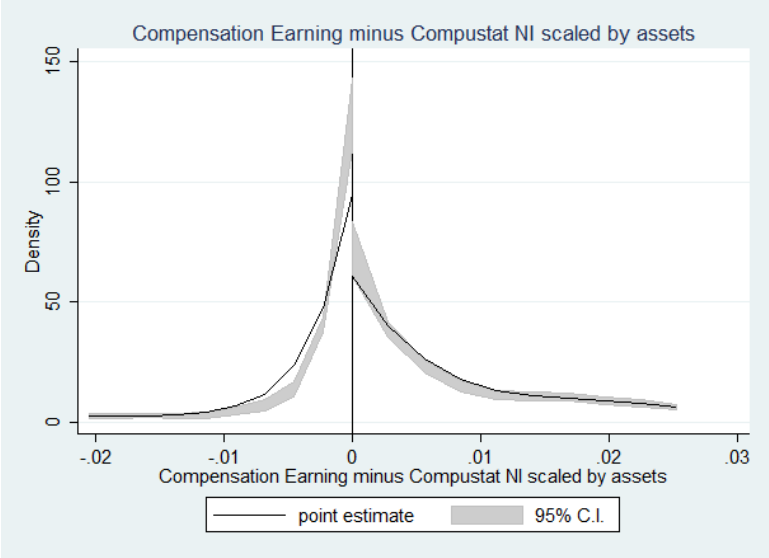
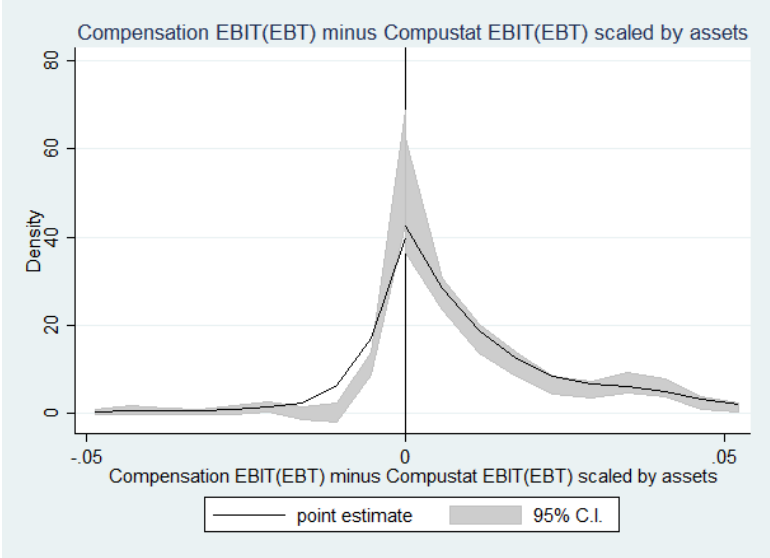


Fig. 1. These figures present the use-intensity of each accounting performance measure. Panel A presents the frequency and Panel B presents the percentage of accounting performance metrics used by our sample firms in each year. Although we group earning and EPS into "earnings" group and group EBIT and EBT together throughout our analyses, these figures break our groupings out and show more granular evolution on what accounting performance measures are used over our sample period (2006-2017).

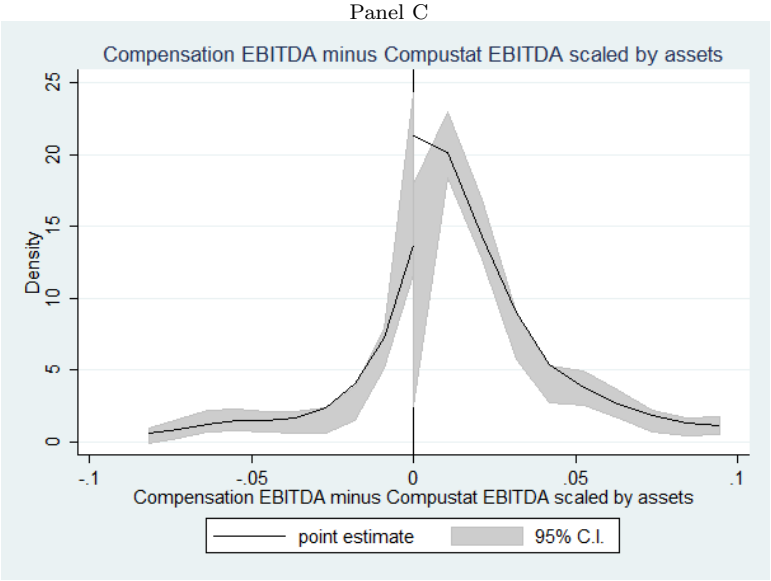
Panel A



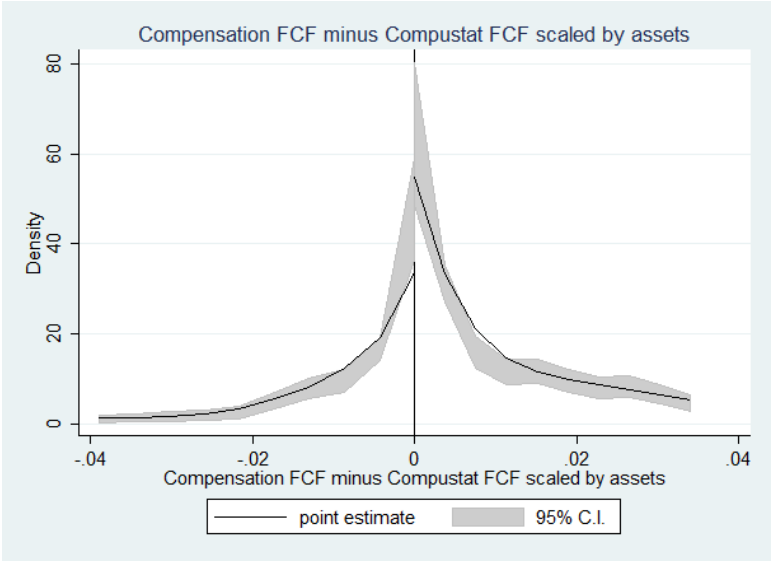
Panel B



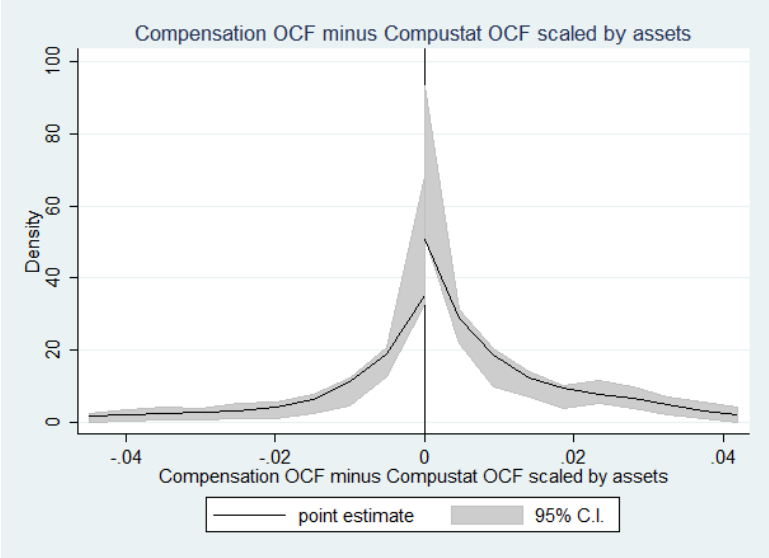
Panel C



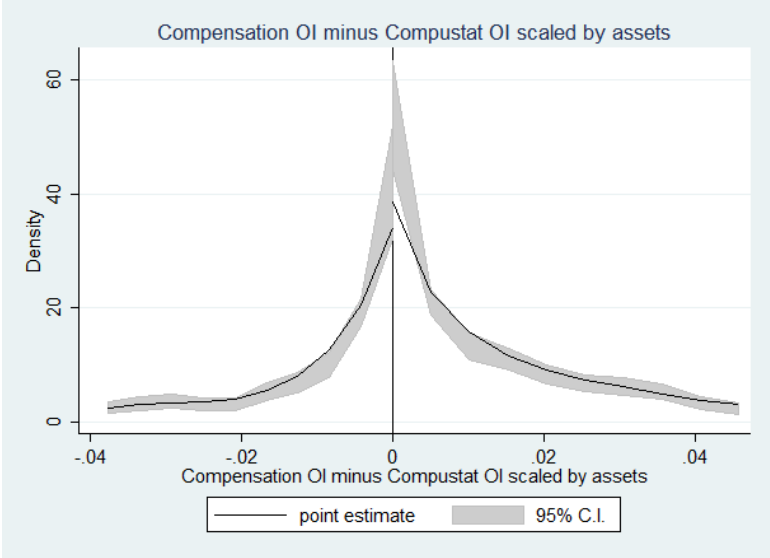
Panel D



Panel E



Panel F



Panel G

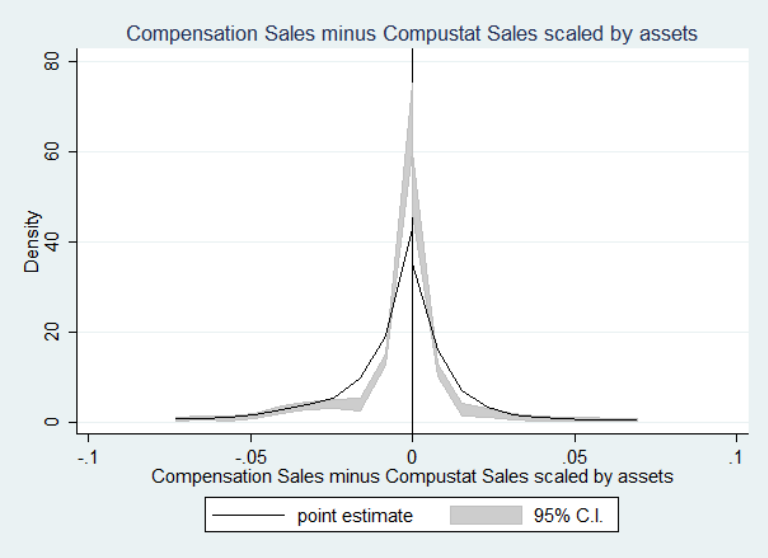
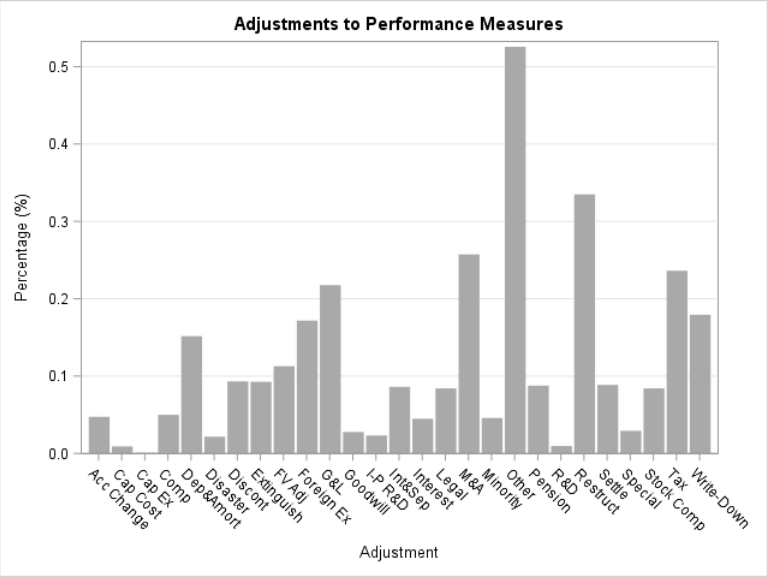
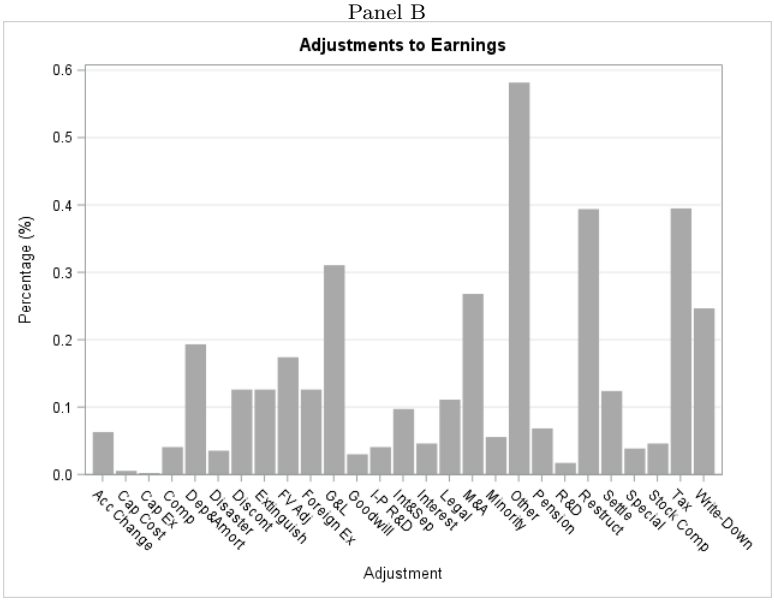


Fig. 2. Panels A through G present the local-polynomial density estimation (Cattaneo, Jansson, and Ma 2018) of the difference between accounting performance measures (earnings (including EPS), EBIT&EBT, EBITDA, free cash flow (FCF), operating cash flow (OCF), operating income (OI), and Sales) and their GAAP-based benchmarks. We use optimal bandwidths that are chosen to minimize the asymptotic mean squared errors of the density estimators as proposed in Cattaneo et al. (2018). The 95% confidence interval indicated in grey uses jackknife standard errors.The results of the test of continuity in the density around the zero-cut-off are presented in Table 4.

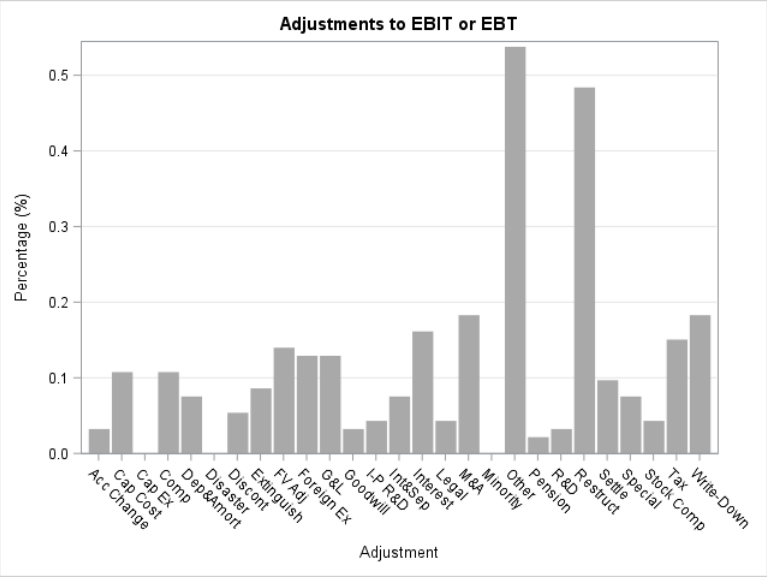
Panel A



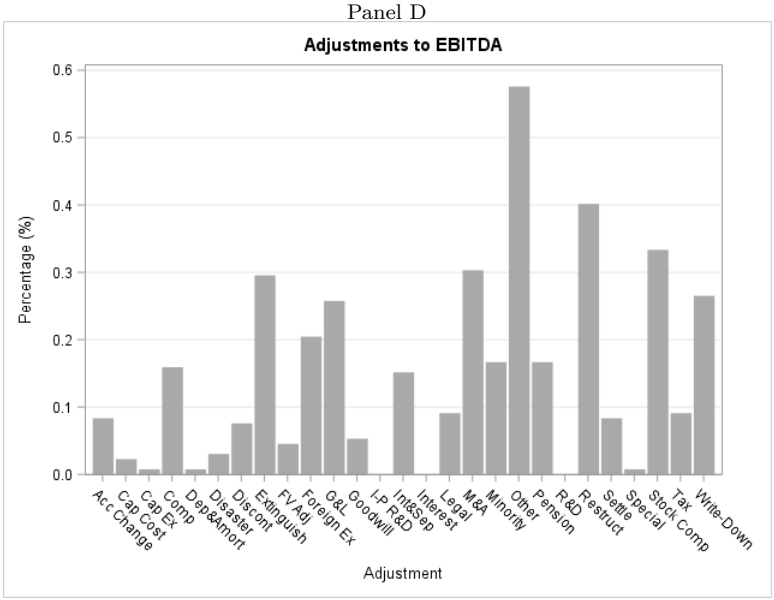
Panel B



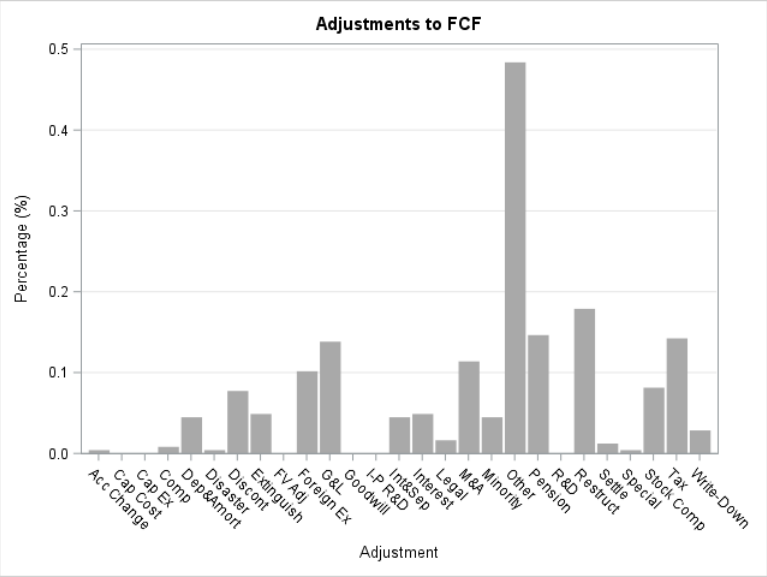
Panel C



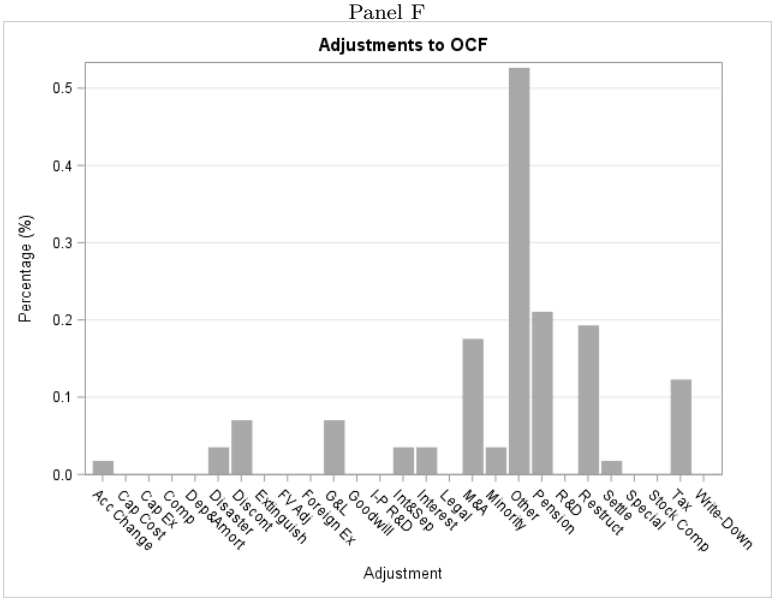
Panel D



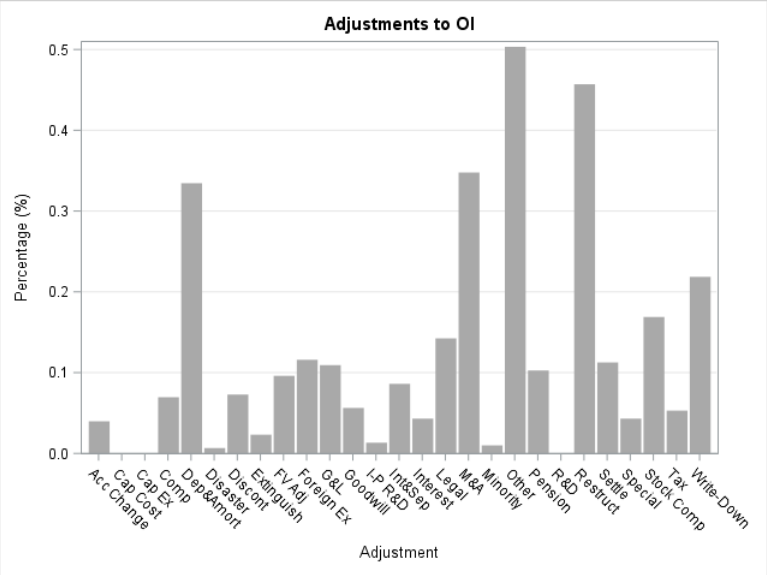
Panel E



Panel F



Panel G



Panel H

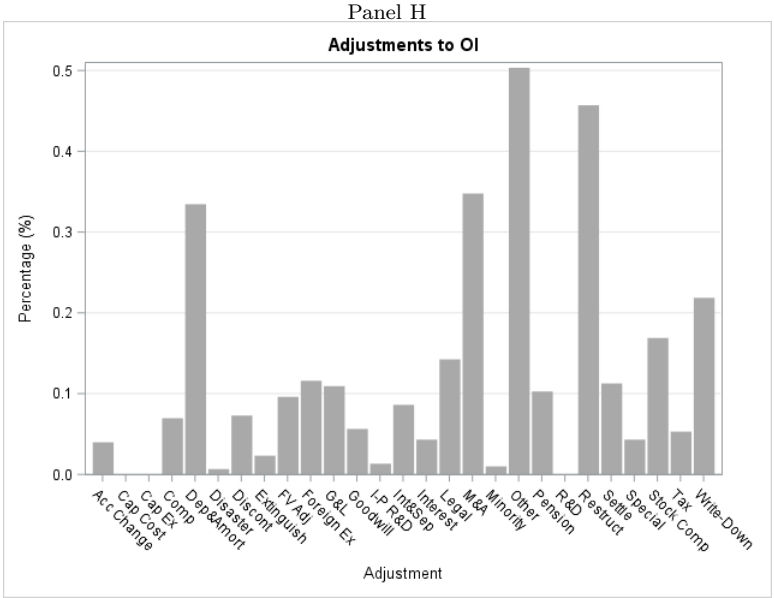


Fig. 3. This figure presents the types of adjustments and the percentage of firms making adjustments to their accounting performance measures. Panel A is for our entire sample across all accounting performance measures. Panels B through H are for each accounting performance measure (earnings (including EPS), EBIT&EBT, EBITDA, free cash flow (FCF), operating cash flow (OCF), operating income (OI), and sales). Adjustment categories are: accounting change (Acc Change), capital cost (Cap Cost), capital expenditure (Cap Ex), compensation (Comp), depreciation and amortization (Dep&Amort), natural disaster (Disaster), discontinued operations (Discont), extinguishment of debt (Extinguish), fair value adjustment (FV Adj), foreign exchange (Foreign Ex), gains and losses (G&L), goodwill (Goodwill), in-process research and development (I-P R&D), integration and separation (Int&Sep), interest (Interest), legal costs (Legal), merger and acquisition (M&A), minority interests (Minority), pension (Pension), research and development (R&D), restructuring (Restruct), settlement (Settle), special items (Special), stock compensation (Stock Comp), tax (Tax), write-down (Write-down), and others (Other).

Table 1: Sample Selection

	Number of firm-years	Number of metrics
S&P 500 companies from 2006 to 2017 using accounting performance measures in CEO compensation contracts	5,506	17,422
Bonus plans only (i.e. delete long-term plans)	5,288	10,698
One-year evaluation period	5,252	10,601
Delete performance measures other than earning, EPS, EBIT, EBT, EBITDA, FCF, OCF, OI or sales. These include: funds from operations; economic value added; capital expenditures; operating expenses; selling, general, and administrative expenses; and working capital.	5,196	9,865
Delete observations with realized performance data not available in proxy statements	3,828	6,440
Delete observations with missing financial data	3,786	6,372
Sample with realized performance data	3,786	6,372
Sample with reconciliation data available		1,992

This table presents our sample selection procedure.

Table 2: Number of Accounting Performance Measures Used

Year	#	Freq.	%	Avg. #	Year	#	Freq.	%	Avg. #
2006	1	68	65.38	1.14	2012	1	180	47.24	1.73
	2	30	28.85			2	137	35.96	
	3	5	4.81			3	54	14.17	
	≥ 4	1	0.96			≥ 4	10	2.62	
2007	1	122	58.65	1.54	2013	1	188	46.88	1.74
	2	63	30.29			2	142	35.41	
	3	20	9.62			3	58	14.46	
	≥ 4	3	1.44			≥ 4	13	3.24	
2008	1	133	57.83	1.54	2014	1	202	48.67	1.72
	2	72	31.30			2	141	33.98	
	3	22	9.57			3	60	14.46	
	≥ 4	3	1.30			≥ 4	12	2.89	
2009	1	152	52.60	1.62	2015	1	179	45.78	1.76
	2	101	34.95			2	137	35.04	
	3	29	10.03			3	66	16.88	
	≥ 4	7	2.42			≥ 4	9	2.30	
2010	1	173	52.42	1.65	2016	1	177	46.83	1.75
	2	109	33.03			2	130	34.39	
	3	40	12.12			3	61	16.14	
	≥ 4	8	2.42			≥ 4	10	2.65	
2011	1	181	50.70	1.66	2017	1	162	47.09	1.73
	2	126	35.29			2	120	34.88	
	3	41	11.48			3	54	15.70	
	≥ 4	9	2.52			≥ 4	8	2.33	

This table presents the number of accounting performance measures used by our sample firms for each year.

Table 3: Compensation Performance Relative to GAAP Financial Measures

Performance Measure	N	Performance < GAAP	Performance = GAAP	Performance > GAAP
Overall	6,440	2,461 (38.21)	327 (5.08)	3,652 (56.71)
Earning	2,220	820 (36.94)	29 (1.31)	1,371 (61.76)
EBIT & EBT	499	135 (27.05)	28 (5.61)	336 (67.33)
EBITDA	486	140 (28.81)	0 (0.00)	346 (71.19)
Free Cash Flow	704	229 (32.53)	44 (6.25)	431 (61.22)
Operating Cash Flow	296	109 (36.82)	27 (9.12)	160 (54.05)
Operating Income	1,044	404 (38.70)	42 (4.02)	598 (57.28)
Sales	1,191	624 (52.39)	157 (13.18)	410 (34.42)

This table presents the distribution of compensation performance relative to their GAAP Financial measures.

Table 4: Tests of Discontinuity

Panel A: Earning			Panel B: EBIT&EBT		
Cutoff C = 0	Left of C	Right of C	Cutoff C = 0	Left of C	Right of C
Effective number of observations	585	663	Effective number of observations	99	208
Bandwidth	0.007	0.008	Bandwidth	0.016	0.017
Test of discontinuity at C = 0			Test of discontinuity at C = 0		
Robust bias-correction T (p-value)	−5.285 (< 0.001)		Robust bias-correction T (p-value)	−0.625 (0.532)	
Panel C: EBITDA			**Panel D: FCF**		
Cutoff C = 0	Left of C	Right of C	Cutoff C = 0	Left of C	Right of C
Effective number of observations	77	240	Effective number of observations	167	220
Bandwidth	0.027	0.032	Bandwidth	0.013	0.011
Test of discontinuity at C = 0			Test of discontinuity at C = 0		
Robust bias-correction T (p-value)	−1.464 (0.143)		Robust bias-correction T (p-value)	1.531 (0.126)	
Panel E: OCF			**Panel F: OI**		
Cutoff C = 0	Left of C	Right of C	Cutoff C = 0	Left of C	Right of C
Effective number of observations	74	104	Effective number of observations	221	326
Bandwidth	0.015	0.014	Bandwidth	0.013	0.015
Test of discontinuity at C = 0			Test of discontinuity at C = 0		
Robust bias-correction T (p-value)	1.378 (0.168)		Robust bias-correction T (p-value)	1.520 (0.129)	
Panel G: Sales					
Cutoff C = 0	Left of C	Right of C			
Effective number of observations	434	337			
Bandwidth	0.024	0.023			
Test of discontinuity at C = 0					
Robust bias-correction T (p-value)	−2.198 (0.028)				

This table presents the results of the test of continuity in the density around the zero-cut-off using local polynomial density estimation (Cattaneo et al. 2018).

Table 5: Magnitude of Adjustments to Compensation Performance

Adjustment	N	Mean	Std Dev	25th	50th	75th
Accounting change	91	0.007	0.017	−0.001	0.000	0.007
Capital cost	18	−0.040	0.028	−0.059	−0.053	−0.006
Capital expenditure	2	−0.005	0.000	−0.005	−0.005	−0.005
Compensation	105	0.004	0.007	0.000	0.001	0.003
Depreciation & amortization	301	0.016	0.018	0.004	0.011	0.024
Discontinued operations	182	0.003	0.025	0.000	0.000	0.002
Extinguishment of debt	178	0.003	0.017	0.000	0.002	0.004
Foreign exchange	336	0.004	0.017	−0.001	0.001	0.007
Fair value adjustment	216	0.001	0.008	−0.001	0.000	0.002
Gain or loss	429	−0.003	0.015	−0.003	−0.001	0.000
Goodwill impairment	55	0.035	0.053	0.002	0.011	0.052
In-process R&D	42	0.006	0.007	0.001	0.004	0.011
Interest	88	0.011	0.014	0.003	0.008	0.019
Integration and separation	168	0.003	0.010	0.000	0.001	0.004
Legal fees	165	0.004	0.009	0.000	0.001	0.004
M&A	499	0.002	0.019	0.000	0.001	0.004
Minority interests	90	−0.001	0.004	−0.001	0.000	0.000
Natural disaster	40	0.001	0.001	0.000	0.001	0.001
Pension	171	0.004	0.009	0.000	0.002	0.007
R&D	18	0.003	0.005	0.001	0.002	0.002
Restructuring	654	0.006	0.014	0.001	0.004	0.009
Special items	53	0.003	0.028	0.001	0.002	0.010
Settlement	171	0.011	0.060	0.000	0.001	0.003
Stock compensation	148	0.014	0.014	0.003	0.009	0.025
Taxes	466	−0.026	0.171	−0.004	−0.001	0.001
Write-down	344	0.011	0.024	0.001	0.003	0.009
Others	1,024	−0.001	0.050	−0.001	0.001	0.005

This table presents the summary statistics for the magnitude of adjustments made to GAAP benchmarks to arrive at compensation performance. A positive (negative) number indicates a performance-increasing (performance-decreasing) adjustment. The sample consists of 1,992 observations for which detailed data on reconciliation between compensation performance and the comparable GAAP-based accounting number were available in the proxy statement. Adjustment magnitudes are scaled by total assets at the beginning of the period.

Table 6: Descriptive Statistics

Panel A: Descriptive statistics for CompPerf and GAAP

Variable	N	Mean	Std Dev	25th	50th	75th
Return	6,372	0.146	0.361	−0.043	0.133	0.305
Earning						
GAAP	2,203	0.059	0.049	0.043	0.061	0.079
CompPerf	2,203	0.071	0.029	0.054	0.067	0.083
EBIT & EBT						
GAAP	493	0.093	0.105	0.070	0.097	0.133
CompPerf	493	0.117	0.079	0.079	0.105	0.141
EBITDA						
GAAP	466	0.185	0.276	0.081	0.132	0.252
CompPerf	466	0.263	0.315	0.103	0.157	0.299
FCF						
GAAP	699	0.069	0.061	0.043	0.063	0.091
CompPerf	699	0.086	0.068	0.053	0.071	0.100
OCF						
GAAP	295	0.134	0.119	0.063	0.103	0.173
CompPerf	295	0.126	0.118	0.064	0.095	0.163
OI						
GAAP	1,035	0.109	0.054	0.074	0.102	0.138
CompPerf	1,035	0.106	0.055	0.072	0.101	0.133
Sales						
GAAP	1,181	0.832	0.944	0.323	0.504	0.920
CompPerf	1,181	0.795	0.889	0.308	0.485	0.883

Panel B: Ratio of CompPerf to GAAP

Variable	N	Mean	Std Dev	25th	50th	75th
Earning	2,203	1.103	1.122	0.955	1.020	1.219
EBIT&EBT	493	0.876	1.718	0.991	1.025	1.203
EBITDA	466	1.042	1.815	0.948	1.074	1.236
FCF	699	1.187	1.696	0.946	1.008	1.200
OCF	295	0.989	0.477	0.961	1.000	1.100
OI	1,035	1.057	0.570	0.940	1.010	1.143
Sales	1,181	0.967	0.157	0.984	1.000	1.001

This table presents descriptive statistics. Return is one-year buy-and-hold returns. CompPerf is compensation performance as reported in companies' proxy statements. GAAP is comparable GAAP-based performance. Each GAAP-based measure is calculated as follows: Earnings is net income (NI); EBIT is earnings before interest and taxes (NI + XINT + TXT); EBT is earnings before taxes (NI + TXT); EBITDA is earnings before interest, taxes, depreciation, and amortization (NI + XINT + TXT + DP); Free Cash Flow is cash flow from operations minus capital expenditure (OANCF – CAPX); Operating Cash Flow is cash flow from operations (OANCF); Operating Income is operating income after depreciation and amortization (OIADP); Sales is SALE. CompPerf and GAAP are scaled by market value of equity at the beginning of the period.

Table 7: Association with Contemporaneous Returns

Dep Var: $Return_t$							
Performance Measure	*Earnings*	*EBIT&EBT*	*EBITDA*	*FCF*	*OCF*	*OI*	*Sales*
Intercept	−0.101***	−0.045	−0.034	−0.002	−0.019	−0.079**	0.131***
	(−3.72)	(−0.81)	(−0.73)	(−0.08)	(−0.38)	(−2.35)	(8.21)
GAAP	3.350***	2.114***	0.827***	2.021***	1.229***	2.151***	0.025
	(8.79)	(4.66)	(3.34)	(5.92)	(3.87)	(7.74)	(1.27)
Adj	2.680***	0.786*	0.406**	1.553***	−0.799	1.400***	0.016
	(6.31)	(1.75)	(2.33)	(2.64)	(−1.27)	(3.38)	(0.54)
N	2,203	493	466	699	295	1,035	1,181
Adj. R-squared	0.109	0.177	0.143	0.104	0.222	0.101	0.003

This table examines the association of compensation performance with contemporaneous returns. Return is one-year buy-and-hold returns. Compensation performance is disaggregated into GAAP and Adj, CompPerf = GAAP + Adj, where CompPerf is compensation performance as reported in companies' proxy statements; GAAP is comparable GAAP-based performance; and Adj is the total amount of contractual adjustments and is calculated as the difference between CompPerf and GAAP. Each GAAP-based measure is calculated as follows: Earnings is net income (NI); EBIT is earnings before interest and taxes (NI + XINT + TXT); EBT is earnings before taxes (NI + TXT); EBITDA is earnings before interest, taxes, depreciation, and amortization (NI + XINT + TXT + DP); FCF is cash flow from operations minus capital expenditure (OANCF – CAPX); OCF is cash flow from operations (OANCF); OI is operating income after depreciation and amortization (OIADP); Sales is SALE. CompPerf and GAAP are scaled by market value of equity at the beginning of the period. t-statistics are presented in parentheses and are based on heteroskedasticity-robust standard errors clustered by firm. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels using a two-tailed test, respectively.

Table 8: Predictive Ability for Future Cash Flows

Dep Var: $CashFlow_{t+1}$							
Performance Measure	*Earnings*	*EBIT&EBT*	*EBITDA*	*FCF*	*OCF*	*OI*	*Sales*
Intercept	0.096***	0.095***	0.112***	0.125***	0.101***	0.063***	0.099***
	(12.23)	(8.24)	(3.98)	(8.37)	(5.97)	(8.13)	(17.92)
GAAP	0.773***	0.574***	0.477***	0.495***	0.393***	0.752***	0.049***
	(8.14)	(6.84)	(3.83)	(3.36)	(2.90)	(12.11)	(8.15)
Adj	0.891***	0.651***	0.440***	0.824***	−0.026	0.023	−0.007
	(7.02)	(8.21)	(5.68)	(3.81)	(−0.11)	(0.22)	(−0.47)
N	1,947	440	383	607	247	908	1,049
Adj. R-squared	0.098	0.275	0.251	0.156	0.110	0.290	0.262

This table examines the association of compensation performance with future cash flows. Future cash flow is measured as earnings before extraordinary items and depreciation (OIBDP) scaled by market value of equity at the beginning of the period. Compensation performance is disaggregated into GAAP and Adj, CompPerf = GAAP + Adj, where CompPerf is compensation performance as reported in companies' proxy statements; GAAP is comparable GAAP-based performance; and Adj is the total amount of contractual adjustments and is calculated as the difference between CompPerf and GAAP. Each GAAP-based measure is calculated as follows: Earnings is net income (NI); EBIT is earnings before interest and taxes (NI + XINT + TXT); EBT is earnings before taxes (NI + TXT); EBITDA is earnings before interest, taxes, depreciation, and amortization (NI + XINT + TXT + DP); FCF is cash flow from operations minus capital expenditure (OANCF – CAPX); OCF is cash flow from operations (OANCF); OI is operating income after depreciation and amortization (OIADP); Sales is SALE. CompPerf and GAAP are scaled by market value of equity at the beginning of the period. t-statistics are presented in parentheses and are based on heteroskedasticity-robust standard errors clustered by firm. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels using a two-tailed test, respectively.

Table 9: Sensitivity of Contractual Adjustments to Macroeconomic Factors

Dep Var: Adj_t							
Performance Measure	*Earnings*	*EBIT&EBT*	*EBITDA*	*FCF*	*OCF*	*OI*	*Sales*
Intercept	0.016***	0.053***	0.120***	0.019***	−0.009	−0.043***	−0.031***
	(7.12)	(3.96)	(3.35)	(3.32)	(−0.83)	(−8.57)	(−3.36)
GDP	−0.229***	−1.361***	−2.233	−0.104	0.296	0.152	−0.033
	(−2.61)	(−2.86)	(−1.52)	(−0.50)	(1.12)	(1.24)	(−0.10)
IndRet	−0.005*	−0.033**	−0.044	−0.002	−0.006	−0.009	0.004
	(−1.91)	(−2.08)	(−1.20)	(−0.28)	(−0.32)	(−1.48)	(0.31)
N	2,192	493	466	691	295	1,010	1,175
Adj. R-squared	0.006	0.045	0.005	−0.002	0.000	0.003	−0.002

This table examines the sensitivity of contractual adjustments to macroeconomic factors. The dependent variable is Adj, which is the total amount of contractal adjustment and is calculated as the difference between CompPerf and GAAP (CompPerf – GAAP). GDP is percentage change in real gross domestic product. IndRet is equal weighted SIC 2-digit industry portfolio return, excluding the return of the firm. t-statistics are presented in parentheses and are based on heteroskedasticity-robust standard errors clustered by firm. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels using a two-tailed test, respectively.

Table 10: Return Test – By Adjusted Item

Dep Var: $Return_t$								
AdjItem	*Restructuring*	*M&A, Integ.&Sep.*	*Write-down*	*Gains or losses*	*Dep&Amort*	*Foreign exchange*	*Fair value adjustment*	*Idiosync. items*
Intercept	0.075**	0.141***	0.04	0.130***	0.109***	0.089*	−0.039	0.108***
	(2.35)	(9.00)	(0.66)	(5.50)	(3.66)	(1.80)	(−0.55)	(6.29)
GAAP	0.708**	0.064	1.093*	0.139**	0.260*	0.304	1.843**	0.304**
	(2.30)	(1.30)	(1.85)	(2.12)	(1.92)	(1.35)	(2.53)	(2.25)
AdjItem	−0.175	−0.096	−1.25	3.165***	1.228	1.763	−2.191	1.229
	(−0.08)	(−0.04)	(−0.91)	(4.14)	(0.41)	(0.59)	(−0.24)	(1.01)
AllOtherAdj	0.749	−0.386	0.944	−0.368	0.548	−0.959	2.879	−0.654
	(1.09)	(−1.60)	(0.59)	(−1.06)	(1.43)	(−0.92)	(1.00)	(−1.46)
N	563	509	277	328	197	260	164	815
Adj. R-squared	0.071	0.005	0.102	0.061	0.000	0.128	0.296	0.048

This table examines the association of each adjusted item with contemporaneous return. Return is one-year buy-and-hold returns. GAAP is comparable GAAP-based performance; AdjItem is the amount of contractual adjustment for the item indicated in each column; and AllOtherAdj is the sum of all adjustments except the item of interest. Each GAAP-based measure is calculated as follows: Earnings is net income (NI); EBIT is earnings before interest and taxes (NI + XINT + TXT); EBT is earnings before taxes (NI + TXT); EBITDA is earnings before interest, taxes, depreciation, and amortization (NI + XINT + TXT + DP); FCF is cash flow from operations minus capital expenditure (OANCF – CAPX); OCF is cash flow from operations (OANCF); OI is operating income after depreciation and amortization (OIADP); Sales is SALE. AdjItem, AllOtherAdj and GAAP are scaled by market value of equity at the beginning of the period. t-statistics are presented in parentheses and are based on heteroskedasticity-robust standard errors clustered by firm. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels using a two-tailed test, respectively.

Table 11: Future Cash Flow Test – By Adjusted Item

Dep Var: $CashFlow_{t+1}$								
AdjItem	*Restructuring*	*M&A, Integ.&Sep.*	*Write-down*	*Gains or losses*	*Dep&Amort*	*Foreign exchange*	*Fair value adjustment*	*Idiosync. items*
Intercept	0.105***	0.125***	0.112***	0.160***	0.090***	0.133***	0.141***	0.144***
	(11.87)	(13.37)	(10.50)	(14.59)	(11.95)	(10.82)	(9.92)	(18.57)
GAAP	0.274***	0.070*	0.177*	0.007	0.058**	0.012	0.173**	0.068**
	(3.85)	(1.97)	(1.82)	(0.27)	(2.21)	(0.47)	(2.40)	(2.04)
AdjItem	2.974***	2.532*	2.494***	0.806**	2.222***	−0.873	−0.778	0.251
	(3.09)	(1.97)	(3.12)	(2.12)	(4.35)	(−0.85)	(−0.43)	(0.74)
AllOtherAdj	−0.237	0.298*	0.345	−0.056	0.246***	0.266	−0.241	0.064
	(−0.86)	(1.74)	(1.37)	(−0.15)	(3.90)	(1.28)	(−0.92)	(0.41)
N	563	509	277	328	197	260	164	815
Adj. R-squared	0.248	0.094	0.258	0.026	0.247	0.049	0.247	0.020

This table examines the association of each adjusted item with future cash flows. Future cash flow is measured as earnings before extraordinary items and depreciation (OIBDP) scaled by market value of equity at the beginning of the period. GAAP is comparable GAAP-based performance; AdjItem is the amount of contractual adjustment for the item indicated in each column; and AllOtherAdj is the sum of all adjustments except the item of interest. Each GAAP-based measure is calculated as follows: Earnings is net income (NI); EBIT is earnings before interest and taxes (NI + XINT + TXT); EBT is earnings before taxes (NI + TXT); EBITDA is earnings before interest, taxes, depreciation, and amortization (NI + XINT + TXT + DP); FCF is cash flow from operations minus capital expenditure (OANCF – CAPX); OCF is cash flow from operations (OANCF); OI is operating income after depreciation and amortization (OIADP); Sales is SALE. AdjItem, AllOtherAdj and GAAP are scaled by market value of equity at the beginning of the period. t-statistics are presented in parentheses and are based on heteroskedasticity-robust standard errors clustered by firm. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels using a two-tailed test, respectively.

Table 12: Future Cash Flow Test – Effect of F/S Reported Item versus Manager Adjusted Item

Dep Var: $CashFlow_{t+1}$					
AdjItem	*Restructuring*	*M&A, Integ.&Sep.*	*Write-down*	*Gains or Losses*	*Dep&Amort*
Intercept	0.106***	0.125***	0.112***	0.150***	0.082***
	(11.47)	(12.74)	(10.33)	(19.54)	(13.26)
GAAP	0.277***	0.070**	0.175*	0.023	0.040**
	(3.92)	(2.02)	(1.82)	(1.55)	(2.03)
GAAPItem	−0.676	−0.035	0.272	2.106***	0.826***
	(−0.61)	(−0.04)	(0.22)	(2.80)	(6.11)
AdjItem	3.571**	2.554**	2.476***	2.293***	0.404
	(2.11)	(2.46)	(2.95)	(3.58)	(0.82)
AllOtherAdj	−0.222	0.299*	0.33	0.121	0.141***
	(−0.87)	(1.71)	(1.29)	(0.56)	(3.13)
N	563	509	277	328	197
Adj. R-squared	0.248	0.092	0.256	0.183	0.497

This table examines the association of each adjusted item and comparable reported item with future cash flows. Future cash flow is measured as earnings before extraordinary items and depreciation (OIBDP) scaled by market value of equity at the beginning of the period. GAAP is comparable GAAP-based performance; AdjItem is the amount of contractual adjustment for the item indicated in each column; AllOtherAdj is the sum of all adjustments except the item of interest; and GAAPItem is the amount reported in the firm's financial statement for the item comparable to AdjItem. Each GAAP-based measure is calculated as follows: Earnings is net income (NI); EBIT is earnings before interest and taxes (NI + XINT + TXT); EBT is earnings before taxes (NI + TXT); EBITDA is earnings before interest, taxes, depreciation, and amortization (NI + XINT + TXT + DP); FCF is cash flow from operations minus capital expenditure (OANCF – CAPX); OCF is cash flow from operations (OANCF); OI is operating income after depreciation and amortization (OIADP); Sales is SALE. We use the following Compustat items for each GAAPItem: RCP for restructuring; AQP for M&A, integration and separation; WDP for write-down of assets; SPPIV + DERHEDGL for gains and losses; and DPC for depreciation and amortization. To be consistent with the sign of AdjItem, we multiply these items, except for DPC, by minus one. AdjItem, AllOtherAdj, GAAP and GAAPItem are scaled by market value of equity at the beginning of the period. t-statistics are presented in parentheses and are based on heteroskedasticity-robust standard errors clustered by firm. *, **, and *** represent statistical significance at the 10%, 5%, and 1% levels using a two-tailed test, respectively.