On the SEC's Enforcement Cooperation Program: A Regime Shift after 2010*

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Abstract

This paper examines the interplay between the SEC and accounting misconduct firms under the SEC's modified leniency program of 2010. In contrast to previous findings that the SEC penalized cooperative violators prior to 2010, we show that post-2010, the Commission rewards cooperation, particularly good faith cooperation. Unlike prior studies, our results are *not* conditional on firms receiving enforcement actions. We also show that misconduct firms, despite initial hesitation, have adapted their cooperation strategies to the SEC's post-2010 leniency practices. Our findings highlight the importance of regulators establishing clear *ex-ante* incentives and limiting *ex-post* prosecutorial discretion to mitigate the cooperation hold-up problem. Our results also caution against using SEC sanctions as a proxy for severity of misreporting after 2010.

Keywords: SEC enforcement, Cooperation, Leniency, Prosecutorial discretion, Restatement

JEL Classifications: G18, G38, K42, M14

1. Introduction

Law enforcement agencies often feature leniency programs. For example, the Antitrust Division of the Department of Justice (DOJ) grants reduced criminal charges to violators who voluntarily report their cartel activity. Economic theory suggests that leniency programs can be powerful enforcement tools because they address two fundamental issues: costly investigation and probabilistic enforcement (Malik 1993; Kaplow and Shavell 1994).[1] By inducing self-reporting and voluntary remediation from violators, regulators can conserve valuable enforcement resources, as well as uncover and rectify more misconduct than they otherwise would (Innes 1999). However, in contrast to what theory suggests, the leniency program at the Securities and Exchange Commission (SEC)—beginning with the Seaboard Report in 2001—illustrated a different reality. Despite receiving a higher annual budget,[2] the SEC failed to detect egregious cases of financial fraud during the 2008 Financial Crisis,[3] and empirical evidence suggests the SEC penalized—as opposed to rewarded—misconduct firms after they cooperated.[4]

In the wake of such criticism, the SEC took two important affirmative steps on January 13, 2010: First, it issued a new cooperation initiative, and, second, it published the 2010 *SEC Enforcement Manual*, which, for the first time, devoted an entire section to formalizing a multitude of new cooperation policies, including (1) a framework for evaluating firm and individual cooperation, (2) a spectrum of tools for facilitating and rewarding cooperation, (3) minimum authority levels for staff when negotiating leniency with firms, and (4) publicizing the nature and benefits of cooperation. As then-director Robert Khuzami said, "[t]his is a potential game-changer

[1] See Becker (1968) for a classic discussion of these two fundamental issues in law enforcement.
[2] Since the SEC introduced its first program for firm cooperation in 2001 with the Seaboard Report, its annual budget surged by over 125% to reach almost $1 billion in 2009. The SEC's annual budget can be found at https://www.sec.gov/foia/docs/budgetact.htm.
[3] These cases were the Bernard Madoff Ponzi Scheme and Lehman Brothers (Moyer 2008; Henriques 2009).
[4] See Files (2012) and Files, Martin, and Rasmussen (2018).

for the Division of Enforcement" (SEC 2010a). Despite the potential of the new initiative, limited evidence exists on two basic questions. First, when does the SEC exercise leniency, and is the 2010 initiative a real game-changer? Second, have the new 2010 policies induced more cooperation from firms? The purpose of our study is to provide initial evidence to answer these questions.

Our empirical investigation is important for several reasons. First, given the current federal budget cuts, understanding the interplay between the SEC and firms under a resource-conserving leniency program is crucial to effective enforcement in a new era (Kedia and Rajgopal 2011).[5] Second, there are no clear *ex-ante* predictions on how the SEC and violators interact under the modified 2010 program. Since violators face a classic "hold-up" problem (i.e., that cooperation is irreversible and can be *ex-post* expropriated by the regulator), the key issue is to reduce firms' risk bearing costs by enhancing the program's transparency and restraining regulators' prosecutorial discretion (Kaplow and Shavell 1994; Miller 2009; Hammond 2009). Many argued that the SEC's previous 2001 cooperation program lacked transparency,[6] while the 2010 cooperation program mitigates firms' hold-up problem by instituting formal guidelines in the 2010 SEC Enforcement Manual that the SEC staff must follow, setting minimum authority levels for SEC staff during negotiations to ensure consistency, and establishing *case precedent* (via public disclosure of the details of cooperation cases and formal agreements) for how the SEC plans to reward future cooperation,[7] all of which curb the SEC's *ex-post* prosecutorial discretion. However, since the

[5] In anticipation of budget cuts, the Division of Enforcement recently banned non-essential travel. The Division has also imposed a hiring freeze and reduced the use of outside contractors. See Robinson and Bain (2017).

[6] This is because the 2001 program only outlined cooperative actions that made the firm *eligible* for leniency, and it allowed SEC line lawyers to apply the guidelines inconsistently (with no manual), thereby exploiting cooperative firms (DeHaan, Kedia, Koh, and Rajgopal 2015).

[7] In our private conversation with a former senior SEC official (who requested anonymity), s/he revealed that after the SEC published the full-text of cooperation cases and agreements online as illustrative examples, defense lawyers in

SEC's leniency decisions do not bind other judicial or regulatory bodies, violating firms, out of an abundance of caution, may still be reluctant to cooperate after 2010 (Crudo and Horn 2012).

We focus our empirical analysis on two periods: post-Seaboard (2002-2010) and post-2010 initiative (2011-2014).[8] To closely capture deliberate financial misconduct and avoid trivial accounting mistakes, we limit our sample to income-decreasing accounting restatements and measure SEC sanctions using the incidence of enforcement actions and monetary penalties against firms (e.g., Kedia and Rajgopal 2011; Files 2012; Correia 2014). To capture firm cooperation, we consider four distinct actions suggested by the Seaboard Report: self-investigation, timely reporting, prominent disclosure, and replacing executives. Self-investigation refers to firms voluntarily appointing an internal committee, or retaining outside legal counsel, to perform an independent investigation. Timely reporting and prominent disclosure are related to the timing and channel (i.e., press release) of public disclosure of the misconduct. The last measure, replacing executives, captures the extent of voluntary remediation, as the SEC has stressed holding culpable executives accountable. Regarding SEC enforcement, we estimate that after the first initiative, one unit higher in the cooperation "composite" score (based on the four suggested actions) is associated with a 4.1% *higher* chance of enforcement actions and $3.2 million more in penalties; after 2010, it is related to a 3.3% *lower* probability of enforcement and $3.7 million less in fines. We also find that after the first initiative, the SEC penalized all cooperative actions except for timely reporting,

the new era started to write letters "citing Seaboard factors and how [their clients] comply with every factor in those 'shining examples'," . Lawyers explicitly told the SEC staff, "I'm here to get my Seaboard credit."

[8] Although the SEC's 2010 initiative was announced on January 13, 2010, the first published case under this revised program, Carter's, was not announced/signed until December 20, 2010, at which time it set official case precedent. Thus, we start our post-2010 initial period in 2011. Our restatement sample ends in 2014 to allow enough time to capture SEC enforcement actions (updated as of January 2018), which could take up to four years after a restatement. One concern is that certain restatements announced in 2013 and 2014 could still be under investigation. To address this concern, we limit the post-2010 sample to 2011-2012 restatements (Table 10 Columns 1 and 2), and the results are qualitatively similar.

but after 2010, the SEC rewards firms that disclose quickly and replace executives.[9] In additional tests, we find that after 2010, the SEC acknowledged cooperation in AAERs by using more detailed descriptions (as opposed to generic, standard language), and it increased mentions of cooperation in public speeches. Collectively, the evidence suggests that the SEC "appear[s] fully committed to the new regime" (Ellsworth 2010).

To address concerns that firm and misconduct heterogeneity could drive both firm cooperation and SEC sanctions, we apply a battery of controls involving an entropy balancing technique and Files' (2012) treatment-effects model, and we obtain similar results. Most importantly, endogeneity appears to be less of a concern in our enforcement regressions, as the same endogeneity source is unlikely to drive two *opposite* relations (to turn a positive relation into a negative one).

Next, we test whether the policy changes introduced by the 2010 initiative have induced more cooperation by firms, and we have three main findings. First, when examining the average yearly effect, we find no significant change in firms' cooperation behavior in the first four years following the 2010 initiative (with the exception of a negative effect in 2013). Second, after we incorporate the number of SEC hotline complaints, we document a negative relation between cooperation and complaints, and the 2013 effect becomes insignificant; this suggests that firms adjust cooperation downward when they fear the SEC staff has performed poorly. Third, starting from 2014, we find that firms replaced significantly more executives; given that post-2010, the SEC granted more leniency to firms that replaced their executives, this demonstrates that firms

[9] Prominent disclosure does not reduce sanctions, and the SEC continues to penalize firms conducting internal investigations, perhaps because these are now viewed as commonplace. In his speech on March 13, 2015, Andrew Ceresney, Director, Division of Enforcement, stated that "[a]s for the nature of cooperation, I think that the bar has been raised… For example, internal investigations have now become common…, government officials have reemphasized recently the need for companies to share information on … who is responsible so that we can hold them accountable" (Ceresney 2015).

have increased their cooperation in the predicted manner. Despite their initial hesitation and a "learning curve", firms have adapted their cooperation strategies to the SEC's new leniency practice.[10]

While one concern may be that observing a shift in SEC enforcement after the SEC voluntarily introduced a new cooperation initiative is not surprising, we contend this is still an important issue for several reasons. First, after the SEC introduced its first cooperation initiative in 2001, it penalized cooperative firms, so documenting whether the SEC has curbed this behavior is crucial to firms. Second, the SEC does not reward all cooperative activities equally, so demonstrating that the SEC rewards timely disclosure and replacing executives over other measures helps to guide resource-constrained firms choose their activities. Third, cooperating firms face a hold-up problem, and showing that these firms have adjusted their cooperation upward (when the SEC rewards the measure) and downward (when there are more SEC complaints) reveals to what extent the cooperation program has achieved its intended goal.

Another important concern for our study is how contemporaneous policies affect our results. First, the 2010 Dodd-Frank Act rewards whistleblowers only when penalties exceed $1 million, so we exclude cases with over $1 million in fines and find similar results. Second, some argue that the new 2010 policy allowing for streamlined witness immunity requests may encourage individual cooperation, potentially confounding our results; however, this would bias against our finding of more leniency towards firms because our analysis reveals that individual cooperation

[10] In supplementary tests, we conduct an event study on two key dates around the 2010 initiative: the promulgation date (1/13/2010) and the announcement of the first non-prosecution agreement (NPA) and case precedent under the revised program (12/20/2010). We find a much larger and statistically stronger positive price reaction to the second date than to the first date. This is consistent with the notion that while firms and shareholders were initially uncertain about the revised program, they took it more seriously when the SEC announced the first NPA case.

and firm cooperation are likely substitutes rather than complements.[11,12] Third, despite the uptick in firms correcting small misreporting errors with revisions rather than restatements (Choudhary, Merkley, and Schipper 2017), this practice is unlikely to affect our main test, as we focus on material misreporting. Nonetheless, our results should be evaluated with these caveats in mind.

We contribute to the relatively few studies on the SEC's leniency program. Files (2012) finds that cooperative firms are *more* likely to be sanctioned by the SEC during her sample period (1997-2005). While our Seaboard-era analysis confirms her findings, we show a stark reversal in the relation after 2010. Files (2012) also finds that, *conditional* on receiving enforcement actions (i.e., 10% of sample), cooperative violators pay lower monetary penalties, but we note it is unclear what inferences can be applied to the remaining 90% of the sample. Our *unconditional* test shows the opposite: cooperative firms, on average, paid higher penalties in the pre-2010 era. In another relevant study, Files, Martin, and Rasmussen (2018) use a similar design as Files (2012) and show that, *conditional* on receiving enforcement actions, violators who engage in self-reporting and remedial actions receive cooperation credit, which reduces monetary penalties. Likewise, they state, "[a]n important limitation […] is that we cannot identify the net cost or benefit of receiving cooperation credit from regulators" (p. 6). Our analysis complements their tests by showing that cooperative firms paid higher monetary penalties than *non-cooperative firms* in the pre-2010 period, but they paid lower fines in the post-2010 era. Furthermore, we document a change in misconduct firms' cooperation decisions around 2010, which has not been examined before.

[11] Even though the 2010 Initiative put a spotlight on individual cooperation, it also clarified the circumstances under which firm cooperation is rewarded. While one concern may be that increased individual cooperation may complement firm cooperation—thereby confounding our results—our analysis suggests there is a "first-mover" advantage in that the first party to cooperate helps the regulator bring charges against other individuals and entities (Dubow et al., 2015). Given this first-mover advantage, a cooperative individual as the first-mover means the SEC would be more likely to bring charges against (and less lenient towards) the related cooperative firm; instead, our results show the opposite, that the SEC is more lenient and levies lower penalties with after 2010 against cooperative firms.

[12] As an illustrative example, the first individual cooperation agreement in In re: AXA Rosenberg shows that the SEC credited a "senior executive" for being the first to offer cooperation (before the company), and his cooperation led to settled enforcement actions against the company, which included a significant penalty.

Finally, while SEC sanctions are typically used to measure misreporting, if the SEC grants leniency to cooperative violators, then the link between misreporting and SEC sanctions would then become ambiguous. In contrast to the early period, we show that in the post-2010 era, there is no clear monotonic relation between the severity of misreporting and the incidence of SEC sanctions or monetary penalties. We caution future research against using SEC sanctions as a proxy for the severity of misreporting.

The rest of the paper is organized as follows. Section 2 discusses the background, related research, and hypotheses. Section 3 describes our sample. Section 4 provides details on our estimation methodology. Section 5 presents our main empirical tests, and Section 6 presents robustness checks and supplementary tests. Section 7 discusses implications for future research using AAERs to measure financial misreporting. Concluding remarks are provided in section 8.

2. Background, Related Research, and Hypotheses

2.1 Background and Prior Research

The SEC first introduced its enforcement cooperation program on October 23, 2001, when it released an investigation report on the financial misconduct by Seaboard Corporation. In what would later be known as the Seaboard Report (AAER 1470)[13], the SEC explained its decision to take no enforcement action against the firm and, more importantly, laid out several measures that a registrant could take to earn cooperation credit during SEC investigations. These measures included conducting internal investigations, reporting misconduct to the public in a timely and prominent fashion, disciplining or dismissing culpable employees, improving controls and compliance to prevent future recurrence, and providing reasonable assistance to the SEC staff during investigations. By taking these cooperative actions, violating firms became eligible to

[13] https://www.sec.gov/litigation/investreport/34-44969.htm

receive reduced sanctions and less severe judgments, or to even have enforcement actions dropped completely (Ceresney 2015).

Despite its appealing nature, the SEC's 2001 leniency program had major drawbacks. For example, the SEC provided only a vague and ambiguous description of how it would grant cooperation credit to firms (Hamilton, 2011). Back in 2001, the SEC Division of Enforcement had no formal manual that articulated the evaluation framework or cooperation tools to be used during the investigations.[14] On average, the majority of firms would not know *ex-ante* whether and how they could earn cooperation credit; the SEC provided a definitive answer only after the investigation was complete. As shown in Figure 3, the time period between a firm taking cooperative actions and the SEC deciding the final outcome was more than one year in the Seaboard case.[15] Furthermore, the Commission's final decision was based largely on the SEC line lawyers' subjective judgments—which could differ across offices and individuals—without relying on a standardized framework for evaluating cooperation or a centralized approval authority for verification. Because some SEC line lawyers tended to take aggressive enforcement actions against violators to advance their personal career paths (DeHaan et al. 2015), firms seeking cooperation credit often bore considerable risk because their cooperation would not necessarily lead to benefits and in many cases was expropriated (Files 2012).

Facing harsh criticism after the financial crisis and recognizing that uncertainty about rewards could discourage cooperation and jeopardize the leniency program, the SEC issued a new

[14] In 2007, the Senate Finance and Judiciary Committees recommended that the SEC adopt an enforcement manual. The first Enforcement Manual was dated October 6, 2008. (18-03179-FOIA).

[15] In Figure 3, the waiting period between Events #3 and #4 is necessary so the SEC can evaluate the quality of the firm's investigation to decide whether to forego spending its own resources on its own investigation; as shown in Appendix E Panel C, there are four cases from the SEC's Cooperation Initiative Homepage where the SEC acknowledged this point.

cooperation initiative on January 13, 2010 to revitalize its program;[16] on this same date, the SEC issued its Enforcement Manual for 2010, which included a brand new "Section 6: Fostering Cooperation" to elaborate on:

- A framework for evaluating firm and individual cooperation;
- A wide spectrum of tools for facilitating and rewarding cooperation (including non-prosecution agreements (NPAs), deferred prosecution agreements (DPAs), Cooperation Letters, Settlement Recommendation, etc.);
- The minimum level of authority needed for approval of cooperation outcomes; and
- Publicizing the nature and benefits of entities' cooperative activities.

We list out the new cooperation tools from the 2010 Enforcement Manual in Appendix A. The framework provides SEC line lawyers explicit guidelines to review misconduct firms' cooperative efforts. The variety of formal cooperation tools also helps cooperating entities clarify their responsibilities and secure their benefits at different stages of the investigation. Most importantly, with these formal cooperation tools (e.g., Settlement Recommendation, Deferred Prosecution Agreements, Non-Prosecution Agreements) elaborating the circumstances, manner, and extent of cooperation and the corresponding leniency treatment, as well as the SEC publicizing these details on its website, helps to establish case precedent for how the Commission will reward future cooperation.

The very first non-prosecution agreement under the revised leniency program, which was announced on December 20, 2010, provides a good illustrative example of how the SEC sets case

[16] After replacing Christopher Cox in January 2009, SEC Chairwoman Mary Schapiro launched a redesign of the Enforcement Division with two goals—to quickly stop misconduct and efficiently use resources. When it was completed in 2010, Khuzami (2011) described it as "the most significant restructuring since the Division was created almost 40 years ago." He highlighted, among others, the new cooperation program as a "game changer" because it could help with both goals. The other main changes Khuzami (2011) discussed are (1) introducing five national specialized investigative units dedicated to areas of Asset Management, Market Abuse, Structured Product, Foreign Corrupt Practices Act violations, and Municipal Securities and Public Pension; (2) adopting a flatter, more streamlined organizational structure by adding more experienced managers back to front-line investigation; (3) establishing an Office of Market Intelligence to handle and process tips, complaints and referrals received by the Enforcement Division; (4) creating an Office of COO to handle IT, budget, HR, etc., thereby allowing investigative staff to focus on investigation; and (5) delegating authority to senior staff for subpoena issuing, MUI openings, Wells Notice calls, etc.

precedent.[17] Although Carter's had a material overstatement of its net income in several periods, the SEC decided to only charge the firm's former Executive Vice President, Joseph M. Elles, but not the firm because of Carter's extensive cooperation during the SEC investigation and the firm's substantial remedial actions. These cooperation activities included conducting a thorough internal investigation, reporting the findings to the SEC, promptly terminating Elles's employment, continuously responding to all inquiries, and testifying at trial or other judicial proceedings. Publicizing the details of the Carter's case on the SEC's website reduces uncertainty for future violators regarding potential outcomes and hence, encourages more cooperation (Johnson and Lawrence 2011).

Note that establishing case precedent is particularly relevant for firm cooperation because, as shown in Figure 3, firms cannot wait months to sign a formal agreement with the SEC before deciding to cooperate. A firm discovering serious financial misconduct is like a "house on fire"; the firm must take immediate action to stop, disclose, investigate, and remediate the misconduct before it causes further damage. As explicitly stated by the SEC, "[t]he Commission considered remedial acts *promptly* undertaken by respondent and cooperation afforded the Commission staff."[18] Consequently, having these previous cases as precedent is crucial.

It is important to note that case precedent alone may not be sufficient to mitigate the cooperation hold-up problem. Another important issue is to curb the SEC's ex-post prosecutorial discretion, and the 2010 Enforcement Manual guidelines specifying the minimum authority level for staff approving leniency credit during negotiations helps with this issue. Prior to 2010, the SEC gave its line lawyers a broad amount of discretion when negotiating leniency and penalties with misconduct firms. As a result, many SEC lawyers that were trying to make a name for themselves

[17] https://www.sec.gov/litigation/cooperation/2010/carters1210.pdf
[18] See, for example, https://www.sec.gov/litigation/admin/34-45393.htm.

became aggressive in getting companies to pay money and punishing them; this is likely one reason why prior to 2010, cooperative firms had a higher likelihood of receiving a sanction from the SEC. This is consistent with the evidence in DeHaan, Kedia, Koh, and Rajgopal (2015) that line lawyers build "human capital." However, by centralizing the approval authority for cooperation tools, the 2010 guidelines effectively restrain the prosecutorial discretion of line lawyers and ensure consistency in applying the leniency policies.

Despite the anecdotal evidence and the importance of SEC enforcement actions, empirical work on the SEC's leniency program has been rather scarce. Most empirical studies on SEC enforcement focus either on the determinants of financial misreporting (e.g., Dechow et al. 1995, 1996, 2011) or economic consequences of enforcement actions (e.g., Feroz et al. 1991; Karpoff et al. 2008; Silvers 2016). While a few recent studies have begun to explore factors underlying SEC enforcement (e.g., Kedia and Rajgopal 2011; Correia 2014), these studies do not address the important interplay between the SEC and misconduct firms under leniency programs.

One notable exception is Files (2012), who documents that the SEC punished cooperation during the time period 1997-2005, and *conditional* on firms receiving SEC enforcement actions (i.e., 10% of her sample), cooperative firms pay lower monetary penalties.[19] In another recent study, Files et al. (2018) adopt a similar research design and find that, *conditional on* receiving enforcement actions, misconduct firms who engage in self-reporting and remedial actions receive cooperation credit, which reduces monetary penalties. These *conditional* tests make it difficult to estimate the net cost or benefit of cooperation, especially considering that cooperative firms are more likely to be cited in SEC enforcement actions.

[19] Interpreting this conditional result can be difficult because it does not address to what extent non-cooperation helps misconduct firms avoid SEC enforcement actions altogether (and hence monetary penalties). More importantly, it is unclear whether these relations would still hold under the revised leniency program after 2010.

Given the mixed findings from prior research regarding the net effect of cooperation and uncertainty for firms under the revised program, the purpose of our study is to provide initial evidence on two basic questions. First, when does the SEC exercise enforcement leniency towards cooperation, and is the 2010 initiative a real game-changer? Second, are firms more willing to cooperate after the 2010 initiative, consistent with its objective? We outline our predictions.

2.2 Hypothesis Development

Economic theory suggests that a leniency program can help regulators better detect and remediate misconduct as compared to direct monitoring. Under a well-functioning cooperation program, regulators have incentives to award cooperative violators with reduced penalties, and violators would choose to cooperate in exchange for pre-defined rewards. In his seminal work, Becker (1968) recognizes that it is not socially optimal to detect all violations under a pure sanction system. A more efficient enforcement system detects wrongdoers with a probability that is less than one hundred percent and increases the amount of sanctions accordingly. Extending this probabilistic law enforcement model, Kaplow and Shavell (1994) examine an enforcement scheme with self-reporting, where violators that admit guilt enjoy a reduced sanction. They show that a scheme with self-reporting is socially superior to a scheme without this feature because (1) regulators can save enforcement resources spent identifying wrongdoers who would turn themselves in, and (2) risk-averse violators can reduce their risk-bearing costs when admitters face an *ex-ante* certain sanction. Subsequent research also identifies a third benefit: that self-reporting discourages violators from engaging in detection avoidance activities (such as destroying evidence or covering up misconduct) that could be costly for both violators and regulators (Innes, 2001).

Innes (1999) further extends Kaplow and Shavel (1994) by considering an enforcement scheme that induces violators to engage in voluntary remediation before apprehension. In particular, violators who voluntarily remediate misconduct will receive reduced penalties. Innes

(1999) shows such an enforcement system provides two social benefits. First, violators conduct remediation, even without being apprehended. Second, given that the probability of self-remediation becomes independent of regulators' enforcement effort, regulators can save monitoring costs to achieve the desired level of deterrence.

However, prior law and political science literature argues that real world regulatory enforcement can be more complex than what stylized economic models suggest. For example, Carter (1979) recognizes that when an enforcement environment contains complicated and unexpected situations, regulators cannot write rules to provide well-defined outcomes for every scenario. By building "slack" into rules, regulators allow for *ex-post* subjective judgment, which could result in enforcement that is inconsistent with the stated intent. Additionally, Scholz (1984) points out a dilemma in enforcement—that regulatory agencies are often influenced by the changing political environment. After well-publicized negative events, public pressure for cracking down on wrongdoers could force regulators to impose sanctions on subjects, even if they show cooperative efforts. As a result, cooperative subjects become uncertain whether they will face reduced or heightened enforcement efforts. Kagan (1989) makes a similar argument that political influence can shift a regulator's enforcement style from "welfare-maximizing" to "criticism-avoiding." He posits that after a catastrophe that occurs under a regulator's jurisdiction, the regulator is likely to engage in more aggressive enforcement activities, at least for a short while (Kagan, 1989, p.106). Therefore, even with a leniency program in place, regulators, for various reasons, could act opportunistically by exploiting cooperative violators—inducing them to admit wrongdoing and then imposing a harsher penalty. In response, subjects would lose their trust in the enforcement scheme and choose not to cooperate.

Applying these arguments to the SEC's revised leniency program, there are clearly two opposing forces driving the SEC's enforcement decisions on cooperative firms. On one hand, the

SEC has incentives to build a more effective leniency program to induce misconduct firms to confess and cooperate more. This helps to support the ever-increasing enforcement efforts, conserve resources, and prevent other egregious fraud cases from going undetected. To dispel misconduct firms' hesitation to cooperate due to the hold-up problem, the SEC has incentives to improve its program transparency. On the other hand, the SEC has incentives to keep as much prosecutorial discretion as possible to accommodate complicated and unexpected enforcement environments and intense political pressure.[20] However, the more discretion it retains, the more leeway it has to exploit and potentially punish cooperative violators.

Introducing and publicizing formal cooperation agreements and tools allow the SEC to create credible and detailed case precedent for how future cooperation should be rewarded. This, coupled with a more consistent authorization system, helps restrain the SEC's *ex-post* prosecutorial discretion.[21] Therefore, considering the *joint effect* of these policy changes, the SEC is expected to exercise more leniency towards cooperative violators after 2010. However, critics argue that even after 2010, the SEC remains the "sole arbiter" to evaluate the quality of cooperation (Sporkin and Bacon 2014). If the SEC acts opportunistically in its evaluation, it could nullify the commitment made in written agreements, thereby relegating the agreements to false promises. Given the ambiguous nature of the change that the 2010 initiative introduces, we state our first hypothesis below in null form:

> **H1:** After the 2010 cooperation initiative, the SEC exhibits no difference in exercising enforcement leniency towards cooperative violators.

[20] For example, in June 2012, the SEC charged Harbinger Capital Partners for illegal securities dealing in an initial public offering. A tentative settlement was reached in May 2013 in which the company paid $4 million while the manager accepted a two-year ban from serving as an investment adviser. However, incoming SEC Chairwoman Mary Jo White believed the settlement was too lenient and forced renegotiation.

[21] In formal cooperation agreements, firms would be required to provide ongoing cooperation with the SEC on investigations of individuals and entities not released (e.g., executives and CPAs). Therefore, formal cooperation agreements, to a certain extent, do help cement firms' cooperation benefits before they undertake further cooperative activities in the post-2010 era.

Given a misconduct firm's apprehension of the hold-up problem, the firm's decision to cooperate hinges critically on a cost-benefit tradeoff between potential reduced sanctions and the risk of being *ex-post* expropriated by the SEC. As the 2010 initiative is argued to have made the SEC's leniency program more transparent by formalizing the evaluation framework and allowing for publicized formal cooperation agreements to establish case precedent, as well as the more consistent application of leniency policies, it is expected that violating firms will be more likely to embrace the leniency program after 2010. However, given the considerable prosecutorial discretion that the SEC retains on evaluating cooperation, it is questionable whether wrongdoers will indeed increase their faith in the new leniency program. Moreover, since the SEC's leniency decisions do not bind other judicial or regulatory bodies (such as the Department of Justice) in subsequent investigations, violating firms, out of an abundance of caution, could be reluctant to cooperate after 2010 (Crudo and Horn 2012). Given the contrasting arguments, we state our second hypothesis below in null form:

> **H2:** After the SEC's 2010 Initiative, misconduct firms exhibit no difference in their tendency to cooperate with the SEC.

3. Sample Selection and Data Description

3.1 Sample Selection Procedures

Table 1 Panel A summarizes our sample selection process. Our initial sample consists of 7,649 accounting restatements announced during 2002-2014 from the Audit Analytics (AA) database. We start from 2002, the first year after the Seaboard Report, and end at 2014 to allow enough time (i.e., four years) for the SEC to take enforcement actions. We drop 260 observations that have missing Compustat information for the year prior to the restatement. We eliminate 1,895 observations with missing CRSP information. Based on firm headquarters information, we drop another 576 restatements by non-U.S. firms. We further eliminate seven observations where filings

could not be located on the SEC's EDGAR system. We delete 730 observations in which CEO turnover information could not be identified from Boardex, Execucomp, or SEC filings, and we drop 73 observations with other missing regression variables.

Because a firm can make multiple announcements related to the same wrongdoing period, we collapse these subsequent announcements into one restatement observation by retaining the first announcement date (from the series) and using the earliest and latest wrongdoing period dates (from the series). This step eliminates 504 redundant restatement announcements. To closely capture deliberate financial misconduct, we follow Kedia and Rajgopal's (2011) approach to limit our analysis to income-decreasing restatements by dropping 532 income-increasing restatements. To avoid trivial accounting mistakes, we further eliminate another 1,974 restatements whose impact on earnings is less than one percent of total assets.[22] Finally, we drop 60 restatements made by high frequency restatement firms (i.e., 19 firms who have three or more restatements in the remaining sample) during our sample period, as the SEC likely treats routine violators differently (Files, Sharp, and Thompson 2014). Our final sample consists of 1,049 unique restatements.

We download all related Accounting and Auditing Enforcement Releases (AAERs) from the SEC's website up until January 2018. We read through each release to determine if the enforcement action is against a firm (as opposed to individuals, such as executives or auditors). This is an important step because, as shown in the Seaboard case, the SEC issued an AAER against Seaboard's executive only; it did not charge the firm because of its cooperative actions. If we code the AAER release on Seaboard as if the enforcement action was against the *firm*, we would fail to recognize leniency and have significant measurement error. Additionally, reading through each release helps identify and eliminate enforcement actions not related to financial misreporting, such

[22] See Section 6.4 and Table 9 Columns 5 and 6 for sensitivity tests on these trivial restatements.

as enforcement of the Foreign Corrupt Practices Act (FCPA). Besides the incidence of SEC enforcement actions, we also measure the form of the settlement and total monetary penalties against the firm. We search the text for cease-and-desist orders, injunctions, enjoinments, as well as dollar values of disgorgement, pre-judgment interest, post-judgment interest, penalties, fines, and restitution. We view settlement types and penalties as two alternate measures capturing the SEC's willingness to exercise leniency, as the SEC could issue a cease-and-desist order against a firm and impose no monetary penalties.[23]

We identify firms' cooperative actions (outlined in the SEC's 2001 Seaboard Report) and measure them within a window beginning six months before and ending six months after the restatement announcement. To collect the cooperation variables, we use Perl to download 96,520 firm filings (10Qs, 10Ks, 8Ks, and DEF proxy statements) from the SEC's EDGAR database for our sample firms.[24] After isolating the relevant disclosure text, we manually review the text to check whether the firm has formed an independent committee or retained an outside law firm to conduct an independent investigation; we code *Investigation* as one if this occurs and zero otherwise. *TimelyDisclose* is a dummy variable for whether the restatement was disclosed within one quarter after the end of the first misreporting period. *PromDisclose* is a dummy variable for whether the restatement was first disclosed in a press release, as opposed to in an SEC filing (e.g., 8K, 10Q, or 10K). Finally, we search for information about executive turnover and identify the current and/or subsequent CEO to determine if the firm replaced top executives; we code *ReplaceExec* as one if the CEO as of six months prior to the restatement announcement was different from the CEO as of six months after the restatement announcement and zero otherwise.

[23] See, for example, the AAER on LSB Industries, Inc. https://www.sec.gov/litigation/admin/2009/34-60336.pdf
[24] We identify disclosures on restatement and cooperation actions by searching for keywords, such as "restatem", "not be relied upon", "internal review", "independent review", "review", "investigat", "inquiry", "inquired", "conducting a", and "conducted".

Finally, we create a summary cooperation score *CoopSum* by summing all four cooperation dummy variables together. Therefore, *CoopSum* can take on values from zero to four.

3.2 Data Description

Appendix B contains all variable definitions. Table 1, Panel B and Figure 1 show the trend in our restatement sample over time. As shown in Figures 1A and 1B, the number of restatements announced (as indicated by the solid bars) has climbed from 64 in 2002 to reach a peak value of 179 in 2005. After that, the number steadily declines, except for a slight increase in 2012. What is noteworthy is the overall trend in SEC enforcement and corporate cooperative actions over time. At the beginning of our sample period, SEC enforcement actions against firms occur at a rate of 9.4% in 2002. The rate then falls to 6.6% in 2003 before climbing up to 12.8% in 2007. While the early decline might be attributed to the first installment of the SEC's leniency program, the increase around the financial crisis could be consistent with the notion that the SEC was under pressure to crack down on wrongdoers. After 2007, the rate of enforcement declines except for a jump in 2010. However, note that while the total number of restatements increases in 2012 and levels off in 2013 and 2014, the rate of SEC enforcement starts to drop, which hints at potentially more lenient treatment towards misconduct firms. Of course, the rate of SEC enforcement also depends on the severity of misreporting before and after 2010, which we control for in the regression analysis.

Regarding firm cooperation, Panel B of Table 1 shows that the summary cooperation score rises from 0.86 in 2002 to peak at 1.29 in 2006. The pattern of overall cooperation appears to level off, dip slightly in 2013, then slightly increasing in 2014. This pattern is likely explained by firms' initial enthusiasm for cooperation after the 2001 initiative, but this was later dampened by SEC enforcement during the financial crisis period. Regarding specific cooperative actions, our investigation variable shows a pattern of an increase from 17.2% in 2002 to 51.2% in 2006, then steadily declines to 4.9% in 2011. What is interesting is that *ReplaceExec* increased from 2013 to

2014 and appears to be the most popular of all the cooperative actions.

4. Methodology: The Relation between SEC Enforcement and Cooperation

4.1 Modeling the SEC Enforcement Decision

We begin our analysis by modeling the SEC's sanction against restatement firms, which can be summarized in the following equation:

$$SECSanction = \alpha + \beta * [Cooperation] + \gamma * [Severity] + \xi * [GeoProximity] + \delta * [WBStrength] + \varphi * [OtherControls] + \varepsilon \quad (1)$$

where *SECSanction* is proxied by three measures: (1) *Enforcement*, an indicator variable for whether the SEC issued an AAER against the firm; (2) *Settlement*, an ordered variable for the severity of firm settlement. This variable is set to 2 if the SEC imposed either an enjoinment or permanent injunction against the firm, 1 if a cease and desist order is issued, or 0 if no sanction is issued against the firm; and (3) the total dollar value assigned by the SEC for penalties, which is the sum of disgorgement, pre-judgment interest, post-judgment interest, penalties, fines, and restitution paid by the firm. In our model, *Cooperation* refers to either the summary cooperation score (*CoopSum*) or the four specific cooperation variables (*Investigation*, *TimelyDisclose*, *PromDisclose*, and *ReplaceExec*) defined in the previous section. Our H1 (in alternate form) tests whether the SEC has altered its enforcement leniency after 2010, i.e., whether a regime shift has occurred. If the SEC has become more lenient and rewards cooperative actions, then we predict a negative coefficient on *Cooperation* in Equation (1). If the SEC does not exercise more leniency or even penalizes cooperative firms, we predict a non-negative coefficient.

4.1.1 Restatement severity

Following Files (2012), we control for a number of *Severity* measures that may impact the SEC enforcement decision. *Litigation* is an indicator variable equal to 1 if a class action lawsuit was filed in response to the restatement. We obtain lawsuit filing information from the Stanford

Law School Securities Action Clearinghouse Database. We include two measures of restatement severity commonly found in prior research, restatement magnitude and concurrent return (Scholz 2008; Hennes, Leone, and Miller 2008; Leone and Liu 2010). Restatement magnitude is the cumulative earnings impact of the restatement, scaled by lagged total assets, with negative values indicating that the restatement reduced previously recorded net income. To ease the interpretation, we multiply it by -1 to create *RestateEarnings* so that larger positive values capture more severe restatements. Similarly, concurrent return is the three-day cumulative abnormal return around restatement announcement(s). As with restatement magnitude, we multiply our concurrent return variable by -1 to create the variable *RestateCAR* so that larger *positive* values of the return proxy for more severe restatements.

We calculate *LogDamages*, where damages are calculated by taking the difference between the highest market value during the violation period and the market value on the day after the restatement announcement (in billions). Larger damages are related to more severe restatements. We include *RestateLength*, which is an indicator variable equal to 1 if the length of the overall violation period is above the median and 0 otherwise. Longer violation periods capture more severe restatements. Our last severity variable is *RevRecognition*, an indicator variable equal to 1 if the restatement involves revenue recognition issues and 0 otherwise; we expect *RevRecognition* to be positively related to severity.

4.1.2 Geographic proximity, whistleblower, and other controls

Geographical proximity is likely to affect the resources the SEC must spend to investigate restatements (Kedia and Rajgopal, 2011). We control for *SECDistance*, which is the distance (in thousands of miles) from company headquarters to the SEC's headquarters. We also control for firm size using the natural logarithm of a firm's market capitalization, *LogMktCap*. We include

dummy variables for *Tech* firms, and we control for past performance (*PriorReturns*) and future performance (*PostReturns*).

Finally, we control for the effect of whistleblowers on the likelihood of SEC enforcement. Because the SEC does not make public the identity of whistleblowers and related firms, there is no direct measure of whistleblower activities. Instead, we rely on Baloria, Marquardt, and Wiedman (2017) to create an indirect measure of the relative strength of whistleblower programs across different firms. Specifically, Baloria et al. (2017) find that firms with weaker programs experience more positive returns around several events related to the whistleblower legislation. We calculate the average three-day abnormal return around these events and define a dummy variable *WBStrength*, which equals 1 if a firm's abnormal return is below the distributional median and 0 otherwise. A stronger whistleblower program allows for more active whistleblower actions and protects investors via deterring financial misconduct.

4.2 Modeling the Firms' Cooperation Decision

Misconduct firms consider several factors when making their cooperation decision. Therefore, to test H2 concerning whether the tendency to cooperate has changed over time, we estimate the following equation:

$$Cooperation = \alpha + \sum_{t=2002}^{2015} \beta^t * YearDummy^t + \gamma * [Severity] + \xi * [GeoProximity] + \delta * [WBStrength] + \varphi * [OtherControls] + \varepsilon \quad (2)$$

The purpose of Equation (2) is to examine how misconduct firms' cooperation behavior has changed in response to the SEC's revised leniency program in 2010. If misconduct firms perceive that the SEC would exercise more leniency towards cooperative firms after 2010, then they will take more cooperative actions, which results in a predicted positive coefficient on the year dummy variables after 2010. However, if the subject firm has little confidence in the SEC's

promises to reward cooperation, or if the firm does not want to expose its vulnerabilities by admitting wrongdoing, then we expect a negative or zero coefficient on the time dummies.

Similar to the SEC enforcement model, we control for many severity measures because more severe misreporting is more likely to be detected by the SEC, which provides an incentive for firms to engage in more cooperative actions. Furthermore, we also include other controls as specified in the enforcement model.

5. Empirical Results

5.1 Descriptive Statistics

Table 2 reports descriptive statistics for each variable included in our models. In Panel A, 8% of our sample received an SEC enforcement action against the firm. About one half of the actions are settled with a cease-and-desist order, whereas the other half are given a permanent injunction or enjoinment. This leads to an average SEC settlement of 0.12.[25] The average monetary penalties for misconduct firms are $0.22 million, while the median penalties remain at $0. The mean and median values for *CoopSum* are 0.88 and 1. The mean *Investigation*, *TimelyDisclose*, *PromDisclose*, and *ReplaceExec* values are 25%, 18%, 21%, and 24%, respectively. Our sample of restating firms report an average downward restatement of about 9% of lagged total assets, as indicated by *RestateEarnings*. The average three-day market reaction to the restatement announcement is -3%, as shown by *RestateCAR*. The mean distance from firms to the SEC's headquarters is approximately 1,140 miles. These firms report prior returns over the past year of 9.9% on average.

We report correlations among our variables of interest for the post-Seaboard and post-2010

[25] Of the 8% of enforcement actions, 4% are settled with a cease-and-desist order (with *Settlement* taking a value of 1), while the other 4% are settled with a permanent injunction or enjoinment (with *Settlement* taking a value of 2); the remaining *Settlement* values are 0.

eras in Table 2 Panels B and C, respectively. We group restatements announced in 2010 with the first leniency initiative under post-Seaboard period because although the SEC announced the second leniency program on January 13, 2010, it did not actually grant leniency in its first case until December 20, 2010; since the SEC has set case precedent by publicly announcing specific case results, firms may have been waiting for the first case under the revised program before making their cooperation decisions.[26] We note that our overall motivation is to examine the relation between firm cooperation (*Investigation*, *TimelyDisclose*, *PromDisclose*, and *ReplaceExec*) and SEC sanctions (*Enforcement*, *Settlement*, and *$Penalties*). Panel B reveals a significantly positive correlation between most of these variables, suggesting that on average, the SEC penalized cooperative firms after the first leniency initiative during 2002-2010. In contrast, Panel C shows no significant correlation between cooperation and SEC sanctions, except for *Investigation*, which indicates a major change in SEC enforcement after 2010. Panel B also shows strong positive correlations between most severity variables and SEC sanctions during 2002-2010. This highlights the importance of controlling for restatement severity in regressions. However, in Panel C, these correlations, albeit remaining positive, become less significant or insignificant. Finally, consistent with Kedia and Rajgopal (2011), Panel B shows a negative correlation between geographic proximity to the SEC and SEC enforcement in the post-Seaboard period. However, this correlation loses its significance after 2010, suggesting that firm cooperation and SEC leniency may also interfere with this relation.

[26] When the SEC announced its first cooperation initiative on October 23, 2001, it announced the initiative along with the first case, Seaboard, which set case precedent. Consequently, firms may have been skeptical when the second initiative was announced without an accompanying firm restatement.

5.2 Regression Results for SEC Enforcement

5.2.1 SEC Enforcement and Summary Cooperation Measure

In our first set of regression analyses shown in Table 3, we focus on the summary cooperation measure (*CoopSum*) to examine whether the SEC's enforcement actions vary with the number of cooperative actions taken by misconduct firms. *CoopSum* values of 0 indicate that the firm did not take any of the four cooperation measures, while 4 indicates that the firm chose all four cooperation measures; we interpret higher values of *CoopSum* to capture higher cooperation effort by the firm. In Columns (1) and (2), we estimate a probit regression on *Enforcement* in the post-Seaboard and post-2010 periods, respectively. In Column (1), the coefficient on *CoopSum* of 0.336 is significantly positive, which shows that the more cooperative actions a misconduct firm takes during 2002-2010, the more likely it receives an SEC enforcement action. In contrast, Column (2) shows a significant negative coefficient on *CoopSum* (-0.641). This finding demonstrates that the SEC has switched from penalizing cooperation in the post-Seaboard period to rewarding cooperation after 2010.

In Columns (3) and (4) of Table 3, we use an ordered probit regression to explain *Settlement*. The positive coefficient on *CoopSum* (0.328) in Column (3) indicates that more cooperative efforts by a firm are related to more severe sanctions that involve federal court injunctions during 2002-2010; in the post-2010 period, the coefficient on *CoopSum* is significantly negative at -0.641, indicating that the SEC reduces sanctions on cooperative misconduct firms. In Columns (5) and (6), we use a tobit regression because our dependent variable *$Penalties* is a continuous variable bounded by zero for those firms that do not receive an AAER. We view monetary penalties as an alternate measure of the SEC's sanctions, and our results are generally consistent with the findings on *Enforcement* and *Settlement*. In Column (5), *CoopSum* has a significantly positive coefficient of 3.181 during the post-Seaboard period. In Column (6), the

coefficient on *CoopSum* is negative at -3.748, which means that the penalties assigned to cooperative violators are significantly lower in the period of 2011-2014.

In Panel B of Table 3, we also calculate the marginal effects for *Enforcement*.[27] Combined with the results on *$Penalties*, we estimate that after the first leniency program, one unit higher in the cooperation score is associated with a 4.1% higher chance of enforcement actions and $3.2 million more in penalties against a firm up until 2010; but after 2010, it is related to a 3.3% lower probability of SEC sanctions and lower fines by $3.7 million. Our tests provide support for H1, that while the SEC penalized cooperative firms in the post-Seaboard period, it now exercises more leniency towards cooperative firms after the 2010 initiative, which indicates a regime shift in SEC enforcement.

The results on the control variables are generally consistent with expectations. Most severity metrics have a positive sign, indicating that the SEC is more likely to sanction firms with more severe misreporting. The negative coefficients on *SECDistance* are also consistent with the "constrained cop" hypothesis that the SEC is less likely to sanction remote firms (Kedia and Rajgopal 2011).

5.2.2 SEC Enforcement and Specific Cooperation Measures

In Table 4, we show our regression analyses on the relation between SEC enforcement and specific cooperative actions. The SEC's leniency program outlines several actions the firm could take to earn cooperation credit, but it is generally silent on whether certain actions carry more weight than others. In Column (1) for the first initiative, we find that with the exception of *TimelyDisclose* (-0.201), all other three cooperative actions, *Investigation* (0.742), *PromDisclose*

[27] We do not calculate the marginal effects for *Settlement* because none of our sample restatements in the post-2010 period is settled in the form of a federal court injunction. This evidence is consistent with the SEC becoming more lenient towards firms after 2010.

(0.433), and *ReplaceExec* (0.330), are associated with a significantly higher probability of SEC enforcement actions during 2002-2010. This result is consistent with the SEC's concerted efforts to exploit cooperative firms, which contradicts the spirit of the leniency program. In contrast, the post-2010 era results in Column (2) show significantly negative coefficients on *TimelyDisclose* (-3.268) and *ReplaceExec* (-1.674). These results show a reversal in SEC enforcement, as the SEC has become less likely to prosecute firms that provide timely disclosure of misconduct and replace their culpable executives. This indicates that after the 2010 initiative, the SEC made a deliberate effort to alter its practices regarding enforcement leniency. However, the significantly positive coefficients on *Investigation* (1.990) and the insignificant result on *PromDisclose* (-0.424) also indicate that the SEC has a high threshold for granting cooperation credit to firms. The SEC differentiates between a "good faith" cooperative action that imposes high costs on firms, as compared to a "perfunctory" cooperative action that is less costly. Making a timely disclosure of misconduct and replacing top executives signal a stronger commitment to cooperation and remedial actions than conducting internal investigations.

In Columns (3) to (6) of Table 4, we perform a similar analysis on the other two SEC sanction measures. Our inferences are largely consistent with the results for enforcement. During the post-Seaboard era, the SEC punished cooperative firms by increasing the probability of federal court injunctions for those with self-investigations (0.761), prominent disclosure (0.402), and replaced executives (0.270), as shown in Column (3); the SEC also assigned higher penalties to firms who conducted self-investigations (7.254) and replaced executives (3.997), as shown in Column (5). However, circumstances changed after 2010. Column (4) shows that *Settlement* decreased for firms that disclosed in a timely manner (-3.268 on *TimelyDisclose*) or replaced their top executives (-1.674 *ReplaceExec*), while Column (6) shows that the SEC assigned lower

penalties to firms that disclosed in a timely fashion (-17.205) and replaced executives (-12.728).[28] We also calculate the marginal effects associated with these cooperative actions in Panel B of Table 4. After 2010, firms that disclose misconduct in a timely manner have a 14.0% lower probability of receiving SEC enforcement actions. Likewise, firms that replace executives have a 7.2% lower probability of receiving SEC enforcement actions.

5.2.3 Controlling for Self-Selection in Cooperation

Similar to prior studies, our models of SEC sanctions are subject to potential endogeneity because firm heterogeneities could drive the relation between firm cooperation and SEC enforcement. To mitigate this concern, we apply an entropy balancing technique to mitigate the impact from firm heterogeneity. By re-weighting observations in the cooperation versus non-cooperation groups, entropy balancing ensures that the post-weighting distributional properties of these two groups are virtually identical (Hainmueller 2012).

We match cooperation firms to non-cooperation firms on all control variables in Eq. (1). Because we have four separate cooperation measures, we apply entropy balancing to each of these cooperation indicator variables one at a time. Appendix B Panel A presents the distributional properties of control variables before and after entropy balancing reweighting for *Investigation*. As demonstrated, after re-weighting, the mean, variance, and skewness of the treatment and control firms are nearly identical. Panels B, C, and D presents similar statistics for entropy balancing performed on *TimelyDisclose*, *PromDisclose*, and *ReplaceExec*, respectively. Table 5 Panel A presents pre- and post-2010 regressions on *Enforcement* with entropy balancing. For example, Columns (1) and (2) show the results by applying the entropy balancing technique to *Investigation*

[28] Since over 75% of our sample has $0 penalties, we also used a Poisson model to estimate this relation (Santos, Silva, and Tenreyro 2006; 2011). The results shown in Appendix G are qualitatively similar, and all inferences are unchanged.

(highlighted in shade). The inferences remain unchanged with significant positive coefficients on *Investigation* (0.907), *PromDisclose* (0.347), and *ReplaceExec* (0.451) in the post-Seaboard era, but negative coefficients on *TimelyDisclose* (-8.790), *PromDisclose* (-1.583), and *ReplaceExec* (-3.819) in the post-2010 era. In Columns (3) through (8), we show the results of applying an entropy balancing technique to the other three cooperation dummies individually (highlighted in shade) and reach similar findings. Likewise, Panel B presents tobit regressions for *$Penalties* with entropy balancing. The inferences remain unchanged.

As an alternative way to mitigate potential self-selection, we follow Files's (2012, p. 367) approach by adopting a treatment-effects model to control for unobservable sources of endogeneity. Specifically, she estimates selection models predicting specific cooperative actions (e.g., *Investigation*, *TimelyDisclose*). These selection models include all control variables from Eq. (1) plus three instrumental variables: the percentage of institutional ownership, whether the firm has a BigN Auditor, and the number of management forecasts. Files (2012) calculates the inverse mills ratios from each regression, then incorporates all of these ratios into the SEC enforcement regression, which would be analogous to our Eq. (1) regression. We follow her method and present the results in Table 6. While Columns (1) and (2) duplicate our results from Table 4 Panel A, Columns (3) and (4) present the results from the treatment-effects model. Consistent with our baseline regressions, we find significant positive (negative) coefficients on cooperation variables in the post-Seaboard (post-2010) period. Therefore, our inferences remain unchanged by using the treatment-effect models.

Since the SEC and the misconduct firm are the two players in the hold-up problem, a significant change in the behavior of any one player is sufficient to demonstrate a regime shift. Our tests show that after 2010, the positive relation between firm cooperation and SEC sanctions has flipped into a negative one, consistent with a change in SEC enforcement and a regime shift

for the SEC. Endogeneity appears to be less of a concern in our study because the same endogeneity source is unlikely to drive two *opposite* relations.

5.3 Firms' Cooperation Decisions

In this section, we test H2 by examining whether misconduct firms have changed their tendency to cooperate after the SEC's 2010 initiative. Given the hold-up problem between the SEC and the firm, we argue that a significant change in firms' behavior is also consistent with a regime shift. We conduct several tests of whether, and under what conditions, misconduct firms have adjusted their cooperative actions after the 2010 initiative.

5.3.1 Regression Results for Firm Cooperation

For our first test of firm cooperation, we examine firms' *overall* cooperative actions before and after the 2010 leniency program. As illustrated in Table 7, we place the summary cooperation score and specific cooperation actions as the dependent variables in either OLS or probit regressions. Considering that under the post-Seaboard regime, the SEC penalized cooperative firms, we argue that it will take some time for the SEC to rebuild its reputation and regain firms' trust. Firms also need time to observe and learn about what activities will earn them cooperation credit under the new regime. Consequently, we incorporate year dummy variables for 2002 through 2014 into the regression to capture the adjustment in cooperation behavior for each separate year and to allow for a "learning curve". Because this analysis involves the time-series pattern of firm cooperative activities only, we extend our cooperation sample by one more year, 2015, to give more longitude post 2010, and we incorporate a dummy variable for 2015 into the regression. We omit the dummy variable for 2009 to use it as the base line year because it is the last year before the 2010 policy was promulgated.

First, we report our results on the entire panel and 2015 in Table 7 Columns (1) to (5). With the exception of the year 2013, the overall cooperation (*CoopSum*) pattern for the years after

the 2010 initiative remain steady compared to 2009; the coefficients on the dummy variables for years 2010, 2011, and 2012 are not significantly different from zero. In fact, for the cooperation proxy replacing executives (*ReplaceExec*), which is a good-faith cooperation proxy that the SEC rewarded post 2010, we find significant positive coefficients for 2014 and 2015 (see Column (5) and the coefficients on *D_2014* and *D_2015*), indicating that firms have taken more good-faith remedial actions. However, for perfunctory cooperation measures that the SEC did not reward post 2010, which are *Investigation* and *PromDisclose*, we find significant negative coefficients in 2014 and 2015. These results suggest that misconduct firms spent some time learning about the new initiative and responded in the predicted manner.

Second, to probe deeper into reasons why firms cooperated significantly less in the year 2013, we were guided by the changes introduced in the 2010 initiative. Recall that prior to 2010, some argued that the SEC's leniency guidelines were applied inconsistently by SEC line lawyers, which resulted in some cases of firm cooperation being expropriated; the SEC Division of Enforcement's 2010 handbook established clear rules about cooperation tools and minimum authority level that SEC staff must follow when negotiating with firms. We then explore if potential (or perceived) SEC staff inconsistency could possibly affect firms' cooperation behavior under the revised 2010 program. We collected data from the Office of Inspector General's (OIG) Semi-Annual Reports to Congress, which contain information about the SEC's operations and include statistics on the number of complaints recorded by a telephone hotline that is accessible 24 hours a day, 7 days a week. These hotline complaints are a measure of the suspected fraud and abuse in SEC operations, as well as SEC staff misconduct; complaints can be filed by any person inside or outside of the SEC. The descriptive statistics reported in Appendix C show there is a spike in the number of complaints to the hotline during 2012 and 2013.

Since the Semi-Annual Reports to Congress hotline complaints data is only available from late 2008 and after, and we calculate the 18-month rolling average of complaints, our sample size for this test is 315 restatement observations spanning the years 2009-2015. When we place the 18-month rolling average of these complaints, *Log_SEC_Hotline_Complaints_18m*, into the cooperation regression, we have two interesting findings. First, as shown in Table 7 Columns (6) to (10), the coefficient on *Log_SEC_Hotline_Complaints_18m* is significantly negative in four of the five regressions. This negative relation suggests that firms adjust their cooperation downward when the number of complaints is high (and vice versa). Second, we find that the significant negative coefficients for *D_2013* then become insignificant for the regressions involving *CoopSum*, *Investigation*, *TimelyDisclose*, and *ReplaceExec*. This finding suggests that 2013 was a year that the SEC had a lot of complaints, and firms adjusted their cooperation downward accordingly.

Third, both sets of tests shown in Table 7 reveal that firms have continued to increase their cooperative efforts with *ReplaceExec*; as shown in Columns (5) and (10), the firing of CEOs has increased in 2014 and 2015. It is important to note that our enforcement regressions show that the SEC is less likely to sanction firms that replace their executive, so this test is consistent with firms adjusting their cooperation according to the measures rewarded by the SEC.

Collectively, these empirical tests demonstrate that after 2010, firms are more skeptical and selective about the circumstances under which they cooperate. Our findings are also consistent with firms actively monitoring the behavior of SEC employees. While it has taken firms several years to learn about the new 2010 regime, these results are consistent with a regime-shift in firms' cooperation behavior after 2010.

5.3.2 An Event Study around SEC Cooperation Initiatives and Rulings

To provide further evidence on the general perception of the SEC's 2010 initiative, we conduct an event study. Note that although the SEC announced its 2010 cooperation initiative on January 13, 2010, it did not announce the first settled case (i.e., case precedent) under the revised program until December 20, 2010.[29] To provide more information on how the revised SEC cooperation initiative was received by the market, we examine the market reactions of firms in our sample during these two important dates. If investors believed that the SEC's 2010 initiative would be beneficial to restatement firms, then we expect a significantly positive market reaction to the initial announcement. However, if firms were highly skeptical regarding the SEC's true intent with its revised leniency program, perhaps as a result of the SEC's past practices, the initial reaction would be minimal.

We present the event study results in Table 8. Panel A presents the result for all firms in our restatement sample, which includes restatements announced as early as 2002. When the Commission promulgated its second cooperation initiative on January 13, 2010 (Event #1) to revitalize the program, the average market reaction was marginally positive at 0.4% with a t-statistic of 1.93. However, by the time that Event #2 occurred in which the SEC announced the outcome of the first actual case (i.e., the case precedent), we find a much larger market reaction (0.9%) that is highly significant (t-statistic of 2.74). In Panel B, we restrict our test to a subsample of firms with restatements announced after 2010. These firms are arguably more sensitive to the 2010 cooperation program as they had "pending" restatement cases that were announced in 2010 and after. On this restricted sample, we find an insignificant reaction to the first event, but a significant reaction (1.3%) to the second event. Collectively, the evidence suggests that Event #2

[29] This involved the non-prosecution agreement with Carter's. See https://www.sec.gov/news/press/2010/2010-252.htm .

announcing the first non-prosecution agreement (which set case precedent for the 2010 program) could mark the first time that outsiders started to take the revised program seriously. Therefore, if the SEC's goal is to induce firm cooperation after 2010, it needs to make more of an effort to (re)build its reputation.

6. Further Robustness Checks and Supplementary Tests

6.1 Has the SEC Fully Committed to a Regime Shift After 2010?

In this section, we conduct additional tests of whether the SEC is fully committed to a new regime after the second cooperation initiative. First, we examine whether the SEC's encouragement of cooperation via public speeches is consistent with a regime shift. Figure 4 and the descriptive statistics in Appendix D Panel A show that the Enforcement Staff mentioned "cooperation" in 26.1% of the speeches (on average) from 2008 through 2010, and this increased to an average of 64.5% for speeches from 2011 through 2013. These results demonstrate the SEC is making a concerted effort to publicly encourage cooperation.

Second, we searched through all AAERs related to our sample to examine how the SEC acknowledges firm cooperation during 2002-2017 (see Panel B of Appendix D). We find that prior to 2010 the AAERs used mostly standard wording, such as "[t]he Commission considered remedial acts promptly undertaken by respondent and cooperation afforded the Commission staff" without offering any details. However, starting from 2010, the SEC began to provide much more detail in the AAERs about the circumstances, manner, and extent of firm cooperation.

Last, we also collect all written agreements (non-prosecution agreements, deferred prosecution agreements, and cooperation agreements) available from the SEC website to examine the types of cooperation activities covered and the subject of the agreements, i.e., firms versus individuals, and we present our summary and findings in Appendix E Panel A. We find

that agreements with firms are mostly publicly available.[30] The SEC acknowledges firms' self-investigation, timely disclosure, replacing management, and ongoing cooperation in 94%, 94%, 78%, and 100% of formal agreements, respectively. In Panel B, we also list out cases mentioned on the SEC's Cooperation Initiative homepage, and we find that the SEC explicitly discusses several measures of cooperation (that are used in our study). These examples provide support that the SEC cares about and acknowledges specific cooperation activities.

Consequently, the SEC can use speeches, AAERs, and its Cooperation Initiative homepage to publicize the nature and benefits of entities' cooperative activities. Overall, these tests provide evidence that the SEC's top enforcers "appear fully committed to the new regimen, which increases its chances of success" (Ellsworth 2010).

6.2 The Limited Time for SEC Enforcement

SEC investigations and enforcement actions can take years to complete. Although we end our sample period in 2014 to allow enough time to capture the SEC enforcement actions (updated as of January 2018), it is still possible that the SEC has not completed its enforcement actions on restatements announced in the last two years of our sample. As a robustness check in Table 9 Columns (1) and (2), we drop 2013 and 2014 from our post-2010 sample and find consistent results. The coefficients on *TimelyDisclose* and *ReplaceExec* are significantly negative (with t-statistics of 2.34 and 2.04, respectively); the only difference is that the positive coefficient on *Investigation* is insignificant, with a t-statistic of 1.57.

[30] We find that written agreements with individuals are often unavailable. Quite often, the identity of the individual person is unknown and kept confidential. This is consistent with the Enforcement Manual 2010, which states that "[i]n disclosing information regarding the benefits of cooperation in specific cases, the staff should take care to protect the identity of cooperating individuals." (p. 140 of the SEC's 2010 Enforcement Manual). We also find that agreements with individuals, if available, focus on voluntarily reporting misconduct to the SEC, resigning from the post, and ongoing cooperation, such as producing all documents, appearing for interviews, testifying at trials, and entering into tolling agreements, etc.

6.3 The Whistleblower Provision of the 2010 Dodd-Frank Act

The Dodd-Frank Act was signed into law on July 21, 2010. Due to its proximity in time with the 2010 cooperation initiative, one concern is to what extent our results might be driven by the whistleblower provisions of the Dodd-Frank Act. We note that the SEC's rule implementing this provision became effective in August 2011 (i.e., 18 months after the 2010 initiative) and rewards whistleblowers only when total monetary sanctions exceed $1 million.[31] As a sensitivity test shown in Table 9 Columns (3) and (4), we drop all restatements settled with more than $1 million in fines (which eliminated three observations), and our inference remains unchanged. Additionally, with the threat from potential whistleblowers, one might expect that misconduct firms are incentivized to engage in more timely disclosure and better cooperation, but these conjectures are not supported by the data.

6.4 Less Significant Restatements

To closely capture deliberate financial misconduct, we dropped 1,974 restatements from our sample when their impact on earnings was less than one percent of total assets. In an untabulated sensitivity test, we add back these less significant restatements to the sample and incorporate a dummy variable *Trivial* (an indicator for such restatements) and an interaction term with *CoopSum* to Eq. (1). As shown in Table 9 Columns (5) and (6), we find an insignificant coefficient on *Trivial*CoopSum* in the post-Seaboard period, indicating that the SEC also penalized cooperative firms over trivial restatements. In the post-2010 period, the coefficient on *Trivial*CoopSum* is positive with a magnitude close to the negative coefficient on *CoopSum*. This

[31] See https://www.sec.gov/whistleblower.

result is consistent with the SEC rewarding cooperation for firms with more severe misconduct, as opposed to errors or trivial restatements.[32]

Choudhary, Merkley, and Schipper (2017) document an uptick in firms correcting reporting errors with revisions instead of non-reliance restatements. While this could potentially create a downward bias on the number of less significant restatements by misclassifying them as errors, it is unlikely to affect our main sample of large restatements.

6.5 SEC Overhaul in Personnel

The SEC's 2010 revitalized program was also accompanied by a vast overhaul in SEC personnel, and we explore whether this is likely to confound our results. A vast overhaul in more skilled personnel would likely affect the amount the SEC spends on employee benefits. To test whether this increase in employees confounds our results, we obtained the SEC employee benefits data, which was available from 2005-2014 from the U.S. SEC's Annual Performance and Accountability Report / Agency Financial Report on the SEC website.[33] We scaled the employee benefits liability by the SEC's total assets, and we included this variable in our enforcement regressions. As shown in Table 10, the relations between cooperation and enforcement are all qualitatively similar, so this personnel overhaul does not affect our inferences.

7. Implications for Using AAERs to Measure Misreporting

In this section, we discuss the implications of the SEC's 2010 leniency program for future research on SEC enforcement. A common practice in prior research is to use the SEC's AAER releases to proxy for the severity of misreporting (Dechow, Ge, and Schrand, 2010). This practice is warranted if there is a monotonic relation between the severity of misreporting and SEC

[32] We also acknowledge that it is possible that less significant errors take longer to find and, therefore, are less likely to result in enforcement, settlement, and penalties. Therefore, in a sample consisting of trivial or low magnitude restatements, the relation between cooperation and enforcement may be ambiguous.
[33] The Report for 2005 can be accessed at: https://www.sec.gov/about/secpar/secpar2005.pdf#sec3

sanctions. However, under the modified leniency program, firms with more severe misconduct are incentivized to cooperate more and thereby receive reduced SEC sanctions. Failure to recognize the effect of firm cooperation could lead to biased inferences, as the relation between the severity of misreporting and SEC sanctions becomes ambiguous.

Recall that in Table 2 Panel B we find strong positive correlations between most severity variables and SEC sanctions during 2002-2010. However, in Table 2 Panel C, these correlations, albeit remaining positive, become less significant or insignificant in 2011-2014. This is consistent with the notion that firm cooperation and SEC leniency likely interferes with the monotonic relation between the severity of misreporting and SEC sanctions.

To demonstrate this point more clearly, we create decile groups within each time period based on restatement magnitude, i.e., the cumulative earnings impact scaled by lagged total assets. Decile 1 (10) consists of the least (most) severe restatements. We assign deciles separately for the post-Seaboard and post-2010 periods, and we plot the average probability of SEC enforcement and average monetary penalties on the spectrum of restatement severity deciles in Figure 2A and Figure 2B, respectively. The solid blue line in Figure 2A shows a clear increasing pattern for restatements in the period of 2002-2010, which indicates a higher probability of SEC sanctions for more severe restatements. However, the dotted red line reveals a different pattern for the post-2010 period. Not only does the probability peak in the middle (i.e., Decile 5), it also slightly bends down from Decile 8 through Decile 10. Therefore, more severe restatements do not appear to result in more SEC enforcement actions in the post-2010 era. Figure 2B presents a largely similar pattern. The mean monetary penalties increase from Decile 8 through Decile 10 in the post-Seaboard period, whereas it declines from Decile 9 to Decile 10 in the post-2010 era. Collectively, the evidence indicates that the relation between the severity of misreporting and SEC sanctions has become ambiguous after 2010.

8. Conclusion

Effective enforcement of federal securities laws is the cornerstone of protecting investors (DeFond and Hung 2004; Christensen et al. 2013; Silvers 2016). We explore the SEC's revitalized 2010 enforcement cooperation program and document a regime shift in the interaction between the SEC and misconduct firms. Our main findings are twofold. First, we find that although the SEC exploited cooperative firms after the 2001 Seaboard Report, it appeared to exercise more leniency towards cooperative firms after its 2010 revitalized program; we also document that the SEC places a higher value on "good faith" cooperative actions, such as timely disclosure and replacing executives, than on "perfunctory" actions, such as conducting an internal investigation. Second, we find that firms have exhibited a "learning curve" and have slowly increased some cooperative activities, such as replacing top executives, after 2010. Moreover, we find evidence that firms have adjusted their cooperation upward (when the SEC rewards the measure) and downward (when there are more SEC complaints).

We conclude that although the SEC's 2010 program demonstrates the regulator's willingness to (finally) reward cooperation, misconduct firms remain suspicious and skeptical, and this could partly be due to the SEC's inconsistent application of its programs. Our supplementary event study of the market reaction to the announcement of the second program and subsequent release of the case precedent under the revised program confirms the notion that outsiders have been initially uncertain about the SEC's intent. Our findings highlight the importance of regulators establishing a clear *ex-ante* incentive structure to limit *ex-post* prosecutorial discretion when operationalizing an effective leniency program. Finally, we also show how this modified leniency program can make the relation between the severity of misreporting and AAERs less clear-cut, which has important implications for future research that uses AAERs to proxy for misreporting.

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Appendix A – New Cooperation Tools Mentioned in the SEC Enforcement Manual (version dated January 13, 2010)

Section	Tools	Description	Authority	When and How
§6.2.1	1. Proffer Agreements	A written agreement providing that any statements made by a cooperating party, on a specific date, may not be used against that party in subsequent proceedings.	Assistant Director	In most cases, the SEC should obtain a detailed proffer before utilizing other cooperation tools.
	2. Oral Assurances	When evidence indicates no significant violation that warrants an enforcement action, Assistant Directors may orally inform the cooperating party that the Division does not anticipate recommending an enforcement action.	Associate Director	Authorized only when the investigative record is adequately developed.
§6.2.2	3. Cooperation Agreements	A written agreement in which the Division agrees to recommend to the Commission that the cooperating party receive credit for cooperating in the SEC investigation and related enforcement actions.	Commission	Should have sufficient information regarding cooperating party's ability to provide substantial assistance to the SEC investigations or related enforcement actions.
	4. Settlement Recommendation	The SEC staff may take into account a party's cooperation in connection with recommending sanctions associated with the alleged misconduct and, under certain circumstances, forgoing enforcement actions against the party.	Commission	In the absence of a cooperation agreement.
	5. Cooperation Letters	The SEC staff may submit letters describing the fact, manner and extent of assistance provided by the cooperating party to the attention of courts, regulatory organizations, or law enforcement authorities.	Associate Director	Upon the written request of a cooperating party.
§6.2.3	6. Deferred Prosecution Agreements	A written agreement in which the Commission agrees to forego an enforcement action against the cooperating party. If the agreement is violated during the period of deferred prosecution, the staff may recommend an enforcement action.	Commission	Should consider whether there is sufficient time to ensure that the related prohibitions have adequately reduced the likelihood of future violations.
§6.2.4	7. Non-Prosecution Agreements	A written agreement, entered in limited and appropriate circumstances, that provides that the Commission will not pursue an enforcement action against the cooperating party.	Commission	Not for previous violators; Should not in early stages of investigation.
	8. Termination Notice	When an investigation has been completed and the Division has determined not to recommend an enforcement action against the cooperating party, the SEC sends a letter informing the party of the determination.	Assistant Director	If the cooperating party is likely to provide substantial assistance and has not entered into a cooperation agreement, these notices may be provided before the investigation is closed.
§6.2.5	9. Immunity Requests	In appropriate circumstances, to obtain testimony and/or facilitate cooperation that will substantially assist in the enforcement of the federal securities laws, the staff may seek immunity orders or letters in order to obtain testimony and/or witness cooperation.	Director	Should not be requested in the early stages of investigation.

Appendix B –Variable Definitions

Variable Name	Variable Definition
Enforcement	An indicator variable equal to 1 if the SEC names the *firm* as a respondent in an accounting and auditing enforcement action (AAER) related to the restatement and 0 otherwise. Information is manually coded from the AAER texts, which are obtained from the SEC's EDGAR website. Enforcement has been updated as of January 2018.
Settlement	Settlement is a variable that takes on the value of 2 if the SEC AAER texts indicate a settlement in the form of an enjoinment or injunction against the firm, 1 if the settlement is a cease-and-desist order against the firm, and 0 otherwise.
$Penalties	The total SEC monetary penalties levied against the *firm*, as collected from the SEC AAERs. SEC monetary penalties are the sum of disgorgement, pre-judgment interest, post-judgment interest, penalties, fines, and restitution.
Investigation	An indicator variable equal to 1 if firm disclosures indicate an investigation of the announced restatement is led by (i) the audit committee (which is required to be independent in the period after Sarbanes-Oxley, which is included in the sample period), (ii) a special committee consisting of independent directors, or (iii) hired outside counsel, and 0 otherwise. All SEC filings are searched from six months prior to six months after the restatement announcement. In cases where the firm makes multiple announcements about the same restatement (i.e., the same wrongdoing period), we collapse these into a single announcement and take the *maximum* Investigation variable across all announcements.
TimelyDisclose	An indicator variable equal to 1 if the restatement was disclosed within a quarter (i.e., 90 days) after the end of the misreporting period, and 0 otherwise. In cases where the firm makes multiple announcements about the same restatement (i.e., the same wrongdoing period), we collapse these into a single announcement and take the TimelyDisclose variable from the *first* announcement.

Appendix B – continued

Variable Name	Variable Definition
PromDisclose	An indicator variable equal to 1 if the restatement was initially disclosed in a press release (as opposed to an SEC filing such as an 8K, 10Q, or 10K), and 0 otherwise. In cases where the firm makes multiple announcements about the same restatement (i.e., the same wrongdoing period), we collapse these into a single announcement and take the *maximum* PromDisclose variable across all announcements.
ReplaceExec	An indicator variable equal to 1 if firm's CEO as of six months prior to the restatement announcement was different from the CEO as of six months after the restatement announcement, and 0 otherwise. In cases where the firm makes multiple announcements about the same restatement (i.e., the same wrongdoing period), we collapse these into a single announcement and take the *maximum* ReplaceExec variable across all announcements.
CoopSum	A summary cooperation score, which is calculated as Investigation + TimelyDisclose + PromDisclose + ReplaceExec. The score can take a value from zero to four.

Variable Name	Variable Definition
The following control variables are based on Files (2012, Equation 1 and Table 3) and Hennes, Leone, Miller (2014) and obtained from Compustat and CRSP unless otherwise specified. All quantitative variables are winsorized at the 1st and 99th percentiles.	
Litigation	An indicator variable equal to 1 if a class action lawsuit was filed in response to the restatement, and 0 otherwise. Lawsuits filed within a window beginning 30 days prior to and ending 90 days after the restatement announcement are considered to be attributed to the restatement. Lawsuit file dates are obtained from the Stanford Law School Securities Action Clearinghouse Database at http://securities.stanford.edu/index.html

Appendix B – continued

Variable Name	Variable Definition
RestateEarnings	RestateEarnings is the cumulative earnings impact of the restatement, scaled by lagged total assets, with negative values of magnitude indicating that the restatement reduced previously recorded net income. To ease in the interpretation of this variable, we multiply it by -1 to reverse the sign, so that larger values capture more severe restatements. The restatement amount is collected from the following sources in order of priority: Cumulative_Change_in_Net_Income/1,000,000, then Cumulative_Change_in_Stockholder/1,000,000 (both from Audit Analytics), and then the Compustat variable "rea" (retained earnings adjustment). If no values are available, the restatement magnitude is set to zero.
RestateCAR	RestateCAR is the firm's raw buy and hold return minus the CRSP value-weighted (including dividends) portfolio return, calculated from the trading day prior to the restatement announcement until the trading day after the announcement [-1,+1], with daily returns obtained from CRSP. To ease in the interpretation of this variable, we multiply it by -1, so that larger values capture more severe restatements.
LogDamages	Log of (damages + 1), where damages is calculated by taking the difference between the highest market value during the violation period (using the variables Restated_Period_Begin and Restated_Period_Ended) and the market value on the day after the restatement announcement (in billions). Larger damages are expected to be associated with more severe restatements.
RestateLength	An indicator variable equal to 1 if the log of years restated is above the median and 0 otherwise. Log of (years restated + 1), where years restated is calculated by taking the difference between the beginning and ending violation dates from Audit Analytics (using Restated_Period_Begin and Restated_Period_Ended), then dividing that difference by 365 (to convert the amount into years).
RevRecognition	An indicator variable equal to 1 if the restatement involves revenue recognition issues (as determined by searching for the term "revenue" in the Audit Analytics Database variables describing the reasons for restatement: Accounting, Financial, Errors, and Other) and 0 otherwise.

Appendix B – continued

Variable Name	Variable Definition
Other Control Variables	
SECDistance	Distance (in thousands of miles) from the company's headquarters (obtained from CRSP Events Database) to the SEC's Headquarter at 100 F Street, NE, Washington, DC 20549.
LogMktCap	Log of (market capitalization + 1). The market capitalization is measured as of the end of the fiscal year prior to the restatement announcement (in billions).
Tech	An indicator variable for the following: 2833 < SIC code < 2836, 3570 < SIC code < 3577, 3600 < SIC code < 3674, 7371 < SIC code < 7379, 8731 < SIC code < 8734.
PriorReturns	The firm's buy and hold return from the 252nd trading day prior to the restatement announcement until the 2nd trading day prior to the restatement announcement [-252,-2], with prices obtained from CRSP.
PostReturns	The firm's buy-and-hold return from days [+2, +20] of the restatement announcement. Firms with missing values are assigned a post-return of 0.
WBStrength	We first calculate the average abnormal returns around seven dates related to whistleblower legislation, as outlined in Baloria, Marquardt, and Wiedman (2017): March 26, 2009, July 14, 2009, November 3, 2010, December 15, 2010, May 11, 2011, May 25, 2011, and July 11, 2011. The abnormal returns are calculated as the firm's buy and hold return minus the CRSP value-weighted (including dividends) portfolio return for days [-1,+1] . WBStrength is an indicator variable equal to 1 if the firm's average returns are below the distributional median, which indicate a strong whistleblower program, and 0 otherwise.
EventCAR	EventCAR is the firm's buy and hold return minus the CRSP value-weighted (including dividends) portfolio return for days [-1,+1] around the event date related to the SEC's cooperative initiatives.

Appendix B – Distributional Properties of the Sample Before and After Entropy Balancing is Applied to Firms' Cooperation Decisions

Panel A. Distributional Properties of Treatment = Investigation

A1. Before: Without Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.261	0.193	1.091	0.058	0.055	3.767
RestateEarnings	0.088	0.013	3.068	0.086	0.030	5.678
RestateCAR	0.070	0.022	1.243	0.023	0.014	3.762
LogDamages	18.290	37.650	-2.347	15.450	54.380	-1.476
RestateLength	0.713	0.206	-0.940	0.445	0.247	0.220
RevRecognition	0.349	0.228	0.635	0.180	0.148	1.664
SECDistance	1.213	0.847	0.258	1.116	0.737	0.396
LogMktCap	0.799	0.599	1.797	0.476	0.406	2.548
Tech	0.399	0.241	0.415	0.232	0.179	1.268
PriorReturns	0.044	0.347	1.866	0.117	0.524	2.232
PostReturns	-0.008	0.024	0.562	0.006	0.023	0.585
WBStrength	0.533	0.250	-0.131	0.496	0.250	0.015

A2. After: With Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.261	0.193	1.091	0.261	0.193	1.091
RestateEarnings	0.088	0.013	3.068	0.088	0.042	5.914
RestateCAR	0.070	0.022	1.243	0.070	0.023	2.346
LogDamages	18.290	37.650	-2.347	18.290	31.300	-2.535
RestateLength	0.713	0.206	-0.940	0.713	0.205	-0.940
RevRecognition	0.349	0.228	0.635	0.349	0.227	0.635
SECDistance	1.213	0.847	0.258	1.213	0.827	0.220
LogMktCap	0.799	0.599	1.797	0.799	0.938	1.721
Tech	0.399	0.241	0.415	0.399	0.240	0.415
PriorReturns	0.044	0.347	1.866	0.044	0.462	2.581
PostReturns	-0.008	0.024	0.562	-0.008	0.024	0.044
WBStrength	0.533	0.250	-0.131	0.533	0.249	-0.131

Note: All variables are defined in Appendix B.

Appendix B - continued

Panel B. Distributional Properties of Treatment = TimelyDisclose

B1. Before: Without Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.176	0.146	1.700	0.093	0.085	2.793
RestateEarnings	0.094	0.030	5.205	0.085	0.024	5.752
RestateCAR	0.048	0.015	2.161	0.032	0.016	2.961
LogDamages	17.990	33.210	-2.428	15.740	54.970	-1.496
RestateLength	0.648	0.229	-0.618	0.481	0.250	0.075
RevRecognition	0.207	0.165	1.444	0.226	0.175	1.314
SECDistance	1.156	0.763	0.330	1.136	0.767	0.372
LogMktCap	0.667	0.652	2.300	0.532	0.430	2.192
Tech	0.264	0.195	1.069	0.276	0.200	1.004
PriorReturns	0.080	0.499	2.271	0.103	0.477	2.201
PostReturns	0.000	0.027	0.585	0.003	0.022	0.571
WBStrength	0.487	0.251	0.052	0.509	0.250	-0.037

B2. After: With Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.176	0.146	1.700	0.176	0.145	1.700
RestateEarnings	0.094	0.030	5.205	0.094	0.038	6.707
RestateCAR	0.048	0.015	2.161	0.048	0.026	3.956
LogDamages	17.990	33.210	-2.428	17.990	32.130	-2.452
RestateLength	0.648	0.229	-0.618	0.648	0.229	-0.618
RevRecognition	0.207	0.165	1.444	0.207	0.165	1.444
SECDistance	1.156	0.763	0.330	1.156	0.776	0.362
LogMktCap	0.667	0.652	2.300	0.667	0.566	1.919
Tech	0.264	0.195	1.069	0.264	0.195	1.069
PriorReturns	0.080	0.499	2.271	0.080	0.454	2.342
PostReturns	0.000	0.027	0.585	0.000	0.022	0.631
WBStrength	0.487	0.251	0.052	0.487	0.250	0.052

Note: All variables are defined in Appendix B.

Panel C. Distributional Properties of Treatment = PromDisclose

C1. Before: Without Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.177	0.147	1.690	0.090	0.082	2.855
RestateEarnings	0.088	0.028	5.625	0.086	0.025	5.640
RestateCAR	0.067	0.025	1.331	0.026	0.014	3.578
LogDamages	17.820	35.440	-2.339	15.710	55.120	-1.487
RestateLength	0.646	0.230	-0.608	0.477	0.250	0.094
RevRecognition	0.305	0.213	0.849	0.200	0.160	1.498
SECDistance	1.182	0.752	0.305	1.129	0.770	0.381
LogMktCap	0.634	0.558	2.199	0.536	0.449	2.283
Tech	0.296	0.209	0.897	0.268	0.196	1.049
PriorReturns	0.041	0.430	2.043	0.114	0.493	2.246
PostReturns	0.012	0.024	0.762	0.000	0.023	0.521
WBStrength	0.523	0.251	-0.091	0.501	0.250	-0.002

C2. After: With Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.177	0.147	1.690	0.177	0.146	1.690
RestateEarnings	0.088	0.028	5.625	0.088	0.038	7.844
RestateCAR	0.067	0.025	1.331	0.067	0.029	4.318
LogDamages	17.820	35.440	-2.339	17.820	34.100	-2.395
RestateLength	0.646	0.230	-0.608	0.645	0.229	-0.608
RevRecognition	0.305	0.213	0.849	0.305	0.212	0.850
SECDistance	1.182	0.752	0.305	1.182	0.784	0.313
LogMktCap	0.634	0.558	2.199	0.634	0.541	2.164
Tech	0.296	0.209	0.897	0.295	0.208	0.897
PriorReturns	0.041	0.430	2.043	0.041	0.400	2.231
PostReturns	0.012	0.024	0.762	0.012	0.025	0.695
WBStrength	0.523	0.251	-0.091	0.523	0.250	-0.091

Note: All variables are defined in Appendix B.

Panel D. Distributional Properties of Treatment = ReplaceExec

D1. Before: Without Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.209	0.166	1.433	0.078	0.072	3.160
RestateEarnings	0.112	0.045	5.773	0.079	0.019	4.667
RestateCAR	0.056	0.034	2.919	0.028	0.011	1.381
LogDamages	17.820	35.970	-2.330	15.630	55.490	-1.467
RestateLength	0.534	0.250	-0.137	0.505	0.250	-0.020
RevRecognition	0.289	0.206	0.930	0.201	0.161	1.490
SECDistance	1.131	0.741	0.370	1.143	0.774	0.362
LogMktCap	0.612	0.522	1.889	0.539	0.457	2.412
Tech	0.313	0.216	0.805	0.261	0.193	1.087
PriorReturns	-0.026	0.448	2.501	0.137	0.485	2.165
PostReturns	-0.003	0.030	0.468	0.004	0.021	0.639
WBStrength	0.582	0.244	-0.334	0.481	0.250	0.075

D2. After: With Weighting

	Treatment			Control		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Litigation	0.209	0.166	1.433	0.209	0.165	1.433
RestateEarnings	0.112	0.045	5.773	0.112	0.057	4.841
RestateCAR	0.056	0.034	2.919	0.056	0.017	1.311
LogDamages	17.820	35.970	-2.330	17.820	30.010	-2.488
RestateLength	0.534	0.250	-0.137	0.534	0.249	-0.137
RevRecognition	0.289	0.206	0.930	0.289	0.206	0.930
SECDistance	1.131	0.741	0.370	1.131	0.777	0.394
LogMktCap	0.612	0.522	1.889	0.612	0.597	2.422
Tech	0.313	0.216	0.805	0.313	0.215	0.805
PriorReturns	-0.026	0.448	2.501	-0.026	0.293	2.150
PostReturns	-0.003	0.030	0.468	-0.003	0.022	0.541
WBStrength	0.582	0.244	-0.334	0.582	0.244	-0.334

Note: All variables are defined in Appendix B.

Appendix C – Data from the Semi-Annual Report to Congress, issued by the Office of Inspector General

SEC Report N	Start of Report Period	End of Report Period	Complaints from Hotline
1	09/30/07	03/31/08	N/A*
2	04/01/08	09/30/08	29
3	10/01/08	03/31/09	178
4	04/01/09	09/30/09	162
5	10/01/09	03/31/10	141
6	04/01/10	09/30/10	132
7	10/01/10	03/31/11	106
8	04/01/11	09/30/11	144
9	10/01/11	03/31/12	133
10	04/01/12	09/30/12	172
11	10/01/12	03/31/13	184
12	04/01/13	09/30/13	183
13	10/01/13	03/31/14	211
14	04/01/14	09/30/14	121
15	10/01/14	03/31/15	105
16	04/01/15	09/30/15	165
17	10/01/15	03/31/16	154

Note: The number of SEC complaints received during the period was obtained from Tables 4 and 5 of the Semi-Annual Report to Congress, issued by the Office of Inspector General. These reports were obtained from https://www.sec.gov/reports.

*Since the OIG (Office of Inspector General) hotline only become operational on August 13, 2008, then the 9/30/08 report was the first to contain the complete complaints data. The hotline is operational 24 hours a day, 7 days a week. For hotline information for 2008, see p. 81 of the 9/30/08 report at https://www.sec.gov/files/seminov08.pdf .

Appendix D – SEC Encouragement and Acknowledgement of Cooperation

Panel A. SEC Encouragement of Cooperation in Speeches by SEC Division of Enforcement Staff

Year	All Speeches		Speeches Excluding Announcements of Additional Charges		N_ Restatements
	N	% Mentioning "Cooperation"	N	% Mentioning "Cooperation"	
1999	5	0.0%	5	0.0%	
2000	6	33.3%	6	33.3%	
2001	3	33.3%	3	33.3%	
2002	4	50.0%	4	50.0%	64
2003	5	0.0%	2	0.0%	76
2004	9	22.2%	5	40.0%	110
2005	4	25.0%	3	33.3%	179
2006	6	0.0%	1	0.0%	170
2007	11	36.4%	9	44.4%	86
2008	10	20.0%	8	25.0%	61
2009	8	25.0%	6	33.3%	64
2010	6	33.3%	4	50.0%	37
2011	7	71.4%	5	100.0%	41
2012	9	22.2%*	5	40.0%	66
2013	3	100.0%	3	100.0%	49
2014	3	66.7%	3	66.7%	46
2015	7	57.1%	7	57.1%	
2016	7	42.9%	7	42.9%	
2017	2	0.0%	2	0.0%	
2018	4	50.0%	4	50.0%	
Total					1,049

Note: Speeches made by the SEC Enforcement Staff were obtained from https://www.sec.gov/news/speeches . Each speech was manually reviewed to ensure that "cooperation" referred to the corporate cooperation initiative, as opposed to cooperation from other agencies.

* While 2012 has a low % of speeches mentioning cooperation, this was not a typical year due to the turnover of SEC Chairperson Mary Schapiro (announced November 26, 2012) and Division of Enforcement Head Robert Khuzami (announced January 9, 2013).

Panel B. SEC Acknowledgement of Cooperation in AAERs

AAER Issuance Year	Number of AAERs in which the SEC Acknowledges Firm Cooperation			% Elaborating Cooperation Details
	Total	Using Standard Language	Elaborating on Firm Cooperation Details	
2002	15	11	4	27%
2003	22	17	5	23%
2004	14	12	2	14%
2005	8	8	0	0%
2006	9	9	0	0%
2007	10	10	0	0%
2008	8	8	0	0%
2009	13	13	0	0%
2010	7	5	2	29%
2011	4	1	3	75%
2012	5	2	3	60%
2013	1	0	1	100%
2014	5	3	2	40%
2015	7	2	5	71%
2016	14	4	10	71%
2017	7	2	5	71%

Note: Accounting and Auditing Enforcement Releases (AAERs) can be accessed at: https://www.sec.gov/divisions/enforce/friactions.shtml

Appendix E – Formal Agreements Mentioned in SEC AAERs and the SEC Cooperation Initiative Homepage

Panel A. Formal Agreements Mentioned in SEC AAERs

N	AAER Number	AAER Date	Firm or Individual? (abbreviated)	Agreement Publicly Available?	Agreement Discussed Credit/No Credit for:			
					Timely/ Voluntary Disclosure	Internal Investigation	Replacing Executive	Future Continuing Cooperation
Cooperation Agreements (CAs)								
1	3648	04/01/15	CA with Individual	0				
2	3662	06/05/15	CA with Individual	0				
3	3726	12/14/15	CA with Individual	0				
4	3727	12/14/15	CA with Individual	0				
Deferred Prosecution Agreements (DPAs)								
1	3399	08/08/12	DPA with Firm Pfizer	1	1	1		1
2	3454	04/16/13	DPA with Firm Parker	1		1	1	1
3	3509	10/22/13	DPA with Firm Diebold	1	1	1		1
4	3775	05/24/16	DPA with Firm Swisher	1	1	1	1	1
5	3792	07/25/16	DPA with Firm Latam	1	1	1	1	1
6	3843	01/12/17	DPA with Firm Biomet	1	1	1	1	1
7	3851	01/18/17	DPA with Firm Orthofix	1	1	1	1	1
8	3938	04/30/18	DPA with Firm Panasonic Avio	1	1	1	1	1
Non-Prosecution Agreements (NPAs)								
1	3219	12/20/10	NPA with Firm Carter's	1	1	1	1	1
2	3348	12/20/11	NPA with Firm Aon	1	1	1		1
	3421	10/26/12	duplicate of AAER 3219					
3	3594	11/03/14	NPA with Firm Bio-Rad	1	1	1	1	1
4	3743	02/16/16	NPA with Firm Parametric	1	1			1
5	3784	06/21/16	NPA with Firm BK Medical	1	1	1	1	1
6	3824	11/17/16	NPA with Firm JP Morgan	1	1	1	1	1
7	3833	12/02/16	NPA with Firm United	1	1	1	1	1
8	3948	07/05/18	NPA with Firm Credit Suisse	1	1	1	1	1
9	3961	08/27/18	NPA with Firm Legg Mason	1	1	1	1	1
10	3989	09/27/18	NPA with Firm Petroleo Brasil	1	1	1	1	1
			N	18	17	17	14	18
			% (out of 18 available)		*94%*	*94%*	*78%*	*100%*

Appendix E – continued

Panel B. Formal Agreements Listed on the SEC Cooperation Initiative Homepage

N	Number	Date	Firm or Individual? (abbreviated)	Agreement Publicly Available?	Press Release/Agreement Discussed Credit/No Credit for:			
					Timely/ Voluntary Disclosure	Internal Investigation	Replacing Executive	Future Continuing Cooperation
Cooperation Agreements (CAs)								
1	2014-91	05/05/14	CA with Robert S. Agriogianis	0				
2	LR 22298	03/19/12	CA with Anonymous	0	1	N/A	1	
3*	2014-47	03/11/14	CA with Clayton T. Marshall	0				
4	2013-19	02/04/13	CA with William G. Reeves	0				
5	AAER 3439	01/11/13	No Agreement	0				
6	LR 22527	11/09/12	No Agreement	0				
7	2012-193	09/20/12	CA with Kenneth F. Wrangell	0				
8	2012-23	02/01/12	No Agreement with Credit	0	1		1	
Deferred Prosecution Agreements (DPAs)								
1	2011-112	05/17/11	DPA with Firm Tenaris	1	1	1		1
2	2012-138	07/18/12	DPA with non-profit Amish	1				1
3**	2013-241	11/12/13	DPA with Individual Scott	1	1		1	1
4	2014-125	06/25/14	DPA with Firm Regions	1			1	1
5	2015-13	01/22/15	DPA with Firm PBSJ	1	1	1	1	1
6	2015-181	09/08/15	DPAs with Individuals	0				
7	2016-29	02/16/16	DPA with Individual Yu Kai	1	1			1
8	2016-45	03/09/16	DPA with Individual Bernard	1			1	1
9	LR 24222	08/01/18	DPA with "Individual A"	1	1			1
Non-Prosecution Agreements (NPAs)								
1	2010-252	12/20/10	NPA with Carter's	1	1	1	1	1
2	2011-267	12/16/11	NPA with Fannie Mae	1				1
3	2013-65	04/22/13	NPA with Ralph Lauren	1	1	1	1	1
4	2014-85	04/25/14	NPA with a Trader	0				
5	2016-109	06/07/16	NPA with Firm Akamai	1	1	1	1	1
6	2016-109	06/07/16	NPA with Firm Nortek	1	1	1	1	1

Note: The SEC Cooperation Initiative Homepage is found at https://www.sec.gov/spotlight/enforcement-cooperation-initiative.shtml . Details about the provided cooperation were not always included in the formal agreement; thus, we also obtained details from Exhibit A of the agreement and/or the SEC press release.

* Clayton T. Marshall signed a cooperation agreement and still received AAER 3542.

** Scott Jonathan Herckis provided cooperation against another individual in November 2012; his DPA was signed on 11/8/13, nearly one year later.

Panel C. Excerpts from Formal Agreements Listed on the SEC Cooperation Initiative Homepage

CA #2: "Coding error at money manager" (3/19/12), Individual Was Anonymous "The SEC determined that his cooperation proved valuable because of its timeliness and quality, which allowed the SEC to conserve its investigative resources." https://www.sec.gov/litigation/litreleases/2012/lr22298.htm
CA #7: "Insider trading in shares of insurance company" (9/20/12), Individual Kenneth F. Wrangell "By making the choice to cooperate with the SEC and voluntarily provide all of the necessary evidence at the outset of the investigation, Wrangell saved the SEC time and resources and himself a larger penalty," said William P. Hicks, Associate Director in the SEC's Atlanta Regional Office." https://www.sec.gov/news/press-release/2012-2012-193htm
NPA #5 and #6: "Two companies who promptly self-reported bribes" (5/5/16), Firms Akamai and Nortek "When companies self-report and lay all their cards on the table, non-prosecution agreements are an effective way to get the money back and save the government substantial time and resources while crediting extensive cooperation," said Andrew Ceresney, Director of the SEC Enforcement Division." https://www.sec.gov/news/pressrelease/2016-109.html
NPA #3: "FCPA violations involving bribes to Argentinian government officials" (4/18/13), Firm Ralph Lauren "Ralph Lauren Corporation's cooperation saved the agency substantial time and resources ordinarily consumed in investigations of comparable conduct." https://www.sec.gov/news/press-release/2013-2013-65htm

Note: Case numbers refer to listing in Appendix E Panel B. The SEC Cooperation Initiative Homepage is found at https://www.sec.gov/spotlight/enforcement-cooperation-initiative.shtml

Appendix F – Determinants of SEC Enforcement, with Firms' Investigation Variable, Split by Whether Firms Disclosed That They Shared Results with the SEC

	(1)	(2)	(3)	(4)	(5)	(6)
	Models Where the Dependent Variables are:					
	Enforcement (Probit)		Settlement (Ordered Probit)		$Penalties (Tobit)	
	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-2.305***	-5.097***			-73.010***	-21.736**
	[6.57]	[2.82]			[4.08]	[2.32]
Investigation_ToldSEC	1.023***	0.924	0.978***	0.924	9.679***	11.311**
	[4.92]	[1.14]	[4.94]	[1.14]	[2.92]	[2.44]
TimelyDisclose	-0.191	-4.835***	-0.157	-4.835***	-2.758	-29.417***
	[0.95]	[3.96]	[0.82]	[3.96]	[0.90]	[2.61]
PromDisclose	0.421**	-0.378	0.394**	-0.378	3.220	0.518
	[2.55]	[0.51]	[2.51]	[0.51]	[1.40]	[0.21]
ReplaceExec	0.276*	-1.716**	0.222	-1.716**	3.413	-12.121***
	[1.76]	[2.18]	[1.44]	[2.18]	[1.42]	[3.75]
Investigation_DidNotTellSEC	0.530***	3.594***	0.601***	3.594***	4.549	25.685***
	[2.92]	[2.80]	[3.55]	[2.80]	[1.33]	[2.79]
Litigation	0.191	0.910*	0.264	0.910*	2.905	6.077***
	[0.98]	[1.67]	[1.55]	[1.67]	[1.03]	[3.00]
RestateEarnings	1.003***	-2.216	0.645*	-2.216	12.983**	-60.277***
	[2.58]	[1.39]	[1.78]	[1.39]	[2.22]	[4.01]
RestateCAR	2.600***	11.962***	1.554***	11.962***	20.634**	42.893*
	[3.70]	[3.35]	[3.01]	[3.35]	[2.37]	[1.76]
LogDamages	0.018	0.112	0.017	0.112	2.589***	0.582
	[1.08]	[1.52]	[1.04]	[1.52]	[2.82]	[1.44]
RestateLength	0.061	0.531	0.056	0.531	-2.821	2.969
	[0.39]	[0.78]	[0.36]	[0.78]	[0.91]	[1.04]
RevRecognition	0.165	-0.110	0.166	-0.110	-1.147	-2.140
	[0.93]	[0.23]	[0.98]	[0.23]	[0.44]	[0.89]
Controls	Yes	Yes	Yes	Yes	Yes	Yes
N	847	202	847	202	847	202
Pseudo R-Square	29.00%	57.00%	22.00%	57.00%	22.00%	50.00%
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix A. Enforcement, Settlement, and $Penalties have all been updated as of January 2018. For this analysis only, the variables SECDistance, LogMktCap, Tech, PriorReturns, PostReturns, and WBStrength were included in the regressions but not tabulated due to space constraints.

Note: For this analysis, we split our *Investigation* variable into two variables: *Investigation_ToldSEC* and *Investigation_DidNotTellSEC*.

Investigation is an indicator variable equal to 1 if firm disclosures indicate an investigation of the announced restatement is led by (i) the audit committee, (ii) a special committee consisting of independent directors, or (iii) hired outside counsel, and 0 otherwise.

Investigation_ToldSEC is an indicator variable equal to 1 if the firm conducted an independent investigation and disclosed in an SEC filing that it reported the results to the SEC, and 0 otherwise.

Investigation_DidNotTellSEC is an indicator variable equal to 1 if the firm conducted an independent investigation and did not disclose in a public filing whether it reported the results to the SEC.

Appendix G – Determinants of SEC Enforcement Penalties with Poisson Model

	(1)	(2)	(3)	(4)
	Models Where the Dependent Variables are:			
	$Penalties (Poisson)			
	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-11.771***	-6.099*	-10.157***	-17.032**
	[2.77]	[1.70]	[2.79]	[2.26]
CoopSum (0-4)	0.323*	-2.694**		
	[1.71]	[2.50]		
Investigation			1.127*	17.027*
			[1.76]	[1.80]
TimelyDisclose			-0.362	-18.745**
			[0.62]	[2.13]
PromDisclose			-0.093	-0.172
			[0.20]	[0.17]
ReplaceExec			0.565	-10.248**
			[1.10]	[2.07]
Litigation	0.660	3.616	0.354	6.219
	[1.40]	[0.99]	[0.82]	[1.31]
RestateEarnings	1.353	-4.857	1.998*	-75.693
	[1.40]	[0.75]	[1.84]	[1.40]
RestateCAR	3.580***	16.442**	3.673***	18.003***
	[2.67]	[2.33]	[2.70]	[2.76]
LogDamages	0.462**	-0.294*	0.382**	0.304
	[2.23]	[1.87]	[2.00]	[1.63]
RestateLength	-0.594	4.312	-0.649	6.301**
	[1.16]	[1.02]	[1.11]	[2.03]
RevRecognition	0.281	5.279**	0.328	-3.251
	[0.56]	[2.22]	[0.65]	[1.08]
SECDistance	-0.322	-2.829***	-0.259	-3.374**
	[0.98]	[2.96]	[0.70]	[2.53]
LogMktCap	0.499	-0.391	0.588*	-1.118
	[1.53]	[0.60]	[1.81]	[1.29]
Tech	-0.225	3.140	-0.453	6.745**
	[0.35]	[0.78]	[0.69]	[2.40]
PriorReturns	0.002	-2.206	0.138	3.773
	[0.00]	[0.92]	[0.38]	[1.13]
PostReturns	-1.520	-12.792***	-1.512	-41.810**
	[1.17]	[3.32]	[1.15]	[2.12]
WBStrength	-0.325	-0.504	-0.237	-0.933
	[0.64]	[0.12]	[0.45]	[0.66]
N	847	202	847	202
Wald Chi-Square	325	1,300	366	192,775
Year Fixed Effects	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. $Penalties have all been updated as of January 2018.

Figure 1A. Rates for SEC AAERs and Summary Cooperation Measure by Year of Restatement Announcement

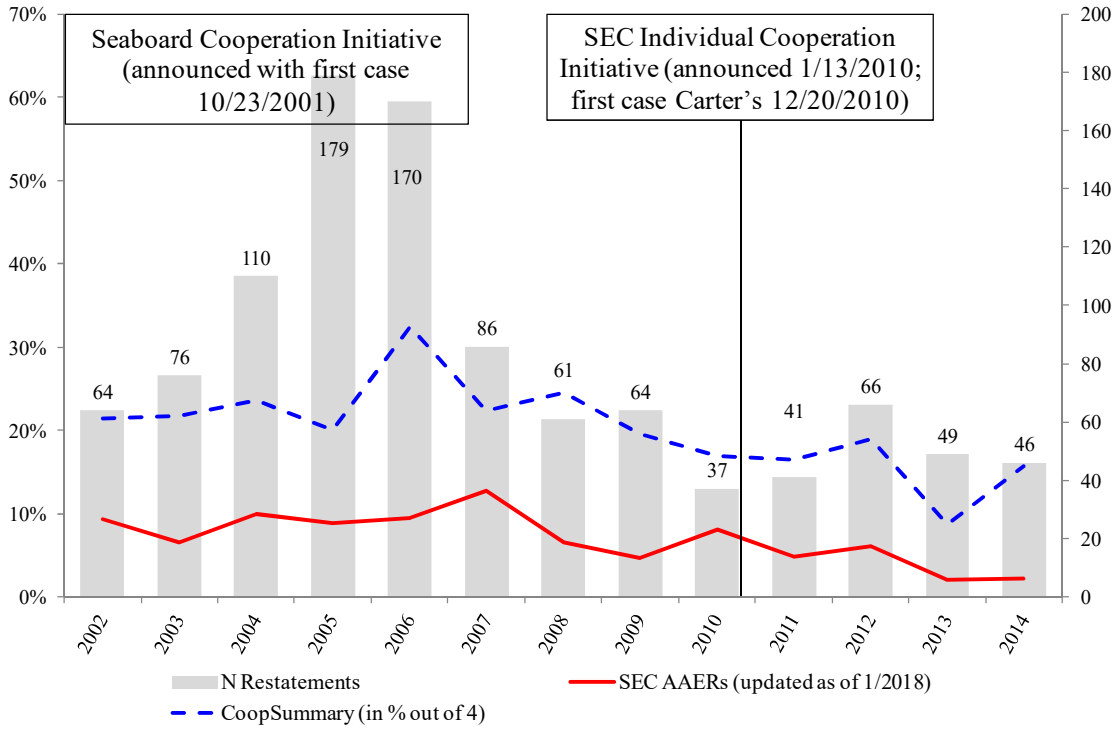


Figure 1B. Rates for Firms' Cooperation Decisions by Year of Restatement Announcement

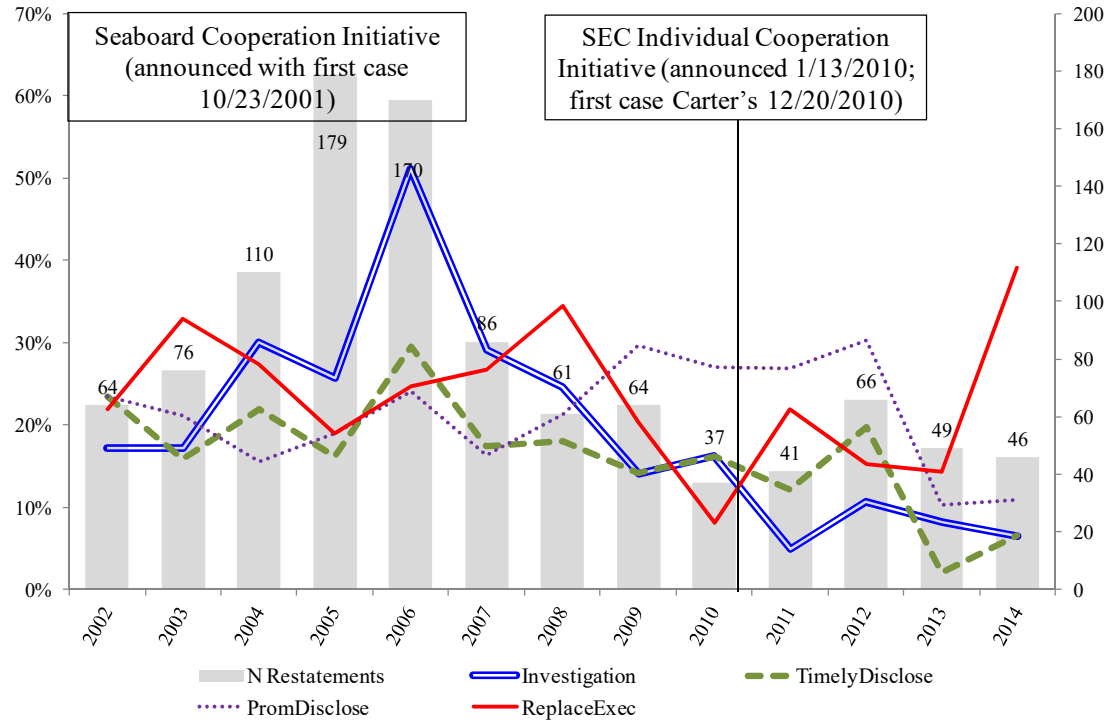


Figure 2A. Average SEC AAER Rates for Each Restatement Decile For Each Cooperation Initative (N = 1,049 Restatements)

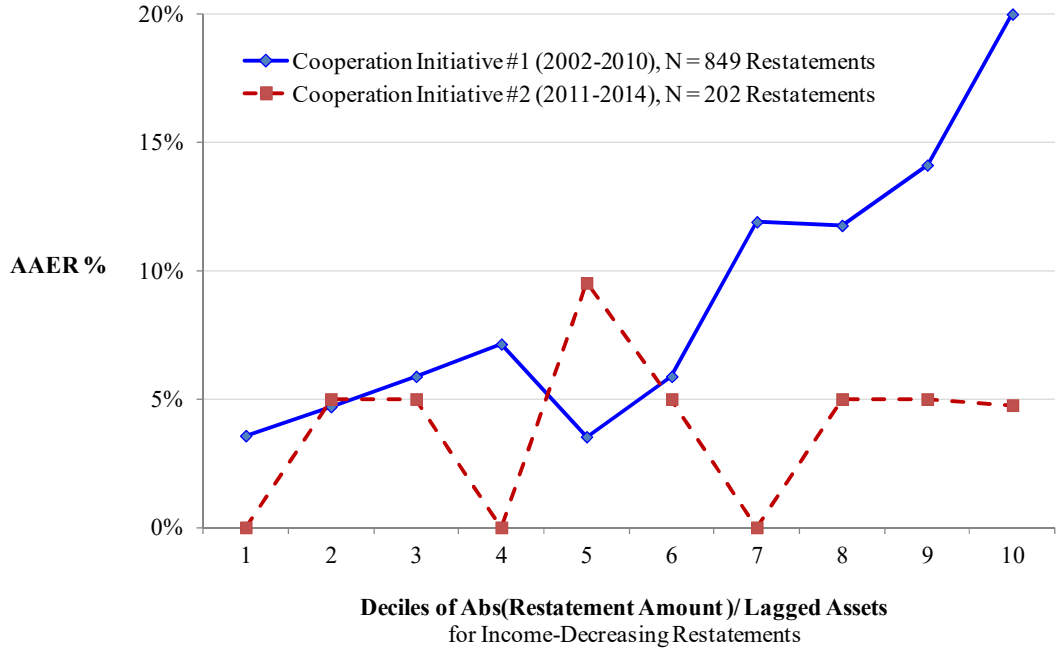
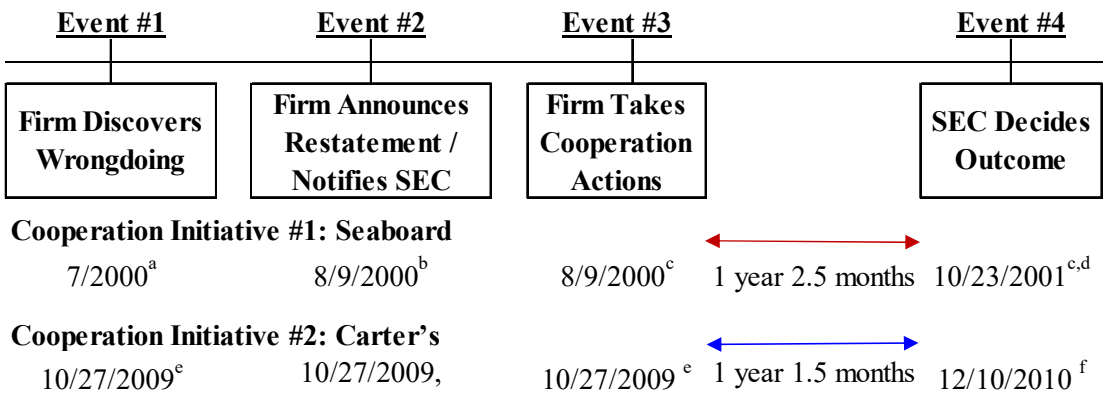


Figure 2B. Average SEC $Penalties for Each Restatement Decile For Each Cooperation Initative (N = 1,049 Restatements)

Figure 3. Timeline of Cooperation and Enforcement Outcomes for the SEC's Cooperation Initiative Benchmark Cases (Seaboard and Carter's)



Source Links:

[a] https://www.sec.gov/litigation/investreport/34-44969.htm

[b] https://www.sec.gov/Archives/edgar/data/88121/000008812100500003/press4.txt

[c] See AAER 1470 at https://www.sec.gov/litigation/investreport/34-44969.htm

[d] See AAER 1471 at https://www.sec.gov/litigation/admin/34-44970.htm

[e] https://www.sec.gov/Archives/edgar/data/1060822/000106082209000018/form8k.htm

[f] https://www.sec.gov/news/press/2010/2010-6.htm

Figure 4. Percent of Speeches by the SEC Division of Enforcement Staff Mentioning Firm "Cooperation"

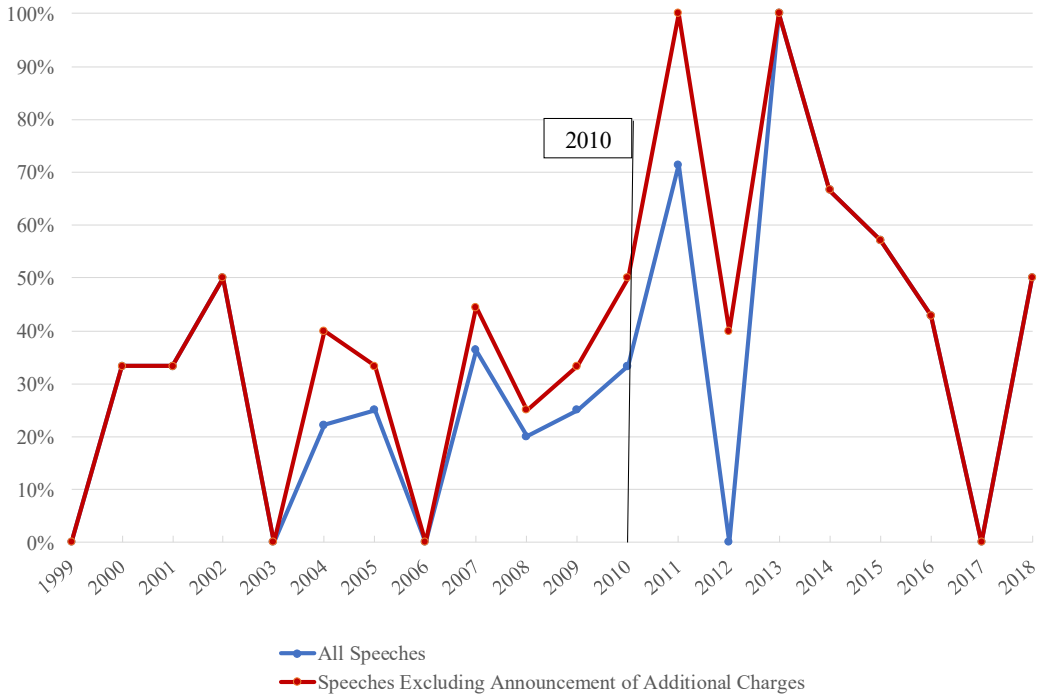


TABLE 1 – Sample Selection

Panel A. Sample Selection	**N**
Restatement observations from the Audit Analytics (AA) database with either CIK or GVKEY identifiers, limited to years 2002-2014	7,649
Less: missing Compustat information	(260)
Less: missing CRSP information	(1,895)
Less: observations where headquarter information is missing or outside the U.S.	(576)
Less: missing SEC Edgar information	(7)
Less: missing or unavailable CEO turnover information	(730)
Less: variables required for regressions	(73)
Less: multiple/subsequent announcements about the same restatement (i.e., the same wrongdoing period)	(493)
Less: cumulative impact on income positive	(532)
Less: cumulative impact on income less than 1% of total assets	(1,974)
Less: high frequency restaters (19 firms with 3+ remaining restatements each)	(60)
Final Sample of Restatements	**1,049**

TABLE 1 – SEC Enforcement and Firms' Cooperation Decisions by Year of Restatement Announcement

Panel B. Distribution of Restatements By Year of Restatement Announcement

Year	Number of Restatements	Enforcement	CoopSum (0-4)	Investigation	Timely Disclose	Prom Disclose	Replace Exec
2002	64	9.4%	0.86	17.2%	23.4%	23.4%	21.9%
2003	76	6.6%	0.87	17.1%	15.8%	21.1%	32.9%
2004	110	10.0%	0.95	30.0%	21.8%	15.5%	27.3%
2005	179	8.9%	0.80	25.7%	16.2%	19.0%	19.0%
2006	170	9.4%	1.29	51.2%	29.4%	24.1%	24.7%
2007	86	12.8%	0.90	29.1%	17.4%	16.3%	26.7%
2008	61	6.6%	0.98	24.6%	18.0%	21.3%	34.4%
2009	64	4.7%	0.78	14.1%	14.1%	29.7%	20.3%
2010	37	8.1%	0.68	16.2%	16.2%	27.0%	8.1%
2011	41	4.9%	0.66	4.9%	12.2%	26.8%	22.0%
2012	66	6.1%	0.76	10.6%	19.7%	30.3%	15.2%
2013	49	2.0%	0.35	8.2%	2.0%	10.2%	14.3%
2014	46	2.2%	0.63	6.5%	6.5%	10.9%	39.1%
Total	1,049	7.9%	0.88	24.9%	18.4%	21.0%	23.7%

Note: All variables are defined in Appendix B.

TABLE 2 – Descriptive Statistics

Panel A. Descriptive Statistics (N = 1,049)

	Mean	Q1	Median	Q3	Std.Dev
Enforcement	0.08	0.00	0.00	0.00	0.27
Settlement	0.12	0.00	0.00	0.00	0.44
$Penalties (in millions)	0.22	0.00	0.00	0.00	1.47
CoopSum (0-4)	0.88	0.00	1.00	1.00	0.93
Investigation	0.25	0.00	0.00	0.00	0.43
TimelyDisclose	0.18	0.00	0.00	0.00	0.39
PromDisclose	0.21	0.00	0.00	0.00	0.41
ReplaceExec	0.24	0.00	0.00	0.00	0.43
Severity Variables:					
Litigation	0.11	0.00	0.00	0.00	0.31
RestateEarnings	0.09	0.02	0.03	0.08	0.16
RestateCAR	0.03	-0.02	0.02	0.08	0.13
Damages (in millions)	946.09	11.31	117.60	539.17	2,882.01
RestateLength (in years)	2.90	1.00	2.00	3.75	2.69
RevRecognition	0.22	0.00	0.00	0.00	0.42
Control Variables:					
SECDistance (in thousands)	1.14	0.34	0.92	2.27	0.87
MktCap (in millions)	1,503.04	96.58	336.98	1,125.32	4,345.13
Tech	0.27	0.00	0.00	1.00	0.45
PriorReturns	0.099	-0.318	-0.004	0.300	0.693
PostReturns	0.003	-0.075	-0.001	0.068	0.152
WBStrength	0.51	0.00	1.00	1.00	0.50

Note: Variable definitions are found in Appendix B.

TABLE 2 – continued

Panel B. Pearson Correlations for 2002-2010 (N = 847)

	Enforcement	Settlement	$Penalties	CoopSum (0-4)	Investigation	Timely Disclose	PromDisclose	ReplaceExec
Settlement	0.948***							
$Penalties (in millions)	0.464***	0.542***						
CoopSum (0-4)	0.258***	0.262***	0.164***					
Investigation	0.259***	0.270***	0.158***	0.664***				
TimelyDisclose	0.009	0.023	0.033	0.528***	0.153***			
PromDisclose	0.144***	0.132***	0.060*	0.503***	0.097***	0.057*		
ReplaceExec	0.154***	0.151***	0.110***	0.552***	0.187***	0.025	0.011	
Severity Variables:								
Litigation	0.210***	0.205***	0.128***	0.325***	0.301***	0.124***	0.114***	0.181***
RestateEarnings	0.127***	0.119***	0.067*	0.052	-0.004	0.023	-0.005	0.104***
RestateCAR	0.286***	0.238***	0.183***	0.186***	0.158***	0.043	0.112***	0.101***
LogDamages	0.134***	0.129***	0.113***	0.245***	0.196***	0.125***	0.112***	0.115***
RestateLength	0.086***	0.089***	0.061*	0.227***	0.235***	0.125***	0.144***	0.004
RevRecognition	0.160***	0.133***	0.101***	0.146***	0.154***	-0.023	0.094***	0.095***
Control Variables:								
SECDistance (in thousands)	-0.083**	-0.078**	-0.049	0.058	0.069**	0.010	0.028	0.019
LogMktCap (in millions)	0.141***	0.163***	0.223***	0.262***	0.289***	0.125***	0.113***	0.054
Tech	0.015	0.026	0.009	0.119***	0.156***	-0.006	0.031	0.076**
PriorReturns	-0.062*	-0.059*	-0.036	-0.083**	-0.050	-0.026	-0.025	-0.084**
PostReturns	-0.040	-0.036	0.030	-0.0020	-0.030	-0.007	0.029	0.007
WBStrength	0.004	0.007	0.026	0.055	0.027	-0.017	0.012	0.098***

*, **, *** indicates correlation is significant at the 10%, 5%, and 1% level, respectively. Variable definitions are found in Appendix B.

TABLE 2 – continued

Panel C. Pearson Correlations for 2011-2014 (N = 202)

	Enforcement	Settlement	$Penalties	CoopSum (0-4)	Investigation	Timely Disclose	PromDisclose	ReplaceExec
Settlement	1.000***							
$Penalties (in millions)	0.546***	0.5462***						
CoopSum (0-4)	0.101	0.1013	0.0608					
Investigation	0.222***	0.2224***	0.2426***	0.4270***				
TimelyDisclose	0.011	0.0105	-0.0111	0.5394***	0.1328*			
PromDisclose	0.024	0.0237	-0.0426	0.5973***	0.0343	0.0606		
ReplaceExec	0.016	0.0158	0.0067	0.6305***	0.0229	0.1235*	0.0915	
Severity Variables:								
Litigation	0.180**	0.180**	0.054	0.211***	0.200***	-0.015	0.110	0.174**
RestateEarnings	0.014	0.014	-0.026	0.066	0.0830	0.020	0.040	0.017
RestateCAR	0.246***	0.246***	0.127*	0.215***	0.117*	0.076	0.250***	0.030
LogDamages	0.053	0.053	-0.088	0.191***	-0.0250	0.075	0.145**	0.181**
RestateLength	0.102	0.102	0.137	0.171	0.072	0.086	0.111	0.100
RevRecognition	0.116*	0.116*	0.160*	0.186***	0.267***	-0.026	0.143**	0.059
Control Variables:								
SECDistance (in thousands)	-0.100	-0.100	-0.109	-0.142**	-0.193***	-0.038	0.010	-0.124*
LogMktCap (in millions)	-0.038	-0.038	0.093	-0.042	0.031	-0.035	-0.114	0.037
Tech	0.074	0.074	-0.026	-0.021	0.151**	-0.073	-0.004	-0.081
PriorReturns	-0.069	-0.069	-0.023	-0.156**	-0.029	0.074	-0.142**	-0.194***
PostReturns	-0.236***	-0.236***	-0.097	-0.135*	-0.167**	-0.028	0.040	-0.165**
WBStrength	0.012	0.012	0.082	0.027	0.018	-0.043	0.042	0.031

*, **, *** indicates correlation is significant at the 10%, 5%, and 1% level, respectively. Variable definitions are found in Appendix B.

TABLE 3 – Determinants of SEC Enforcement, with Summary Cooperation Measure

Panel A. Baseline Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Models Where the Dependent Variables are:					
	Enforcement (Probit)		Settlement (Ordered Probit)		$Penalties (Tobit)	
	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-2.472***	-2.101***			-86.371***	-8.910***
	[6.45]	[3.24]			[4.20]	[2.83]
CoopSum (0-4)	0.336***	-0.641**	0.328***	-0.641**	3.181***	-3.748*
	[4.82]	[2.08]	[5.10]	[2.08]	[3.21]	[1.85]
Litigation	0.281	0.863	0.351*	0.863	4.253	4.717
	[1.41]	[1.56]	[1.96]	[1.56]	[1.47]	[1.44]
RestateEarnings	0.763*	-0.606	0.456	-0.606	10.310	-13.919**
	[1.89]	[0.73]	[1.25]	[0.73]	[1.58]	[2.46]
RestateCAR	2.660***	6.593***	1.688***	6.593***	21.478**	36.799**
	[3.66]	[3.89]	[3.16]	[3.89]	[2.26]	[2.34]
LogDamages	0.022	-0.011	0.020	-0.011	3.226***	-0.196
	[1.23]	[0.44]	[1.17]	[0.44]	[3.19]	[1.26]
RestateLength	0.067	0.404	0.073	0.404	-3.044	2.521
	[0.45]	[0.87]	[0.51]	[0.87]	[1.06]	[1.09]
RevRecognition	0.242	0.454	0.230	0.454	-0.481	4.520
	[1.44]	[0.87]	[1.42]	[0.87]	[0.18]	[1.36]
SECDistance	-0.271***	-0.859***	-0.258***	-0.859***	-3.904**	-4.240**
	[2.79]	[2.93]	[2.79]	[2.93]	[2.39]	[2.30]
LogMktCap	0.160*	-0.325	0.164*	-0.325	1.345	-1.219
	[1.72]	[1.31]	[1.75]	[1.31]	[0.67]	[0.97]
Tech	-0.016	0.839*	0.034	0.839*	-1.841	4.500*
	[0.09]	[1.70]	[0.20]	[1.70]	[0.57]	[1.73]
PriorReturns	-0.233	0.054	-0.209*	0.054	-2.353	0.302
	[1.60]	[0.23]	[1.70]	[0.23]	[1.04]	[0.20]
PostReturns	-1.071**	-4.147***	-0.851*	-4.147***	-8.247	-18.550***
	[2.23]	[3.44]	[1.94]	[3.44]	[1.16]	[2.70]
WBStrength	-0.215	0.190	-0.157	0.190	-3.319	1.673
	[1.37]	[0.43]	[1.08]	[0.43]	[1.35]	[0.63]
N	847	202	847	202	847	202
Pseudo R-Square	26.00%	43.00%	19.00%	43.00%	21.00%	29.00%
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. Cooperation Summary Measure (CoopSum) is the sum of four dummy variables: Investigation + TimelyDisclose + PromDisclose + ReplaceExec; CoopSum can take on values ranging from 0 to 4. Enforcement, Settlement, and $Penalties have all been updated as of January 2018.

TABLE 3 – continued

Panel B. Marginal Effects for Enforcement

Models from Panel A:	*(1)*	*(2)*
	Models Where the Dependent Variable is Enforcement (Probit)	
	2002-2010	2011-2014
CoopSum (0-4)	0.041***	-0.033**
	[4.66]	[2.23]
Litigation	0.034	0.044*
	[1.41]	[1.72]
RestateEarnings	0.092*	-0.031
	[1.88]	[0.70]
RestateCAR	0.321***	0.338***
	[3.72]	[3.06]
LogDamages	0.003	-0.001
	[1.24]	[0.45]
RestateLength	0.008	0.021
	[0.45]	[0.94]
RevRecognition	0.029	0.023
	[1.44]	[0.87]
SECDistance	-0.033***	-0.044***
	[2.85]	[2.89]
LogMktCap	0.019*	-0.017
	[1.73]	[1.25]
Tech	-0.002	0.043*
	[0.09]	[1.79]
PriorReturns	-0.028	0.003
	[1.59]	[0.23]
PostReturns	-0.129**	-0.212***
	[2.21]	[3.24]
WBStrength	-0.026	0.010
	[1.38]	[0.42]
N	847	202
Year Fixed Effects	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. Cooperation Summary Measure (CoopSum) is the sum of four dummy variables: Investigation + TimelyDisclose + PromDisclose + ReplaceExec; CoopSum can take on values ranging from 0 to 4. Enforcement, Settlement, and $Penalties have all been updated as of January 2018.

TABLE 4 – Determinants of SEC Enforcement, with Firms' Cooperation Decisions

Panel A. Baseline Regressions

	(1)	(2)	(3)	(4)	(5)	(6)
	Models Where the Dependent Variables are:					
	Enforcement (Probit)		Settlement (Ordered Probit)		$Penalties (Tobit)	
	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-2.417***	-3.832***			-79.232***	-14.482***
	[6.65]	[3.90]			[4.08]	[4.68]
Investigation	0.742***	1.990***	0.761***	1.990***	7.254**	13.772***
	[4.58]	[2.83]	[4.96]	[2.83]	[2.55]	[5.56]
TimelyDisclose	-0.201	-3.268***	-0.166	-3.268***	-2.810	-17.205***
	[1.01]	[3.01]	[0.87]	[3.01]	[0.91]	[3.88]
PromDisclose	0.433***	-0.424	0.402***	-0.424	3.283	0.278
	[2.68]	[0.54]	[2.61]	[0.54]	[1.46]	[0.12]
ReplaceExec	0.330**	-1.674**	0.270*	-1.674**	3.997*	-12.728***
	[2.11]	[2.49]	[1.74]	[2.49]	[1.70]	[5.58]
Litigation	0.210	0.453	0.274	0.453	2.924	4.805**
	[1.07]	[0.72]	[1.58]	[0.72]	[1.04]	[2.34]
RestateEarnings	0.943**	-2.035	0.600*	-2.035	11.923**	-55.953***
	[2.43]	[1.28]	[1.69]	[1.28]	[1.99]	[4.02]
RestateCAR	2.578***	8.963***	1.592***	8.963***	21.391**	35.918***
	[3.67]	[4.14]	[3.12]	[4.14]	[2.43]	[3.33]
LogDamages	0.023	0.048*	0.020	0.048*	2.902***	0.109
	[1.32]	[1.72]	[1.21]	[1.72]	[2.96]	[1.08]
RestateLength	0.067	0.692	0.062	0.692	-3.115	4.882**
	[0.42]	[1.13]	[0.40]	[1.13]	[1.00]	[2.23]
RevRecognition	0.170	-0.155	0.169	-0.155	-1.239	-1.959
	[0.96]	[0.35]	[0.99]	[0.35]	[0.47]	[0.96]
SECDistance	-0.282***	-1.233***	-0.268***	-1.233***	-4.053**	-4.729***
	[2.82]	[3.97]	[2.82]	[3.97]	[2.47]	[3.59]
LogMktCap	0.142	-0.422*	0.144	-0.422*	1.616	-0.701
	[1.50]	[1.83]	[1.55]	[1.83]	[0.83]	[0.57]
Tech	-0.079	1.376**	-0.035	1.376**	-2.398	7.486***
	[0.44]	[2.00]	[0.20]	[2.00]	[0.75]	[3.41]
PriorReturns	-0.231	0.018	-0.217*	0.018	-2.085	1.262
	[1.58]	[0.05]	[1.77]	[0.05]	[0.95]	[0.65]
PostReturns	-1.026**	-7.624***	-0.835**	-7.624***	-7.033	-44.147***
	[2.20]	[4.28]	[1.97]	[4.28]	[1.03]	[6.27]
WBStrength	-0.238	0.320	-0.171	0.320	-3.233	2.255
	[1.49]	[0.66]	[1.17]	[0.66]	[1.34]	[1.10]
N	847	202	847	202	847	202
Pseudo R-Square	28.00%	54.00%	22.00%	54.00%	22.00%	46.00%
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. Enforcement, Settlement, and $Penalties have all been updated as of January 2018.

TABLE 4 – continued

Panel B. Marginal Effects for Enforcement

Models from Panel A:	*(1)*	*(2)*
	Models Where the Dependent Variable is Enforcement (Probit)	
	2002-2010	2011-2014
Investigation	0.087***	0.086***
	[4.52]	[2.68]
TimelyDisclose	-0.024	-0.140***
	[1.02]	[2.98]
PromDisclose	0.051***	-0.018
	[2.70]	[0.58]
ReplaceExec	0.039**	-0.072*
	[2.15]	[1.91]
Litigation	0.025	0.019
	[1.08]	[0.75]
RestateEarnings	0.110**	-0.087
	[2.42]	[1.31]
RestateCAR	0.302***	0.385***
	[3.73]	[3.55]
LogDamages	0.003	0.002
	[1.32]	[1.44]
RestateLength	0.008	0.030
	[0.42]	[1.28]
RevRecognition	0.020	-0.007
	[0.96]	[0.35]
SECDistance	-0.033***	-0.053***
	[2.90]	[3.43]
LogMktCap	0.017	-0.018*
	[1.53]	[1.73]
Tech	-0.009	0.059**
	[0.44]	[2.23]
PriorReturns	-0.027	0.001
	[1.56]	[0.05]
PostReturns	-0.120**	-0.328***
	[2.19]	[3.61]
WBStrength	-0.028	0.014
	[1.50]	[0.65]
N	847	202
Year Fixed Effects	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. Enforcement, Settlement, and $Penalties have all been updated as of January 2018.

TABLE 5 – Determinants of SEC Enforcement, Entropy Balancing Approach

Panel A. Enforcement Regressions with Entropy Balancing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Models Where the Dependent Variable is Enforcement (Probit)							
	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-2.381***	-3.684***	-2.242***	-4.095**	-2.154***	-2.965**	-2.767***	-2.344**
	[4.93]	[2.71]	[5.06]	[2.08]	[4.65]	[2.60]	[4.98]	[2.06]
Investigation	**0.907*** **	**4.542*** **	0.779***	2.357***	0.656***	2.070***	0.922***	2.645**
	[5.12]	**[3.55]**	[4.07]	[3.20]	[3.63]	[3.17]	[4.69]	[2.55]
TimelyDisclose	-0.316	-8.790***	**-0.249**	**-4.081*** **	-0.546**	-2.654***	-0.530**	-5.041***
	[1.45]	[5.01]	**[1.40]**	**[4.01]**	[2.41]	[3.12]	[2.37]	[3.48]
PromDisclose	0.347**	-1.583	0.033	-0.843	**0.445*** **	**-0.449**	0.456***	-1.117
	[2.00]	[1.47]	[0.19]	[1.09]	**[2.76]**	**[0.80]**	[2.68]	[1.11]
ReplaceExec	0.451**	-3.819***	0.271	-1.817**	0.345**	-2.302**	**0.350** **	**-2.426*** **
	[2.53]	[5.08]	[1.46]	[2.14]	[2.04]	[2.49]	**[2.12]**	**[2.92]**
Litigation	0.038	-0.238	0.080	-0.726	0.186	0.355	0.228	0.746
	[0.18]	[0.24]	[0.38]	[0.95]	[0.88]	[0.58]	[1.11]	[0.82]
RestateEarnings	1.275**	-6.877***	0.971**	-1.960	1.280**	-2.342	0.597*	-2.478
	[2.47]	[3.65]	[2.31]	[1.17]	[2.31]	[1.64]	[1.70]	[1.40]
RestateCAR	2.647***	21.086***	2.519***	7.953***	3.152***	8.308***	2.678***	13.805***
	[3.79]	[5.72]	[3.86]	[3.17]	[4.31]	[5.24]	[4.05]	[3.70]
LogDamages	0.031	0.076*	0.037	0.151	0.012	0.079	0.050*	0.006
	[1.37]	[1.96]	[1.56]	[1.48]	[0.53]	[1.64]	[1.77]	[0.16]
RestateLength	-0.084	2.407**	-0.046	0.842	0.056	0.034	0.022	1.276*
	[0.44]	[2.25]	[0.23]	[1.09]	[0.29]	[0.05]	[0.12]	[1.80]
RevRecognition	0.022	0.149	0.240	0.492	0.249	-0.223	0.069	-0.651
	[0.11]	[0.41]	[1.08]	[1.05]	[1.19]	[0.48]	[0.35]	[1.18]
SECDistance	-0.283***	-3.221***	-0.363***	-1.345***	-0.397***	-1.124***	-0.286***	-1.837***
	[2.81]	[5.10]	[3.45]	[3.48]	[3.54]	[4.29]	[2.70]	[4.13]
LogMktCap	0.058	-1.035***	0.106	-0.957***	0.073	-0.467*	0.164	-0.575**
	[0.57]	[3.15]	[0.97]	[2.72]	[0.71]	[1.97]	[1.44]	[2.48]
Tech	-0.113	5.468***	-0.053	1.773***	0.040	1.213*	0.001	2.154**
	[0.62]	[5.05]	[0.28]	[2.61]	[0.21]	[1.93]	[0.00]	[2.06]
PriorReturns	-0.237	-0.788	-0.212	-0.226	-0.388**	0.230	-0.282	-0.340
	[1.33]	[1.04]	[1.33]	[0.44]	[2.05]	[0.86]	[1.47]	[0.68]
PostReturns	-1.061*	-18.958***	-0.537	-9.234***	-0.794	-7.802***	-1.520***	-10.782***
	[1.95]	[4.54]	[0.98]	[3.69]	[1.54]	[4.30]	[2.65]	[4.04]
WBStrength	-0.201	0.513	-0.295*	0.514	-0.255	0.425	-0.171	1.012*

	[1.14]	[0.64]	[1.67]	[0.72]	[1.50]	[0.68]	[0.98]	[1.69]
N	847	202	847	202	847	202	847	202
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. Sample moments before and after entropy balancing are reported in Appendix B. Shading indicates entropy balancing, which was applied to each cooperation variable separately; variables were matched based on the mean of all control variables. Enforcement has been updated as of January 2018.

TABLE 5 – continued

Panel B. $Penalties Regressions with Entropy Balancing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Models Where the Dependent Variable is $Penalties (Tobit)							
	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-77.246***	-23.333***	-58.364***	-16.966***	-70.431***	-16.733***	-78.965***	-26.954***
	[3.80]	[6.45]	[3.25]	[3.67]	[3.40]	[3.02]	[3.94]	[5.30]
Investigation	**7.175****	**10.474*****	8.303***	11.597***	4.098	9.706***	6.561**	12.915***
	[2.34]	**[2.78]**	[3.23]	[3.64]	[1.64]	[3.81]	[2.16]	[5.13]
TimelyDisclose	-4.584	-15.838***	**-2.930**	**-17.426*****	-4.600	-11.990***	-4.888	-19.147***
	[1.40]	[4.23]	**[1.17]**	**[4.17]**	[1.48]	[3.00]	[1.59]	[4.55]
PromDisclose	0.343	-1.121	0.599	-0.384	**1.968**	**-1.046**	1.696	-0.780
	[0.13]	[0.87]	[0.25]	[0.25]	**[0.96]**	**[0.53]**	[0.72]	[0.54]
ReplaceExec	7.393**	-10.674***	3.963*	-6.900***	3.610	-9.630***	**3.670**	**-12.615*****
	[2.47]	[5.39]	[1.69]	[2.67]	[1.57]	[3.09]	**[1.55]**	**[6.01]**
Litigation	0.186	3.778***	3.193	3.069**	0.210	3.780*	2.646	5.309***
	[0.06]	[2.96]	[1.29]	[1.98]	[0.08]	[1.82]	[0.95]	[3.40]
RestateEarnings	14.028**	-41.562**	8.610	-32.889*	11.008*	-34.470**	7.756*	-46.188***
	[2.28]	[2.42]	[1.51]	[1.96]	[1.95]	[2.02]	[1.72]	[4.38]
RestateCAR	24.521**	29.932**	23.593***	17.512**	28.576***	29.279***	23.535***	39.997***
	[2.38]	[2.37]	[2.94]	[1.98]	[3.84]	[2.98]	[2.89]	[3.53]
LogDamages	2.732***	0.011	2.059**	0.174	2.715***	0.075	2.846***	-0.007
	[2.68]	[0.09]	[2.10]	[1.46]	[2.71]	[0.79]	[2.76]	[0.06]
RestateLength	-3.065	5.551***	-3.310	3.427	-3.605	1.783	-0.259	5.090***
	[0.89]	[2.98]	[1.02]	[1.64]	[1.20]	[0.85]	[0.08]	[3.83]
RevRecognition	-1.480	-0.095	-3.402	0.566	-1.527	-1.273	-0.597	-0.721
	[0.53]	[0.10]	[1.25]	[0.37]	[0.64]	[0.70]	[0.21]	[0.47]
SECDistance	-3.156*	-3.380***	-5.817***	-3.092***	-3.113*	-3.704***	-2.605	-4.482***
	[1.79]	[2.97]	[3.12]	[2.63]	[1.94]	[3.16]	[1.52]	[3.92]
LogMktCap	1.522	-0.898	1.700	-1.734*	0.958	-1.060	1.950	-1.448
	[0.74]	[1.19]	[0.94]	[1.69]	[0.50]	[0.99]	[0.94]	[1.35]
Tech	-0.811	7.723***	0.142	6.820***	-3.141	5.831**	-2.326	8.673***
	[0.23]	[6.12]	[0.05]	[4.32]	[0.97]	[2.43]	[0.67]	[5.09]
PriorReturns	-0.568	-1.374	-3.014	0.981	-3.276	1.302	-3.389	-0.065
	[0.23]	[0.70]	[1.22]	[0.71]	[1.39]	[1.27]	[1.29]	[0.03]
PostReturns	-7.427	-37.840***	-2.483	-29.795***	-5.214	-33.247***	-11.073	-41.317***
	[0.89]	[4.84]	[0.32]	[3.33]	[0.78]	[3.53]	[1.60]	[7.57]
WBStrength	-1.388	2.592*	-3.594	0.923	-2.440	1.961	-2.037	3.659*

	[0.51]	[1.68]	[1.25]	[0.59]	[1.04]	[0.96]	[0.83]	[1.91]
N	847	202	847	202	847	202	847	202
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix B. Sample moments before and after entropy balancing are reported in Appendix B. Shading indicates entropy balancing, which was applied to each cooperation variable separately; variables were matched based on the mean of all control variables. $Penalties has been updated as of January 2018.

TABLE 6 – The Effect on Enforcement of Controlling for Self-Selection in Cooperation, By Time Period

	(1)	(2)	(3)	(4)
	Models Where the Dependent Variable is Enforcement (Probit)			
	Regression Results		Regression Including Inverse Mills Ratios	
	2002-2010	2011-2014	2002-2010	2011-2014
Intercept	-2.417***	-3.832***	-2.369***	-8.036**
	[6.65]	[3.90]	[6.55]	[2.33]
Investigation	0.742***	1.990***	0.944**	-3.893
	[4.58]	[2.83]	[2.45]	[0.74]
TimelyDisclose	-0.201	-3.268***	-0.358	2.140
	[1.01]	[3.01]	[1.49]	[0.29]
PromDisclose	0.433***	-0.424	0.634**	-26.965**
	[2.68]	[0.54]	[2.13]	[2.33]
ReplaceExec	0.330**	-1.674**	0.612*	-5.090**
	[2.11]	[2.49]	[1.90]	[2.22]
Litigation	0.210	0.453	0.123	1.138
	[1.07]	[0.72]	[0.59]	[0.82]
RestateEarnings	0.943**	-2.035	0.959**	-1.660
	[2.43]	[1.28]	[2.49]	[0.80]
RestateCAR	2.578***	8.963***	2.423***	39.077***
	[3.67]	[4.14]	[3.41]	[2.80]
LogDamages	0.023	0.048*	0.020	0.202
	[1.32]	[1.72]	[1.16]	[1.27]
RestateLength	0.067	0.692	0.016	0.883
	[0.42]	[1.13]	[0.09]	[0.73]
RevRecognition	0.170	-0.155	0.118	5.139**
	[0.96]	[0.35]	[0.61]	[2.00]
SECDistance	-0.282***	-1.233***	-0.279***	-4.380***
	[2.82]	[3.97]	[2.78]	[2.59]
LogMktCap	0.142	-0.422*	0.116	0.078
	[1.50]	[1.83]	[1.17]	[0.18]
Tech	-0.079	1.376**	-0.121	3.911**
	[0.44]	[2.00]	[0.66]	[2.50]
PriorReturns	-0.231	0.018	-0.212	1.812**
	[1.58]	[0.05]	[1.46]	[2.36]
PostReturns	-1.026**	-7.624***	-0.961**	-19.825***
	[2.20]	[4.28]	[2.04]	[3.26]
WBStrength	-0.238	0.320	-0.239	-0.450
	[1.49]	[0.66]	[1.50]	[0.79]
Mills_Investigation			-0.109	2.194
			[0.52]	[0.93]
Mills_TimelyDisclose			0.121	-4.166
			[0.92]	[1.19]
Mills_PromDisclose			-0.134	14.215**
			[0.72]	[2.33]
Mills_ReplaceExec			-0.192	1.119
			[0.96]	[0.92]
N	847	202	847	202
Pseudo R-Square	28.00%	54.00%	29.00%	67.00%
Year Fixed Effects	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. The Mills variables are the inverse mills ratios from regressions of each cooperation variable (Investigation, TimelyDisclose, PromDisclose, and ReplaceExec) on the control variables listed and three instruments based on Files (2012): institutional ownership, a dummy variable for Big 5 auditor status, and the number of management forecasts. Variable definitions are found in Appendix B. Enforcement, Settlement, and $Penalties have all been updated as of January 2018.

TABLE 7 – Determinants of Firms' Cooperation Decisions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Models Where the Dependent Variable is the Cooperation Decision									
	CoopSum (0-4)	Investigation	Timely Disclose	Prom Disclose	Replace Exec	CoopSum (0-4)	Investigation	Timely Disclose	Prom Disclose	Replace Exec
	OLS	Probit	Probit	Probit	Probit	OLS	Probit	Probit	Probit	Probit
	Restatements for 2002-2015					Restatements for 2009-2015				
D_2002	-0.061	-0.217	0.371	-0.343	-0.032					
	[0.45]	[0.72]	[1.38]	[1.38]	[0.13]					
D_2003	0.006	-0.093	0.082	-0.415*	0.367					
	[0.04]	[0.33]	[0.31]	[1.73]	[1.52]					
D_2004	0.105	0.426*	0.338	-0.597***	0.237					
	[0.92]	[1.70]	[1.38]	[2.59]	[1.01]					
D_2005	-0.063	0.279	0.055	-0.478**	-0.006					
	[0.61]	[1.16]	[0.24]	[2.31]	[0.03]					
D_2006	0.301***	0.859***	0.436*	-0.378*	0.058					
	[2.63]	[3.61]	[1.93]	[1.86]	[0.27]					
D_2007	0.005	0.380	0.083	-0.573**	0.166					
	[0.04]	[1.44]	[0.33]	[2.38]	[0.69]					
D_2008	-0.004	0.071	0.099	-0.468*	0.256					
	[0.03]	[0.25]	[0.36]	[1.77]	[1.02]					
D_2010	-0.083	0.085	0.056	-0.045	-0.487	0.031	0.300	0.245	-0.038	-0.318
	[0.55]	[0.26]	[0.17]	[0.16]	[1.35]	[0.18]	[0.70]	[0.61]	[0.11]	[0.71]
D_2011	-0.155	-0.792*	-0.079	-0.131	0.076	-0.153	-0.888*	-0.108	-0.038	0.127
	[1.02]	[1.76]	[0.24]	[0.47]	[0.26]	[0.97]	[1.89]	[0.29]	[0.12]	[0.38]
D_2012	-0.116	-0.420	0.186	-0.039	-0.288	-0.006	-0.354	0.373	-0.012	-0.068
	[0.89]	[1.38]	[0.69]	[0.16]	[1.07]	[0.04]	[1.01]	[1.12]	[0.04]	[0.19]
D_2013	-0.440***	-0.524	-1.001**	-0.697**	-0.232	-0.194	-0.300	-0.570	-0.883**	0.395
	[4.04]	[1.42]	[2.17]	[2.25]	[0.79]	[1.11]	[0.56]	[0.99]	[2.14]	[0.83]
D_2014	-0.234	-0.801**	-0.478	-0.770**	0.665**	0.059	-0.526	-0.065	-0.725*	1.232***
	[1.51]	[2.06]	[1.37]	[2.44]	[2.35]	[0.29]	[1.03]	[0.14]	[1.72]	[2.68]
D_2015	-0.213	-0.632	-0.521	-0.526*	0.541*	-0.134	-0.757	-0.450	-0.470	0.791**
	[1.39]	[1.48]	[1.29]	[1.77]	[1.86]	[0.77]	[1.35]	[1.04]	[1.37]	[2.14]
Log_SEC_Hotline_ Complaints_18m						-0.873***	-1.532**	-1.415*	0.616	-1.901**
						[2.67]	[2.02]	[1.78]	[0.89]	[2.45]
Litigation	0.694***	0.921***	0.364**	0.321**	0.563***	0.597***	0.958***	0.010	0.315	0.789***
	[7.30]	[6.39]	[2.53]	[2.27]	[4.15]	[3.17]	[3.09]	[0.03]	[1.13]	[2.83]

RestateEarnings	0.056	-0.354	0.109	-0.261	0.539*	0.220	0.562	0.444	-0.254	0.346
	[0.36]	[1.32]	[0.39]	[0.81]	[1.88]	[0.75]	[0.83]	[0.68]	[0.44]	[0.59]
RestateCAR	0.668***	0.773**	0.224	1.116***	0.170	0.837	0.267	1.431*	2.015**	-0.363
	[2.79]	[1.98]	[0.65]	[2.92]	[0.46]	[1.55]	[0.25]	[1.82]	[2.26]	[0.39]
LogDamages	0.013***	0.007	0.021**	0.006	0.020***	0.005	-0.010	0.007	0.010	0.017
	[3.64]	[0.88]	[2.45]	[0.82]	[2.63]	[1.04]	[0.60]	[0.44]	[0.79]	[1.38]
RestateLength	0.265***	0.411***	0.268***	0.335***	0.004	0.172*	0.170	0.258	0.120	0.243
	[4.67]	[4.07]	[2.69]	[3.56]	[0.04]	[1.81]	[0.62]	[1.22]	[0.66]	[1.37]
RevRecognition	0.094	0.300***	-0.230*	0.178*	0.044	0.112	0.518*	-0.202	0.350	-0.17
	[1.42]	[2.67]	[1.93]	[1.66]	[0.41]	[0.82]	[1.77]	[0.70]	[1.51]	[0.69]
SECDistance	-0.008	-0.036	-0.015	0.014	-0.022	-0.071	-0.265**	0.043	-0.174*	-0.051
	[0.27]	[0.64]	[0.29]	[0.27]	[0.45]	[1.39]	[1.98]	[0.42]	[1.75]	[0.50]
LogMktCap	0.150***	0.380***	0.096	0.061	-0.011	-0.032	0.379***	-0.015	-0.200	-0.194
	[3.88]	[5.02]	[1.39]	[0.92]	[0.18]	[0.59]	[2.73]	[0.10]	[1.49]	[1.58]
Tech	0.097	0.359***	-0.157	0.068	0.044	0.040	0.537*	0.088	0.243	-0.487**
	[1.60]	[3.32]	[1.43]	[0.65]	[0.44]	[0.39]	[1.94]	[0.37]	[1.22]	[2.25]
PriorReturns	-0.040	-0.013	0.032	-0.016	-0.158*	-0.052	0.034	0.063	-0.031	-0.332*
	[1.05]	[0.16]	[0.44]	[0.23]	[1.95]	[0.75]	[0.25]	[0.46]	[0.21]	[1.80]
PostReturns	0.013	-0.378	-0.059	0.309	-0.027	-0.106	-1.095	-0.439	0.798	-0.400
	[0.08]	[1.12]	[0.19]	[1.07]	[0.09]	[0.34]	[1.50]	[0.62]	[1.40]	[0.63]
WBStrength	0.032	0.033	-0.139	0.013	0.196**	-0.074	-0.006	-0.183	-0.074	-0.033
	[0.62]	[0.34]	[1.52]	[0.14]	[2.23]	[0.88]	[0.03]	[0.96]	[0.44]	[0.19]
N	1,078	1,078	1,078	1,078	1,078	315	315	315	315	315
Adj. R-Square	22.10%					17.66%				
Pseudo R-Square		24.00%	8.00%	6.00%	7.00%		22.00%	10.00%	11.00%	18.00%

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. Variable definitions are found in Appendix A. Cooperation Summary Measure (CoopSum) is the sum of four dummy variables: Investigation + TimelyDisclose + PromDisclose + ReplaceExec; CoopSum can take on values ranging from 0 to 4. The intercept is not tabulated due to space constraints.

Note: Regressions in Columns (1) to (5) contain 1,049 restatements from 2002-2014 plus 29 additional restatements from 2015. For the regressions in Columns (6) to (10), the sample is limited to the year 2009 as the earliest year due to the availability of data for the SEC Hotline Complaints, which was obtained from Tables 4 and 5 of the Semi-Annual Report to Congress, issued by the Office of Inspector General, obtained from https://www.sec.gov/reports; see Appendix D for number of complaints. Log_SEC_Hotline_Complaints_18m is the log of 1 + rolling 18-month average of hotline complaints. Since the OIG (Office of Inspector General) hotline for complaints only become operational on August 13, 2008, then the 9/30/08 report was the first to contain the complaints data. For hotline information for 2008, see p. 81 of the 9/30/08 report at https://www.sec.gov/files/seminov08.pdf .

TABLE 8 –Abnormal Returns around Events Related to SEC's Cooperation Initiatives

Panel A. Abnormal Returns for Full Sample of Restatements (2002-2014)

SEC Events	Date	Description	N	EventCAR	t-stat.
Event #1	1/13/2010	SEC announces Cooperation Initiative #2 for individuals.	641	0.004*	[1.93]
Event #2	12/20/2010	SEC announces first case (Carter's) under Initiative #2	602	0.009***	[2.73]

Panel B. Abnormal Returns for Firms with Pending Restatements (in 2010 and After)

SEC Events	Date	Description	N	EventCAR	t-stat.
Event #1	1/13/2010	SEC announces Cooperation Initiative #2 for individuals.	203	0.006	[1.44]
Event #2	12/20/2010	SEC announces first case (Carter's) under Initiative #2	212	0.013*	[1.62]

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets. EventCAR is the firm's buy and hold return minus the CRSP value-weighted (including dividends) portfolio return for [-1,+1] around the event date related to SEC cooperative initiatives.

TABLE 9– Determinants of SEC Enforcement, with Firms' Cooperation Decisions
Robustness Tests

Robustness Tests

	(1)	(2)	(3)	(4)	(5)	(6)
	Excluding Recent Restatements from 2013-2014		Excluding Penalties > $1M		Including Restatements Less than 1% of Total Assets	
	Models Where the Dependent Variables are Enforcement (Probit)					
	2011-2012		**2011-2014**		**2002-2010**	**2011-2014**
Intercept	-10.665***	-19.996**	-7.849**	-8.716**	-1.629***	-3.080***
	[3.36]	[2.43]	[2.32]	[2.00]	[6.98]	[3.05]
CoopSum (0-4)	-0.886**		-1.289***		0.360***	-0.609*
	[2.57]		[3.10]		[5.52]	[1.88]
Investigation		1.816		-2.584**		
		[1.57]		[2.33]		
TimelyDisclose		-2.348**				
		[2.34]				
PromDisclose		-0.533		-0.361		
		[0.69]		[0.39]		
ReplaceExec		-4.499**		-2.891**		
		[2.04]		[2.25]		
Trivial					-0.249	-1.161***
					[1.52]	[3.35]
CoopSum*Trivial					0.107	0.566
					[1.04]	[1.54]
Litigation	0.393	-0.211	1.402**	1.757**	0.123	1.144***
	[0.66]	[0.29]	[2.23]	[2.23]	[0.74]	[3.27]
RestateEarnings	0.219	0.837	0.719	1.025	0.891**	-1.015
	[0.26]	[0.63]	[0.77]	[0.87]	[2.28]	[0.89]
RestateCAR	7.601***	12.695**	12.994***	11.950***	2.651***	5.898***
	[4.22]	[2.34]	[3.81]	[3.24]	[4.43]	[4.05]
LogDamages	0.552***	1.055**	0.288*	0.368	-0.010	-0.002
	[3.10]	[2.27]	[1.83]	[1.63]	[1.23]	[0.08]
RestateLength	-0.078	-0.194	-0.314	-0.626	0.066	-0.417
	[0.12]	[0.22]	[0.39]	[0.64]	[0.65]	[1.08]
RevRecognition	0.211	-1.074	-1.444**	-1.819*	0.264**	0.980**
	[0.35]	[0.88]	[2.30]	[1.84]	[2.10]	[2.26]
SECDistance	-0.932***	-1.818**	-1.060***	-1.124***	-0.147*	-0.548**
	[2.86]	[2.51]	[2.91]	[3.29]	[1.94]	[2.32]
LogMktCap	-2.298***	-3.053**	-1.949***	-2.063**	0.241***	0.290*
	[3.65]	[2.22]	[2.77]	[2.46]	[3.90]	[1.72]
Tech	0.977*	0.792	1.382*	1.040	0.121	0.596
	[1.68]	[0.75]	[1.87]	[1.16]	[0.82]	[1.54]
PriorReturns	0.274	0.417	0.102	0.210	-0.153	-0.167
	[1.18]	[1.46]	[0.39]	[0.84]	[1.18]	[0.43]
PostReturns	-4.320**	-9.623***	-3.586**	-4.567***	-0.987***	-3.197***
	[2.26]	[3.57]	[2.05]	[3.05]	[2.58]	[2.70]
WBStrength	0.385	1.227	0.845	0.439	-0.218*	-0.234
	[0.63]	[1.10]	[0.92]	[0.50]	[1.78]	[0.80]
N	107	107	199	199	1,904	735
Pseudo R-Square	50.00%	58.00%	54.00%	52.00%	25.00%	53.00%
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*, **, ***, significant at 10%, 5%, and 1%, respectively, with z-statistics and t-statistics in brackets. Variable definitions are found in the Appendix. Enforcement, Settlement, and $Penalties have all been updated as of January 2018.

TABLE 10 - Determinants of SEC Enforcement, Controlling For SEC Employee Benefits As Confounding Factors (2005-2014)

	(1)	(2)	(3)	(4)	(5)	(6)
	Models Where the Dependent Variables are Enforcement (Probit)					
	2005-2010	2011-2014	2005-2010	2011-2014	2005-2010	2011-2014
Intercept	-2.593***	-5.095**	-2.655***	-8.480***	-2.650***	-23.612***
	[4.47]	[2.08]	[4.71]	[2.78]	[5.18]	[4.55]
SEC Employee Benefits / Total Assets	0.001**	0.007	0.001**	0.016**	0.001*	0.049***
	[2.04]	[1.16]	[2.23]	[2.19]	[1.77]	[4.18]
CoopSum (0-4)			0.300***	-0.641***		
			[3.99]	[3.40]		
Investigation					0.572***	1.990***
					[2.69]	[4.02]
TimelyDisclose					-0.175	-3.268***
					[0.56]	[3.61]
PromDisclose					0.507***	-0.424
					[2.79]	[1.41]
ReplaceExec					0.264	-1.674**
					[1.27]	[2.38]
Litigation	0.654***	0.541	0.520***	0.863*	0.449***	0.453
	[3.45]	[1.31]	[3.10]	[1.70]	[2.80]	[1.03]
RestateEarnings	1.428***	-0.659	1.377***	-0.606	1.418***	-2.035
	[4.14]	[0.65]	[3.65]	[0.59]	[3.26]	[0.99]
RestateCAR	2.392***	4.166*	2.179***	6.593**	1.925**	8.963**
	[2.81]	[1.81]	[2.63]	[2.41]	[2.36]	[2.53]
LogDamages	0.031	-0.016	0.024	-0.011	0.026	0.048
	[1.46]	[0.48]	[1.03]	[0.32]	[1.08]	[1.15]
RestateLength	0.278*	0.431***	0.212	0.404***	0.199*	0.692**
	[1.86]	[5.98]	[1.43]	[4.97]	[1.77]	[2.47]
RevRecognition	0.373*	0.116	0.353*	0.454	0.312	-0.155
	[1.83]	[0.28]	[1.90]	[1.06]	[1.58]	[0.35]
SECDistance	-0.212*	-0.536**	-0.230	-0.859***	-0.241	-1.233***
	[1.70]	[2.05]	[1.61]	[3.00]	[1.62]	[3.41]
LogMktCap	0.181	-0.207	0.116	-0.325	0.109	-0.422***
	[1.36]	[0.63]	[0.83]	[1.14]	[1.01]	[3.10]
Tech	-0.315	0.578	-0.350	0.839*	-0.398	1.376**
	[1.42]	[1.46]	[1.53]	[1.84]	[1.62]	[2.06]
PriorReturns	-0.300**	0.065	-0.306**	0.054	-0.306*	0.018
	[2.18]	[0.43]	[2.10]	[0.25]	[1.89]	[0.04]
PostReturns	-0.622*	-3.261***	-0.653*	-4.147***	-0.663**	-7.624***
	[1.70]	[4.12]	[1.70]	[3.59]	[1.99]	[3.97]
WBStrength	-0.192*	0.142	-0.193	0.190	-0.198*	0.320*
	[1.68]	[0.77]	[1.53]	[1.29]	[1.86]	[1.72]
N	597	202	597	202	597	202
Pseudo R-Square	25.00%	38.00%	28.00%	43.00%	30.00%	54.00%
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** indicates significance at the 10%, 5%, and 1% level, respectively, with t-statistics in brackets.

Note: Data on SEC Employee Benefits and SEC Total Assets was obtained from the "Liabilities: Employee Benefits" Line Item and the "Assets: Total Assets" Line Item of the U.S. SEC's Annual Performance and Accountability Report / Agency Financial Report. The ratio of (SEC Employee Benefits / Total Assets) has been re-scaled and multiplied by 1,000,000. The Report for 2005 can be accessed at: https://www.sec.gov/about/secpar/secpar2005.pdf#sec3