

# Perception Shapes Reality: Firms' Proactive Pay Adjustments

Zhi Li\*

*Chapman University*

Qiyuan (Rachel) Peng

*University of Dayton*

Lingling Wang

*University of Connecticut*

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## Abstract

Do potential changes in public opinion about executive pay influence firms' compensation policies? We investigate this question using a unique compensation disclosure rule that prompted a large wave of firms to restate their executives' total compensation from prior years. One novel feature of this rule is that the pay restatements convey no new information but may influence public perception of executive pay size. We find that when a firm restates prior years' CEO pay upward (downward), the CEO experiences a significant concurrent pay cut (raise). These pay adjustments occur consistently across well and poorly performing firms, indicating that past performance does not dictate pay adjustments. Supporting the importance of public perception, we find that higher-paid CEOs experience more significant pay cuts. Firms partially reverse the pay cuts but not the pay raises in the following year. Our results are robust to a difference-in-differences analysis exploiting the staggered implementation of the new rule across firms with different fiscal year ends and hold for non-CEO executives. Together, our evidence suggests that boards and executives are sensitive to how executive pay may be perceived by the public and proactively adjust executive pay to mitigate potential negative publicity.

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\* Author contact information: Zhi Li, [zli@chapman.edu](mailto:zli@chapman.edu); Qiyuan Peng, [qpengl@udayton.edu](mailto:qpengl@udayton.edu); Lingling Wang, [lingling.wang@uconn.edu](mailto:lingling.wang@uconn.edu).

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## 1. Introduction

Executive compensation, especially the level of pay, is one of the most closely scrutinized subjects confronted by U.S. public firms. Studies show that executives with higher reported total pay are more likely to attract negative press and lose shareholder support (e.g., Core, Guay and Larcker, 2008; Eitumur, Ferri, and Oesch, 2013). Recent survey evidence suggests that when designing executive pay, two-thirds of surveyed directors are willing to make adjustments to avoid public controversy (Edmans, Gosling, and Jenter, 2023). However, whether and how concerns regarding public perception influence CEO compensation design in practice remains unclear in the literature. To shed light on this issue, we take advantage of a unique compensation disclosure rule that changes *only* the optics of executive pay to examine how firms respond when they perceive potential changes in public sentiment regarding executive pay.

Starting from 2006, the SEC requires public firms to disclose “a single figure for total compensation” for top executives in the Summary Compensation Table within annual proxy filings.<sup>1</sup> The disclosed total pay becomes the primary focus of public scrutiny, serving as the basis for the press to assess the magnitude of CEO compensation.<sup>2</sup> In 2009, the SEC issued the Proxy Disclosure Enhancements final rule that changes how executive total pay is reported in the Summary Compensation Table. The rule replaces the prior practice of reporting executives' equity grants value based on their accounting expenses recognized for financial statement purposes (ASC 718 expense). Firms are now mandated to report grant date fair value (GDFV) of equity grants in the fiscal year as part of executive total compensation. Further, firms are required to restate executive pay from two preceding years in the Summary Compensation Table.

We use the compensation disclosure of PepsiCo Inc. CEO, Indra K. Nooyi, to illustrate the restatement of past executive compensation (Appendix A). In proxy filings from 2007 and 2008, PepsiCo

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<sup>1</sup> <https://www.sec.gov/files/rules/final/2006/33-8732a.pdf>

<sup>2</sup> For example, in the TIME's 2022 article, “CEO Pay Was Up 21% in 2022. These Are the Most Overpaid CEOs, According to a Shareholder Advocacy Group”, the CEO compensation data cited are all based on the values of ‘*Total Compensation*’ disclosed in the Summary Compensation Table of proxy filings. The article can be accessed through the following link: <https://time.com/6256076/most-overpaid-ceos-2022/>.

reported CEO annual total compensation value of \$11,478,696 and \$13,382,035 in the Summary Compensation Table, respectively. In the 2009 proxy filing under the new SEC rule, PepsiCo restated Ms. Nooyi's 2007 and 2008 total pay to \$15,249,886 and \$16,326,733, respectively, as her stock and option grants values are restated based on their GDFVs. Thus, the SEC rule change could trigger the perception that Ms. Nooyi's total compensation from 2007 and 2008 is \$6,715,696 higher than previously reported, even though there is no actual change to her pay packages from those two years.

A unique feature of the 2009 SEC rule change is that the restated compensation value does not offer new information to investors. Any details related to the restatement, including the magnitude and whether a firm restates past compensation value upward or downward, were previously publicly available in prior proxy filings. Specifically, before the rule changes, firms already report the GDFVs of stock and option grants in the "Grants of Plan-Based Awards Table". Under the new rule, firms only recompute executives' total pay in the prior years based on the GDFVs and restate these values in the Summary Compensation Table. As illustrated in Appendix A, in PepsiCo's 2009 Summary Compensation Table, the restated value of the CEO's 2007 and 2008 stock and option grants have already been reported in detail in 2007 and 2008 proxy filings. Investors reading the 2009 proxy statement gain no new information about 2007 and 2008 executive pay packages than what they can already glean from earlier filings. Thus, the 2009 rule change provides a rare opportunity to examine how firms would react when only the optics of executive compensation change.

If a firm restates the CEO total pay from past two years significantly higher than what has been reported before, it may create the perception that the firm has underreported their CEO pay and would attract scrutiny from shareholders and the public. External scrutiny and negative publicity can lead to increased executive turnover, reduce future labor market values of executives and board members, damage firm reputation in the eyes of customers and employees, and increase the risk of governing agencies tightening regulations in the future (Jensen and Murphy, 1990; Bebchuk and Fried, 2004; Edmans, Gabaix, and Jenter, 2017; among others). Thus, firms and CEOs have strong incentives to mitigate the potential negative perceptions arising from compensation restatements. We expect that, when anticipating an upward

restatement of past CEO total pay under the new SEC rule, board members will proactively adjust the newly granted CEO pay package downward in the fiscal year such restatement information is disclosed (hereafter, “restatement year”). Likewise, CEOs would be more willing to accept downward pay adjustments to alleviate potential criticism resulting from upward pay restatements.

Some firms significantly restate CEO total pay down from earlier years under the 2009 rule, leaving the impression that their executives’ annual pay packages are smaller than previously reported.<sup>3</sup> Expecting shareholders and the public to be more receptive to downward pay restatements, CEOs could take advantage of the opportunity to bargain for higher pay (Bebchuk, Fried, and Walker, 2002). Board members, anticipating a lower probability of public scrutiny and shareholder objection, are likely to relent. Thus, we expect a CEO to receive a larger compensation package in the restatement year when her past pay is restated downward.

To examine our predictions, we manually collect executives’ compensation information in the Summary Compensation Table from the proxy statements filed around the rule year for all public firms with valid accounting information in the Compustat database. Our final sample consists of 2,758 unique U.S. public firms/CEOs with required compensation, stock, and related accounting data. It is worth noting that we cannot use the established compensation databases (such as the Execucomp, Equilar and the Incentive Lab) for our analyses. These databases replace the original reported pay values with the restated values, making it impossible to track pay restatement. We compare a CEO’s restated past two years’ pay under the new SEC rule with her previously reported pay values in the proxy statement filed in the year prior. To measure the overall magnitude of CEO pay restatement, we aggregate the two year changes between the restated CEO equity pay value and the original reported value.

There is a large cross-sectional dispersion in how firms restate the past CEO pay. In our sample, the mean difference between restated and previously reported CEO pay is \$743,995 and the standard deviation of the difference exceeds \$3 million. To make the pay restatement values comparable between

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<sup>3</sup> How firms restate past total pay depends on how the rule affects the reported stock and option values in the Summary Compensation Table. We discuss the details regarding the rule’s effect on reported equity values in Appendix B.

firms of different sizes, we scale the total dollar amount of pay restatement by lagged book assets. Other than this continuous variable that captures the magnitude of past pay restatement, we construct two indicator variables that classify pay restatements into the “Significant Restate Up” (SR\_Up) and “Significant Restate Down” (SR\_Down) subgroups based on whether the scaled past pay restatement value is in the top or bottom tercile of our sample, respectively. Firms in the SR\_Up group on average revise previous years’ CEO pay upward by \$ 2,478,670, while those in the SR\_Down group revise pay downward by \$1,411,975. Our results are robust if we use the top or bottom quartile to classify firms into the SR\_Up and SR\_Down subgroups.

To examine whether the rule-induced pay restatement has motivated firms to implement real changes to their CEO pay, we regress CEO total pay in the restatement year on the pay restatement variables discussed above. We find strong evidence that the restatement of a CEO’s past pay is negatively associated with the size of the CEO’s new compensation package in the restatement year. A one standard deviation increase in the pay restatement metric is associated with a \$675,010 reduction in CEO compensation for the year of the restatement, equivalent to a 21.9% decrease in average CEO total pay. Compared with firms with no or marginal restatement, CEOs in the SR\_Up (SR\_Down) group on average experience a pay cut (raise) of \$490,000 (\$482,000). The pattern is consistent with the idea that firms engage in proactive adjustments of CEO pay packages following a restatement to the CEO’s past pay.

We conduct various analyses to address alternative explanations and mitigate concerns for potential omitted variable bias. Firm performance could affect the probability of payout from performance-based equity grants, and subsequently, the reported accounting expense value of equity grants before the rule change. If past firm performance also shapes the design of a CEO’s future compensation, it could drive a spurious relation between pay restatements and pay adjustments in the restatement year. To alleviate this concern, all our regression analyses control for firms’ current and past accounting and stock performances. As a further robustness check, we split the sample based on firms’ accounting or stock performance one year before the restatement. The relation between pay restatements and adjustments for CEO compensation in restatement year holds in both subsamples of firms with either poor or good past performance. This

finding does not support the idea that firm performance is driving our results. Our results also hold after including various corporate governance control variables.

We next conduct a difference-in-differences (DID) test by taking advantage of the staggered implementation of the new rule across firms with different fiscal year-ends. The 2009 SEC rule became effective for fiscal years ending on or after December 31, 2009. We compare the effect of CEO pay restatement on subsequent pay adjustments in firms that restate past pay in 2009 fiscal year to the effect in firms that do not restate in 2009. Whether a firm adopts the new SEC rule in 2009 fiscal year or not is mainly determined by the firm's fiscal year end, which is already in place before the SEC disclosure rule change and thus is unlikely to be correlated with any unobservable factors that might drive firms' compensation policies. All our findings hold under the DID setting, which supports the causal influence of the rule-induced pay restatement on CEO compensation adjustments.

As the pay restatement is motivated solely by changes in the reporting standard of equity-based pay values, we then investigate whether firms change their use of equity pay given the restatement. We find that firms in the SR\_Up group significantly cut CEOs' equity grants in the restatement year, while using cash-based compensation to partially substitute for equity grants. Firms in the SR\_Down group grant more equity-based pay to CEOs after pay restatement, but there is no significant change in the level of CEOs' cash-based pay. These findings suggest that the adjustments in CEO total pay in the restatement year are primarily influenced by changes in equity-based pay. This provides further evidence that the documented pay adjustments are influenced by the SEC rule that changes the reporting value of equity compensation.

For completeness, we further examine if our findings regarding CEO pay apply to other executives as well. We expect that a firm's overall concern about the public perception of executive compensation will also impact other top executives' compensation packages after their pay restatements. Consistent with our findings for CEOs, we find that non-CEO executives on average experience significant pay cuts when their past pay values are restated upward, while they receive significant pay increases when past pay values are restated downward.

To shed light on the mechanisms through which pay restatement influences CEO compensation, we exploit cross-sectional variations among firms' compensation adjustments in response to pay restatement. CEOs with higher total compensation are under greater pressure to justify their pay size. As a result, they are more likely to proactively take a pay cut when their already high pay levels are restated to be even higher. We find evidence consistent with this prediction. High-paying CEOs experience significantly larger pay cuts than their counterparts when past years' pay values are restated upward. We further examine whether the level of institutional block ownership affects firms' responses to pay restatement, as institutional blockholders have been shown to monitor and exercise influence on executive compensation (Bertrand and Mullainathan, 2000; Holderness, 2003). We find weak evidence that in the presence of high institutional blockholder ownership, firms grant a smaller pay raise to CEOs when past pay levels are significantly restated downward. Board independence and CEO duality, however, do not have a significant influence on how firms adjust the CEO pay after pay restatement, which are not consistent with an agency-based explanation. Instead, combined with survey evidence that directors aim to steer clear of public controversy when designing executive pay, our evidence suggests that both the CEO and the board are aligned in their objectives to avoid public scrutiny and shareholder antagonism.

The empirical evidence presented so far attests to firms adjusting CEO compensation in anticipation of changes in public perception on executive pay. This naturally leads to the question: are these pay adjustments permanent, or will firms reverse the changes when the perceived public scrutiny diminishes? We examine CEO compensation in the years after compensation restatement and find a partial reversal of the pay cuts in the restatement year. Specifically, firms in the SR\_Up group that have reduced CEO pay in the restatement year significantly increase CEO pay in the year after. On average, their CEOs experience a pay raise of \$271,000 in the year immediately after the restatement year, which partially reverses the \$490,000 pay cut in the restatement year. However, for firms in the SR\_Down group that have raised CEO pay in the restatement year, we find no evidence of pay reversal in the subsequent years. Hence, companies appear to partially reverse the pay adjustments in the restatement year if and only if such policy adversely impacts CEO pay.

Our paper contributes to literature in several ways. First, we add to the growing literature on disclosure requirements and compensation design. This strand of literature focuses on the effect of new disclosure rules that either have material impact on firm performance and/or provide new information to evaluate firms and executives. Such rule changes include the adoption of FAS 123R, which affects both the disclosure and accounting expensing of equity-based incentives (Carter, Lynch, and Tuna, 2007); the 2007 introduction of the Compensation Discussion and Analysis that greatly expands disclosure on executive pay (Gipper, 2021); the 2006 SEC mandate on disclosing compensation peer groups (Faulkender and Yang, 2013); the 2018 rule that mandates CEO-employee pay ratio disclosure for U.S. public firms (Chang, Dambra, Schonberger, and Suk, 2023). Our paper differs from these studies in that the 2009 Proxy Disclosure Enhancements rule only changes the optics of executive pay, without providing any new information to the public or imposing any real change to past pay. Yet we find strong evidence that altering the optics of executive compensation could prompt firms to make significant adjustments to executives' future pay level and structure.

We further add to the literature on whether public perception influences executive compensation. The empirical evidence thus far has been inconclusive. Core, Guay and Larcker (2008) find no evidence that firms reduce CEO total pay after receiving negative press coverage. Kuhnen and Niessen (2012) find that when faced with negative press coverage on compensation, firms do not cut pay size, but replace controversial option grants with other less contentious forms of pay. Our paper shows that firms on average take preemptive measures when anticipating a change in the market's perception of executive compensation. Thus, only examining firms' ex-post pay adjustments to negative press may underestimate the influence of public perception on corporate pay policy. Our findings are consistent with recent survey evidence that the majority of board of directors are willing to design executive compensation to avert public backlash (Edmans et al., 2023).

Finally, we contribute to the literature on the importance of presentation format in accounting disclosure. Due to limited attention, investors cannot fully process publicly disclosed information. Thus, where and how accounting numbers are presented in financial statements affect how investors process the



information (e.g., Hirshleifer and Teoh, 2003; Cohen and Lou, 2012; Bartov and Mohanram, 2014; Mohanram, Sun, Xin and Zhu, 2023; among others). While earlier papers mostly focus on items in the accounting statements, our paper is the first to focus on a SEC compensation disclosure mandate that elevates a piece of information reported in the “Grants of Plan-Based Awards Table” to the more prominently featured “Summary Compensation Table”. Our paper extends prior literature by showing that firms adjust their pay policies in anticipation of investor reactions to changes in the reporting format of executive compensation. Our evidence thus aligns with the prior studies and lends additional support to the importance of reporting format in public filings, which can contribute to real changes in firm behavior.

## **2. Background**

The SEC views the Summary Compensation Table in proxy filings as “the principal disclosure vehicle regarding executive compensation” (page 48, SEC final rule 33-8732A).<sup>4</sup> In the table, firms must present the total value and a breakdown of the executives’ annual compensation. To facilitate year-to-year executive pay comparisons, firms are required to disclose executive pay information for the most recent fiscal year and the two preceding years in the table. A few exceptions to this three-year reporting requirement apply to companies that are designated as “Smaller Reporting Company” by the SEC, have recently gone public, have undergone a recent significant corporate restructuring, or have executives who recently joined the firm.

Between 2006 and 2009, firms report executive compensation value in the Summary Compensation Table under the FASB ASC Topic 718 (previously known as FAS 123R). Under this rule, the values for equity compensation components, i.e., stock and option awards, are reported as the accounting expense values that the firm recognizes for financial statement purposes during the year. These values are included as part of executives’ total compensation values in the Summary Compensation Table. Meanwhile, in the same proxy statement but in a different table named as “Grants of Plan-Based Awards”, firms also report the Grant Date Fair Values (GDFVs) of stock and option grants for each executive for the most recent fiscal

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<sup>4</sup> <https://www.sec.gov/files/rules/final/2006/33-8732a.pdf>

year. For example, in the Summary Compensation Table from PepsiCo's 2008 proxy statement (Appendix A), Ms. Nooyi's reported 2008 total pay is \$13,382,035. Within her pay package, the reported stock awards value is \$3,965,714 and option awards value is \$3,900,695, which are expensed values of her outstanding equity awards for that fiscal year. However, in the Grants of Plan-Based Awards Table within the same proxy filing, PepsiCo reports that Ms. Nooyi's 2008 stock and option grants' GDFVs are \$6,428,535 and \$4,382,569, respectively. Thus, had PepsiCo adopted the GDFV method when reporting stock and option values in the Summary Compensation Table, Ms. Nooyi's 2008 total compensation would have been \$2,944,698 higher at \$16,326,733.<sup>5</sup>

Starting from 2009, firms adopt the Proxy Disclosure Enhancements rule, which mandates firms reporting the GDFVs of the current year's stock and option grants in the Summary Compensation Table. Further, in the same table, firms need to restate executive pay for preceding years based on the new rule. In 2009 proxy statement, PepsiCo restates Ms. Nooyi's 2008 stock and option grant values to \$6,428,535 and \$4,382,569, respectively. As a result, her 2008 total pay is restated significantly upward to \$16,326,733. Similarly, her 2007 total pay is restated upward from \$11,478,696 to \$15,249,886 in the same table. Given that the Summary Compensation Table serves as the primary source of information on executive compensation, the public may perceive that Ms. Nooyi's 2008 and 2007 pay is substantially higher than previously reported. It is important to note, however, that the rule does not have any real impact on her 2007 and 2008 compensation, and the restatement does not contain any new information.

Firms may restate executive pay upward or downward under the new rule. Several factors could influence whether the accounting expense value of equity-based awards exceeds or falls short of their GDFVs. For instance, factors such as the vesting period of past equity grant, the vesting schedule, the frequency of equity grant, the nature of the underlying performance measures (including market conditions, internal performance measures, or service-based conditions), and the likelihood of the firm meeting embedded performance requirements can all affect the estimated accounting expense value and the GDFVs

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<sup>5</sup>  $\$2,944,698 = \text{GDFVs of stock and option awards} - \text{Expensed values of stock and option} = (\$6,428,535 + \$4,382,569) - (\$3,965,714 + \$3,900,695)$ .

of equity grants. In Appendix B, we discuss in detail how the rule change affects the reported stock and option values in the Summary Compensation Table. It is worth noting that the 2009 Proxy Disclosure Enhancements rule includes other changes in the proxy statement, such as disclosure related to leadership structure, compensation consultants, director compensation, etc. However, none of these other disclosure changes should result in a large scale of CEO compensation restatement. Further, as we shall show, other pay restatements are very rare during the sample period.

Firms with fiscal years ending *on or after* December 20, 2009 are required to restate previous years' executive pay in the proxy statements filed for fiscal year 2009. For firms with fiscal years ending *before* December 20, 2009, they need to restate executive pay in the proxy statements filed a year later, for fiscal year 2010. Figure 1 illustrates the timing of the rule adoption using one December year-end firm and one October year-end firm as examples, with restatement year being 2009 for the former and 2010 for the latter. Since a firm's fiscal year end is determined well before the 2009 SEC rule change, whether a firm restates past executive pay in the 2009 or 2010 proxy statement is largely exogenous.

### **3. Sample and key variable construct**

#### *3.1. Sample*

Established compensation databases such as the Execucomp, Equilar, and the ISS Incentive Lab replace the original reported compensation values with the restated values, making it impossible to track compensation restatements. Thus, we manually collect the pay restatement information from firms' proxy statements. We start with all U.S. public firms in the Compustat fundamental annual database and with proxy filings (DEF 14A) in fiscal years 2009 and 2010. We exclude firms with stock price less than \$1 per share at the fiscal year end due to potential delisting risk. We further require firms having no missing pay information in both the pre-restatement year and the restatement year for the CEOs. Firms should also have valid accounting and stock-related information for the same period for regression analysis. Our final sample contains 2,758 unique firms. We obtain accounting data from the Compustat database, stock-related information from the Center for Research in Security Prices (CRSP) database, institutional ownership

information from the CDA Spectrum database of the SEC 13-F filings, and other related executive information from the ExecuComp and ISS Directors databases.

From firms' 2009 and 2010 proxy statements, we collect (i) executives' names, positions, and detailed pay information for the fiscal year of the proxy statement from the Summary Compensation Table, and (ii) the *restated* pay details for preceding fiscal years covered in the same Summary Compensation Table.<sup>6</sup> The pay information collected includes salary, short-term cash incentive, stock awards, option awards, annual non-equity awards, long-term non-equity awards, and total compensation. Next, we collect the *originally* reported pay information for the preceding years from the Summary Compensation tables disclosed in the 2007 and 2008 proxy statements that were filed before the rule change.

Panel A of Table 1 presents our sample composition. Of the 2,758 firms with 2009 or 2010 proxy filings, 1,866 firms restate CEOs' past pay level in proxy statements for fiscal year 2009. Of the 892 firms without CEO pay restatement in 2009, 389 firms restate past CEO pay in fiscal year 2010. The remaining 503 firms do not restate CEO pay in both years. Among the firms without pay restatement, 299 firms are not affected by the rule because they do not grant equity-based pay to CEOs during the pre-rule change period. For the remaining 204 firms, the absence of pay restatements may be because the rule does not lead to any changes to their previously reported equity awards value. For example, the GDFV of an equity award with a short-term vesting period (one year or less) can be the same as its accounting expense value. In such cases, the new rule would not result in any changes to the reported values of the equity awards.

Figure 2 presents the percentage of firms with restatements across different industries based on the Fama and French 12 industries classification.<sup>7</sup> More than 70% of firms have restated their CEOs' past compensation across all industries, suggesting that pay restatements are common and are not a phenomenon particular to specific industries.

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<sup>6</sup> Our sample covers a larger set of public firms than the Execucomp and ISS Incentive Lab databases. Execucomp includes S&P1500 firms and the ISS Incentive Lab data covers the largest 750 firms in Compustat each year with forward and backward fills.

<sup>7</sup> Industry classifications are obtained from Professor Kenneth French's online data library.

### 3.2. Constructing the pay restatement variables

Given that the 2009 SEC rule applies only to the reported values of equity (stock and option) awards and their resulting influences on total pay, we use changes between restated and original equity values to capture compensation restatements. For each preceding fiscal year, we calculate the difference between the restated total value of equity awards (stock and option awards) from the Summary Compensation Table filed after the disclosure rule change and the originally reported total value of equity awards from the Summary Compensation Table filed before the rule change. We then aggregate the changes over the two preceding years to capture the full impact of the restatement on previously reported CEO pay size.<sup>8</sup> Our results are robust if we use changes in total pay values to measure the magnitudes of compensation restatements. The differences between restated and original total pay values are 99% correlated with the differences in equity values during our sample period, suggesting that other types of pay restatements are rare.

We use three pay restatement variables in our analyses. The first measure is *PayRestatement*, a continuous variable that equals the aggregated level of equity pay restatements scaled by pre-restatement year's firm book assets. We scale the dollar amount of the pay restatement by the value of book assets at the pre-restatement year to facilitate cross-sectional comparison of pay restatement across firms of different sizes. Compared with compensation-related scalars, pre-rule book assets are less likely to be correlated with future pay changes.<sup>9</sup> Considering that the value of firm's book assets is substantially greater than the CEO pay restatement level, we present the value of *PayRestatement* as a percentage.

We further divide the sample of firms with pay restatement into terciles based on the value of *PayRestatement*. The top tercile includes firms that have significantly revised up the CEO's past pay and the bottom tercile includes firms that have significantly restated past CEO pay downward. The middle

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<sup>8</sup> About 86.80% of our sample firms report executive pay from two preceding years in the Summary Compensation Table. For the remaining 13.20% of firms that only report executive pay from one preceding year, the pay restatement value is estimated using only one year data. Our results are robust if we instead use the average values of pay restatement for firms with data for two preceding years.

<sup>9</sup> As robustness checks, we use CEO salary or CEO total pay in the pre-restatement year as alternative scalars and obtain qualitatively similar results.

tercile consists of firms having minimum or no past pay restatements. We thus use an indicator variable *SR\_Up* (*SR\_Down*) to indicate if a firm has *PayRestatement* in the top (bottom) tercile of our sample. Firms in the *SR\_Up* (*SR\_Down*) group on average revise previous years' CEO pay upward (downward) by \$ 2,478,670 (\$1,411,975). As a robustness check, we alternatively define the *SR\_Up* and *SR\_Down* groups based on whether the firm's *PayRestatement* is in the top or bottom quartile of our sample, respectively. Our results are robust to this alternative definition.

### 3.3. Descriptive statistics

We present the descriptive statistics on pay restatement for the 2,255 observations that have restated the CEO's past compensation in Table 1 Panel B. In addition to equity-based compensation, we include other non-equity compensation components, such as salary, short-term cash incentive, and long-term cash incentive pay, to present a more complete picture of CEO pay. We calculate the aggregate restatement value for each of these components in the preceding years, respectively. The mean (median) for the aggregated restatement value of equity pay for preceding years is \$743,955 (\$175,801), which suggests that on average (most) firms restate the CEO's past equity compensation up after the rule change. These restatements are economically significant as well, equivalent to 24.1% of CEO's total pay based on the mean total pay level in our sample. The 10<sup>th</sup> percentile is about -1.22 million dollars and the 90<sup>th</sup> percentile is about 3.54 million dollars. These statistics indicate a large cross-sectional dispersion in how firms restate past CEO compensation. After being scaled by the firm's book assets in the pre-restatement year, the main variable of CEO pay revision, *PayRestatement*, averages at 0.111%.

Confirming that the restatement of executive pay during the sample period is mainly driven by the SEC rule change concerning the reporting standard of equity compensation, we find that all other compensation components undergo none or trivial restatements. This significant difference between the restatements of equity compensation and other compensation components suggests that there is unlikely to be any other confounding event that could have contributed to compensation restatements.

## 4. Pay restatement and changes in executive compensation

### 4.1. Multivariate analysis of pay restatement and CEO compensation

#### 4.1.1. Model specification

In this section, we examine whether firms change CEO pay after restating past pay size using regression analyses. We use the following model to examine CEO pay level and structure following the restatement of prior CEO pay:

$$\text{Pay Variable}_{it} = \alpha_{it} + \beta \cdot \text{Pay Restatement Variable}_{it} + \gamma \cdot \text{Pay Variable}_{it-1} + X_{it} + \varepsilon_{it}, \quad (1)$$

where  $\text{Pay Variable}_{it}$  in the baseline is CEO pay level, estimated as the natural logarithm of the total compensation, for CEO  $i$  in year  $t$ .  $\text{Pay Restatement Variable}_{it}$  is either the continuous variable ( $\text{PayRestatement}$ ) or the two indicate variables,  $\text{SR\_UP}$  and  $\text{SR\_Down}$ , for CEO  $i$  in year  $t$ . We include lagged CEO pay level to control for potential momentum or reversal in a firm's compensation design. By including lagged dependent variables as additional controls, our model effectively captures the changes in pay level or structure from the prior year. For completeness, we also use the year-over-year change in CEO total pay as an alternative dependent variable to directly examine the relation between pay restatement and changes in executive compensation. We estimate the robust standard errors clustered by firm.

$X_{it}$  is a vector of control variables that are often included in executive compensation studies. To control for the difference in pay-for-performance sensitivity across firms, we include various measures of firm performance – accounting performance (ROA), stock performance (cumulative stock return during the first year), and sales growth. We further control for lagged performance variables to mitigate the concern that past firm performance could influence the reported value of CEO equity pay. We use the natural logarithm value of firm's total assets to control for firm size, the standard deviation of daily stock returns during the fiscal year to control for firm risk, and the Tobins' q ratio for growth opportunities. We include firm characteristics in both restatement year  $t$  and year  $t-1$  to control for the possibility that CEO pay may depend on both concurrent and lagged firm characteristics. We also include the percentage of shares owned by blockholders who own 5% or more of firm shares ( $\text{BlockInstlOwn}\%$ ) in year  $t-1$  as a measure of

shareholder governance (e.g., Edmans, 2014; Edmans and Holderness, 2017). All our regression models include industry fixed effects (based on the Fama French 48-industry classification) to account for possible cross-industry differences in pay design and pay restatement.

Within our sample, 1,866 firms restate CEOs' past pay level in proxy statements for fiscal year 2009 and 389 firms restate past pay in fiscal year 2010. The 922 firms that do not restate executive pay in 2009 would serve as controls in 2009 and the 503 firms that do not restate in both years serve as controls for 2010. Firms that restate CEO pay in 2009 are excluded from regression analysis in 2010 as their compensation policies may have already been changed by the pay restatements. Under this setting, we end up with a panel of 3,485 firm year observations in years 2009 and 2010 for regression analysis. Table 2 Panel A includes the summary statistics for the regression variables.

To gain insights on the relation between pay restatement and firm characteristics, we present the correlation matrix between the pay restatement variables and the control variables in Panel B of Table 2. There is no clear pattern on how pay restatement relates to a firm's past performance. *PayRestatement* is negatively correlated with pre-restatement ROA and stock returns, but positively correlated with sales growth and Tobin's Q. These coefficients are all below 0.1 except for Tobin's Q, though statistically significant. Further, better ROA is associated with a lower probability of significantly restating past CEO pay downward, while better stock performance is associated with a lower probability of significantly restating past CEO pay upward. *PayRestatement* is not significantly correlated with firm size, but is significantly positively correlated with firms' volatility, measured as standard deviation of daily stock returns during the pre-restatement year. Overall, the correlations between the pay restatement variables and firm characteristics range from -0.063 to 0.195, with the majority between -0.1 and 0.1. The relatively low correlation coefficients indicate that multicollinearity is unlikely to be a concern in our regression analysis.

#### 4.1.2. Regression results

We present the regression estimations for equation (1) in Table 3. The dependent variable in columns (1) and (2) is the natural logarithm value of CEO total pay in the restatement year. The independent



variables of interest are *PayRestatement* in column (1) and the two indicator variables (*SR\_Up* and *SR\_Down*) in column (2). The coefficient of *PayRestatement* is negative and significant at 1%, which suggests that the level of restatement for the CEO's prior pay is negatively associated with CEO pay level afterwards. Consistent with this finding, in column (2), the coefficient of *SR\_Up* is negative and significant and the coefficient of *SR\_Down* is positive and significant. Firms that significantly restate the prior CEO pay upward (downward) will award lower (higher) total pay to CEOs after the pay restatement. The relation between pay restatement and subsequent CEO pay appears to be economically significant as well. For example, on average, CEOs in the *SR\_UP* (*SR\_Down*) group receives a total pay that is approximately 15.1% (13.2%) lower (higher) than firms with no or small restatements (the control group), which translate into a pay cut (raise) of \$464,629 (\$406,166) based on the mean CEO total pay in our sample.

Columns (3) and (4) present regression results based on the year-over-year changes in CEO total pay in restatement year. The coefficients on *PayRestatement* and indicator variables (*SR\_Up* and *SR\_Down*) confirm that CEOs take a significant pay cut if their previous years' compensation values are restated upward, while enjoy a pay raise when their previously reported pay values are revised downward under the new SEC rule. Specifically, CEOs in the *SR\_UP* (*SR\_Down*) group on average would experience \$490,000 pay cut (\$482,000 pay raise) in restatement year.

The findings in Table 3 are intriguing given that the pay restatement (i) does not have any real impact on the CEO's past compensation and (ii) contains no material new information to the public. Nevertheless, companies still adjust CEO compensation in response to how the restatement influences the optics of CEO pay size. This result suggests that firms put a lot of weight on the values presented in the summary compensation table that attracts public attention.

#### *4.2. Firm past performance and the relation between CEO pay adjustments and pay restatements*

Before the 2009 disclosure rule change, firms report the accounting expense value of equity grants in the Summary Compensation Table. For equity grants with internal performance (e.g. accounting) conditions, the recorded expense value each year is affected by the likelihood of achieving underlying

performance conditions. This change raises the concern that the restatements of past pay are correlated with firm performance in previous years. For example, firms can reverse the previously reported equity grant value or even record negative value for a performance-based equity grant after a year of bad performance, as the likelihood of executives receiving a payout decreases. The 2009 new rule no longer allows such compensation expense reversal, thus firms with poor past performance may restate prior executive pay upward when the negative influence of performance on reported equity pay value is removed. If further, the poorly performing firms are also more likely to cut future CEO pay, then the observed relation between higher pay restatement and reduced CEO compensation may be driven by firms' poor past performance. Some of the correlations presented in Table 2 Panel B do not support this explanation. *SR\_UP* is not significantly correlated with past ROA and *SR\_Down* is not significantly correlated with past stock return. Nonetheless, to mitigate the influence of past performance in our analyses, we control for both lagged and concurrent firm performance in all our regressions.

To more directly address the concern that firm performance might be an omitted variable that drives our findings, we divide firms into subgroups based on their performance in the year prior to the restatement. Table 4 presents regression results in these subsamples. In Panel A, we divide firms into two groups based on whether firms' ROA in pre-restatement fiscal year is above or below the sample median. Our baseline findings in Table 3 are robust in both high and low performance subgroups. A similar pattern is observed in Panel B when we divide firms into two performance groups based on whether the firm's total stock return (TSR) before restatement year is above or below the sample median. Collectively, the results presented in Table 4 do not suggest that our findings are driven by past firm performance.

#### *4.3. Additional governance controls*

Executive compensation is a bargaining outcome between the board and the CEO (Hermalin and Weisbach, 1998). CEO power and board independence thus can influence CEO compensation design. We obtain data on CEO and board characteristics from the Execucomp and the ISS directors database, respectively. Both datasets, however, only cover S&P 1500 firms, which results in a significantly smaller

sample to conduct corporate governance related analyses. To capture CEO power, we use an indicator variable that equals one if the CEO is also the chairman of the board (*CEO Duality*) and zero otherwise. We also include CEO age to control for cross-sectional differences in career concerns. We measure board independence as the ratio of the number of independent directors to the total number of directors on the board. Table 5 presents regression results after including these additional governance controls. Despite the sample being much smaller, the coefficients of the pay restatement variables still have the same sign and similar magnitudes as those reported in Table 3.

#### 4.4. *Difference-in-differences analysis*

In this section, we take advantage of the staggered implementation of the SEC rule across firms with different fiscal year ends and construct a difference-in-differences (DID) analysis to establish the causal influence of the rule-induced pay restatements on future CEO pay. Gipper (2021) and Chang et al. (2023) use a similar identification strategy to establish the influence of disclosure rules on executive compensation.

The sample for DID analysis includes all firm-year observations in fiscal years 2008 and 2009. The treated firms are those with fiscal year ending after Dec 20, 2009, and that disclosed pay restatement in proxy filings for fiscal year 2009. Control firms are those that do not restate CEO pay for fiscal year 2009. The majority of the control firms restate CEO pay in the subsequent fiscal year, 2010, due to their fiscal years ending before Dec 20, 2009. The remaining control firms do not restate CEO pay in both proxy statements for the 2009 and 2010 fiscal years. Whether a firm restates pay in the proxy statement for fiscal year 2009 or 2010 largely depends on its predetermined fiscal year end, thus introducing exogenous changes in the optics of CEO pay. Our results remain robust when we exclude the firms that do not restate CEO pay for both the 2009 and 2010 fiscal years.

The empirical model for the DID analysis is as follows:

$$Pay\ Variable_{it} = \alpha_{it} + \beta \cdot Pay\ Restatement\ Variable_i \times Post_t + Post_t + \gamma \cdot X_{it} + \varepsilon_{it} , \quad (2)$$

where  $t$  is either 2008 or 2009 and  $Post$  is an indicator variable that equals one for observations in 2009 and zero for observations in 2008. Like in equation (1),  $Pay\ Restatement\ Variable_i$  is either the continuous variable,  $PayRestatement$ , or two indicate variables,  $SR\_Up$  and  $SR\_Down$ , for CEO  $i$ . Because these pay restatement variables can only take non-zero values after the rule change in 2009, it is effectively an interaction between the treated firms and the  $Post$  indicator.

Table 6 presents the regression outcomes of the DID analysis. The dependent variable is the natural logarithm of CEO total pay levels in the first two columns and change in CEO pay after restatement in the last two columns. We present only the coefficients of interest variables in Table 6, but all regressions include the same set of controls as in Table 3. In columns (1) and (3), the coefficients of  $PayRestatement$  remain negative and significant. Columns (2) and (4) show that the coefficients on the top pay restatement tercile indicator ( $SR\_Up$ ) are negative and significant, while the coefficients on the bottom pay restatement tercile indicator ( $SR\_Down$ ) stay positive and significant. Together, the DID results confirm our main findings in Table 3 and support a causal influence of restating past CEO pay values on future adjustment in CEO pay.

#### 4.5. CEO equity vs. cash compensation adjustments

Given that pay restatements in our sample are driven by changes in the reporting standard of equity compensation, it is thus natural to examine whether firms specifically adjust CEOs' equity-based pay given the restatement. Since CEO pay package is comprised of equity and cash compensation, we also analyze how firms adjust CEOs' cash-based pay to better understand what drives the changes in total CEO pay.

To conduct the analyses, we use the same regression model specified in Equation (1). The dependent variable is either the natural logarithm value of one plus CEO equity grant (i.e. stock and option) value or the natural logarithm value of one plus CEO cash-based pay. Cash-based pay includes salary, short-term cash incentive, and long-term cash-based incentives. We present the regression results on equity-based pay in columns (1) and (2) and cash-based pay in columns (3) and (4) of Table 7. The negative and significant coefficient of  $PayRestatement$  in column (1) shows that firms reduce equity-based grants to

CEOs after restating past pay upward. In contrast, the coefficient of *PayRestatement* is insignificant in column (3), suggesting that firms do not adjust cash-based pay level after restatement. Columns (2) and (4) confirm that firms view equity-based pay and cash-based pay differently after restatement. Firms in the *SR\_Up* group significantly reduce equity grants to CEOs while increasing the use of cash-based pay in the restatement year. In contrast, firms in the *SR\_Down* group significantly increase equity-based grants to CEOs, while there is no change in the level of cash-based pay to CEOs. The results suggest that firms do not adjust different pay components indiscriminately. Firms prefer to add to the executives' equity-based incentives when they restate past equity pay value downwards under the new disclosure rule. If firms restate past equity pay value upward, they are more likely to use cash-based pay to substitute equity-based incentives.

#### 4.6. Analysis for non-CEO executives

We further examine whether the findings hold for non-CEO executives. Firms are required to report compensation information for the CEO, the CFO, and other executives who are among the top five highest paid executives of the firm based on total compensation. We conduct the same set of regression analyses for non-CEO executives only. We re-estimate the pay restatement variable, *PayRestatement*, using compensation data for all non-CEO executives collected from proxy statements and then reclassify *SR\_Up* (*SR\_Down*) groups accordingly. Table 8 presents the regression results. Given that there are typically multiple non-CEO executives per firm, the number of executive-year observations in the regressions increases to 10,734.

As shown in Table 8 Columns (1) and (3), the coefficients of *PayRestatement* remain negative and significant, confirming that firms on average are also more likely to cut non-CEO executives' total pay if they restate the executive's past compensation upward. In Columns (2) and (4), the coefficients of *SR\_Up* indicator are negative and significant while the coefficients of the *SR\_Down* are positive and significant, which is again consistent with the findings for the CEO. On average, non-CEO executives experience smaller pay adjustments than the CEOs. Specifically, non-CEO executives in the *SR\_UP* (*SR\_Down*) group

would experience 5.5% lower pay (5.7% higher pay) as shown in Column (2), or \$103,000 pay cut (\$98,000 pay raise) as shown in Column (4) in the restatement year. Together, Table 8 shows that the rule-induced pay restatement also exerts significant impact on the pay of non-CEO executives.

## 5. Cross-sectional analyses

We next analyze a set of factors that may strengthen or weaken the relation between pay restatement and CEO pay adjustments. This analysis helps us to understand the cross-sectional differences in firms' response to past pay restatements.

### 5.1. CEO past pay level

High CEO pay attracts a lot of public attention. The media likes to sort CEOs based on their reported total pay levels, then name and shame the ones in the highest paid CEO list (The WSJ, Times, New York Times, Bloomberg, S&P Global news, among many others, have all published such list in recent years). We thus expect firms with higher prior CEO pay to be more concerned about triggering negative public attention if they need to restate already high CEO pay to an even higher number under the 2009 rule.

To examine this conjecture, we divide our sample into two subsamples based on the median value of CEO total pay in the year prior to the restatement year.<sup>10</sup> We present the results in Table 9 Panel A. The dependent variable is the log values of CEO total pay in columns (1) to (4) and annual changes in CEO total pay in columns (5) to (8). Columns (1) and (2) show that the coefficient for *PayRestatement* is negative and significant in both columns with the coefficient being much higher and more statistically significant when the prior CEO pay is relatively high. We formally test the coefficient differences between the two subsamples and present the *p*-value of the coefficient test near the bottom of the panel. Indeed, the coefficient is statistically significantly lower for the above median sample than for the below median sample. This result confirms our conjecture that when the CEO's past pay is relatively high, firms are more likely to proactively cut the CEO's total pay when restating past CEO pay upward. In columns (3) and (4), the

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<sup>10</sup> As a robustness test, we divide the sample based on the quartile cutoff value of CEO total pay in the pre-statement year. Our results remain qualitatively similar.

negative coefficient for *SR\_Up* is only statistically significant when the prior CEO pay is above the sample median, which again confirms that higher paid CEOs are more likely to experience a downward pay adjustment with an upward pay restatement. The coefficient of *SR\_Down*, however, is consistently positive and significant across both subsamples, indicating that both high and low paid CEOs are more likely to receive a pay raise if their past pay is restated downward. We repeat the analysis using changes in total pay as the dependent variable in columns (5) – (8) and find similar results.

### 5.2. Institutional ownership

Many studies show that institutional investors play an important role in corporate governance (e.g. McCahery, Sautner, and Starks, 2016; Dasgupta, Fos, and Sautner, 2021; Edmans, Gosling, and Jenter, 2023). Facing greater scrutiny, firms with higher institutional ownership may be more inclined to take preemptive pay cuts when they expect negative perception resulting from restating past pay upward. To examine this conjecture, we divide the sample into subgroups based on the median value of institutional block ownership, *Instl. Block Own*. We focus on blockholders because their large ownership increases their willingness to monitor. The subsample results are presented in Panel B of Table 9.

The coefficient of *PayRestatement* is negative and significant in all models and is not statistically different between higher-ownership and lower-ownership subsamples. A similar pattern exists for the *SR\_Up* indicator, all coefficients of this variable are negative and significant with no significant difference between the two subsamples. These results suggest that institutional blockholders do not exert additional influences on firms' pay cut decisions in the restatement year. The coefficient of *SR\_Down* is also positive and significant in all columns, but the coefficient is significantly lower in the higher block ownership subsample than the lower ownership subsample. This finding suggests that strong institutional monitors limit pay raises for CEOs. Overall, our findings indicate a weak influence of block ownership on CEO pay adjustments.

### 5.3. CEO duality and board independence

It is unclear ex ante how a powerful CEO will respond to upward restatement of their past pay. On the one hand, they may not care. If a CEO's reaction to pay restatement is mainly motivated by potentially negative public perception that may lead to career risk and loss in future labor market value, powerful CEOs may be less affected because their job and pay are relatively more secure. On the other hand, powerful CEOs may suffer a greater reputation and human capital value loss and thus are willing to take actions to mitigate reputational concerns. Thus, it is an empirical question how CEO power relates to firms' response to past pay restatement.

We classify the sample into two subsamples based on whether the CEO is also the chairman of the board. We present the results in these subsamples in Panel C of Table 9. The coefficient of *PayRestatement* is negative in all columns and is not statistically different between CEOs with and without the board chair role. Results are similar when we analyze the two pay restatement indicators. The coefficient of *SR\_Up* is negative and the coefficient of *SR\_Down* is positive in all models, with the difference in coefficient being not significant between CEOs that serve as board chairs and those that do not. These findings suggest that CEO power does not have a significant influence on how firms respond to pay restatement.

An independent board helps to mitigate the shareholder-manager conflicts and reduce rent-seeking behaviors (Weisbach, 1988; Yermack, 1996; Vafeas, 2003). However, it remains unclear ex ante how independent board members would respond to CEO pay restatement. A director familiar with compensation design may very well understand the value of executive equity pay under different accounting estimation methods, and that the pay restatement has no material impact on the CEO's past pay package. Nonetheless, outside board directors may be more sensitive to how the level of their CEOs' pay is perceived by the public, which motivates them to adjust the CEO pay based on the revision of past CEO pay. To shed light on these issues, we classify our sample into two subgroups based on the median value of board independence when available and repeat our baseline regression in these two subsamples, respectively. Panel D of Table 9 presents the results. Our findings on all three pay restatement variables are robust in both subsamples. More importantly, none of the coefficient tests suggest that the coefficient for the higher



board independence sample is statistically different from the coefficient for the lower board independence sample. The finding suggests that board independence does not have a significant impact on how firms adjust CEO total pay in the presence of past pay restatements.

In summary, prior CEO pay level appears to have the strongest influence on the relation between CEO pay adjustments and past pay restatements. Institutional block ownership does not appear to matter for CEO pay cuts, but limits pay raises. These findings support the importance of public scrutiny on CEO pay design. Board independence and CEO duality exert minimum influence on how firms adjust their CEO pay with pay restatements.

## **6. Pay restatement and future CEO compensation**

The empirical findings so far suggest that firms preemptively adjust CEO pay in the year they disclose pay restatements in anticipation of potential shifts in how the public views executive compensation due to the restatements. But are those pay adjustments permanent, or will firms reverse the pay changes once they are out of the spotlight? To answer this question, we examine the relation between pay restatement and future CEO compensation in one or two years subsequent to the year of pay restatement disclosure.

The results are presented in Table 10. The dependent variable is the natural logarithm value of CEO total pay one or two years after restatement year in the first four columns, and the annual change in total pay in the next four columns. For CEO total pay in the years following the year of pay restatement, the coefficients of *PayRestatement* in columns (1), (3), (5), and (7) are all insignificant. The findings suggest that on average, there is no reversal of pay policy over the next two years after firms adjust CEO pay in response to pay restatement. However, the coefficient of *SR\_Up* in columns (2) and (6) are positive and significant. This result suggests that CEOs receive a pay raise one year after their pay was initially cut in the year of pay restatement, which indicates a reversal in pay policy. Recall from our evidence in column (4) of Table 3 that CEOs in the *SR\_UP* group on average receive a pay cut of \$490,000 in the year of pay restatement. Table 10 column (6) shows that, one year after, the same CEOs receive on average a \$271,000 pay raise, which translates into a 55% reversal from the earlier pay cut. This significant reversal, however,

does not extend to next year (i.e., two years after the pay restatement) as the coefficients on the pay restatement variables are either marginally significant or insignificant in columns (4) and (8) of Table 10. In stark contrast with the *SR\_Up* group, the coefficient on *SR\_Down* is insignificant in all columns. The finding suggests that for firms that raise CEO pay in the restatement year, they do not reverse the pay raise granted in the pay restatement year in the subsequent two years.

Overall, the evidence suggests that when a CEO's past pay is restated upward, he/she takes a temporary pay cut that will be largely reversed in the subsequent year. But when a CEO's past pay is restated downward, he/she gets a permanent pay raise that will not be reversed in the future.

## **7. Conclusion**

Our paper takes advantage of a 2009 compensation disclosure rule, Proxy Disclosure Enhancements, that changes only the optics of executive compensation to study whether and how firms respond to potential shifts in public perception of executive pay. We find that the rule results in nearly 80% of firms restating their CEOs' past compensation. Firms appear to take preemptive measures to adjust both executive pay size and pay mix in the year of restatement disclosure in anticipation of shifts in how the public perceives their executive compensation. Specifically, firms cut their CEOs' total pay when the restated values of past pay are higher than the originally reported values. The reduction in total pay is mainly a result of cutting the CEOs' equity-based compensation. When firms restate past pay values downward, however, they are more likely to increase CEO total pay in the year of pay restatement.

Our findings support the idea that the observed adjustments in CEO pay are linked to firms' concerns about public attention to executive pay. When past pay is restated upward, higher-paid CEOs are more likely to experience significant pay cuts than lower-paid CEOs. Firms grant CEOs smaller pay raises in the presence of high institutional ownership. Moreover, in subsequent years when the rule no longer changes the optics of executive pay, firms partially reverse CEO pay cuts that were adopted in the restatement year. However, we do not observe a reversal of CEO pay raises in firms with downward pay restatements. Not consistent with an agency-based explanation, we do not find that powerful CEOs or firms

with weaker governance are less likely to experience pay cuts. These findings, combined with survey evidence that directors aim to steer clear of public controversy while designing executive pay, suggest that both the CEO and the board are aligned in their objective to avoid negative public perception on CEO pay.

Our findings highlight that how executive compensation is presented has a significant impact on pay design, especially when closely monitored pay information like CEO total pay is concerned. Our paper thus lends support for the SEC rule, demonstrating that rule-induced reporting changes can have real impact. Furthermore, our evidence underscores the need for more deliberations and research, not only regarding the context but also the presentation of material information in public disclosures.

## Appendix A. An example of executive compensation restatement under the Proxy Disclosure Enhancements rule

We use the compensation disclosure of Indra K. Nooyi, the CEO of PepsiCo Inc., to illustrate the restatement of past executive compensation under the 2009 disclosure enhancement rule. In Section A.1, we show how we obtain restatement information from 2008 and 2009 proxy filings. In Section A.2, we show how pay restatement values do not contain new information and can be found in 2007 and 2008 proxy filings.

### A.1. Pay restatement for Indra K. Nooyi.

We obtain Ms. Indra Nooyi's pay information for 2007 and 2008 from the summary compensation table in the proxy statement filed for fiscal year 2008 (Proxy filing date: 03/24/2009).<sup>11</sup>

#### PepsiCo Inc: 2008 Summary Compensation Table

Name	Year	Salary	Bonus	Stock Awards	Option Awards	Non-equity Incentive Long-term	Change in Pension Value and non-qualified Deferred compensation earnings	All other Comp.	Total
Nooyi	2008	1,300,000	--	3,965,714	3,900,695	2,600,000	1,409,032	206,594	13,382,035
	2007	1,300,000	--	3,231,973	2,829,423	3,200,000	825,085	92,215	11,478,696

In the footnote under the 2008 Summary Compensation Table, PepsiCo states that the reported stock and option values represent "compensation expense for financial statement reporting purposes". The grant date fair value of 2008 equity awards is reported "in the 2008 Grants of Plan-Based Awards table on page 42 of this Proxy Statement."

We obtain Ms. Nooyi's restated pay information for 2007 and 2008 from the summary compensation table in the proxy statement filed for fiscal year 2009 (Proxy filing date:03/23/2010).<sup>12</sup> We specify fiscal year 2009 as PepsiCo's restatement year.

#### PepsiCo Inc: 2009 Summary Compensation Table

Name	Year	Salary	Bonus	Stock Awards	Option Awards	Non-equity Incentive Long-term	Change in Pension Value and non-qualified Deferred compensation earnings	All other Comp.	Total
Nooyi	2009	1,300,000	--	6,000,024	3,676,980	3,000,000	1,590,743	200,603	15,768,350
	2008	1,300,000	--	6,428,538	4,382,569	2,600,000	1,409,032	206,594	16,326,733
	2007	1,300,000	--	4,928,560	4,904,026	3,200,000	825,085	92,215	15,249,886

As shown in the tables above, PepsiCo restated Ms. Nooyi's 2007 and 2008 equity and total pay upward. Her total pay in 2007 (2008) is restated upward from \$11,478,696 (\$13,382,035) to \$15,249,886

<sup>11</sup> 2008 Proxy filing: <https://www.sec.gov/Archives/edgar/data/77476/000119312509061982/ddef14a.htm>

<sup>12</sup> 2009 proxy filing: <https://www.sec.gov/Archives/edgar/data/77476/000119312510064516/ddef14a.htm>

(\$16,326,733). In total, the value of Ms. Nooyi's 2007 and 2008 compensation is revised up by \$ 6,715,888 under the new rule.

*A.2. Pay restatement information can be inferred from prior proxy statements.*

The restated grant date fair value (GDFV) of Nooyi's 2007 and 2008 equity pay can be obtained from the plan-based award table disclosed in proxy statements filed for fiscal year 2007 and 2008, respectively.

From the Grants of Plan-based Awards table in PepsiCo's 2007 proxy statement,<sup>13</sup> we can find the GDFV of Ms. Nooyi's stock and option awards granted in February 2007. After the rule change, these values are copied to PepsiCo's 2009 summary compensation table (shown Section A.1 in blue) because the 2009 rule requires firms to report the GDFVs of equity grants in the summary compensation table instead of the previously mandated accounting expense value (for details, see Appendix B).

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**PepsiCo Inc: 2007 Grants of Plan-Based Awards Table**

Name	Grant Date	Grant Date Fair Value of Stock and Option Awards
Nooyi	2/2/2007	4,928,560
	2/2/2007	4,904,026

Similarly, we can find the GDFV of Ms. Nooyi's stock and option awards granted in February 2008 from PepsiCo's 2008 proxy statement. After the rule change, these values are copied to PepsiCo's 2009 Summary Compensation Table (shown in Section A.1 in green).

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**PepsiCo Inc: 2008 Grants of Plan-Based Awards Table**

Name	Grant Date	Grant Date Fair Value of Stock and Option Awards
Nooyi	2/1/2008	6,428,538
	2/1/2008	4,382,569

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<sup>13</sup> 2007 Proxy filing: <https://www.sec.gov/Archives/edgar/data/77476/000119312508063332/ddef14a.htm>

## Appendix B. The Proxy Disclosure Enhancements rule and its impact on reported equity values

Starting from 2006, under FASB ASC Topic 718 (referred to as the “*Old Rule*” hereafter), the SEC required firms to report, in the Summary Compensation Table of annual proxy statements, the values of stock and option awards to executives as the accounting expense value recognized for financial statement purposes during the year.<sup>14</sup> Accordingly, the total compensation value reported in the Summary Compensation Table was based on the accounting expense value of equity awards.

In 2009, the SEC adopted the Proxy Disclosure Enhancements rule, which became effective for fiscal years ending after December 31, 2009 (referred to as the “*New Rule*” hereafter). The “*New Rule*” requires firms to report the grant date fair values (GDFVs) of executives’ stock and option grants granted in the fiscal year in the Summary Compensation Table, replacing the previously mandated accounting expense values. Additionally, firms are required to follow the “*New Rule*” to restate, in the same Summary Compensation Table, stock and option grant values as well as total compensation for the preceding two years. As a result, many firms significantly restated their prior executive pay in the Summary Compensation Table.

Several factors could influence how reported values of stock and option grants could differ between the new and old rules. Below we discuss a *non-exhaustive* list of situations where the “*New Rule*” would result in firms restating the values of executives’ equity awards in the Summary Compensation Table.

First, for stock or option grants with multi-year vesting period, firms usually expense the GDFVs of these grants across the vesting period under the “*Old Rule*”. Under the “*New Rule*”, firms only need to report the GDFVs of new equity grants during the fiscal year in the Summary Compensation Table. For example, firm A grants its CEO a three-year stock award annually in 2006, 2007, and 2008. From the Summary Compensation Table in firm A’s 2008 proxy filing, the reported value of the CEO’s stock award is calculated as one third of her 2006 stock award GDFV, one third of her 2007 stock award GDFV, and one third of her 2008 stock award GDFV.<sup>15</sup> In firm A’s 2009 proxy filing, following the “*New Rule*”, the CEO’s 2008 stock award value will be restated as 100% of her 2008 stock award GDFV in the Summary Compensation Table. Her 2008 total pay will be restated accordingly. Whether a firm restates its CEO’s 2008 pay upward or downward depends on the relative size of her stock awards in the current year and previous years and their specific vesting schedule.

Second, under the “*Old Rule*”, for stock or option grants with service conditions, firms may recognize a portion of the equity award value before the award is vested. This is due to the fact that the executive has already rendered services in exchange for the equity award, even though the entire service term has not yet been fulfilled. Under the “*New Rule*”, firms must recognize the GDFVs of equity awards in the grant year. Hence, a firm may restate past executive pay upward or downward based on how service-based equity awards were expensed in prior years.

Third, performance conditions attached to equity awards could also result in restatements of equity grant values. Under the “*Old Rule*”, firms may report negative equity value in Summary Compensation Table. This occurs when the value of equity awards forfeited by the executive during that year (e.g. due to not meeting performance conditions) exceeds the value of other grants recognized in the same year. For example, firm A granted its CEO a two-year accounting performance-based stock award in 2007. In 2007’s proxy statement, firm A report 50% of the GDFV of the award in the Summary Compensation Table. However, it is later decided that firm A cannot meet the performance conditions and thus, the CEO forfeited the award in 2008. In 2008 proxy statement, the firm report negative 50% GDFV of the 2007 award in the

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<sup>14</sup> FASB ASC Topic 718 is previously known as the Financial Accounting Standard 123R (FAS 123R).

<sup>15</sup> For equity grants that vest entirely on a single vesting date (cliff-vesting), firms allocate the grant value on straight-line bases. For equity grants that vest in tranches (graded-vesting), firms may allocate different amount each year based on the vesting schedule. For example, for a stock award with a grant date fair value of \$1,000 and vests half each year, the company expenses \$750 in year one ( $\$500 + \$500 \times 0.5$ ) and \$250 in year two.

Summary Compensation Table to reverse the compensation cost previously recognized.<sup>16</sup> Under the “*New Rule*”, firm A would restate 2008 CEO pay upward, as the negative 50% GDFV of the 2007 award will be removed from 2008 pay. Alternatively, if firm A meets the performance conditions in 2008, under the “*Old Rule*”, it would include the remaining 50% of the GDFV of the 2007 equity award value in the Summary Compensation Table in the 2008 proxy statement. Under the “*New Rule*”, firm A would record 100% of the GDFV of the 2007 equity award in 2007 proxy statement. Thus, the firm would restate 2007 CEO total pay upward and 2008 CEO total pay downward.

In sum, how firms restate past executive pay value is influenced by many factors. The vesting periods of past equity grants, the vesting schedules of the grants, the timing of the grants, the underlying performance measures (e.g. market conditions, internal performance measures, or service-based conditions), and the likelihood of the firm meeting performance requirements can all result in differences between the accounting expense value and the GDFVs of equity compensation. However, regardless of the reason for firms restating past pay, it is important to note that the restated amount and any resulting difference between the restated and prior values do not convey any new information. This is because such information can be inferred from the GDFVs already disclosed in prior proxy statements, as demonstrated by the example in Appendix A.

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<sup>16</sup> For equity awards with “market conditions” (e.g. stock price related performance hurdles), firms are not allowed to reverse compensation expense once it is recognized.

### Appendix C. Variable definitions

Variable	Definition	Source
PayRestatement	The aggregated level of equity pay restatements from preceding years scaled by the total assets in the year prior to restatement year. The equity restatement equals the recomputed equity awards minus the original equity awards.	Proxy statement
SR_Up	Indicator equals one if a firm's equity pay restatement is in the top tercile of our sample, and zero otherwise.	Proxy statement
SR_Down	Indicator equals one if a firm's equity pay restatement is in the bottom tercile of our sample, and zero otherwise.	Proxy statement
Ln(Total pay)	The natural logarithm of total annual pay as reported in Summary Compensation Table.	Proxy statement
$\Delta$ Total Pay	The total annual pay at the restatement year minus the total annual pay at the year immediately before disclosure. Both pays are collected from the Summary Compensation Table disclosed in the restatement year. Value in \$MM.	Proxy statement
Equity pay	The sum of the amounts shown in the stock awards and option awards columns in Summary Compensation Table	Proxy statement
Salary	Amounts shown in the salary column in Summary Compensation Table	Proxy statement
<del>Short term cash incentive</del>	<del>The sum of the bonus and non-equity annual incentive. Both bonus and non-equity annual incentive comes from the Summary Compensation Table</del>	<del>Proxy statement</del>
<del>Long term cash incentive</del>	<del>Amounts in non-equity long-term incentive column in summary compensation table</del>	<del>Proxy statement</del>
All cash pay	The sum of salary, short term cash incentive and long-term cash incentive. Short term cash incentive is the sum of the bonus and non-equity annual incentive and the long-term cash incentive is the sum of non-equity long-term incentive. All three items are reported in the Summary Compensation Table.	Proxy statement
Firm size	The value of book assets at the end of the fiscal year	Compustat
ROA	The ratio of operating income before interest, depreciation and tax to total assets	Compustat
Sale growth	The ratio of total revenue over the fiscal year to total revenue over the last fiscal year minus one	Compustat
Stock volatility	The annualized standard deviation of daily stock returns over the fiscal year. We require a firm-year to have at least 120 days to calculate the stock volatility.	Compustat
Tobin's q	The ratio of market value of assets to the book value of assets at the end of fiscal year. The market value of assets equals the book value of assets minus book	Compustat



	value of equity (sum(seq, txd, itcb,-pstkrv)) plus market value of equity (prcc_f × csho)	
TSR	The cumulative buy-and-hold stock return over the fiscal year	Compustat

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**Appendix C continued.**

Instl.BlockOwn	The ratio of the sum of all institutional blockholders' (ownership ≥ 5%) shares to total number of shares outstanding	Thomson financial 13 F
CEO duality	Indicator equals one if the CEO is also the chairman of the board, and zero otherwise	Execucomp
CEO age	The age of CEO at the end of fiscal year	Execucomp
Independent director ratio	The ratio of the number of independent board directors to the total number of board directors	ISS Directors

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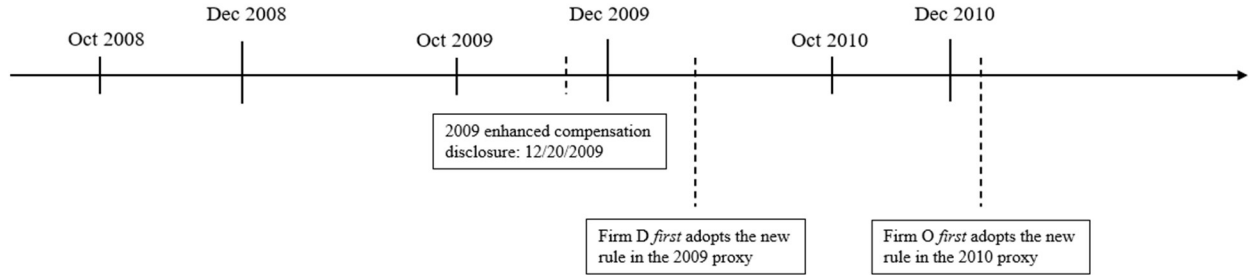
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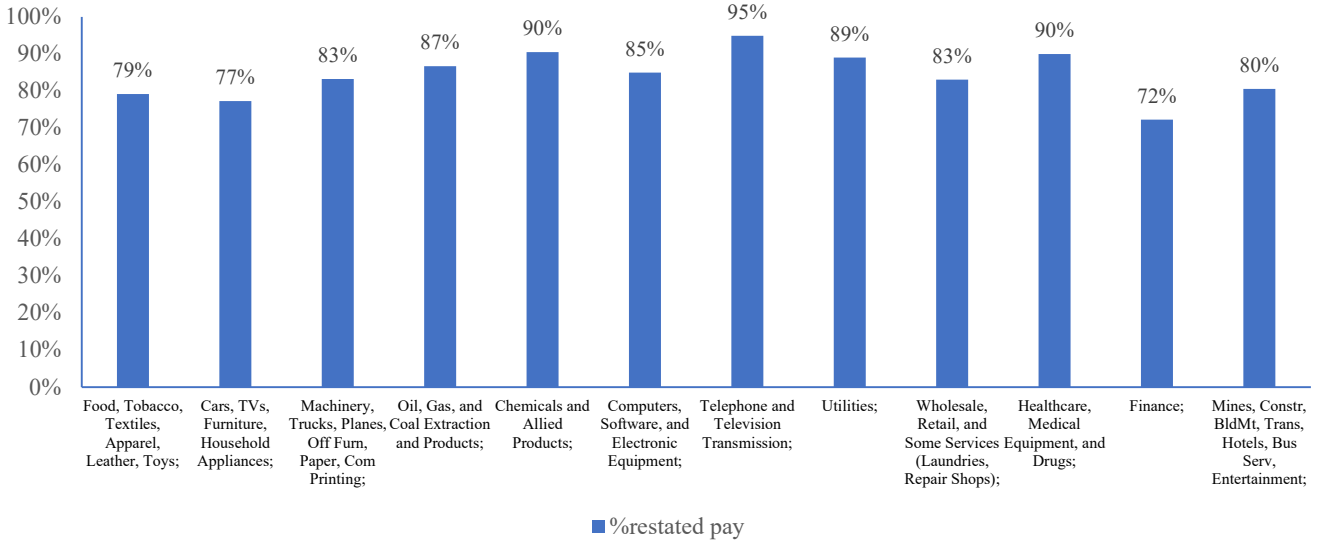
**Figure 1. Examples of different time windows to adopt the Proxy Disclosure Enhancement Rule**

This figure shows the time windows for two firms with different fiscal year-end dates to adopt the new disclosure. One firm has December 31 as the fiscal year end date (we name it firm D), and the other has October 31 as the fiscal year end date (we name it firm O). The 2009 enhanced rule becomes effective for fiscal years ending on or after December 20, 2009. The introduction date, December 20, 2009, leads Firm D to adopt the new disclosure in its 2009 fiscal year with the corresponding proxy statement filed in March 2010 (denoted as 2009 proxy in the figure), while Firm O waits to adopt the new disclosure in its 2010 fiscal year with its corresponding proxy statement filed in Jan 2011 (denoted as 2010 proxy in the figure).



**Figure 2. The distribution of pay restatements across industries**

This figure presents the distribution of compensation restatements across Fama French 12 industries. %Restated pay is the percentage of firms that have restated prior CEO compensation due to the Proxy Disclosure Enhancement rule in each industry.



**Table 1. Sample construction**

Panel A presents information on the sample construction and the impact of data filters on the initial sample of U.S. public firms with valid CEO compensation data for at least one year before and after the Proxy Disclosure Enhancement rule. Panel B provides the summary statistics of pay information for the 2,255 firms with pay restatement. *PayRestatement* is the aggregated level of equity restatements from all preceding years scaled by the total assets in the year prior to the year of restatement disclosure, expressed in percentage points. *Equity restatement* equals the aggregated level of equity restatements from all preceding years. Each preceding year's equity restatement is computed as the restated equity awards value disclosed in the Summary Compensation Table of the proxy statement filed for the year of restatement minus the original equity awards value disclosed in the Summary Compensation Table of the proxy statement filed in the preceding year. *Salary*, *Short-term cash incentive*, and *Long cash incentive restatements* are all calculated in the same way as *Equity restatement* using the respective compensation component values. Short-term cash incentive equals the sum of bonus and non-equity annual awards. Variable definitions are in Appendix C. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

## Panel A. Sample construction

Years in 2009 and 2010	
Total number of unique firms	2,758
# Unique firms with compensation restatement	2,255
# Unique firms with compensation restatement in 2009	1,866
# Unique firms with compensation restatement in 2010	389
# Unique firms without compensation restatement	503
Total number of firm year observations	3,485

## Panel B. Summary statistics of pay restatement

	Obs.	Mean	Std	P10	P25	Median	P75	P90
Equity restatement (\$000)	2,255	743.955	3,169.656	-1,222.393	-156.462	175.801	1,169.384	3,544.270
Salary restatement (\$000)	2,255	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Short-term cash incentive restatement (\$000)	2,255	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Long-term cash incentive restatement (\$000)	2,255	0.011	0.079	0.000	0.000	0.000	0.000	0.000
PayRestatement (%)	2,255	0.111	0.435	-0.114	-0.011	0.013	0.120	0.413

**Table 2. Summary statistics and the correlation matrix of regression variables**

Panel A provides the summary statistics of pay information and firm/CEO characteristics of the 3,485 regression sample. Panel B provides the correlation matrix between pay restatement variables and firm characteristics measured in the year immediately prior to the year of restatement disclosure. *PayRestatement* is the aggregated level of equity restatements from all preceding years scaled by the total assets in the year prior to the year of restatement disclosure. Variable definitions are in Appendix B.

Panel A. Summary statistics

	Obs.	Mean	Std	P25	Median	P75
Total pay (\$000)	3,485	3,077.014	3,910.700	619.569	1,499.377	3,898.598
Equity pay (\$000)	3,485	1,374.685	2,256.517	0.000	395.593	1,647.022
All cash pay (\$000)	3,485	1,257.246	1,267.694	430.850	800.000	1,604.591
Firm size (\$million)	3,485	4,968.023	14,462.000	217.821	773.067	2,733.547
ROA	3,485	0.085	0.137	0.019	0.087	0.150
Sale growth	3,485	-0.014	0.281	-0.153	-0.034	0.077
Stock volatility	3,485	0.738	0.279	0.543	0.696	0.882
Tobin's q	3,485	1.556	0.964	0.988	1.200	1.739
TSR	3,485	0.386	0.784	-0.068	0.202	0.605
Instl.BlockOwn	3,485	0.175	0.144	0.060	0.152	0.264

Panel B. Correlation matrix between pay restatement variables and firm characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) PayRestatement	1.000									
(2) SR_Up	0.564***	1.000								
(3) SR_Down	-0.354***	-0.369***	1.000							
(4) Firm size <sub>t-1</sub>	-0.026	-0.063***	-0.019	1.000						
(5) ROA <sub>t-1</sub>	-0.057***	-0.025	-0.040**	-0.022	1.000					
(6) Sale growth <sub>t-1</sub>	0.082***	0.077***	-0.044**	-0.050***	0.146***	1.000				
(7) Stock volatility <sub>t-1</sub>	0.106***	0.140***	-0.008	-0.094***	-0.207***	0.067***	1.000			
(8) Tobin's q <sub>t-1</sub>	0.195***	0.181***	-0.029	-0.033*	0.138***	0.190***	0.092***	1.000		
(9) TSR <sub>t-1</sub>	-0.063***	-0.056***	0.017	-0.030	0.127***	0.029	0.168***	0.351***	1.000	
(10) Instl.BlockOwn <sub>t-1</sub>	0.056***	0.171***	0.027	-0.089***	0.024	0.001	0.054***	-0.007	-0.070***	1.000

**Table 3. Pay restatement and CEO total pay**

This table presents baseline regression results for the relation between the restatement of prior years' total compensation and the annual total CEO pay in the restatement year. In columns (1) and (2), the dependent variable is the natural logarithm of total annual pay in the restatement year. In columns (3) and (4), the dependent variable is the difference in total pay between the restatement year and the year prior. We have two sets of interest independent variables. *PayRestatement* is the aggregated value of compensation restatement for preceding years scaled by the total assets in the year prior to the restatement year. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in both the year of restatement disclosure and the year prior. All regressions include year dummies and industry dummies based on the Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Total pay)		$\Delta$ Total Pay	
	(1)	(2)	(3)	(4)
PayRestatement	-0.271*** (0.061)		-0.682*** (0.159)	
SR_Up		-0.151*** (0.022)		-0.490*** (0.092)
SR_Down		0.132*** (0.022)		0.482*** (0.131)
Ln(Total pay) <sub>t-1</sub>	0.684*** (0.027)	0.678*** (0.029)		
Total pay <sub>t-1</sub>			-0.321*** (0.033)	-0.322*** (0.033)
Ln(Firm size)	0.277*** (0.073)	0.270*** (0.071)	0.537*** (0.158)	0.519*** (0.159)
ROA	0.434* (0.220)	0.461** (0.222)	0.790 (0.506)	0.853* (0.504)
Sale growth	0.088* (0.046)	0.087* (0.047)	0.333** (0.150)	0.348** (0.154)
Stock volatility	-0.118*** (0.037)	-0.129*** (0.037)	-0.379*** (0.099)	-0.404*** (0.096)
Tobin's q	0.063** (0.030)	0.060* (0.031)	0.189** (0.077)	0.174** (0.073)
TSR	0.063** (0.027)	0.059** (0.027)	0.094 (0.072)	0.083 (0.070)
Ln(Firm size) <sub>t-1</sub>	-0.134* (0.079)	-0.126 (0.078)	-0.074 (0.163)	-0.065 (0.161)
ROA <sub>t-1</sub>	-0.374* (0.199)	-0.346* (0.197)	-0.722 (0.556)	-0.631 (0.543)
Sale growth <sub>t-1</sub>	-0.037 (0.044)	-0.034 (0.043)	-0.124 (0.138)	-0.108 (0.139)
Stock volatility <sub>t-1</sub>	0.028 (0.058)	0.029 (0.055)	-0.164 (0.186)	-0.142 (0.190)
Tobin's q <sub>t-1</sub>	-0.039 (0.028)	-0.047 (0.030)	-0.104 (0.086)	-0.112 (0.086)
TSR <sub>t-1</sub>	0.061** (0.026)	0.068** (0.026)	0.062 (0.091)	0.065 (0.089)
Instl.BlockOwn <sub>t-1</sub>	0.168** (0.073)	0.182** (0.076)	-0.913*** (0.283)	-0.863*** (0.283)
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes
Obs.	3,485	3,485	3,485	3,485
Adj-R <sup>2</sup>	0.82	0.82	0.28	0.29



**Table 4. Pay restatement and CEO total pay: The analysis for performance subsamples**

This table presents the regression estimation results for the relation between pay restatement and CEO total pay in performance subsamples. We split our sample into two groups based on the median value of TSR or ROA from the year prior to the restatement year. TSR is the cumulative buy-and-hold stock return over the fiscal year. ROA is the ratio of operating income before interest, depreciation, and tax to total assets. Panel A reports the subsample analysis of CEO pay based on TSR. Panel B reports the subsample analysis of CEO pay based on ROA. In columns (1) to (4), the dependent variable is the natural logarithm of CEO total annual pay in the restatement year. In columns (5) and (8), the dependent variable is the difference in total pay between the restatement year and the year prior. The odd (even) columns present results in the subsample if the past performance is below (above) the median. We have two sets of key independent variables. *PayRestatement* is the aggregated value of compensation restatement scaled by the total assets in the year prior to the restatement year. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in the year of restatement disclosure and one year prior. All regressions include year dummies and industry dummies based on the Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Subsamples based on stock performance (TSR)

	Ln(Total pay)				Δ Total Pay			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Below	Above	Below	Above	Below	Above	Below	Above
Performance Group:								
PayRestatement	-0.179*** (0.056)	-0.499*** (0.092)			-0.474*** (0.136)	-1.178*** (0.225)		
SR_Up			-0.172*** (0.029)	-0.122*** (0.037)			-0.461*** (0.122)	-0.513*** (0.143)
SR_Down			0.129*** (0.028)	0.120*** (0.028)			0.428** (0.178)	0.464*** (0.149)
Ln(Total pay) <sub>t-1</sub>	0.604*** (0.027)	0.762*** (0.035)	0.612*** (0.027)	0.736*** (0.041)				
Total pay <sub>t-1</sub>					-0.404*** (0.043)	-0.252*** (0.035)	-0.400*** (0.041)	-0.261*** (0.036)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,720	1,765	1,720	1,765	1,720	1,765	1,720	1,765
Adj-R <sup>2</sup>	0.79	0.85	0.80	0.84	0.35	0.24	0.36	0.24

(continued.)

**Table 4 continued.**

Panel B. Subsamples based on operating performance (ROA)

	Ln(Total pay)				ΔTotal Pay			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Performance Group:	Below	Above	Below	Above	Below	Above	Below	Above
PayRestatement	-0.164** (0.062)	-0.422*** (0.081)			-0.416** (0.160)	-1.143*** (0.181)		
SR_Up			-0.111*** (0.031)	-0.174*** (0.031)			-0.359*** (0.133)	-0.601*** (0.126)
SR_Down			0.112*** (0.028)	0.158*** (0.034)			0.283** (0.128)	0.678*** (0.192)
Ln(Total pay) <sub>t-1</sub>	0.575*** (0.036)	0.759*** (0.034)	0.573*** (0.035)	0.746*** (0.038)				
Total Pay <sub>t-1</sub>					-0.388*** (0.050)	-0.289*** (0.040)	-0.387*** (0.048)	-0.296*** (0.039)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,722	1,763	1,722	1,763	1,722	1,763	1,722	1,763
Adj-R <sup>2</sup>	0.79	0.84	0.79	0.84	0.34	0.26	0.34	0.27

**Table 5. Pay restatement and CEO total pay: additional governance controls**

This table presents regression results for the relation between pay restatements and CEO total pay after controlling for CEO power and board independence. In columns (1) and (2), the dependent variable is the natural logarithm of total annual pay in the restatement year. In columns (3) and (4), the dependent variable is the difference in total pay between the restatement year and the year prior. We have two sets of key independent variables. *PayRestatement* is the aggregated value of compensation restatement scaled by the total assets in the disclosure year. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in both the restatement year and the year prior. All regressions include year dummies and industry dummies based on the Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Total pay)		$\Delta$ Total Pay	
	(1)	(2)	(3)	(4)
PayRestatement	-0.416*** (0.106)		-1.027*** (0.265)	
SR_Up		-0.158*** (0.035)		-0.412*** (0.138)
SR_Down		0.131*** (0.030)		0.685*** (0.167)
Ln(Total pay) <sub>t-1</sub>	0.649*** (0.039)	0.636*** (0.041)		
Total pay <sub>t-1</sub>			-0.361*** (0.041)	-0.366*** (0.040)
CEO duality	0.047* (0.024)	0.047** (0.023)	0.134 (0.118)	0.121 (0.116)
CEO age	-0.002 (0.002)	-0.003 (0.002)	-0.002 (0.008)	-0.005 (0.008)
Independent director ratio	0.059 (0.052)	0.075 (0.052)	-0.079 (0.247)	-0.042 (0.244)
Control variables	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes
Obs.	1,858	1,858	1,858	1,858
Adj-R2	0.72	0.71	0.31	0.32

**Table 6. Pay restatement and CEO total pay: The Difference-in-differences analysis**

This table uses a difference-in-differences analysis to examine the relation between pay restatement and CEO total pay using data from 2008 and 2009. In columns (1) and (2), the dependent variable is the natural logarithm of total annual pay in the restatement year. In columns (3) and (4), the dependent variable is the difference in total pay between the restatement year and the year prior. We have two sets of key independent variables. *PayRestatement* is the aggregated value of compensation restatement scaled by the total assets in the year prior to the restatement year. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. *Post* equals one if the fiscal year is 2009, and zero if the fiscal year is 2008. We control firm characteristics from both the restatement year and the year prior. All regressions include year and industry dummies based on the Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Total pay)		$\Delta$ Total Pay	
	(1)	(2)	(3)	(4)
Post $\times$ PayRestatement	-0.211*** (0.059)		-0.575*** (0.157)	
Post $\times$ SR_Up		-0.184*** (0.024)		-0.551*** (0.102)
Post $\times$ SR_Down		0.124*** (0.025)		0.489*** (0.154)
Post	0.014 (0.025)	0.014 (0.023)	0.207** (0.083)	0.187*** (0.070)
Ln(Total pay) <sub>t-1</sub>	0.676*** (0.026)	0.679*** (0.026)		
Total Pay <sub>t-1</sub>			-0.323*** (0.023)	-0.321*** (0.023)
Control variables	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes
Obs.	4,959	4,959	4,959	4,959
Adj-R <sup>2</sup>	0.83	0.83	0.28	0.29

**Table 7. Pay restatement and CEO equity vs. cash pay**

The table presents regression results for the relation between pay restatements and CEO equity or cash pay in the restatement year. In columns (1) and (2), the dependent variable is the natural logarithm of equity pay in the restatement year, defined as the sum of stock and options. In columns (3) and (4), the dependent variable is the natural logarithm of all cash pay in the restatement year, defined as the sum of the salary, short-term cash incentive, and long cash incentive pay. We have two sets of key independent variables. *PayRestatement* is the aggregated value of compensation restatement scaled by total assets in the year prior to the year of restatement. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in both the restatement year and the year prior. All regressions include year dummies and industry dummies based on the Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Equity pay)		Ln(All cash pay)	
	(1)	(2)	(3)	(4)
PayRestatement	-1.154*** (0.386)		-0.034 (0.091)	
SR_Up		-0.492** (0.200)		0.083* (0.047)
SR_Down		0.783*** (0.239)		0.040 (0.028)
Ln(Equity pay) <sub>t-1</sub>	0.522*** (0.024)	0.521*** (0.024)		
Ln(All cash pay) <sub>t-1</sub>			0.700*** (0.063)	0.699*** (0.063)
Control variables	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes
Obs.	3,485	3,485	3,485	3,485
Adj-R <sup>2</sup>	0.45	0.45	0.69	0.69

**Table 8. Pay restatement and the total pay for non-CEO executives**

The table presents regression results for the relation between pay restatements and non-CEO executive total pay in the restatement year. In columns (1) and (2), the dependent variable is the natural logarithm of total annual pay in the restatement year. In columns (3) and (4), the dependent variable is the difference in total pay between the restatement year and the year prior. *PayRestatement* is the aggregated value of compensation restatement for the executive scaled by the total assets in the year prior to the restatement year. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in both the restatement year and the year prior. All regressions include year dummies and industry dummies based on Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Total pay)		$\Delta$ Total Pay	
	(1)	(2)	(3)	(4)
PayRestatement	-0.269*** (0.067)		-0.442*** (0.086)	
SR_Up		-0.055*** (0.015)		-0.103*** (0.028)
SR_Down		0.057*** (0.012)		0.098*** (0.026)
Ln(Total pay) <sub>t-1</sub>	0.676*** (0.023)	0.675*** (0.023)		
Total pay <sub>t-1</sub>			-0.271*** (0.021)	-0.272*** (0.020)
Firm control variables	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes
Obs.	10,734	10,734	10,734	10,734
Adj-R <sup>2</sup>	0.82	0.82	0.22	0.22

**Table 9. Pay restatement and CEO total pay: Subsample analyses**

The table presents regression results from subsample analysis of the relation between pay restatements and CEO total pay in the restatement year. In Panel A, the subsamples are classified based on the median CEO total compensation in the year prior to the SEC rule change. Panel B presents the subsamples based on the median value of institutional blockholder ownership. Panel C presents subsample based on CEO duality. CEO duality is one if the CEO is also the chairman of the board, and zero otherwise. Panel D presents subsamples based on the sample median of the ratio of independent directors in the board. The dependent variable is the natural logarithm of total pay in the restatement year in columns (1) to (4), and the difference in total pay between the restatement year and the year prior in columns (5) to (8). We have two sets of key independent variables. *PayRestatement* is the aggregated value of compensation restatement scaled by the total assets in the year prior to the restatement year. *SR\_Up* equals one if *PayRestatement* is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if *PayRestatement* is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in both the restatement year and the year prior. All regressions include year dummies and industry dummies based on the two-digit SIC codes. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

Panel A. Subsample analysis based on prior CEO total pay

CEO total pay <sub>t-1</sub> :	<u>Ln(Total pay)</u>				<u>ΔTotal Pay</u>			
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
PayRestatement	-0.335*** (0.072)	-0.118** (0.058)			-0.735*** (0.250)	-0.161*** (0.058)		
SR_Up			-0.184*** (0.024)	-0.041 (0.028)			-0.503*** (0.122)	-0.025 (0.033)
SR_Down			0.128*** (0.031)	0.124*** (0.038)			0.675*** (0.201)	0.206*** (0.065)
Ln(Total pay) <sub>t-1</sub>	0.554*** (0.029)	0.724*** (0.040)	0.530*** (0.034)	0.720*** (0.043)				
Total pay <sub>t-1</sub>					-0.391*** (0.045)	-0.219*** (0.075)	-0.392*** (0.043)	-0.234*** (0.080)
<u>Test if the coefficient of the pay revision variable is equal between the above and below groups:</u>								
<i>P</i> -value:	0.00		0.00 (for SR_Up) 0.95 (for SR_Down)		0.01		0.00 (for SR_Up) 0.02 (for SR_Down)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,742	1,743	1,742	1,743	1,742	1,743	1,742	1,743
Adj-R <sup>2</sup>	0.64	0.57	0.64	0.58	0.34	0.13	0.35	0.14

(continued.)

**Table 9 continued.**

**Panel B. Subsample analysis based on institutional block ownership**

Instl.BlockOwn <sub>t-1</sub> :	Ln(Total pay)				ΔTotal Pay			
	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
PayRestatement	-0.295*** (0.084)	-0.229*** (0.064)			-0.704*** (0.204)	-0.598*** (0.172)		
SR_Up			-0.175*** (0.025)	-0.111** (0.044)			-0.498*** (0.087)	-0.483*** (0.119)
SR_Down			0.089** (0.034)	0.187*** (0.039)			0.266** (0.117)	0.719*** (0.239)
Ln(Total pay) <sub>t-1</sub>	0.629*** (0.045)	0.736*** (0.030)	0.626*** (0.046)	0.726*** (0.028)				
Total pay <sub>t-1</sub>					-0.359*** (0.065)	-0.295*** (0.037)	-0.361*** (0.063)	-0.296*** (0.037)
<u>Test if the coefficient of the pay revision variable is equal between the above and below groups:</u>								
P-value:	0.48		0.19 (for SR_Up) 0.06 (for SR_Down)		0.59		0.90 (for SR_Up) 0.04 (for SR_Down)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,742	1,743	1,742	1,743	1,742	1,743	1,742	1,743
Adj-R <sup>2</sup>	0.73	0.86	0.73	0.87	0.33	0.24	0.33	0.26

**Panel C. Subsample analysis based on CEO duality**

CEO duality <sub>t-1</sub> :	Ln(Total pay)				ΔTotal Pay			
	=1 (1)	=0 (2)	=1 (3)	=0 (4)	=1 (5)	=0 (6)	=1 (7)	=0 (8)
PayRestatement	-0.471*** (0.154)	-0.347** (0.129)			-1.216*** (0.331)	-0.785** (0.339)		
SR_Up			-0.120*** (0.038)	-0.169*** (0.061)			-0.358* (0.198)	-0.307** (0.151)
SR_Down			0.136*** (0.032)	0.132** (0.055)			0.761*** (0.199)	0.711*** (0.223)

(continued)



**Table 9 continued**

Ln(Total pay) <sub>t-1</sub>	0.659*** (0.049)	0.637*** (0.069)	0.640*** (0.050)	0.630*** (0.072)				
Total pay <sub>t-1</sub>					-0.371*** (0.044)	-0.387*** (0.085)	-0.381*** (0.041)	-0.387*** (0.084)
<u>Test if the coefficient of the pay revision variable is equal between the above and below groups:</u>								
<i>P</i> -value:	0.52		0.51 (for SR_Up) 0.94 (for SR_Down)		0.24		0.82 (for SR_Up) 0.83 (for SR_Down)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	1,026	847	1,026	847	1,026	847	1,026	847
Adj-R <sup>2</sup>	0.74	0.66	0.73	0.66	0.33	0.29	0.34	0.30
<b>Panel D. Subsample analysis based on the ratio of independent directors</b>								
	Ln(Total pay)				ΔTotal Pay			
Independent director ratio <sub>t-1</sub> :	Above (1)	Below (2)	Above (3)	Below (4)	Above (5)	Below (6)	Above (7)	Below (8)
PayRestatement	-0.447*** (0.067)	-0.422*** (0.130)			-1.098*** (0.353)	-1.117*** (0.335)		
SR_Up			-0.142*** (0.044)	-0.201*** (0.054)			-0.343* (0.200)	-0.545*** (0.195)
SR_Down			0.091*** (0.028)	0.133*** (0.049)			0.639*** (0.220)	0.594*** (0.220)
Ln(Total pay) <sub>t-1</sub>	0.653*** (0.059)	0.637*** (0.051)	0.640*** (0.060)	0.625*** (0.056)				
Total pay <sub>t-1</sub>					-0.437*** (0.032)	-0.267*** (0.058)	-0.443*** (0.031)	-0.270*** (0.057)
<u>Test if the coefficient of the pay revision variable is equal between the above and below groups:</u>								
<i>P</i> -value:	0.86		0.38 (for SR_Up) 0.43 (for SR_Down)		0.97		0.49 (for SR_Up) 0.86 (for SR_Down)	
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	914	933	914	933	914	933	914	933
Adj-R <sup>2</sup>	0.71	0.68	0.71	0.68	0.41	0.22	0.41	0.23

**Table 10. Pay restatement and future CEO pay**

This table presents the regression results of the relation between pay restatement and future pay in one year and two years after the restatement year. In columns (1) to (2), the dependent variable is the natural logarithm of total pay one year after the restatement year. In columns (3) to (4), the dependent variable is the natural logarithm of total pay two years after the restatement year. In columns (5) to (6), the dependent variable is the annual difference in CEO total pay between the year after the restatement year and the restatement year. In columns (7) to (8), the dependent variable is the annual difference in CEO total pay between the second year after the restatement year and one year after the restatement year. *PayRestatement* is the aggregated value of compensation restatements scaled by the total assets in the year prior to the restatement year. *SR\_Up* equals one if total pay restatement is ranked within the top tercile, and zero otherwise. *SR\_Down* equals one if total pay restatement is ranked within the bottom tercile, and zero otherwise. We control firm characteristics in both the year of the dependent variable is measured and one year prior. All regressions include year dummies and industry dummies based on the Fama French 48-industry classification. Variable definitions are in Appendix C. Heteroscedasticity-robust t-statistic clustered by firms are reported in parentheses. \*, \*\*, and \*\*\* indicate significance at the 10%, 5%, and 1% levels, respectively.

	Ln(Total pay)				$\Delta$ Total Pay			
	One year after		Two years after		One year after		Two years after	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PayRestatement	0.063 (0.040)		0.026 (0.044)		0.147 (0.092)		0.004 (0.183)	
SR_Up		0.130*** (0.032)		0.088* (0.046)		0.271** (0.126)		0.121 (0.192)
SR_Down		0.004 (0.027)		0.058 (0.046)		-0.086 (0.152)		0.169 (0.141)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ind. and yr. fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	2,100	2,100	1,667	1,667	2,100	2,100	1,667	1,667
Adj-R <sup>2</sup>	0.81	0.81	0.79	0.79	0.11	0.11	0.11	0.11