Uncertainty in Managers' Reporting Objectives and Investors' Response to Earnings Reports: Evidence from the 2006 Executive Compensation Disclosures

Fabrizio Ferri*
Columbia University
ff2270@gsb.columbia.edu

Ronghuo Zheng
The University of Texas at Austin
Ronghuo.Zheng@mccombs.utexas.edu

Yuan Zou
Columbia University
yzou19@gsb.columbia.edu

Abstract

We examine whether the information content of the earnings report, as captured by the earnings response coefficient (ERC), increases when investors' uncertainty about the manager's reporting objectives decreases, as predicted in Fischer and Verrecchia (2000). We use the 2006 mandatory compensation disclosures as an instrument to capture a decrease in investors' uncertainty about managers' incentives and reporting objectives. Employing a difference-in-differences design and exploiting the staggered adoption of the new rules, we find a statistically and economically significant increase in ERC for treated firms relative to control firms, largely driven by profit firms. Cross-sectional tests suggest that the effect is more pronounced in subsets of firms most affected by the new rules. Our findings represent the first empirical evidence of a role of compensation disclosures in enhancing the information content of financial reports.

JEL Classification: G38, G30, G34, M41
Keywords: earnings response coefficient (ERC), compensation disclosures, SEC rules

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*Corresponding Author: Columbia Business School, Columbia University, Uris Hall 618, 3022 Broadway, New York, NY 10027, phone: (212) 854-0425. We would like to thank Charles Angelucci, Paul Fischer, Pingyang Gao, Brandon Gipper, Lawrence Glosten, Jonathan Glover, Rachel Hayes, Alon Kalay, Mark Maffett, Stephen Penman, Phil Stocken, Joshua Ronen, Abbie Smith, Cong Wang, Frank Yu, Yong Yu, Amir Ziv, workshop participants at the University of Chicago Booth School of Business, Columbia University, University of Miami, China Europe International Business School, Emory University, Harvard Business School and conference participants at the Fourth Annual Conference on Financial Market Regulation at the Securities and Exchange Commission, the 2017 Tillburg Accounting Spring Camp and the 2017 Conference on the Convergence of Financial and Managerial Accounting Research for useful comments. Yuan is thankful for financial support from the Asenath Marie and Duncan Merriwether Doctoral Fellowship. We also thank John Robinson, Yanfeng Xue and Yong Yu for sharing the list of firms receiving SEC comment letters.

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Abstract

We examine whether the information content of the earnings report, as captured by the earnings response coefficient (ERC), increases when investors' uncertainty about the manager's reporting objectives decreases, as predicted in Fischer and Verrecchia (2000). We use the 2006 mandatory compensation disclosures as an instrument to capture a decrease in investors' uncertainty about managers' incentives and reporting objectives. Employing a difference-in-differences design and exploiting the staggered adoption of the new rules, we find a statistically and economically significant increase in ERC for treated firms relative to control firms, largely driven by profit firms. Cross-sectional tests suggest that the effect is more pronounced in subsets of firms most affected by the new rules. Our findings represent the first empirical evidence of a role of compensation disclosures in enhancing the information content of financial reports.

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1 Introduction

We empirically examine whether the information content of the earnings report, as captured by the earnings response coefficient, increases when investors' uncertainty about the manager's reporting objectives decreases. The intuition behind this hypothesis is formalized by Fischer and Verrecchia (2000). In their model, the manager's reporting bias (arising from a variety of incentives) can reduce the information content of the earnings report, with the effect increasing in the degree of investors' uncertainty about her reporting objectives. This is because such uncertainty prevents investors from perfectly adjusting for the bias the manager adds to the report. Thus, the manager's biasing activity adds noise to the financial report. An implication of the model is that the information content of the earnings report should increase as investors' uncertainty about the manager's reporting objectives is reduced.

To examine this hypothesis we use the executive pay disclosures mandated by the Securities and Exchange Commission (SEC) in 2006 as an instrument to the change in investors' uncertainty about the manager's reporting objectives. In doing so, we make three assumptions. First, the manager's compensation incentives are an important driver of her reporting objectives.[1] Second, the 2006 disclosures substantially increased the quality of information relevant to investors' assessment of how managers' compensation incentives may affect their reporting objectives. One example in support of this assumption is the dramatic increase in disclosures of absolute and relative performance targets in cash and equity compensation plans after 2006 – one of the requirements of the new rules (see Fig. 1 and 2, based on Gipper 2016). Third, investors use the information in compensation disclosures to understand the manager's reporting objectives.[2] Given the evidence on the role of compensation motives in reporting

[1] This assumption is rooted in a long line of research linking reporting choices to CEO cash and equity compensation incentives (for a review, see Murphy 2013). Survey evidence indicates that 88.62% of financial executives believe that executive pay affects firms' (mis)reporting choices (Dichev, Graham and Rajgopal 2013).

[2] The first part of this assumption, i.e. that investors use compensation disclosures, is relatively uncontroversial (see Larcker, Sheehan and Tayan 2016 for survey evidence). Ertimur, Ferri and Muslu (2011) document a dramatic increase in compensation-related activism after the 2006 rules. The new disclosures are routinely used as the basis for say on pay votes

choices (Murphy 2013), it seems natural that investors would try to understand such motives.[3] Anecdotal evidence based on a forensic firm's report to its clients suggests that sophisticated institutional investors care about the potential effect of compensation-driven incentives on reported numbers (Appendix 1).

Under these assumptions, the information content of the manager's financial report, as captured by the earnings response coefficient, increases as a result of a decrease in investors' uncertainty about the manager's reporting objectives caused by enhanced disclosure of the manager's compensation incentives under the 2006 rules (hereinafter 'CD&A rules').[4]

Our identification strategy exploits the staggered nature of the adoption of the CD&A rules. Because the rules were effective for fiscal years ending on or after December 15, 2006, the timing of their adoption depended on the firm's fiscal year end, which (by and large) is exogenously (pre)determined. Following Gipper (2016), we use December fiscal year-end firms as the treatment sample, as these firms were the first to be subject to the new rules. In contrast, we use firms with a September, October and November fiscal year-end as the control sample, as these firms were the last to comply with the new rules. This approach allows us to maximize the length of the overlapping period where some firms (the treated sample) were subject to the rule and some (the control sample) were not. Using this approach, we employ a difference-in-differences research design comparing the change in investors' response to quarterly earnings releases (the earnings response coefficient, ERC) of treatment and control firms from the year prior to December 15, 2006 (when no firm was affected) to the subsequent year, during which treated firms were affected but control firms were not (yet). Because

(Ertimur, Ferri and Oesch 2013). Besides, after the mandatory expensing of stock options in 2005 (FAS123R), investors need to examine compensation disclosures in order to get a better understanding of future compensation expense.

[3] Indirect support for the assumption is also in Wei and Yermack (2011), who document that bond and equity prices respond to the 2006 compensation disclosures regarding managers' inside debt, consistent with investors using such disclosures to infer managers' risk-taking incentives. We are assuming that investors also use them to infer reporting objectives.

[4] Because our analysis is based on the joint hypothesis that (i) a reduction in investors' uncertainty about the manager's reporting objectives increases the information content of earnings reports and (ii) the three assumptions above hold, a no-result could have several explanations.

firms with different fiscal year ends may have different characteristics we use entropy balancing, a quasi-matching technique which re-weights control observations to ensure covariate balance between treatment and control firms. Unlike standard matching procedures, entropy balancing preserves the size of the control sample, which is important in studies with significant imbalance between the size of treatment and control samples (most firms have a December fiscal-year end).

Consistent with our hypothesis, we find a statistically and economically significant increase in ERC for treatment firms relative to control firms of 0.925, corresponding to about a 20% increase over the pre-CD&A level of 4.571. As a benchmark, Wilson (2008) finds a 20% decrease in ERC after a restatement, Chen et al. (2014) document a 56% decrease in ERC after a *material* restatement, and Gipper et al. (2016) report a 57% increase in ERC around the introduction of the PCAOB inspection regime.

Additional tests indicate that the increase in ERC is driven by profit firms. Among loss firms, the change in ERC does not differ between treatment and control sample. This is consistent with prior evidence that ERCs are significantly attenuated for loss firms (Hayn 1995). It also suggests that enhanced compensation disclosures have limited usefulness in reducing investors' uncertainty about the manager's reporting objectives at loss firms, perhaps because these firms, rather than linking manager's pay to formulaic financial targets, tend to use subjective evaluation and non-financial metrics (Gibbs, Merchant, Van der Stede and Vargus 2004; Matejka, Merchant and Van der Stede 2005). Also, when we account for differential market response to extreme unexpected earnings, we find that treated firms experienced a relative decrease in the degree to which extreme surprises reduce the ERC. That is, better disclosures of compensation incentives appear to reduce the "discount" investors attach to large earnings surprises.

Our results are robust to extending the event window (i.e. including 2005 in the pre-CD&A period), expanding the control sample (i.e. adding firms with a fiscal year end between June and August) and various design choices (alternative clustering, winsorizations, etc.). In a placebo test, we find no differential change in ERC between treatment and control firms between 2005 and 2006 (instead of 2006 and 2007), providing indirect support for the parallel trend assumption underlying our design.

A series of cross-sectional tests indicate that the increase in ERC is driven by firms that most improved the quality of their compensation disclosures (and thus experienced greater reduction in investors' uncertainty about the manager's reporting objectives), i.e. firms that did not receive a SEC comment letter criticizing such disclosures, firms disclosing CFO pay information for the first time and firms with higher excess CEO pay (a proxy for greater pressure to improve pay disclosures).

The interpretation of all the above results relies on a maintained assumption that other parameters potentially affecting the ERC did not change differentially for treatment and control firms around the introduction of the CD&A rules.[5] In Section 6 we examine this possibility and conclude that these parameters were either unaffected by the CD&A rules or, if affected, they would bias against our hypothesis (i.e. they would predict a decrease, rather than an increase, in ERC).

Our study is the first to link investors' uncertainty about the manager's reporting objectives to the information content of earnings reports, a question highlighted in theoretical work (Fischer and Verrecchia 2000) but neglected in the empirical literature.[6] It is also the first to highlight a potential role of compensation disclosures in improving the usefulness of financial reports to investors. By doing so, we contribute to a long line of research on the determinants of ERC (see Kothari 2001 for a review). While most of this research has focused on the association between ERC and firm characteristics, recent studies have begun to examine changes in ERC around exogenous shocks to the regulatory and information environment. For example, Gipper et al. (2015) document an increase in ERC around the

[5] In the Fischer and Verrecchia (2000) framework an increase in ERC (which we attribute to a decrease in uncertainty about the manager's reporting objectives) can also result from an increase in prior uncertainty on firm value, an increase in the marginal cost of adding bias to the earnings report, or an increase in the inherent earnings quality (see Section 2.1).

[6] Other empirical studies (e.g. Bird, Karolyi, Ruchti and Sudbury 2015; Fang, Huang and Wang 2017; Stein and Wang 2016) rely on the Fischer and Verrecchia (2000) model or variations of the model, but they do not focus on the role of investors' uncertainty about the manager's reporting objectives.

introduction of the PCAOB and its inspection regime, consistent with the regulatory change causing an increase in financial reporting credibility. In a similar vein, Wilson (2008) and Chen et al. (2014) find a decrease in ERC in firms with restatements, viewed as a negative shock to reporting credibility. Our study adds to this line of research by examining the impact of a regulatory change to compensation disclosures on ERC. This type of evidence is important because the market response to unexpected earnings releases remains relatively weak (i.e. the ERC is fairly low; Kothari 2001). In this respect, an implication of our study is that policy makers can increase the information content of financial reports not only by improving their credibility (via disclosure of higher-quality financial information and greater public oversight), but also by reducing investors' uncertainty about managers' reporting objectives (for example via better disclosures of compensation incentives).

Our findings also contribute to the literature examining the impact of executive pay disclosures, and, especially, the 2006 CD&A rules. Most of these studies focus on the effect on executive pay practices (e.g. compensation peer benchmarking, Faulkender and Yang 2013; level of CEO pay, Gipper 2016; use of perks, Grinstein, Wenbaum and Nehuda 2011; use of compensation consultants, Sandino and Murphy 2010; compensation practices at acquiring firms, Wang, Wang and Mangerin 2014). In contrast, we highlight the effect on investors' understanding of managers' reporting incentives and, as a result, on the information content of earnings reports. In a similar vein, Bloomfield (2016) also uses the CD&A rules as a shock to compensation contracts' observability. He finds that revenue-based compensation is more prevalent in CEO pay packages when the benefits of committing to aggressive product market behavior are greater, but only after the CD&A rules, consistent with theoretical predictions that this approach to commitment is only effective if the manager's pay contract is observable and credible to rivals.

Section 2 provides theoretical and regulatory backgrounds. Section 3 describes the research design. Section 4 reports the main results, followed by cross-sectional tests in Section 5. Section 6 discusses additional analyses and alternative explanations for our findings, and Section 7 concludes.

2 Backgrounds

2.1 Theoretical Background

Fischer and Verrecchia (2000) analytically show that the information content of the manager's earnings report is decreasing in the market's uncertainty about the manager's reporting objectives.

To illustrate the intuition behind this result, consider a firm whose true value is unknown ex ante. The prior distribution of firm value $\tilde{v} \sim N(\mu_v, \sigma_v^2)$ is common knowledge.[7] The manager privately observes the earnings $\tilde{e} = \tilde{v} + \tilde{n}$, $\tilde{n} \sim N(0, \sigma_n^2)$, which is a noisy signal of the firm value v. The manager then decides the earnings report r. The manager's bias in the report is denoted by $b \equiv r - e$. By adding bias to the report, the manager bears a private cost $C(b) = \frac{c}{2} b^2$. After observing the report, investors form a conditional expectation of firm value, which determines the market price of the firm, denoted by $P(r) = E[\tilde{v}|r]$. The manager's objective is to maximize the value of $\tilde{x}P(r)$ net of the cost of biasing the report. The term $\tilde{x}P(r)$ represents the manager's benefit from obtaining a certain price as a result of biasing the report, for example, due to the structure of her compensation. Note that x can be positive or negative. For example, the manager may prefer higher earnings and thus a higher price because of his annual bonus (Healy 1985) and equity-based pay (Cheng and Warfield 2005; Bergstresser and Philippon 2006; Bizjak et al. 2015), or may prefer lower earnings and thus a lower price because of an expected grant of new stock options (Aboody and Kasznik 1998; Balsam et al. 2003; McAnally et al. 2008).

[7] In Fischer and Verrecchia (2000) the prior distribution of firm value is $\tilde{v} \sim N(0, \sigma_v^2)$. Assuming a non-zero mean, i.e. $\tilde{v} \sim N(\mu_v, \sigma_v^2)$, allows us to explicitly obtain the price function expressed in terms of price *change* and unexpected earnings (rather than price *level* and earnings), which literally fits our returns-earnings surprise empirical framework.

The manager observes the realization x, while investors only know the prior distribution $\tilde{x} \sim N(\mu_x, \sigma_x^2)$. In our setting, this is equivalent to assuming that only the manager knows precisely the details of his or her compensation plan and how they affect reporting objectives. Investors have only limited information about the compensation plan. Hence, σ_x^2 captures investors' uncertainty about the manager's reporting objectives. Under this scenario, Fischer and Verrecchia (2000) show that in equilibrium the manager chooses bias $b^* = \beta \frac{x}{c}$ (resulting in an earnings report $r^* = e + \beta \frac{x}{c}$), and the market price of the firm is: $P(r^*) = \mu_v + \beta \left(r^* - \left(\mu_v + \frac{\beta \mu_x}{c} \right) \right)$, where β is determined by $\beta = \frac{\sigma_v^2}{\sigma_v^2 + \sigma_n^2 + (\frac{\beta}{c})^2 \sigma_x^2}$.

If there is no uncertainty about the manager's reporting objectives (i.e. $\tilde{x} = \mu_x$ is common knowledge, and thus $\sigma_x^2 = 0$), then $\beta = \frac{\sigma_v^2}{\sigma_v^2 + \sigma_n^2}$. That is, β only depends on the precision of the earnings report as a signal of firm value (i.e. $\frac{1}{\sigma_n^2}$) and the precision of the prior on the firm value (i.e. $\frac{1}{\sigma_v^2}$), but does not depend on x (even though in equilibrium the manager does add bias to the report; Stein 1989). Intuitively, because there is no uncertainty about the manager's reporting objectives, the market is able to correctly conjecture that there is a certain amount of reporting bias and back out the "true" earnings. Hence, the reporting bias does not add noise to the report and does not reduce its information content (i.e. β). In contrast, if $\sigma_x^2 > 0$, β also depends on σ_x^2. Because of the uncertainty about $\tilde{x}$, the market is unable to perfectly adjust for the bias the manager adds to the report. As a result, the market's ability to infer the true earnings from the reported earnings is weakened, resulting in an inverse relation between β and σ_x^2.[8]

[8] If $\sigma_x^2 > 0$ (as in Fischer and Verrecchia 2000), the precision of the earnings report as a signal of the firm value declines because the signal contains not only the endowed measurement noise $\tilde{n}$ but also the reporting noise $\frac{\beta}{c}(\tilde{x} - \mu_x)$ (whose variance is $(\frac{\beta}{c})^2 \sigma_x^2$). Similar predictions have been obtained with additional or alternative model features including earnings-based compensation (Ewert and Wagenhofer 2005), investor speculation (Fischer and Stocken 2004), and voluntary disclosure (Einhorn 2007).

As we proceed to empirically test the relation between β and σ_x^2, it is useful to make three observations. First, to see why β in essence captures the earnings response coefficient (ERC), the market price function can be reorganized as: $P(r^*) - \mu_v = \beta\big(r^* - (\mu_v + b^*)\big)$, where $P(r^*) - \mu_v = P(r^*) - E[P(r^*)]$ represents the price change after earnings announcement, and $r^* - (\mu_v + b^*) = r^* - E[r^*]$ represents the earnings surprise. That is, to the extent that the stock price prior to the earnings announcement proxies for the expected price as a result of reported earnings, $E[P(r^*)]$, and that analysts' consensus forecasts proxy for expected reported earnings, $E[r^*]$, then empirically β is the coefficient in a regression of earnings announcement returns on earnings surprise (scaled by price), i.e. the ERC.

Second, Fischer and Verrecchia (2000) mentions compensation incentives as an examples of reporting objectives, but it does not explicitly model the role of compensation disclosures. However, adjusting the model to make compensation disclosure a source of reduction of σ_x^2 is fairly simple.[9]

Finally, as the ERC is determined by $\beta = \frac{\sigma_v^2}{\sigma_v^2 + \sigma_n^2 + (\frac{\beta}{c})^2 \sigma_x^2}$, an increase in ERC can result from an increase in σ_v^2 or c, and a decrease in σ_n^2, rather than from a decrease in σ_x^2. The intuition is as follows: if prior uncertainty on firm value increases, then investors will put more weight on the earnings report signal, resulting in higher ERC; if the marginal cost of adding bias to the earnings report increases, then managers' biasing activity and thus the associated noise in the earnings report will decline, resulting in higher ERC; finally, if the inherent earnings quality increases, investors will put more weight on the earnings report signal, resulting in higher ERC. Initially, our maintained assumption is that these parameters are not affected by the new disclosures. In Section 6.1 we will examine the implications of relaxing this assumption.

[9] Let us assume the prior distribution is $\tilde{x} \sim N(\mu_0, \sigma_0^2)$, and compensation disclosure, s, serves as a noisy signal of the manager's reporting objectives, that is, $s = \tilde{x} + \tilde{\epsilon}$, where $\tilde{\epsilon} \sim N(0, \sigma_s^2)$. Then, the posterior distribution is $\tilde{x}|s \sim N(\mu_{x|s}, \sigma_{x|s}^2)$, where $\mu_{x|s} = \frac{\sigma_s^2 \mu_0 + \sigma_0^2 s}{\sigma_s^2 + \sigma_0^2}$, $\sigma_{x|s}^2 = \frac{\sigma_s^2 \sigma_0^2}{\sigma_s^2 + \sigma_0^2}$. Improved compensation disclosures can be captured by a lower σ_s^2, which results in a lower $\sigma_{x|s}^2$ and, thus, a higher equilibrium β or ERC.

2.2 Regulatory Background: the 2006 CD&A rules

On January 27, 2006, the SEC proposed revisions to the executive pay disclosure rules introduced in 1992. The objective was to design a disclosure framework that would reflect the significant changes to compensation practices since 1992 (e.g. increase in equity awards, more complex performance-based plans) and allow investors to better understand and monitor CEO compensation and its relation to performance. After receiving a record number of over 20,000 comment letters, the SEC released the final rules in August 2006, effective for fiscal years ending on or after December 15, 2006.

The new rules were far-reaching in scope, requiring "dramatically different disclosures" (McGuireWoods 2007).[10] The centerpiece is a new "Compensation Discussion and Analysis" (CD&A) section (to be filed with the proxy statement and certified by CEO and CFO). The CD&A is meant to be a narrative, in-depth description of the objectives and terms of executive compensation programs, complementing the tabular disclosures in the same way the MD&A section of a 10-K filing complements the financial statements. Especially relevant to our study, firms must disclose more details about performance metrics used (including their weight, when multiple metrics are used, and their exact definition) and performance targets (including the time over which they need to be achieved and the payouts triggered by their achievement) for any type of incentive plan (cash, equity, short-term, long-term, etc.).[11] Fig.1 and Fig.2 (based on Gipper 2016) highlight the impact of the new rules on the frequency of disclosure of absolute and relative performance targets in cash and equity incentive plans.

The CD&A section must also include forward-looking information (i.e. new plans adopted after

[10] In this section we focus on the provisions most relevant to our research question. The CD&A rules also modified disclosures regarding the use of compensation consultants, related party transactions, director independence and other corporate governance matters. The final rules are available at: https://www.sec.gov/rules/final/2006/33-8732a.pdf.

[11] Firms are allowed not to disclose performance targets if disclosure would result in competitive harm to the company. The 1992 rules had a similar provision, but the standard for non-disclosure under the 2006 rules is much tighter (it is the "Freedom of Information Act" standard that a company needs to satisfy when it requests confidential treatment of trade secrets or commercial or financial information that would otherwise be disclosed in documents filed with the SEC). The large increase in disclosures of performance targets (see Fig.1 and Fig.2) confirms it became more difficult to justify non-disclosure. Also, under the 2006 rules, if performance targets are not disclosed, the firm must explain how difficult it is to achieve the targets.

the end of the fiscal year) and explain the firm's policy regarding the timing of option grants (a provision included in response to the option backdating scandal). As a result, investors will know if the firm has a policy to grant options at the same time each year (or contingent upon the same event), which may affect their interpretation of earnings reports preceding and following the scheduled grant date.

The second important change involves tabular disclosures.[12] A new table ("Outstanding equity awards at fiscal year-end") requires detailed information on each tranche of equity holdings, including their vesting schedule. Combined with the requirement on performance metrics and targets, this means that at any point in time an investor knows which equity awards are about to vest (and when), the performance criteria (if any) triggering vesting and the potential payout. Finally, the CD&A rules expand the requirements for timely disclosures via 8-K filings of compensation arrangements made during the year, further augmenting the information set available to investors.

To sum up, under the CD&A rules, at any point in time (e.g. before an earnings release) investors have substantially more precise information about the compensation consequences of reported performance to the manager, and thus, we argue, about her reporting objectives.

3 Research Design and Sample Description

3.1 Research design

Our identification strategy exploits the staggered adoption of the CD&A rules. Because the rules were effective for fiscal years (FY) ending on or after December 15, 2006, the timing of their adoption depended on the firm's fiscal year end. Following Gipper (2016), we use December FY-end firms as the treatment sample, as these firms were the first to be subject to the new rules. In contrast, we use firms with a September, October and November FY-end as the control sample, as these firms were the last to

[12] The CD&A rules mandate disclosure of the dollar value of equity grants and a "total compensation" figure (not required under the 1992 rules) in the Summary Compensation Table. They also mandate new tabular and narrative disclosures of post-employment contracts (pensions, severance and change-in-control payments), new tabular disclosure of director compensation and greater disclosures about perks.

comply with the new rules.[13] This approach allows us to maximize the length of the overlapping period where some firms (the treated sample) were subject to the rule and some (the control sample) were not (yet). Thus, we can examine how investors' response to quarterly earnings releases changed for treatment versus control firms from the year prior to December 15, 2006 (when no firm was affected) to the subsequent year, when treated firms were affected but control firms were not (yet).[14]

In particular, we adopt the following difference-in-differences design using data from FY 2006 and 2007 for treatment and control firms defined as above:

$$\begin{aligned} CAR_{i,t} = {} & \beta_0 + \beta_1 UE_{i,t} * POST_{i,t} * TREAT_{i,t} + \beta_2 UE_{i,t} + \beta_3 TREAT_{i,t} + \beta_4 POST_{i,t} \\ & + \beta_5 TREAT_{i,t} * POST_{i,t} + \beta_6 UE_{i,t} * POST_{i,t} + \beta_7 UE_{i,t} * TREAT_{i,t} \\ & + \beta_m Controls + \beta_n UE_{i,t} * Controls + \varepsilon_{i,t}. \end{aligned} \tag{1}$$

$CAR_{i,t}$ is the 3-day market-adjusted stock return around the date of quarterly earnings announcements. $UE_{i,t}$ is the unexpected earnings, which is calculated as the difference between the actual quarterly EPS and the most recent median analyst forecast scaled by stock price two days prior to the earnings announcement. $TREAT_{i,t}$ is an indicator variable which equals one if firm *i* has December FY-end, and zero if firm has a September, October or November FY-end. $POST_{i,t}$ is an indicator variable which equals one if quarter *t* is in FY 2007, and zero if quarter *t* is in FY 2006 (see Figure 3 for a timeline).[15] We focus only on 2006 and 2007 to keep the window as tight as possible and reduce the risk

[13] To the extent that some control firms decided to adopt the CD&A rules "early", the power of our tests may be reduced. We checked a random sample of 50 firms and found only one such case.

[14] Because we are able to compare quarterly ERCs for treatment and control firms over *overlapping* periods, our specification naturally takes into account any time effect: for each quarterly earnings release by a treatment firm we have a quarterly earnings release by control firms in the adjacent months (or even weeks). Using annual ERCs would result in measuring the ERC for treatment firms and control firms at a systematically different time (with the treatment firms being measured later). This is especially a problem because the ERC for fiscal year 2007 for treatment firms would be measured in 2008 (at the onset of the financial crisis) and may be systematically different because of its timing, rather than because of the effect of the CD&A rules. Also, to keep a tight window, a test using annual ERC would be essentially based only on two observations (fiscal year 2006 and fiscal year 2007), further increasing the risk of spurious inferences.

[15] The first quarter of FY 2007 for December FY-end firms is included in the Post period as long as the proxy statement is filed before the first-quarter earnings release and, thus, investors are aware of the new compensation information before the earnings release. We remove 414 observations (about 3% of the original sample) where this condition is not met.

of capturing the effect of earlier events (e.g. the PCAOB inspection regime, FAS123R) or subsequent ones (e.g. the 2008 financial crisis).[16] Our main variable of interest is β_1, the coefficient of $UE_{i,t} * POST_{i,t} * TREAT_{i,t}$, which captures the change in ERCs for treated firms relative to control firms from the Pre (FY 2006) to the Post (FY 2007) CD&A period.

Following the literature on ERCs (e.g. Collins and Kothari 1989; Easton and Zmijeswki 1989; Gipper et al. 2015), we include several control variables and their interaction with *UE* (see Appendix 2 for details): firm size (*Size*), market-to-book ratio (*Market-to-Book*), beta (*Beta*), leverage (*Leverage*), earnings persistence (*Persistence*), a loss indicator (*Loss*) and analysts' forecast dispersion (*Dispersion*).[17] We also include industry fixed effects (using Fama-French 12 industries) and fiscal year-quarter fixed effects and their interactions with *UE*, to control for differences in investors' reaction to earnings reports in different fiscal quarters (particularly the fourth quarter) and across different industries.

To mitigate concerns about outliers (especially for *UE*, Kothari 2001), we employ a weighted-least squares "robust" regression, which places less weights on observations with large absolute residuals (e.g. Gipper et al. 2015; Leone, Minutti-Meza and Wasley 2015). To account for cross-sectional dependencies among firms announcing on the same day, we report standard errors clustered by earnings announcement dates (DellaVigna and Pollet 2009; Hirshleifer et al. 2009). Doing so has the added benefit

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[16] Avoiding the effect of the financial crisis is also one reason why we do not perform a similar difference-in-differences study around the adoption of the CD&A rules by September-November FY-end firms in late 2007. Another reason is that the December FY-end firms continued to improve their disclosures in the second year under the CD&A rules (see Fig. 1 and 2), partly in response to SEC comment letters issued after the first year and urging for better compliance with the new rules (Robinson et al. 2011). In other words, during the second year arguably both sets of firms receive some 'treatment' (see Gipper (2016) for a similar argument).

[17] In unreported tests we add an indicator for "bundled" earnings releases (i.e. earnings releases bundled with a management forecast; Anilowski, Feng and Skinner 2007; Rogers and Van Buskirk 2013) and its interaction with *UE*, to account for the possibility that the ERC differs when a concurrent management forecast is released. However, the interaction term is not significant and our coefficient of interest (*UE*POST*TREAT*) is unaffected. Also, we include cumulative market-adjusted returns from the most recent analyst forecast date in I/B/E/S to two days prior to the earnings announcement, to control for any new information arriving between the last analyst report and the earnings announcement. Our inferences are unchanged.

of resulting in a large number of clusters and more consistent standard errors (Petersen 2009). Our inferences are similar when we cluster by week, month or quarter (untabulated).

Note that our difference-in-differences design is well suited to overcome measurement errors in the control variables. This is especially relevant for UE, the unexpected earnings. Analysts' forecasts are known to be an imperfect proxy for investors' expectations, because analysts do not rationally incorporate all information in their forecasts and are subject to non-random biases (Bradshaw 2011; Brown et al. 2014). The resulting measurement error will bias downward the ERC (Kothari 2001). However, as long as the degree to which analysts' forecasts proxy for investors' expectations does not change differentially for treatment and control firms around the CD&A rules, in a difference-in-differences design these shortcomings will not affect the estimate of the *change* in ERC (Gipper et al. 2015). This assumption seems generally plausible,[18] with one exception: the CD&A rules provided both analysts and investors with more precise information potentially useful in adjusting for the manager's reporting bias at treatment firms. If analysts only partially incorporated such new information in their forecasts, then their forecasts may have become a worse proxy for investors' expectations at treatment firms in the Post period (i.e. the measurement error in UE may have increased for these firms). If so, our estimate of the relative change in ERC for treatment firms would be biased downward, making it more difficult to detect the hypothesized increase in ERC.

3.2 Parallel trend assumption

The key identifying assumption for the consistency of the difference-in-differences estimator is the parallel trends assumption: in the absence of treatment (the CD&A rules) treated and control firms should experience parallel *trends* in the outcome variable (ERC). While the assumption is not directly

[18] We are not aware of any evidence suggesting a change in analysts' non-random biases during our relatively tight window around the CD&A. Even if such a change took place, it is difficult to imagine that it differentially affected treatment and control firms (which differ based on fiscal year end dates).

testable (since the trend in ERC absent the 2006 CD&A rules is not observable), similar to other studies we examine the trends in ERC *prior* to the event of interest (Roberts and Whited 2013). For this purpose, we re-run regression equation (1) but starting from FY 2004 (we start in 2004 to avoid the potential confounding effect of earlier regulations, e.g. Sarbanes-Oxley). That is, we include two additional indicators to capture FY 2004 and FY 2005 (interacted with the relevant variables, similar to the indicator *POST* for the FY 2007). Then, for each FY between 2004 and 2007 we plot the average quarterly ERCs for treatment and control firms estimated from such regression. As shown in Figure 4, there is no indication of a different trend in ERCs prior to the CD&A rules.[19] We also run a placebo test using a pseudo-event date of December 2005 (i.e. with FY 2005 and 2006, respectively, as Pre and Post periods), finding no evidence of a differential change in ERC for treatment firms relative to control firms (the coefficient of *UE*POST*TREAT* is negative and insignificant; untabulated). Based on this evidence the parallel trends assumption seems reasonable in our setting.

3.3 Sample selection, descriptive statistics and entropy balancing

Our sample includes all U.S. firms with the required data available on Compustat, CRSP and I/B/E/S for FY 2006 and 2007 (each firm must have at least one quarter of data in both FY 2006 and FY 2007). We exclude any earnings release occurring in calendar year 2008 to avoid the effect of the financial crisis (we will return to this issue in the robustness tests section). We exclude foreign private issuers (FPIs), since they are exempted from the CD&A rules.[20] We winsorize continuous variables at

[19] Treatment firms exhibit lower ERCs in the Pre period. However, differences in the *level* of ERCs do not violate the parallel trend assumption, which pertains to the *trend* in the outcome variable.

[20] We considered using FPIs as a control sample. However, FPIs were subject to the Sarbanes-Oxley Act Section 404 (effectiveness of internal controls) and prior studies document an increase in ERCs in response to Section 404 disclosure (Chen, Krishnan, Sami and Zhou 2013). Section 404 became effective at different points in time between 2006 and 2007 for different types of FPIs ("non-accelerated filers", "accelerated filers", "large accelerated filers"; for details, see pp. 224-226 from http://www.gibsondunn.com/publications/Documents/Kelley-Sarbanes-OxleyActForeignPrivateIssuers.pdf). Hence, it is difficult to identify a subset of FPIs that could serve as a proper control sample during our sample period. Also, FPIs were not required to do quarterly reporting (though many did), raising selection issues. However, we will use FPIs for a placebo test described in Section 4.3.

2% and 98% level, and delete firms with prices lower than $3 in order to mitigate market microstructure concerns when calculating stock returns. Using Compustat data we define a firm as treated if it has a December FY-end and as a control if its FY ends between September and November. We drop all other firms. The resulting final sample includes 14,509 firm-quarters (2,765 distinct firms). Treatment (control) observations represent 88% (12%) of the sample. Such imbalance is common in studies where the regulation of interest applies to all firms and identification of the control samples relies on its staggered adoption based on FY-ends, since the vast majority of firms uses a December FY-end. For example, control firms represent about 10% of the sample in Gipper (2016), and 13% in Ladika and Sautner (2016).

Table 1 reports summary statistics for the main variables. The descriptive statistics for the full sample are generally similar to other studies using Compustat firms (Panel A). Prior studies document that the choice of FY end is associated with industry factors, business seasonality and peer effects (Fried and Sinha 2008; Smith and Pourciau 1988), raising concerns that by sorting based on FY ends we are selecting on firm/industry characteristics perhaps related to changes in ERC over our sample period. We analyze such characteristics for treatment and control firms in Panel B and C. Prior to the CDA& rules, treatment firms have higher leverage and market-to-book ratios, lower beta, and slightly higher dispersion in analysts' forecasts and frequency of losses (Panel B). Most industries are present in both samples but some industries are more frequent in the treatment group (e.g. Banking) and some more frequent in the control group (e.g. Electronic Equipment) (Panel C). While we partially control for these differences in our regressions by including firm characteristics (including industry membership) and their interactions with *UE*, the above evidence calls for tighter matching between treatment and control firms. Since the control observations represent only 12% of our sample, using traditional propensity score matching would greatly reduce the sample size and thus the power of our test. Instead, we use entropy balancing, a technique which preserves sample size and is often used in studies where treatment and control groups are unbalanced (Chapman, Miller and White 2017; Shroff, Verdi and Yost 2017).

Entropy balancing is a quasi-matching approach which re-weights each control observation so that post-weighting distributional properties of matched variables of treatment and control observations are virtually identical, thereby ensuring covariate balance (Hainmueller 2012; McMullin and Schonberger 2015). As a first step, entropy balancing requires to select the distributional properties of interest (we focus on mean and variance) and the 'matching' variables (we choose firm size, market-to-book, beta, leverage, earnings persistence, loss indicator, analyst forecasts' dispersion and industry indicators). Next, the algorithm proceeds by first assigning possible weights (above or below one) to control observations, and then testing whether the 'balance' conditions have been met, i.e., whether the chosen distributional properties of treatment and post-weighted control observations for the matched variables are identical. The algorithm repeats this process over multiple iterations until a set of weights for control observations are found such that the balance conditions are met. Table 2 shows the distributional properties of treatment and control firms in our sample before and after this process. The weights assigned to each control observation at the end of this iteration procedure are then used in the regression analysis.

For our main analyses we present the findings both without matching and using entropy balancing. Given the importance of closely 'matching' treatment and control firms, we rely on the entropy balancing results when discussing the economic magnitude of the effects and in the subsequent robustness and cross-sectional tests.

4 Empirical Results

4.1 Changes in ERC around the CD&A Rules

Our main analysis relies on a difference-in-differences design comparing the change in ERC around the 2006 CD&A rules for firms who are immediately subject to the rules (December FY-end firms) and firms who are not subject to them until a later date (September-November FY-end firms). To do so, we estimate regression equation (1). Table 3 reports the result, using un-weighted control observations in Panel A and re-weighted control observations (using the entropy balancing technique) in Panel B.

To facilitate comparisons with prior studies, we first present a 'pooled' regression for FY 2006 and FY 2007, without the indicator variables denoting the Post period and the treatment sample, and without industry and fiscal year-quarter fixed effects. The estimated ERC in the pooled sample ranges between 3.129 (using ordinary least squares, Column 1) and 3.924 (robust regression, Column 2), generally in line with prior literature (Kothari 2001). The coefficients on the interactions of control variables with UE are also in line with prior research: losses are associated with lower ERC (*UE*Loss*) (Hayn 1995; Basu 1997); larger firms and higher-leverage firms have significantly lower ERC (*UE*Size*, *UE*Leverage*) (Collins and Kothari 1989); growth firms have higher ERC (*UE*Market-to-Book*) (Easton and Zmijewski 1989); firms with greater earnings persistence have higher ERC (*UE*Persistence*) (Easton and Zmijewski 1989); firms with greater analysts' forecast dispersion have lower ERC (*UE*Dispersion*) (Imhoff and Lobo 1992). All the coefficients are significant except *UE*Persistence*.

In Column (3) we include only the indicator variables for the Post period (*POST*) and for the treatment sample (*TREAT*) and their interactions with each other and with *UE*, and add industry and fiscal year-quarter fixed effects (and their interactions with *UE*), without including firm characteristics and their interactions with *UE*. The coefficient on the variable of interest, *UE*POST*TREAT*, is positive and significant at the 1% level, in both Panel A (1.157) and Panel B (1.419).

Next, in Column (4) we present the full model corresponding to Equation (1). The coefficient on *UE*POST*TREAT* is again positive at 0.648 in Panel A (p-value=0.077) and at 0.925 in Panel B (p-value=0.012). These results suggest a greater relative increase of ERC for treated firms after the introduction of the CD&A rules.

4.1.1 Change in ERC for loss firms and for extreme earnings surprises

Next, we extend our analysis to account for two critical properties of ERCs – namely, that ERCs are lower for accounting losses and for extreme values of *UE*. In particular, in Column (5), we add the interaction variables *UE*Loss*POST*, *UE*Loss*TREAT* and *UE*Loss*POST*TREAT*, to allow for the market reaction to earnings surprise for loss firms to differ between Pre and Post period and between treatment and control firms, as well as to change differently for treatment and control firms around the CD&A rules (the *UE*Loss*POST*TREAT* term). In both Panel A and B, the coefficient of *UE*POST*TREAT* (capturing the change in ERC in case of profits for treatment firms relative to control firms) is much larger than in Column (4). In contrast, the coefficient on *UE*Loss*POST*TREAT* is negative and significant, with a magnitude similar to the positive coefficient on *UE*POST*TREAT*. The net effect is close to zero and statistically not significant (untabulated). In other words, the relative increase in ERC for treatment firms is driven by firms with positive earnings, while there is no change in ERC for firms with losses, suggesting that enhanced information about managers' compensation-driven reporting incentives has limited usefulness for these firms. This is consistent with the notion that losses are transitory and earnings releases for loss firms contain less information, as evidenced by a low ERC (Hayn 1995; Lawrence, Sloan and Sun 2014). In a similar vein, Gipper et al. (2015) find that the increase in ERC around the introduction of the PCAOB inspection regime is concentrated among firms reporting profits. Our result is also consistent with evidence that firms operating at a loss, rather than linking manager's pay to formulaic financial targets, tend to use subjective evaluation and non-financial metrics (Gibbs et al. 2004; Matejka et al. 2005). Thus, for loss firms the CD&A rules are likely to be less effective at reducing investors' uncertainty about the manager's reporting objectives.

Next, in Column (6), to account for differential market response to extreme unexpected earnings, we add the nonlinear term *UE**|UE|* (*Nonlinear*) as well as the interaction variables *Nonlinear*POST*, *Nonlinear*TREAT* and *Nonlinear*POST*TREAT*. The coefficient on *UE*POST*TREAT* remains positive and significant. Consistent with prior literature documenting that extreme unexpected earnings are less persistent and thus are associated with lower ERCs (Freeman and Tse 1992), the coefficient on *Nonlinear* is negative and significant. Interestingly, we find a positive and significant coefficient on the interaction variable *Nonlinear*POST*TREAT*, indicating that firms affected by the CD&A rules experienced a relative decrease in the degree to which extreme surprises reduce the ERC. With some caution, this finding suggests that a better understanding of management reporting objectives (via enhanced compensation disclosures) substantially reduces the "discount" that investors attach to large unexpected earnings surprises. Indirectly, it also implies that uncertainty about reporting objectives may be one of the reasons for lower ERCs in case of extreme unexpected earnings.

4.2 Interpreting the economic magnitude

In terms of economic magnitude, an increase of 0.925 (the coefficient of *UE*POST*TREAT* from Column 4 in the entropy balance regression of Panel B) corresponds to about a 20% increase over the ERC level in the Pre period for treatment firms, estimated at 4.57.[21] As a benchmark, Chen et al. (2014)

[21] The estimated average quarterly ERC for treatment firms is 4.57 in the Pre period and 4.67 in the Post period, versus 5.74 in the Pre period and 4.92 in the Post period for control firms, resulting in a difference-in-differences of about 0.92. To obtain these figures, one needs to consider not only the coefficients of *UE*, *UE*POST*, *UE*TREAT*, *UE*POST*TREAT* but also the coefficients of the interaction terms between fixed effects (industry, fiscal year-quarter) and *UE* (details are available upon request). Also, these figures are not directly comparable to Figure 4 because Figure 4 is based on a pooled regression over the FY 2004-2007 period (rather than FY 2006-2007). Finally, if we use the coefficient from Column 4 of Table 3, Panel A,

report a decrease of about 1.8 in the average quarterly ERC after a *material* restatement (presumably a large shock to reporting credibility), representing a 56% decrease from an initial ERC of about 3.3. Wilson (2008) reports an ERC decrease of about 1.2 after (*any*) restatement, from an initial level of about 6.6, representing an 18% decrease. Gipper et al. (2015) report an increase of about 0.8 in the annual ERC around the introduction of PCAOB inspection regime (with the increase rising to 1.6 in the sample of 'full' inspections), representing an increase of 57% over an initial value of about 1.4. Presumably, material restatements and PCAOB inspections have a substantial impact on investors' reliance on earnings reports. Thus, a 20% increase in response to a change in compensation disclosures seems plausible relative to other studies.

It is harder, though, to interpret the economic magnitude of a change in ERC in absolute terms. Does an increase in ERC of 0.925 suggest that the CD&A rules resulted in a modest reduction in uncertainty about manager's reporting objectives? Or a large one? Answering this question is difficult without a benchmark for what the change in ERC increase *should* be (under the hypothesis that the CD&A rules had a large impact). A step in this direction is to express the increase in ERC in terms of the difference between the empirically observed ERC and the theoretical ERC under the assumption that innovations in earnings are permanent, i.e. ERC= (1/r) +1, where r is the annual cost of equity capital (Kothari 2001). Assuming a cost of capital of 10% and, thus, a theoretical ERC of 11 (= 1+ 1/10%), we can state that an increase of 0.925 closes about 14% of the "gap" between observed (4.57) and theoretical (11) level of ERC. While useful, this approach falls short of providing a full answer, since we do not know how much of the gap is due to σ_x^2 vis-à-vis other factors (transitory earnings, etc.). For example, if we knew that the ERC would at most increase to 6 when the σ_x^2=0 (with the rest of the gap due to other

the increase in ERC of 0.648 represents a 15% increase (the ERC level in the Pre period for treatment firms is estimated at 4.27).

factors), then we could conclude that the CD&A rules removed about 65% (≈0.925/(6-4.57)) of the uncertainty about reporting objectives.

Another approach to interpret a change in (annual) ERC is offered by Gipper et al. (2015). If the downward bias in the observed ERC relative to its theoretical value of 11 (assuming, again, a 10% cost of capital and permanent earnings innovations) remains constants over time, then for a given change in ERC one can infer the corresponding cost of equity capital by solving for *r_new* the following expression: (1/*r_new*) +1 = 11 + Change in ERC. After solving for *r_new*, Gipper et al. (2015) compare it to 10% and conclude that the increase in the ERC around the introduction of the PCAOB inspection regime is equivalent to a decrease of 73 basis points in the cost of capital. Using the same approach, our (quarterly) ERC increase of 0.925 is equivalent to a decrease of 84 basis points in the cost of capital (*r_new*=1/(11+0.925-1)=9.16%). However, this estimate effectively assumes that quarterly earnings innovations are permanent only on an annual basis (i.e. a surprise of $1 this quarter will only result in $1 of additional earnings this year, and $1 all subsequent years). If, instead, quarterly earnings innovations are assumed to be permanent on a quarterly basis (i.e. a surprise of $1 this quarter will result in $1 of additional earnings for each quarter of this year, and thus about $4 each year for all subsequent years), then an ERC increase of 0.925 is equivalent to a decrease of 22 basis points in the cost of capital.[22]

Both assumptions are extreme. Empirically, quarterly ERCs tend to be larger than annual ERCs, suggesting that quarterly earnings innovations are not permanent only on annual basis (i.e. a surprise of $1 this quarter tends to result in more than $1 of additional earnings during the year and in all subsequent years). At the same time, they are unlikely to be permanent on a quarterly basis either, due to the presence

[22] This figure is obtained as follows. The 10% annual cost of capital used as benchmark implies a quarterly cost of equity capital of r = $(1+10\%)^{1/4} - 1$ =0.0241 (2.41%). Thus, the benchmark quarterly ERC is: (1/r) +1 = (1/0.0241) + 1 = 42.4702. Since we document an increase in ERC of 0.925, then (1/r_new) +1 = ERC + Change in ERC = 42.4702 + 0.925, which implies a new quarterly cost of capital r_new = 0.0236. In turn, this implies an annual cost of capital of $(1+0.0236)^4$ - 1 = 9.78%. That is, the increase in ERC of 0.925 is equivalent to a decline in the cost of capital of 22 basis points (from the 10% benchmark).

of seasonal and transitory components (i.e. a surprise of $1 this quarter tends to result in less than $4 of additional earnings during the year and in all subsequent years). Hence, we can only state that in our setting the increase is equivalent to a decrease in the cost of capital ranging from 22 to 84 basis points.

4.3 Robustness tests

We perform a number of robustness tests (in all of them we use entropy balancing; thus the figures below should be compared to Table 3 Panel B). First, we expand our control sample to include firms with a FY-end between July and August (for these firms, we only keep in the Post period the quarterly earnings releases issued before they adopt the CD&A rules). The logic remains the same as in the main test (i.e. exploit the overlapping period to examine differential changes in ERC between treatment and control), except that for the June-August firms the overlapping period is shorter. The resulting control sample represents almost 20% of the total sample. Using this control sample in Column (4) the coefficient of *UE*POST*TREAT*, at 0.668, remains positive and significant (p-value =0.07).

Our second set of tests (untabulated) deals with the window used to perform our analyses. In our main tests (Table 3) we employ a tight window (FY 2006 and 2007) to minimize the risk of capturing the effect of other events. Nonetheless, we obtain similar results when we expand the Pre period to include FY 2006 *and* 2005. For example, in Column (4) the coefficient of *UE*POST*TREAT*, at 0.685, remains positive and significant (at the 5% level). Also, in our main tests we exclude any earnings release relative to the fourth quarter of *fiscal* year 2007 but occurring in *calendar* year 2008, in order to avoid any potential effect of the 2008 financial crisis on ERCs.[23] When we include early 2008 earnings releases, the coefficient of *UE*POST*TREAT* in Column (4) is slightly lower, at 0.760, but still significant (at the 5% level).

[23] ERCs in 2008 are generally lower (as verified in untabulated analysis). Since most quarterly earnings releases in early 2008 involve treatment firms, including 2008 earnings releases may bias our estimate of *UE*POST*TREAT* downward.

Our third test aims to control for omitted factors that may differentially affect treatment and control firms around the CD&A rules. While we control for fiscal year-quarter fixed effects and the interactions with unexpected earnings, it is possible that unobservable factors differentially affect market responses to earnings news for treatment and control firms over the period we analyze, causing us to attribute to the CD&A rules a change in ERC driven instead by these factors. While it is hard to imagine why such factors would correlate with (predetermined) FY-ends, to partially mitigate this concern we conduct a placebo test using a sample of foreign private issuers (FPIs). FPIs are exempted from the CD&A rules but are subject to similar market events as well as other aspects of the U.S. regulatory regime. If our results were driven by omitted factors that for some reason affect the ERC of firms with different FY-end differently, then we should find a significant increase in ERCs for December-year-end FPIs compared to non-December-year-end FPIs. To test this conjecture, we re-run the regression equation (1) in a sample of 261 distinct FPI firms (identified as in Li 2014), resulting in 1,312 firm-quarter observations. In unreported tests, we do not find a relative increase in ERC for December-year-end FPIs. However, the sample size is small, especially for September-November FY-end firms, and some of the coefficients unusually large, casting doubts on the reliability of the estimates.

Finally, our results are robust to a number of alternative design choices. Untabulated tests show that: (i) if we exclude industries not represented in the control sample (see Table 1, Panel C), the coefficient of *UE*POST*TREAT* in Column (4) is 0.932 (p-value=0.012); (ii) if we limit the sample to firms with at least two (rather than one) quarters of data in both the Pre and the Post period, the coefficient of *UE*POST*TREAT* in Column (4) is 0.870 (p-value=0.018); and, (iii) if we winsorize the continuous variables using the 1^{st} and 99^{th} percentile (instead of the 2^{nd} and 98^{th} percentile) in Column (4) the coefficient of *UE*POST*TREAT* is 0.791 (p-value<0.01).

5. Cross-Sectional Analyses

The theory underlying our study predicts a larger increase in ERC when the reduction in uncertainty about the manager's reporting objectives is greater, i.e. (in our setting) when the improvement in compensation disclosures is larger. Constructing a direct, firm-specific measure of such improvement is somewhat subjective and prohibitively costly in a large sample study. Thus, we use two sets of proxies, one capturing ex post observed improvements in compensation disclosures and one capturing ex ante expected improvements. The proxies are described below.

5.1 Proxies for (ex post) observed improvement in compensation disclosures

Our first proxy takes advantage of the SEC review process. To evaluate (and induce) compliance with the CD&A rules, in April 2007 the SEC began reviewing proxy statements released by firms with a December FY end (thus, only treatment firms were reviewed). As a result of this process, the SEC issued a comment letter to 350 firms detailing specific inadequacies in the disclosures and urging the firm to remedy. Robinson, Xue and Yu (2011) find that most of the defective disclosures relate to pay-for-performance issues (e.g. poor disclosures of performance targets/metrics).

Since firms receiving a SEC comment letter did not improve compensation disclosures to the extent required by the CD&A rules (according to the SEC), we expect them to exhibit a smaller increase in ERC relative to firms that did not receive comment letters. To test this conjecture, in Table 4, Column 1, we re-run regression equation (1) within the subset of treatment firms but replacing the *TREAT* indicator with an indicator for firms that did not receive a SEC comment letter (*No_SEC_CL)*. The coefficient on *UE*POST*No_SEC_CL* is positive and significant (p-value=0.064), consistent with a greater reduction in investors' uncertainty about managers' reporting incentives among treatment firms that most improved their compensation disclosures (as noted above, control firms were not reviewed by the SEC).[24]

While the SEC comment letters proxy for overall improvement in disclosures, our second proxy aims to capture one specific, readily observable improvement. The CD&A rules require firms to disclose compensation information for the CEO, CFO and the three highest paid executives. In contrast, the 1992 rules covered the CEO and the four highest paid executives. Hence, before the CD&A rules, some firms did not include CFO pay data in the proxy filings (namely, firms where the CFO was not one of the four highest paid officers and that did not voluntarily disclose CFO pay data). At the same time, a recent stream of studies highlights the role of CFOs' compensation incentives in financial reporting choices. For example, Jiang et al. (2010) find that CFO equity incentives are more associated with earnings management than CEO equity incentives, consistent with CFO's primary responsibility in preparing financial reports. To the extent that CFOs' incentives are a significant part of the "manager's" reporting objectives, we expect a more pronounced increase in ERC among treatment firms that began disclosing details of CFO pay after the CD&A rules.

To examine our prediction, in Panel B we partition our treatment sample between firms that began to disclose CFO pay information *after* the CD&A rules (captured by the indicator variable *CFO Pay_New*) and all other firms and compare the change in ERC. As shown in Column (2), the coefficient on *UE*POST*CFO Pay_New* is positive and significant (at the 1% level). In Column (3) we repeat the same test within control firms (as placebo). The coefficient is not significant and is statistically smaller than within treatment firms (p-value=0.06). While these findings are consistent with our prediction, we

[24] The relatively low statistical significance is not surprising, considering that: (i) not all treated firms that did not receive SEC comment letters improved the quality of their disclosures (Robinson et al. 2011 documents incomplete or defective disclosures in a random sample of 50 firms that did not receive SEC comment letters); and (ii) some firms receiving a SEC comment letter may have improved the disclosures relevant to investors' ability to assess managers' reporting incentives (performance targets/metrics) and received the SEC comment letter for other reasons (e.g. poor disclosures of compensation setting process; Robinson et al. 2011).

caution that the sample size of firms that began disclosing information about the CFO pay plan after the CD&A rules is fairly small.

5.2 Proxy for (ex ante) expected improvement in compensation disclosures

As a proxy for expected improvement in compensation disclosures (and thus greater expected increase in ERC), we use excess CEO pay. Firms with higher excess CEO pay are subject to greater compensation-related activism (e.g. Ertimur et al. 2011, 2013) and thus arguably under greater pressure to improve their disclosures in response to the CD&A rules (investors want to assess the strength of the pay-for-performance linkage and the appropriateness of performance targets).

Table 5, Column (1), compares changes in ERCs within the treatment sample for firms with excess CEO pay above- (*Excess Pay*=1) and below- (*Excess Pay*=0) sample median (measured in 2006). The coefficient on *UE*POST*Excess Pay* is positive and significant (at the 5% level), suggesting greater increases in ERC for the subset of firms with higher excess CEO pay. In Column (2) we repeat the same test within control firms (as placebo) and find an insignificant coefficient. We note, though, that the difference between the coefficient in Columns 1 and 2 is not significant.

Our test views excess CEO pay firms as a proxy for investors' demand of better pay disclosures. However, excess CEO pay firms also proxy for lower supply of disclosures (i.e. managers more reluctant to provide details about their compensation). Thus, we repeat our test, separately, within treatment firms receiving and not receiving a SEC comment letter (respectively, Column 4 and Column 3). If firms receiving a comment letter are, by construction, firms that ex post did not improve their disclosures, we would expect no effect of excess CEO pay on ERC within this group. Indeed, we find that *UE*POST*Excess* is positive and significant only among firms *not* receiving comment letters (and the difference among coefficients in Column 3 and 4 is significant). Put it differently, on average, firms with excess CEO pay experienced an increase in ERC (Column 1), but the increase did not occur in the subset of more entrenched firms that resisted the pressure to improve disclosures (as evidenced by the subsequent comment letters' Column 4).

While admittedly imperfect, our cross-sectional tests suggest that the increase in ERC was more pronounced in firms that likely exhibited greater improvement in compensation disclosures.

6. Additional Analyses

6.1 Alternative explanations for the increase in ERC

In the previous sections we attribute the increase in ERC around the CD&A rule to a decrease in uncertainty about managerial incentives and thus her reporting objectives, as predicted by Fischer and Verrecchia (2000). However, in their model other parameters can also affect ERC since the ERC is determined by $\beta = \frac{\sigma_v^2}{\sigma_v^2+\sigma_n^2+(\frac{\beta}{c})^2\sigma_x^2}$. Thus, as noted in Section 2.1, an increase in ERC can result not only from a decrease in σ_x^2 but also from an increase in σ_v^2 (greater prior uncertainty on firm value), an increase in c (higher marginal cost of adding bias to the earnings report), or a decrease in σ_n^2 (greater inherent earnings quality). Implicitly, our study assumes that these three parameters did not change for treatment firms relative to control firms around the CD&A rules. This assumption seems reasonable for σ_n^2 (there is no obvious reason why compensation disclosures would change the inherent earnings quality observed by the manager), but it requires a more careful discussion for the other two parameters.

With respect to σ_v^2 (prior uncertainty on firm value), to the extent that the parameters of the incentive plan (performance metrics/weights/targets) 'reveal' the strategy of the firm (e.g. emphasis on growth versus profitability), greater compensation disclosures may help investors to better predict managers' real activities, and thus reduce investors' uncertainty on firm value. But such scenario would predict a *reduction* in σ_v^2 and, thus, in ERC, biasing against our hypothesis (thus, the documented increase in ERC might understate the effect of the reduction in σ_x^2).

The CD&A rules may have caused an increase in σ_v^2 if they induced a shift toward pay structures providing stronger risk-taking incentives. Such shift would increase firm volatility and cause greater investors' uncertainty on firm value, providing an alternative explanation for the increase in ERC. However, we are not aware of a study documenting such effect of the CD&A rules.[25] Also, a higher ex-ante uncertainty typically implies a bigger surprise ex post. Hence, an increase in σ_v^2 should manifest itself ex post in a larger absolute magnitude of *UE* (viewed as a proxy for the magnitude of forecast errors). In contrast, in untabulated tests we find no significant change in the absolute magnitude of *UE* for treatment firms. Besides, in our main regressions we control for (observable) time-varying factors likely correlated with σ_v^2 (e.g. beta, analysts' forecast dispersion). Thus, an increase in σ_v^2 does not seem a likely alternative explanation for the increase in ERC around the CD&A rules.

With respect to c, it is conceivable that the regulation increased the marginal cost of adding bias. More precise information about compensation targets may have resulted in greater investors' scrutiny of reporting choices and/or stronger penalties for adding bias (e.g. reputation costs, turnover risk, litigation risk). However, in such scenario c would be a decreasing function of σ_x^2 (rather than a constant term, as in Fischer and Verrecchia (2000)), and thus an increase in c (as a result of a reduction in σ_x^2) would not be an *alternative* explanation for the increase in ERC. Rather, the reduction in σ_x^2 would affect the ERC both directly (through a reduction in investors' uncertainty about reporting objectives) and indirectly (through the increase in the cost of adding bias as a result of such reduction). Thus, the reduction in σ_x^2 would continue to be the explanation for the increase in ERC.[26]

[25] Starting with the mandatory expensing of stock options in 2004 and throughout our sample period there was a shift from stock options pay to restricted stock in executive pay. Such shift should lead to a *decrease* in risk-taking incentives (although the presence of performance-based vesting conditions in most restricted stock awards may partially reintroduce the convexity of time-based stock options; Hayes, Lemmon and Qiu 2012; Bettis, Bizjak, Coles and Kalpathy 2016).

[26] The parameter c would be an alternative explanation for the increase in ERC if it increased around the CD&A rules for treatment firms relative to control firms for reasons unrelated to the improved quality of compensation disclosures. We are not aware of any such reasons. But even under this scenario, a necessary (but not sufficient) condition for c to be the *only*

6.2 The bias prediction in the Fischer and Verrecchia (2000) model

In addition to the ERC, Fischer and Verrecchia (2000) make predictions about the equilibrium behavior of other variables (see Section 2.1).[27] Especially relevant to our study, given the potential policy implications, is that their model predicts that a decrease in σ_x^2, by causing an increase in β (ERC), will result in a higher amount of reporting bias. The intuition is that the expected benefit from adding bias will increase (because of the higher ERC), and thus managers will have greater incentives to add bias. To test this prediction, we examine the change in earnings management (our empirical translation of reporting bias) for treatment and control firms around the CD&A rules. As measures of earnings management, we use the discretionary accruals calculated based on four different models – Dechow and Dichev model (Dechow and Dichev 2002), modified Jones model (Dechow et al. 1995), performance-matched modified Jones model (Kothari et al. 2005), and growth-adjusted modified Jones model (Collins et al. 2017) (see Appendix 2 for details). Because firms can use either income-increasing or income-decreasing discretionary accruals to manipulate earnings, we use the absolute values of discretionary accruals (results are similar when using signed values).

Across the four measures, as shown in Table 6, Panel A-D, we find no evidence of a change in the absolute values of discretionary accruals between treatment and control firms from the Pre to the Post period (the difference-in-differences is not statistically significant). In Panel E, we conduct a multivariate analysis where the dependent variables are the four discretionary accruals measures and the independent variables include *POST*, *TREAT*, the interaction *POST*TREAT* and the firm characteristics included in Table 3. Again, the coefficient of interest, $POST_{i,t}$ * $TREAT_{i,t}$ is not statistically significant.

force driving the increase in ERC is a decrease in reporting bias (Fischer and Verrecchia 2000). However, as noted in Section 6.2, we fail to find such evidence.

[27] For example, Fischer and Verrecchia (2000) predict an increase in absolute value of the intercept in a regression of price on earnings when σ_x^2 decreases. However, as we adapt the model to a returns-surprise framework, the theoretical intercept is zero and independent of σ_x^2 (see pp.7-8).

In unreported tests we also examine other measures (propensity to meet or beat earnings targets, discretionary accruals calculated based on the original Jones (1991) model, working capital accruals and total accruals), with similar findings.

There may be many reasons why we do not find the increase in bias predicted by the model.[28] We conjecture that the model's assumption of a constant cost of adding bias *c*, while generally reasonable, may not hold in our setting. As noted earlier, as compensation disclosures become more precise (and thus σ_x^2 declines), it is plausible that the cost of adding bias *c* increases, due to greater public scrutiny. Enhanced disclosures may allow investors to better infer ex post whether management opportunistically added bias (upward or downward) for compensation-related reasons. They may also allow regulators to target those firms whose managers have stronger incentives to manipulate earnings report, raising the legal cost of manipulating earnings. In brief, managers potentially face a higher cost of adding bias. If *c*, rather than being a constant, varies inversely with σ_x^2, the effect of a decrease in σ_x^2 on bias ($b^* = \beta \frac{\mu_x}{c}$) is no longer obvious: any bias-increasing effect through higher β may be offset by a bias-decreasing effect due to higher *c*, with the net effect depending on the precise function linking *c* and σ_x^2. In contrast, even when *c* varies inversely with σ_x^2, a decrease in σ_x^2 (and the resulting increase in *c*) still leads to a higher ERC (as noted in Section 6.1).

Subject to the limitations of any attempt to translate a stylized model into empirical tests, a benign interpretation of our findings (and one of potential relevance to policy-makers) is that the net effect of the CD&A rules on financial reporting was to increase investors' response to earnings releases without a corresponding increase in earnings management, because the benefit from adding bias (via a higher ERC) may have been offset by an increase in its marginal cost.

[28] Available measures of discretionary accruals may do a poor job at capturing "reporting bias", a long-standing challenge in accounting research. Also, the change in ERC may be not sufficient to have a detectable effect on earnings management. However, we continue to find no change in earnings management when we repeat the analysis in Table 6 for subsets of firms where the increase in ERC is highest (profit firms and firms without a SEC comment letters; untabulated).

7. Conclusion

We empirically examine the hypothesis that the information content of the earnings report, as captured by the earnings response coefficient (ERC), increases when investors' uncertainty about the manager's reporting objectives decreases, as predicted by Fischer and Verrecchia (2000). To do so, we use the executive compensation disclosures released by the Securities and Exchange Commission in 2006 as an instrument to the change in investors' uncertainty about the manager's reporting objectives, based on the empirical evidence that managers' compensation incentives are an important driver of their reporting objectives. Since these disclosures apply to all publicly traded firms, our identification strategy exploits the staggered nature of their adoption based on the firm's fiscal year end.

Consistent with our hypothesis, we find a statistically and economically significant increase in ERC for treatment firms relative to control firms. The result holds across various specifications, including allowing for nonlinearities in ERC, and is more pronounced for firms with a greater improvement in the quality of compensation disclosures (as proxied by firms that did not receive a SEC comment letter criticizing their disclosures, firms disclosing CFO pay information for the first time and firms with higher excess CEO pay). In addition to contributing to the research on ERC and the literature on compensation disclosures, our study suggests that policy makers can increase the information content of financial reports not only by improving their credibility and quality of accounting information, but also by reducing investors' uncertainty about managers' reporting objectives via better disclosures of compensation-related incentives.

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Appendix 1: Evidence of institutional investors' interest in the effect of compensation incentives on reporting quality

The excerpts reported below are from firm-specific reports issued by a forensic accounting firm to its clients. The firm sells the reports to its clients on a subscription basis. The objective of these reports is to identify concerns with the firm's accounting quality.[29] We provide these excerpts to support the notion that sophisticated institutional investors care about the potential effect of compensation-driven incentives on reported numbers.

> *"In the proxy filing…the Company disclosed that a free cash flow goal has been added as a metric for executive incentive compensation. In prior years these targets included only various revenue and earnings metrics. We caution that when a company makes changes to its incentive compensation plan, this can sometimes lead to management manipulation of the new metrics"*

> *"Accelerated recognition of redemption revenue seems to have accounted for most of the company's growth in revenue, EBITDA and Cash EPS…Management cash incentive compensation plans are based on revenue and EBITDA targets."*

> *"We raise concern that the financial performance goal in the company's annual cash bonus plan for executives is based on GAAP EPS given that the non-cash amortization of acquired contract liabilities results in an inflated EPS"*

> *"The Company used debt to finance pension contributions during the year. The decline in pension expense (above the line) was replaced with increased interest expense (below the line) which by definition increases EBITDA margin, all else equal. EBITDA is a key metric for determining long-term incentive compensation."*

> *"We also note that with regard to compensation under the company's Performance Plan, EBIT and EPS targets are adjusted for restructuring and other charges. Given the Company's frequent incurrence of restructuring charges, we raise additional concern regarding earnings quality given the incentive to increase restructuring charges in order to keep costs out of EBIT for purposes of compensation."*

[29] A confidentiality agreement does not allow us to disclose the identity of the forensic accounting firms nor the identity of the firms covered by the reports.

Appendix 2: Variable Definitions

Variable Definitions		
Variable	***Variable Name***	***Description***
Treatment Variables		
Treatment firms	TREAT	• An indicator variable that equals 1 if a firm has December FY-end, and 0 a firm's FY year ends in September through November. More precisely, given the convention followed by Compustat in coding the month of the FY-end, TREAT equals 1 if a firm has a FY-end between December 15 (when the CD&A rules became effective) and December 31, and 0 if a firm's FY-end falls between September 15 and December 14.
Post treatment	POST	• An indicator variable that equals 1 for a quarter in fiscal year 2007, and 0 for a quarter in fiscal year 2006.
Variables of Interest		
Market response	CAR	• A firm's 3-day stock return around the quarterly earnings announcement date, minus the CRSP market return over the same period. • Data are obtained from CRSP.
Earnings surprise	UE	• I/B/E/S actual quarterly EPS minus the most recent median I/B/E/S forecast of quarterly EPS (during a window beginning 45 calendar days prior to the earnings announcement and ending 2 days prior to the earnings announcement), scaled by the CRSP price from 2 days prior to the earnings announcement. • Both the actual and forecast EPS are from I/B/E/S.
Control Variables		
Firm Size	Size	• Market cap of the firm measured at the end of the fiscal year. The market cap equals the share price * the number of shares outstanding as reported by Compustat. • We use the natural log of firm size in all of our regressions.
Market to Book Ratio	Market-to-Book	• Ratio of market value of equity to the book value of equity, both measured at the end of the fiscal year, from Compustat.
Market beta	Beta	• The regression coefficient from regressing excess daily returns for a firm on excess market returns over one calendar year, ending on the fiscal quarter-end date. • The market return and risk-free rate are obtained from Ken French's data library. • The return data are obtained from CRSP.
Financial Leverage	Leverage	• Ratio of total debt (debt in current liabilities + long term debt) to the book value of equity, as reported by Compustat.
Earnings persistence	Persistence	• The regression coefficient from regressing quarterly EPS on past quarter's EPS using up to 10 years data. This is calculated at the end of each quarter. • The data are obtained from Compustat.
Accounting loss indicator	Loss	• An indicator variable that equals 1 if the basic earnings per share excluding extraordinary items is less than 0, and 0 otherwise.

Analysts' forecast dispersion	Dispersion	• The difference between highest and lowest analyst forecasts (during a window beginning 45 calendar days prior to the earnings announcement and ending 2 days prior to the earnings announcement), scaled by the CRSP price from 2 days prior to the earnings announcement. • Analyst forecast data are obtained from I/B/E/S.
Nonlinearity	Nonlinear	• Unexpected earnings multiplied by the absolute value of the unexpected earnings (i.e. UE*|UE|).
Discretionary accruals calculated based on Dechow and Dichev approach (2002)	Dechow-Dichev	• Calculated the same way as Dechow and Dichev (2002), modified at quarterly level. • We calculate the residuals from the industry-specific (defined by 2-digit SIC code) regression of change in working capital accruals (defined as below) on cash flows from operations in past one quarter, current quarter and one quarter ahead. • Working capital accruals are calculated as $\Delta AR + \Delta Inventory - \Delta AP - \Delta TP + \Delta Other\ Assets\ (net)$, where AR is accounts receivable, AP is accounts payable, and TP is taxes payable. • Instead of using the standard deviation of the residuals for a firm, we use the absolute value of the estimated residual for each firm-quarter (as suggested in footnote 6 in Dechow and Dichev (2002)). • All the variables are obtained from Compustat.
Discretionary accruals calculated based on modified Jones model (Dechow, Sloan, and Sweeney 1995)	Modified-Jones	• Calculated the same way as Dechow et al. (1995), modified at quarterly level as suggested by Collins, Pungaliya, and Vijh (2017). • We calculate the residuals from the following regression by industry and year level: $ACC_{i,t} = \beta_0 + \beta_1 Q_{1,i,t} + \beta_2 Q_{2,i,t} + \beta_3 Q_{3,i,t} + \beta_4 Q_{4,i,t} + \beta_5 (\Delta SALES_{i,t} - \Delta AR_{i,t}) + \beta_6 ACC_{i,t-4} + \varepsilon_{i,t}$, where $ACC_{i,t}$ is accruals calculated from the cash flow statement as the total of changes in accounts receivables, inventories, accounts payable, tax payable, and other accounts that affect accruals (Hribar and Collins 2002). $Q_{1,i,t}$, $Q_{2,i,t}$, $Q_{3,i,t}$, $Q_{4,i,t}$ are fiscal quarter dummies. • We use the absolute value of the estimated residual for each firm-quarter. • All the variables are obtained from Compustat.
Performance-matched discretionary accruals (Kothari, Leone, and Wasley 2005)	Performance-matched	• Match each firm-quarter observation with another from the same industry and quarter with the closest beginning-quarter ROA. • Calculated as the difference in discretionary accruals between a firm-quarter and the matched firm-quarter. We use the absolute value of the difference for each firm-quarter. • Discretionary accruals are from the modified Jones model.
Growth-adjusted discretionary accruals (Collins, Pungaliya and Vijh 2017)	Growth-adjusted	• Calculated based on modified Jones model, adjusted for firm growth as suggested by Collins et al. (2017). • In the estimation equation of modified Jones model, we add ROA, seasonally differenced sales growth, and beginning-quarter market-to-book ratio as additional control variables. We follow Collins et al. (2017) to use the quintile dummies of these variables instead of the raw values of these variables to control for the non-linear relation between accruals and growth. • We use the absolute value of the estimated residual for each firm-quarter. • All the variables are obtained from Compustat.

Firms not receiving a SEC Comment Letter	No_SEC_CL	• An indicator variable equal to 1 if the firm did not receive a SEC Comment Letter for failure to comply with the 2006 compensation disclosures.
Firms that began to disclose CFO Pay information after CD&A rules	CFO Pay_New	• Indicator variable equal to one if the firm began to disclose information about CFO compensation after the CD&A rules (i.e. in the 2007 proxy statement for fiscal year 2006). The data are obtained from Execucomp.
Excess CEO pay	Excess Pay	• An indicator variable equal to 1 if a CEO receives abnormal compensation higher than the median of the sample during 2006. • Abnormal compensation is defined as CEO total pay net of CEO predicted pay, where the predicted pay is defined as the predicted value from a regression of the natural logarithm of total CEO compensation on proxies for economic determinants of CEO compensation, including, CEO tenure, sales, indicator for S&P 500 index, book-to-market ratio, stock return, and ROA (Ertimur, Ferri and Muslu 2011).

Figure 1 Proportion of Absolute Performance Objective Targets Non-missing in IncentiveLab

This is the Figure 1 of Appendix 2 in Gipper (2016). This figure shows the time-series trends of the proportion of non-missing absolute performance targets for bonus and short-term cash incentives, restricted stock, and other plans as reported in the ISS Incentive Lab database.

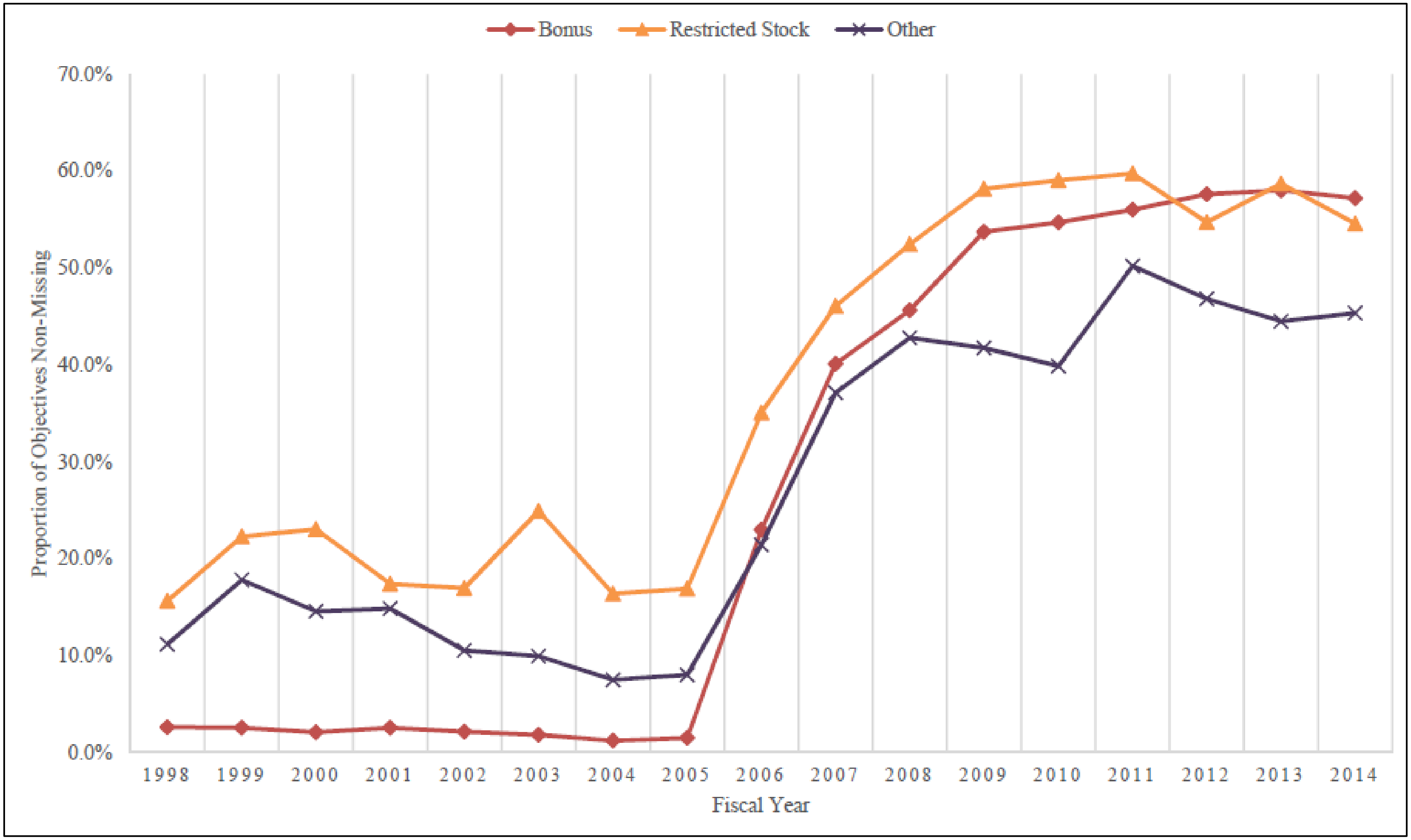

Figure 2 Proportion of Relative Performance Objective Targets Non-missing in IncentiveLab

This is the Figure 2 of Appendix 2 in Gipper (2016). This figure shows the time-series trends of the proportion of non-missing relative performance targets for bonus and short-term cash incentives, restricted stock, and other plans as reported in the ISS Incentive Lab database.

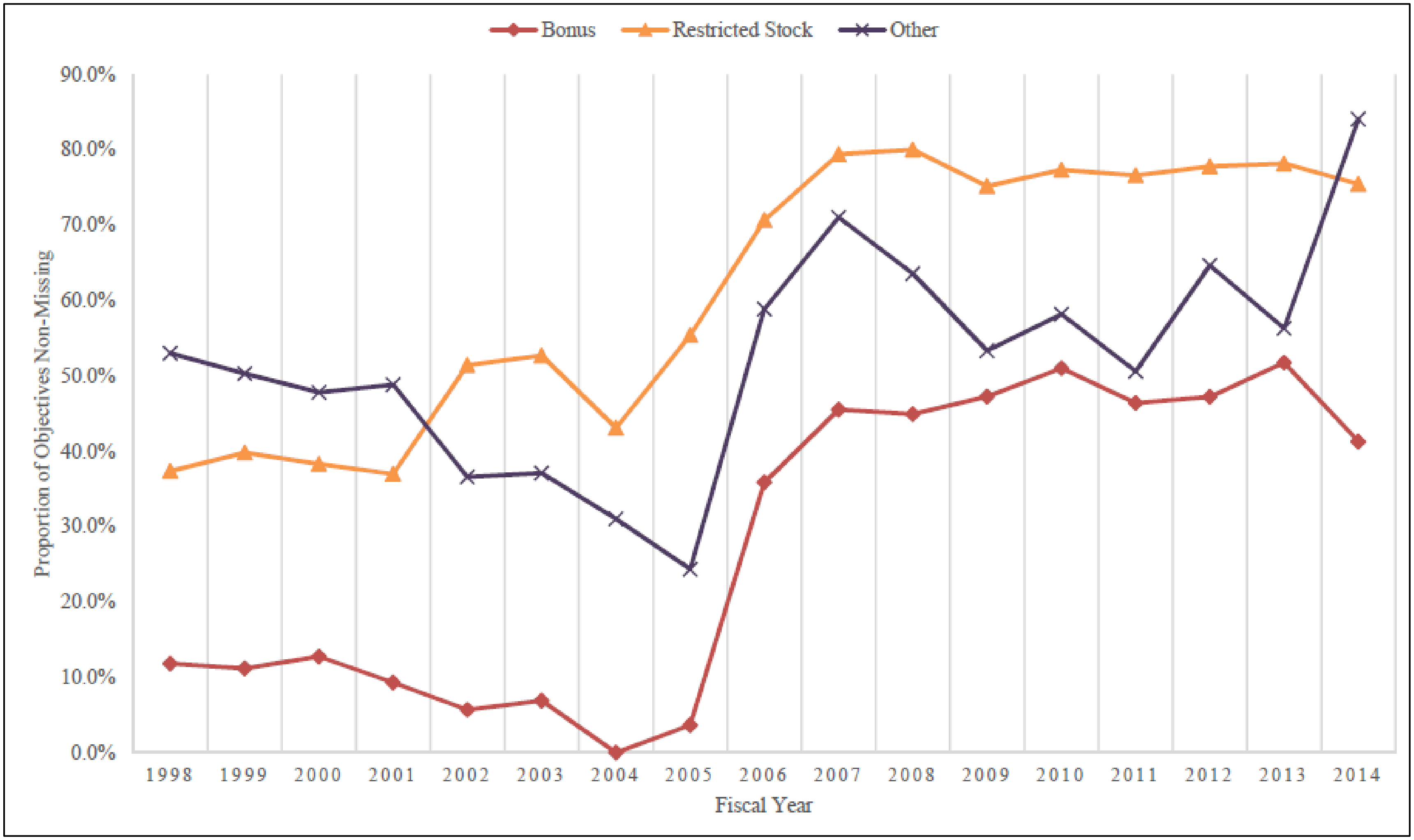

Figure 3 Timeline

This figure shows the timeline underlying the research design. We utilize the CD&A introduction date of December 15, 2006 to design a difference-in-differences test. We use firms with December fiscal year-end as the treatment firms, and firms with September to November fiscal year-end as the control firms. In the difference-in-differences tests, we compare the changes in ERCs between treatment and control firms from the Pre to the Post Period.

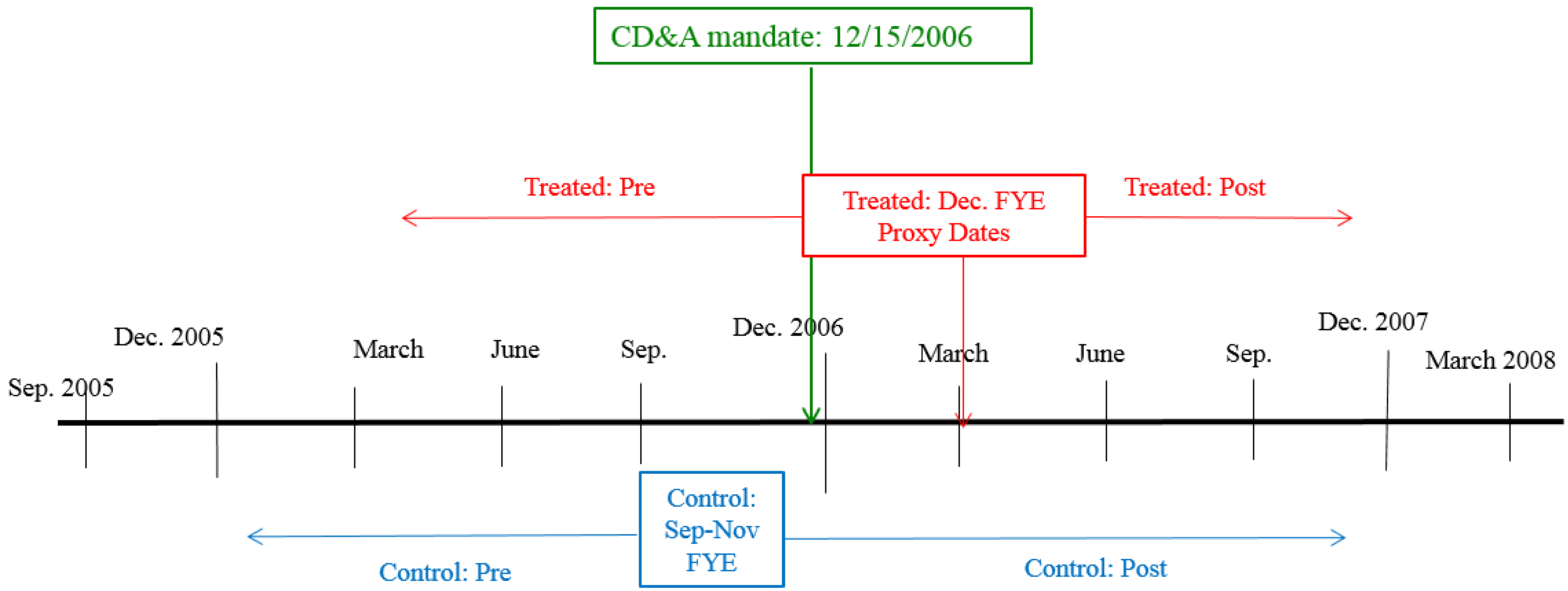

Figure 4 Parallel Trend in ERCs

This figure presents trends in ERCs of treatment and control samples from FY 2004 to FY 2007. To construct the figure, we re-run regression equation (1), modified to include two additional indicators to capture FY 2004 and FY 2005 (interacted with the relevant variables, similar to the indicator POST for the FY 2007). The ERC values plotted in Figure 4 for control firms (blue line) and treatment firms (red line) are the average quarterly coefficients on UE for each group in each FY estimated from such pooled regression. The sample includes U.S. firms used in our primary analyses (Table 3).

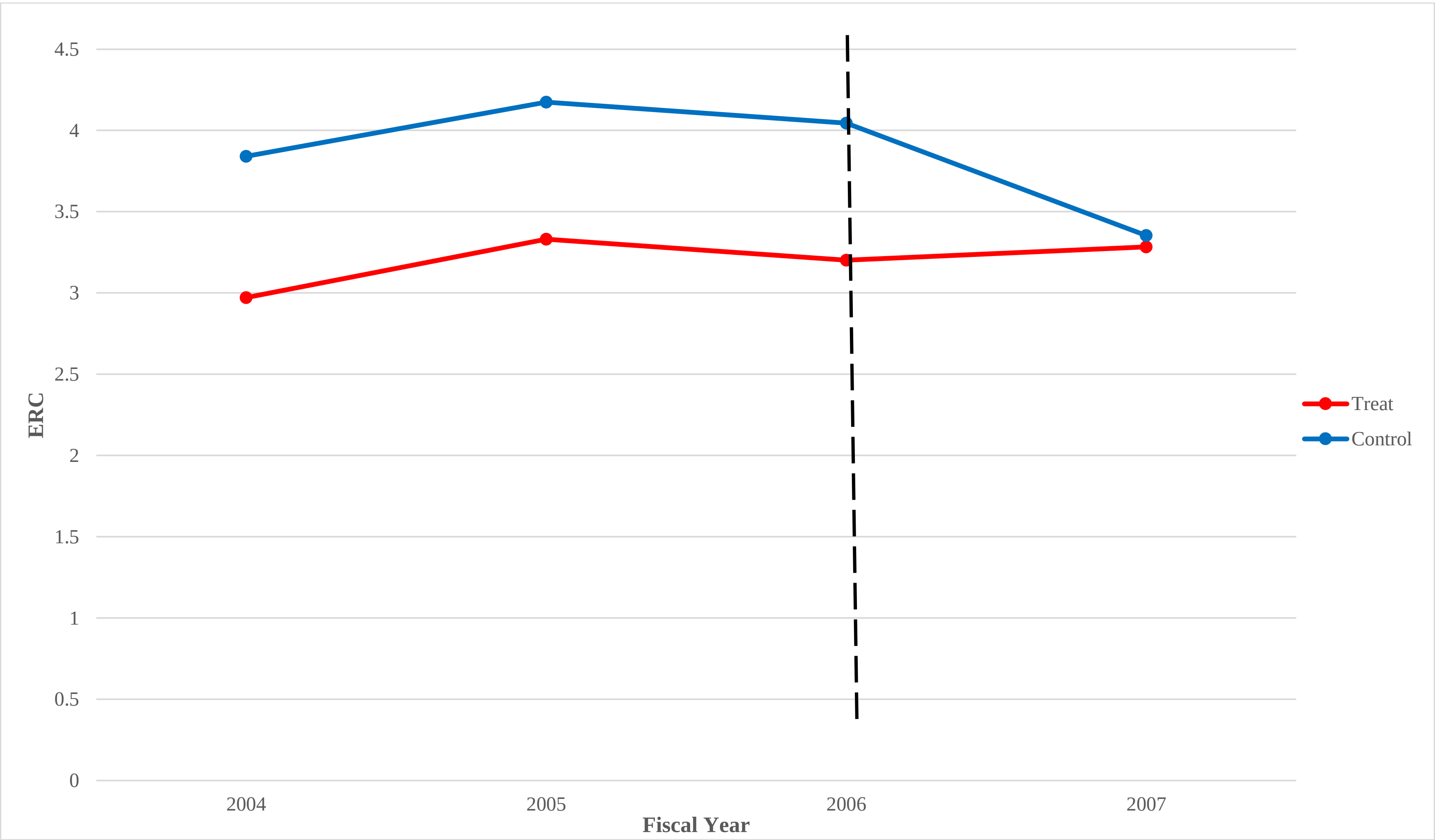

Table 1 Summary Statistics

Table 1 presents summary statistics for the variables used in our main analyses (Table 3). Panel A reports descriptive statistics for the full sample for the entire period (quarterly data for fiscal year 2006 and 2007). Panel B reports mean and median values for the treatment and control samples for the Pre period (quarterly data for fiscal year 2006). Also reported are the differences in mean and median values. All the variables are defined in detail in Appendix 2. Panel C reports the industry composition for treatment and control firms based on Fama-French 48 industry classification. All continuous variables are winsorized at 2% and 98% level. ***, **, * indicates significance level at 1%, 5%, and 10%, respectively.

Panel A Summary statistics for full sample

Variable	N	Mean	Std. Dev	P25	Median	P75
CAR	14,509	-0.00059	0.07150	-0.03666	-0.00080	0.03745
UE	14,509	-0.00050	0.01073	-0.00086	0.00036	0.00185
Treat	14,509	0.88	0.32	1.00	1.00	1.00
Post	14,509	0.43	0.50	0.00	0.00	1.00
Size (Million)	14,509	4,056.41	8,588.11	348.80	973.54	2,957.51
Market-to-Book	14,509	3.19	3.36	1.56	2.34	3.79
Beta	14,509	1.13	0.61	0.72	1.09	1.49
Leverage	14,509	0.83	1.55	0.03	0.41	1.05
Persistence	14,509	0.33	0.30	0.09	0.32	0.56
Loss	14,509	0.17	0.37	0.00	0.00	0.00
Dispersion	14,509	0.11	0.65	0.02	0.05	0.10

Panel B Summary statistics: means and medians for treatment and control firms prior to the 2006 CD&A rules

Variable(s)	Treatment: Mean	Control: Mean	Difference in Mean: Treatment - Control	Treatment: Median	Control: Median	Difference in Median: Treatment - Control
CAR	-0.00060	0.00542	-0.00602***	-0.00113	0.00269	-0.00382**
UE	-0.00025	-0.00049	0.00024	0.00040	0.00038	0.00002
Size (Million)	3,883.70	3,658.61	225.09	946.02	963.43	-17.41
Market-to-Book	3.23	2.89	0.34***	2.49	2.31	0.18***
Beta	1.20	1.29	-0.09***	1.15	1.26	-0.11***
Leverage	0.79	0.61	0.18***	0.39	0.25	0.14***
Persistence	0.33	0.34	-0.01	0.31	0.35	-0.04
Loss	0.17	0.14	0.03**	0.00	0.00	0.00**
Dispersion	0.10	0.09	0.02*	0.04	0.04	0.00***

Panel C Industry composition (based on Fama-French 48 industries classification)

	Treatment			Control		
	Freq.	Percent	Cum.	Freq.	Percent	Cum.
Agriculture	3	0.12	0.12	0	0.00	0.00
Food Products	19	0.76	0.88	10	3.85	3.85
Candy & Soda	6	0.24	1.12	0	0.00	0.00
Beer & Liquor	5	0.20	1.32	0	0.00	0.00
Tobacco Products	5	0.20	1.52	0	0.00	0.00
Recreation	14	0.56	2.08	2	0.77	4.62
Entertainment	30	1.20	3.27	2	0.77	5.38
Printing and Publishing	9	0.36	3.63	4	1.54	6.92
Consumer Goods	21	0.84	4.47	3	1.15	8.08
Apparel	23	0.92	5.39	4	1.54	9.62
Healthcare	47	1.88	7.27	7	2.69	12.31
Medical Equipment	72	2.87	10.14	10	3.85	16.15
Pharmaceutical Products	189	7.54	17.68	8	3.08	19.23
Chemicals	43	1.72	19.40	10	3.85	23.08
Rubber and Plastic Products	12	0.48	19.88	1	0.38	23.46
Textiles	4	0.16	20.04	0	0.00	0.00
Construction Materials	32	1.28	21.32	7	2.69	26.15
Construction	25	1.00	22.32	7	2.69	28.85
Steel Works Etc	22	0.88	23.19	4	1.54	30.38
Fabricated Products	1	0.04	23.23	1	0.38	30.77
Machinery	73	2.91	26.15	14	5.38	36.15
Electrical Equipment	24	0.96	27.11	9	3.46	39.62
Automobiles and Trucks	30	1.20	28.30	1	0.38	40.00
Aircraft	10	0.40	28.70	4	1.54	41.54
Shipbuilding, Railroad Equipment	7	0.28	28.98	0	0.00	0.00
Defense	4	0.16	29.14	1	0.38	41.92
Precious Metals	4	0.16	29.30	0	0.00	0.00
Non-Metallic and Industrial Metal Mining	7	0.28	29.58	0	0.00	0.00
Coal	11	0.44	30.02	0	0.00	0.00
Petroleum and Natural Gas	132	5.27	35.29	4	1.54	43.46
Utilities	95	3.79	39.08	9	3.46	46.92
Communication	90	3.59	42.67	1	0.38	47.31
Personal Services	23	0.92	43.59	4	1.54	48.85
Business Services	255	10.18	53.77	31	11.92	60.77
Computers	61	2.44	56.21	10	3.85	64.62
Electronic Equipment	107	4.27	60.48	27	10.38	75.00
Measuring and Control Equipment	39	1.56	62.04	11	4.23	79.23
Business Supplies	24	0.96	62.99	1	0.38	79.62
Shipping Containers	8	0.32	63.31	2	0.77	80.38

Transportation	97	3.87	67.19	2	0.77	81.15
Wholesale	51	2.04	69.22	7	2.69	83.85
Retail	49	1.96	71.18	11	4.23	88.08
Restaurants, Hotels, Motels	41	1.64	72.81	3	1.15	89.23
Banking	329	13.13	85.95	11	4.23	93.46
Insurance	135	5.39	91.34	0	0.00	0.00
Real Estate	10	0.40	91.74	0	0.00	0.00
Trading	176	7.03	98.76	11	4.23	97.69
Other	31	1.24	100.00	6	2.31	100.00
Total	2,505	100		260	100	

Table 2 Pre- and Post-Weighting Distributional Properties of Treatment and Control Firms

This table presents distributional properties (mean and variance) for treatment and control firms in the original sample (Panel A) and after the re-weighting of the control sample via the entropy balancing technique (Panel B).

Panel A Original Sample

Variable	Treatment (N=12,778)		Control (N=1,731)	
	Mean	**Variance**	**Mean**	**Variance**
Log(Size)	6.99	2.55	6.99	2.30
Market-to-Book	3.22	11.71	2.93	7.93
Beta	1.12	0.38	1.18	0.35
Leverage	0.86	2.48	0.63	1.76
Persistence	0.33	0.09	0.35	0.09
Loss	0.17	0.14	0.14	0.12
Dispersion	0.01	0.00	0.01	0.00

Panel B Post Entropy Balancing

Variable	Treatment (N=12,778)		Control (N=1,731)	
	Mean	**Variance**	**Mean**	**Variance**
Log(Size)	6.99	2.55	6.99	2.55
Market-to-Book	3.22	11.71	3.22	11.71
Beta	1.12	0.38	1.12	0.38
Leverage	0.86	2.48	0.86	2.48
Persistence	0.33	0.09	0.33	0.09
Loss	0.17	0.14	0.17	0.14
Dispersion	0.01	0.00	0.01	0.00

Table 3 Change in ERC around the CD&A Rules

This table presents results from the estimation of Equation (1). We regress 3-day cumulative abnormal returns around earnings announcements (CAR) on unexpected earnings (UE), indicators for treatment firms, treatment period and their interaction (TREAT, POST, POST*TREAT), control variables (firm characteristics), year-quarter fixed effects, industry fixed effects and the interactions of UE with control variables, year-quarter fixed effects, industry fixed effects and treatment indicators. Panel A reports results for a set of baseline regressions across different specifications. In Column (1), we use Ordinary Least Squares (OLS), while in Columns (2)-(6) we use a robust regression. Panel B reports the results by using entropy balancing, a quasi-matching technique which re-weights control observations to obtain better matching with the treatment observations. In Column (1) we use OLS, while in Columns (2)-(6) we use robust regressions by multiplying the robust regression weights with weights from entropy balancing method. Column (1) and (2) are identical in Panel A and B because the entropy balancing technique only applies to the specifications with indicators for treatment and control sample (Column 3 to 6). The coefficients for the intercepts are untabulated. All the variables are defined in detail in Appendix 2. *t-statistics*, based on robust standard errors clustered at the earnings announcement date level, are presented below the coefficient estimates. ***, **, * indicates significance level at 1%, 5%, and 10%, respectively.

Panel A Baseline regressions

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	Robust	Robust	Robust	Robust	Robust
UE*POST*TREAT			**1.157*** **	**0.648***	**4.403*** **	**2.846*** **
			(3.15)	**(1.77)**	**(5.79)**	**(3.41)**
UE	3.129***	3.924***	1.323***	4.237***	7.006***	8.860***
	(7.11)	(14.42)	(3.94)	(9.60)	(10.13)	(12.12)
UE*POST			0.842	-0.460	-3.214***	-2.835***
			(1.58)	(-0.99)	(-4.71)	(-3.59)
UE*TREAT			-0.839**	-0.759**	-3.556***	-3.328***
			(-2.54)	(-2.32)	(-5.48)	(-4.80)
UE*Log(Size)	-0.101	-0.135***		-0.121***	-0.086**	-0.222***
	(-1.64)	(-3.23)		(-2.97)	(-2.19)	(-4.76)
UE*Market-to-Book	0.062***	0.089***		0.061***	0.062***	0.058***
	(3.23)	(6.99)		(5.16)	(4.81)	(4.74)
UE*Beta	0.219*	0.368***		0.324***	0.295***	0.362***
	(1.82)	(4.31)		(3.77)	(3.55)	(4.17)
UE*Leverage	-0.102***	-0.120***		-0.052**	-0.052**	-0.019
	(-3.45)	(-4.99)		(-2.24)	(-2.24)	(-0.81)
UE*Persistence	0.236	0.153		0.178	0.056	0.441**
	(0.88)	(0.90)		(1.00)	(0.33)	(2.35)
UE*Loss	-2.222***	-2.921***		-3.081***	-6.646***	-6.060***

	(1)	(2)	(3)	(4)	(5)	(6)
	(-10.36)	(-21.32)		(-21.12)	(-9.54)	(-8.22)
UE*Dispersion	-1.681***	-2.552***		-2.154***	-3.386***	-0.351
	(-2.76)	(-6.51)		(-5.58)	(-7.95)	(-1.45)
UE*Loss*POST*TREAT					-4.487***	-5.166***
					(-5.42)	(-5.84)
Nonlinear						-52.295***
						(-3.46)
Nonlinear*TREAT						-20.278
						(-1.23)
Nonlinear*POST						-1.454
						(-0.09)
Nonlinear*POST*TREAT						35.078**
						(2.02)
Firm Characteristics, Firm Characteristics*UE	Yes	Yes	No	Yes	Yes	Yes
Fixed Effects	No	No	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry
Fixed Effects*UE	No	No	Yes	Yes	Yes	Yes
Treatment Indicators (POST, TREAT)	No	No	Yes	Yes	Yes	Yes
POST*TREAT	No	No	Yes	Yes	Yes	Yes
UE*Treatment Indicators	No	No	Yes	Yes	Yes	Yes
Loss*UE interacted with Treatment Indicators	No	No	No	No	Yes	Yes
Nonlinear (=UE*|UE|).	No	No	No	No	No	Yes
Nonlinear*Treatment Indicators	No	No	No	No	No	Yes
Observations	14,509	14,498	14,501	14,491	14,490	14,497
Number of Treatment Obs.	12,778	12,769	12,778	12,766	12,770	12,772
Number of Control Obs.	1,731	1,729	1,723	1,725	1,720	1,725
Cluster	Date	Date	Date	Date	Date	Date
Adj. R-squared	0.074	0.121	0.109	0.148	0.152	0.179

Panel B Entropy balancing results

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	OLS	Robust	Robust	Robust	Robust	Robust
UE*POST*TREAT			**1.419*** **	**0.925** **	**3.472*** **	**1.969** **
			(3.98)	**(2.52)**	**(4.35)**	**(2.13)**
UE	3.129***	3.924***	1.196***	4.808***	7.197***	8.233***
	(7.11)	(14.42)	(3.57)	(9.49)	(9.65)	(9.96)
UE*POST			0.619	-0.213	-2.525***	-1.843**
			(1.02)	(-0.45)	(-3.44)	(-2.09)
UE*TREAT			-1.242***	-1.168***	-3.607***	-3.152***
			(-3.78)	(-3.63)	(-5.18)	(-3.96)
UE*Log(Size)	-0.101	-0.135***		-0.162**	-0.140**	-0.189***
	(-1.64)	(-3.23)		(-2.53)	(-2.32)	(-3.24)
UE*Market-to-Book	0.062***	0.089***		0.082***	0.088***	0.054***
	(3.23)	(6.99)		(4.77)	(5.05)	(2.70)
UE*Beta	0.219*	0.368***		0.346***	0.370***	0.310***
	(1.82)	(4.31)		(2.68)	(3.05)	(2.77)
UE*Leverage	-0.102***	-0.120***		-0.101***	-0.116***	-0.070*
	(-3.45)	(-4.99)		(-2.93)	(-3.39)	(-1.95)
UE*Persistence	0.236	0.153		0.086	-0.159	0.470*
	(0.88)	(0.90)		(0.33)	(-0.63)	(1.74)
UE*Loss	-2.222***	-2.921***		-3.414***	-6.242***	-5.966***
	(-10.36)	(-21.32)		(-16.47)	(-8.23)	(-7.25)
UE*Dispersion	-1.681***	-2.552***		-1.888***	-2.804***	-0.693**
	(-2.76)	(-6.51)		(-3.62)	(-5.05)	(-2.11)
UE*Loss*POST*TREAT					-3.051***	-4.364***
					(-3.45)	(-4.60)
Nonlinear						-29.263
						(-1.51)
Nonlinear*TREAT						-35.741*
						(-1.70)

Nonlinear*POST						-20.329
						(-1.01)
Nonlinear*POST*TREAT						51.026**
						(2.34)
Firm Characteristics, Firm Characteristics*UE	Yes	Yes	No	Yes	Yes	Yes
Fixed Effects	No	No	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry
Fixed Effects*UE	No	No	Yes	Yes	Yes	Yes
Treatment Indicators (POST, TREAT)	No	No	Yes	Yes	Yes	Yes
POST*TREAT	No	No	Yes	Yes	Yes	Yes
UE*Treatment Indicators	No	No	Yes	Yes	Yes	Yes
Loss*UE interacted with Treatment Indicators	No	No	No	No	Yes	Yes
Nonlinear (=UE*|UE|).	No	No	No	No	No	Yes
Nonlinear*Treatment Indicators	No	No	No	No	No	Yes
Observations	14,509	14,498	14,501	14,491	14,490	14,497
Number of Treatment Obs.	12,778	12,769	12,778	12,766	12,770	12,772
Number of Control Obs.	1,731	1,729	1,723	1,725	1,720	1,725
Cluster	Date	Date	Date	Date	Date	Date
Adj. R-squared	0.074	0.121	0.109	0.148	0.152	0.179

Table 4 Change in ERC: Cross-sectional test based on Ex Post Measures of Improvement in Pay Disclosures

This table reports the results from the estimation of equation (1), modified to examine whether the change in ERC varies based on ex post measures of improvement in compensation disclosures. In Column (1) we only examine treatment firms (since control firms did not receive SEC comment letters) and partition them based on whether or not a firm received a SEC comment letter. In particular, we run the following robust regression: $CAR_{i,t} = \beta_0 + \beta_1 UE_{i,t} * POST_{i,t} * No\_SEC\_CL_{i,t} + \beta_2 UE_{i,t} + \beta_3 * No\_SEC\_CL_{i,t} + \beta_4 POST_{i,t} + \beta_5 UE_{i,t} * POST_{i,t} + \beta_6 UE_{i,t} * No\_SEC\_CL_{i,t} + \beta_7 POST_{i,t} * No\_SEC\_CL_{i,t} + \beta_m Controls + \beta_n UE_{i,t} * Controls + \varepsilon_{i,t}$. *No_SEC_CL* is defined as one if the firm does not receive a SEC Comment Letter for failure to comply with the 2006 compensation disclosures.

In Columns (2) and (3), we examine treatment and control firms separately and partition each subset based on whether or not a firm begins to disclose its CFO compensation after the CD&A rules. In particular, we run the following robust regression: $CAR_{i,t} = \beta_0 + \beta_1 UE_{i,t} * POST_{i,t} * CFO\ Pay\ \_New_{i,t} + \beta_2 UE_{i,t} + \beta_3 * CFO\ Pay\_New_{i,t} + \beta_4 POST_{i,t} + \beta_5 UE_{i,t} * POST_{i,t} + \beta_6 UE_{i,t} * CFO\ Pay\_New_{i,t} + \beta_7 POST_{i,t} * CFO\ Pay_{New_{i,t}} + \beta_m Controls + \beta_n UE_{i,t} * Controls + \varepsilon_{i,t}$. *CFO Pay_New* is defined as one if the firm began to disclose information about CFO compensation after the CD&A rules. We present the results within treatment firms (Columns (2)) and within control firms (Column (3)), respectively. Also reported is the p-value of the difference in change in ERC between the two columns. For parsimony we only report the coefficient of interest (*UE*POST*No_SEC_CL* and *UE*POST*CFO Pay_New*). Note that the sample size in Columns (2) and (3) is smaller than in Table 3 because we have access to CFO pay data only for the S&P 1500 firms covered by the Execucomp dataset. *t-statistics*, based on robust standard errors clustered at the earnings announcement date level, are presented below the coefficient estimates. ***, **, * indicates significance level at 1%, 5%, and 10%, respectively.

	(1)	(2)	(3)
	No_SEC_CL=1: Firm did not receive a SEC comment letter	CFO Pay_New=1: Firm began to disclose CFO pay after CD&A rules	
VARIABLES	Within Treatment Firms	Within Treatment Firms	Within Control Firms
UE*POST*No_SEC_CL	**0.812***		
	(1.86)		
UE*POST* CFO Pay_New		**2.819*****	**-1.431**
		(3.48)	**(-0.74)**
p-value for difference in coefficients		0.06	
Firm Characteristics, Firm Characteristics*UE	Yes	Yes	Yes
Fixed Effects	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry
Treatment Indicators (POST, No_SEC_CL)	Yes		
Treatment Indicators (POST, CFO Pay_New)		Yes	Yes
Interaction Treatment Indicators	Yes	Yes	Yes
Treatment Indicators*UE, Fixed Effects*UE	Yes	Yes	Yes
Observations	12,765	6,603	1,061
Number of Obs. No_SEC_CL=1 (0)	1,815 (10,950)		
Number of Obs. CFO Pay_New=1 (0)		347 (6,256)	122 (939)
Cluster	Date	Date	Date
Adj. R-squared	0.139	0.156	0.233

Table 5 Change in ERC: cross-sectional test based on Ex Ante Measure of Expected Improvement in Pay Disclosures

This table reports the results from the estimation of equation (1) separately for treatment and control firms, with each subset partitioned based on the level of excess CEO pay, a proxy for expected improvement in compensation disclosures. We adopt the following robust regression: $CAR_{i,t} = \beta_0 + \beta_1 UE_{i,t} * POST_{i,t} * Excess\ Pay_{i,t} + \beta_2 UE_{i,t} + \beta_3 * Excess\ Pay_{i,t} + \beta_4 POST_{i,t} + \beta_5 UE_{i,t} * POST_{i,t} + \beta_6 UE_{i,t} * Excess\ Pay_{i,t} + \beta_m Controls + \beta_n UE_{i,t} * Controls + \varepsilon_{i,t}$. *Excess Pay* is equal to one for firms with excess CEO pay above the sample median. We run the analysis within treatment firms (Column (1)) and within control firms (Columns (2)) respectively. Also reported are p-values of the differences in change in ERC between treatment and control firms. In Column (3) and Column (4), we then partition our treatment sample based on whether the firm received a comment letter from the SEC. Also reported is the p-value of the difference in change in ERC between the two columns. For parsimony, we only report the coefficient of interest (*UE*POST*Excess Pay*). Note that the sample size is smaller than in Table 3 because we have access to executive compensation data only for the S&P 1500 firms covered by the Execucomp dataset, respectively. *t-statistics*, based on robust standard errors clustered at the earnings announcement date level, are presented below the coefficient estimates. ***, **, * indicates significance level at 1%, 5%, and 10%, respectively.

	(1)	(2)		(3)	(4)
	Excess Pay=1: Excess pay>median			Excess Pay=1: Excess pay>median	
VARIABLES	Within Treatment Firms	Within Control Firms	VARIABLES	Within Treatment Firms w/o SEC comment letter	Within Treatment Firms w/SEC comment letter
UE*POST*Excess Pay	**1.486****	**-0.032**	**UE*POST*Excess Pay**	**3.595*****	**-1.252**
	(2.53)	**(-0.02)**		**(4.93)**	**(-1.33)**
p-value for difference in coefficients	0.24		p-value for difference in coefficients	0.00	
Firm Characteristics, Firm Characteristics*UE	Yes	Yes	Firm Characteristics, Firm Characteristics*UE	Yes	Yes
Fixed Effects	Year-Quarter, Industry	Year-Quarter, Industry	Fixed Effects	Year-Quarter, Industry	Year-Quarter, Industry
Fixed Effects*UE	Yes	Yes	Fiscal Quarter*UE	Yes	Yes
Treatment Indicators (POST, Excess Pay)	Yes	Yes	Treatment Indicators (POST, Excess Pay)	Yes	Yes
POST*Excess Pay	Yes	Yes	POST*Excess Pay	Yes	Yes
UE*Treatment Indicators	Yes	Yes	UE*Treatment Indicators	Yes	Yes

Observations	4,277	854	Observations	1,378	3,164
N. Obs. Excess Pay=1	2,369	334	N. Obs. Excess Pay=1	784	1,482
N. Obs. Excess Pay=0	1,908	520	N. Obs. Excess Pay=0	594	1,682
Cluster	Date	Date	Cluster	Date	Date
Adj. R-squared	0.168	0.258	Adj. R-squared	0.210	0.156

Table 6 Change in Earnings Management around the CD&A Rules

This table compares proxies for earnings management between treatment and control firms in the Pre and Post periods as well as their change from the Pre to the Post period. Panel A, Panel B, Panel C and Panel D report univariate differences in, respectively, the levels of absolute values of discretionary accruals calculated based on Dechow and Dichev (2002), modified Jones model (Dechow et al. 1995), performance-adjusted modified Jones model (Kothari et al 2005), and growth-adjusted modified Jones model (Collins 2017). Panel E reports the results from multivariate analyses regressing proxies for earnings management on treatment indicators (POST, TREAT), their interaction (POST*TREAT, the coefficient of interest) and the firm characteristics in Table 3. Columns (1) – (4) report results from OLS regressions where the dependent variables are the absolute values of discretionary accruals calculated based on each of the four models, respectively. The coefficients for the intercepts are untabulated. *t-statistics*, based on robust standard errors clustered at the firm level, are presented below the coefficient estimates. All the variables are defined in detail in Appendix 2. ***, **, * indicates significance level at 1%, 5%, and 10%, respectively.

Panel A Dechow-Dichev (2002)

	Pre	Post	Post-Pre
Treatment Firms	0.019	0.018	-0.001
Control Firms	0.023	0.021	-0.002**
Treatment - Control	-0.004***	-0.003***	**0.001**

Panel B Modified-Jones (Dechow et al. 1995)

	Pre	Post	Post-Pre
Treatment Firms	0.019	0.017	-0.002
Control Firms	0.023	0.020	-0.003***
Treatment - Control	-0.004*	-0.003***	**0.001**

Panel C Performance-matched (Kothari et al. 2005)

	Pre	Post	Post-Pre
Treatment Firms	0.030	0.028	-0.002
Control Firms	0.034	0.033	-0.001
Treatment - Control	-0.004***	-0.005***	**-0.001**

Panel D Growth-adjusted (Collins et al. 2017)

	Pre	Post	Post-Pre
Treatment Firms	0.020	0.019	-0.001
Control Firms	0.023	0.021	-0.002*
Treatment - Control	-0.003***	-0.002***	**0.001**

Panel E Regression Analysis

	(1)	(2)	(3)	(4)
VARIABLES	Dechow-Dichev	Modified-Jones	Performance-matched	Growth-adjusted
POST*TREAT	0.002	0.001	-0.000	0.001
	(1.51)	(0.51)	(-0.25)	(0.46)
TREAT	-0.003***	-0.003***	-0.002**	-0.002**
	(-3.29)	(-3.17)	(-2.10)	(-2.40)
Size	-0.001***	-0.001***	-0.001***	-0.001***
	(-6.75)	(-6.26)	(-3.97)	(-4.25)
Market-to-book	0.001***	0.001***	0.001***	0.001***
	(6.83)	(4.72)	(6.61)	(5.75)
Beta	0.001**	0.002***	0.001*	0.001*
	(2.57)	(4.90)	(1.92)	(1.95)
Leverage	-0.002***	-0.002***	-0.002***	-0.001***
	(-7.10)	(-5.47)	(-5.64)	(-4.16)
Earn_Persistence	0.000	0.000	0.001	0.001
	(0.42)	(0.06)	(0.54)	(0.56)
Loss	0.004***	0.002**	0.006***	0.004***
	(4.43)	(2.13)	(4.67)	(4.56)
Dispersion	0.001	0.001	0.025	0.006
	(0.21)	(0.11)	(1.11)	(0.94)
Observations	13,724	13,196	13,053	13,315
Fixed Effects	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry	Year-Quarter, Industry
Cluster	Firm	Firm	Firm	Firm
Adj. R-squared	0.087	0.090	0.095	0.085