Economic Consequences of Deterrent Clawback Provisions

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Abstract

A clawback policy is a governance mechanism to deter executives from misbehavior and to recover erroneously awarded compensation. While prior studies focus on the mere adoption of voluntarily adopted clawback provisions, we emphasize their firm level variation. We employ a Deterrent Index, which is based on a comprehensive linguistic analysis of clawback provisions, to quantify the deterrent level of each clawback. Using a difference-in-differences analysis, we report a significantly lower incidence of misstatements and accounting restatements only for firms that adopt a high deterrent clawback policy, but not for firms that adopt a low deterrent clawback policy. We also document an increase in audit fees after firms adopt a high deterrent clawback. There is no evidence that firms with a high deterrent clawback policy face higher costs in the form of higher CEO pay following adoption. Our results indicate that the mere adoption of clawback policies is not sufficient to experience benefits, but that the effectiveness of voluntarily adopted clawback policies depends on their deterrent level.

Keywords: Clawback provisions, excess pay, corporate governance, linguistic analysis
JEL codes: G18, G30, G34, G39, K22, K29

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Abstract

A clawback policy is a governance mechanism to deter executives from misbehavior and to recover erroneously awarded compensation. While prior studies focus on the mere adoption of voluntarily adopted clawback provisions, we emphasize their firm level variation. We employ a Deterrent Index, which is based on a comprehensive linguistic analysis of clawback provisions, to quantify the deterrent level of each clawback. Using a difference-in-differences analysis, we report a significantly lower incidence of misstatements and accounting restatements only for firms that adopt a high deterrent clawback policy, but not for firms that adopt a low deterrent clawback policy. We also document an increase in audit fees after firms adopt a high deterrent clawback. There is no evidence that firms with a high deterrent clawback policy face higher costs in the form of higher CEO pay following adoption. Our results indicate that the mere adoption of clawback policies is not sufficient to experience benefits, but that the effectiveness of voluntarily adopted clawback policies depends on their deterrent level.

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1. Introduction

Large accounting scandals in mid-2000 by Enron Corp. or WorldCom Inc. increased the necessity to hold executives financially accountable for their misdeeds. To deter executives from their self-serving behavior, the regulatory body has introduced clawback provisions that provide for the recoupment of erroneously paid compensation (excess-pay) in case of an accounting restatement.

Section 304 of the Sarbanes-Oxley Act (hereafter, SOX 304) introduced the first regulatory clawback in 2002. It authorizes the Securities and Exchange Commission (SEC) to recover excess-pay received by chief executive officers (CEOs) and chief financial officers (CFOs) of public firms after an accounting restatement due to executives' misconduct.[1]

However, ambiguities inhibited in SOX 304 hindered the exercise of clawbacks. Despite thousands of restatements taking place since 2002, the SEC has activated its clawback power in only 31 cases. Only seven cases have been settled successfully suggesting that the alleged managers fight very hard to retain their excess-pay (Morgenson [2013]).

To ease the enforcement of clawbacks and to eliminate the ambiguities inhibited in SOX 304, the Dodd-Frank Wall Street Reform and Consumer Protection Act (hereafter, DFA) introduced a clawback section (Section 954) in 2010. Section 954 differs in two major aspects from the SOX clawback: First, listed companies are now required to implement their own clawback policies. It is no longer the SEC who enforces a potential clawback, but the firm itself. Second, Section 954 removes executive misconduct as a precondition for clawbacks.[2] To date, however, Section 954 is still not carved in law: The SEC has not yet issued its guidance on the details of such clawback policies. Hence, firms are not obligated to implement a clawback until now. If they nevertheless choose to voluntarily adopt a clawback provision, they have the freedom to choose the structure and scope of these provisions. The

[1] Sarbanes-Oxley Act of 2002, H. R. 3763, Section 304, p. 34.
[2] US Congress. 2010. Dodd-Frank Act. In H.R. 4173. USA.

postponement likely indicates the difficulties of designing an adequate clawback policy at the firm level.

Due to various large accounting scandals and the overall trend towards more corporate governance standards in the last decades, firms have increasingly chosen to voluntarily adopt clawback policies. According to the Corporate Library, 849 (38.33%) of Russell 3000 firms had clawback provisions in place in 2012. This is up from 269 firms (12.07%) in 2007. In this paper, we study the effectiveness of such voluntarily adopted clawbacks and distinguish between high and low deterrent provisions. In contrast to prior work, we recognize that the mere adoption of a clawback does not necessarily imply a firm's commitment to recoup excess-pay, and thus, to punish managers. More specifically, we argue that a high deterrent clawback policy is more likely to deter executives from misbehavior than a low deterrent clawback.

Deterring executives from misbehavior is important both to shareholders and bondholders. Shareholders experience declines in the market value of equity once the market is informed about the incidence of management fraud (Davidson Iii, and Worrell [1988], Griffin, Grundfest, and Perino [2004]). Furthermore, bondholders and other creditors of the company can also suffer from negative consequences of executive fraud both through price and non-price terms (Bharath, Sunder, and Sunder [2008]). In case a company's credit rating is lowered when fraud is revealed, bonds issued by the firm lose value, and the bondholders immediately suffer (Zahra [2005]).

We follow Erkens, Gan, and Yurtoglu [2014]) and claim that a clawback policy should fulfill the following five features to be deterrent : First, a policy should contain a triggering event that can be identified with certainty. Second, it should require the recoupment of excess-pay in case the triggering event occurs. Third, it should apply to culpable executives and supervisors as well. Fourth, it should cover both received and promised remuneration. Lastly, a clawback policy should have a long look-back period. A clawback policy that comes

close to these features is considered to be deterrent. It will more likely deter executives from misbehavior than clawback policies that fall short of these features. At best, a clawback fulfills all characteristics to form a high-deterrent provision.

The five features are derived from Becker's ([1968]) **model** of optimal policies to deter crime. His economic approach to analyze criminal behavior builds upon the human capital theory. In human capital theory, individuals are driven by forward-looking behavior. They rationally anticipate the costs and benefits of their decisions, and are not solely driven by opportunistic behavior (Becker [1993]). In line with Becker's model, executives would take into account (i) the likelihood that their misbehavior is discovered (first feature: the triggering event), and (ii) the strength of the punishment (reflected by the remaining four features) before they decide to misbehave. The first decision variable (i) is important, as a clawback provision containing a triggering event that is easy to discover and to substantiate (e.g. a financial restatement *absent* of executive misconduct) increases the firm's likelihood to settle a lawsuit successfully against her accused executives (Dvorak, and Ng [2006], Fried, and Shilon [2011], Lublin [2010], Salehi, and Marino [2008]). The second decision variable is important as it increases the executive's costs of punishment. As also highlighted by Desai, Hogan, and Wilkins [2006]) and in line with agency theory, executives expecting monetary costs or reputational damage as a result of their misbehavior will be deterred from misbehavior ex ante.

In contrast to prior studies (Chan, Chen, and Chen [2013], Chan, Chen, Chen, and Yu [2012], DeHaan, Hodge, and Shevlin [2013]) we claim that the mere adoption of a clawback provision does not guarantee its success as a governance device. In fact, only the implementation matters. We argue that the economic consequences around clawback adoption are more pronounced for firms that adopt high deterrent clawback provisions compared to firms with low deterrent provisions. We add to the existing literature by assessing the economic consequences of clawbacks based on the firm-level heterogeneity in their structure.

We posit that the mere adoption of clawbacks is not sufficient to deter executives from misbehavior, but that the structure of clawbacks and their deterrent levels make the difference. Our findings provide guidance for companies, shareholders and regulators on how to structure and design clawback provisions.

Prior studies have already highlighted that it is not sufficient to analyze the economic consequences of corporate decisions and events only through their mere existence or occurrence. Daske, Hail, Leuz, and Verdi [2013]) find that liquidity and cost of capital effects around voluntary and mandatory IFRS adoption vary across "serious" and "label" adopters.[3] Serious adopters experience more favorable capital-market effects such as higher liquidity and lower cost of capital, while label adopters do not. With regard to corporate events Hennes, Leone, and Miller [2008]) provide evidence that "researchers can significantly enhance the power of tests related to restatements by distinguishing between "[restatements resulting from] errors and irregularities". They find that capital markets react more negatively to restatements due to irregularities than to restatements due to errors, and also report much higher CEO/ CFO turnover rates for restatements resulting from irregularities than restatements resulting from errors.[4]

We provide an in-depth analysis of the economic consequences following clawback adoption. We study the effects of clawback deterrence levels on accounting quality, audit fees and executive compensation. For this purpose, we employ the *Deterrent Index* developed by Erkens, Gan, and Yurtoglu [2014]) for our analyses. This index quantifies the deterrent effect inherent in firm-level clawback provisions. It is based on a comprehensive linguistic analysis of 3,578 non-financial firms that have voluntarily adopted a clawback policy between 2007–

[3] In contrast to serious adopters, label adopters "make very few changes and adopt IAS/ IFRS more in name" (Daske, Hail, Leuz, and Verdi [2013]).

[4] Errors are for example accidental misapplications of GAAP, whereas irregularities imply accounting fraud (Hennes, Leone, and Miller [2008]).

2012.[5] It is the sum of five sub indices that assess the deterrent effects of various dimensions that make up a clawback provision. These dimensions follow the five deterrent features as outlined above and are: Compensation Coverage, Employee Coverage, Enforcement, Time Period, and Trigger. The Deterrent Index is constructed to range from a minimum of 0 to a maximum of 5. Higher values imply less discretion to activate a clawback and, thus, imply a higher deterrent effect on executives. In our sample, the Deterrent Index ranges from 0.25 to 3.72 with a mean (median) of 1.77 (1.72), and a standard deviation of 0.55. These statistics reveal that firms highly value the discretion to exercise their clawback powers and that voluntarily adopted clawbacks display a high degree of heterogeneity across firms.

We partition our sample based on the yearly sample median into high deterrent (treatment sample) and low deterrent (control sample) clawback observations. We employ a difference-in-differences design and also match treatment firms to control firms using a propensity score matching procedure minimize the bias dues to self-selection. We then analyze the economic consequences of adopting a high vs. a low deterrent clawback provision from three different perspectives.

First, we examine whether high deterrent clawbacks deter executives more from committing misconduct. Most clawback provisions are triggered by a financial restatement or misstatement. Thus, we use the incidence of financial restatements and misstatements to analyze the deterrence effects of clawback provisions. In contrast to related studies we exclude all restatements that had a positive net effect on the firm's net income and/ or shareholders' equity as clawbacks intend to deter executives from misbehavior that harms shareholders. More importantly, we also explicitly analyze *when* executives start and stop to misstate their financial statements by focusing on the misstatement period. In contrast to our analyses, prior studies typically focus on the filing date with the SEC (Chan, Chen, and Chen [2013], Chan, Chen, Chen, and Yu [2012], DeHaan, Hodge, and Shevlin [2013]). The filing

[5] We restrict ourselves to non-financial firms since financial firms receiving funds under the Troubled Asset Relief Program (TARP) are obligated to implement a clawback provision in their executive compensation plans.

date, however, is misleading since it does not overlap with the time period over which the executives started and ended misbehavior. Hence, our approach enables a more precise identification of treatment effects. The results show that the incidence of accounting restatements and misstatements is lower for firms that initiate a high deterrent clawback compared to firms that only adopt a low deterrent clawback.

Second, we examine the effect of clawback deterrence on audit fees. Counter to our intuition, the difference-in-differences coefficient is positive, indicating that firms adopting a high deterrent clawback experience a higher increase in audit fees following adoption compared to low deterrent firms. We posit that firms adopting high deterrent clawbacks put more emphasis on detecting accounting fraud and, therefore, also exhibit higher auditing costs, as auditors examine their reports more carefully.

Finally, we analyze whether firms with high deterrent provisions bear higher costs by paying their executives more. Risk-averse managers would need to be compensated for the (increased) risk of recoupment and the associated reputational loss in case a clawback is enforced (Prendergast [1999]). Compensation arrangements can be adjusted in response to clawback adoption, as a clawback provision is likely determined jointly with various components of executive pay. Hence, we study the effect of deterrent clawbacks on CEO salary, CEO bonus and CEO option grants. We do not find any evidence that firms implementing a clawback policy raise CEO compensation following adoption. Moreover, CEO pay does not significantly differ between high and low deterrent clawback firms after adoption. This result may help to alleviate a main concern about high deterrent clawback policies – namely, that they impose higher costs on firms in the form of higher CEO pay.

Taken together, our findings add to our understanding of the effectiveness of firms' voluntary use of corporate governance devices when they can deliberately design such devices. Our results imply that we have to exercise caution when interpreting the effects of firm-initiated clawback provisions. We show that firm-initiated voluntary clawbacks exhibit a

great deal of heterogeneity and document economically and statistically significant differences in accounting outcomes. In contrast to prior literature, we analyze the effectiveness of clawbacks within the sample of firms that adopt clawback policies, and not between adopting and non-adopting companies.

The rest of the paper is organized as follows. In the following section, we review prior literature on clawback provisions and develop our hypotheses. Section three describes the sample, methodology and variables, section four presents our empirical findings, and the fifth section provides results of robustness tests. Finally, section six concludes the paper.

2. Literature Review and Hypotheses Development

2.1 Literature Review

Prior studies analyze various aspects of voluntary clawback adoption. Babenko, Bennett, Bizjak, and Coles [2012b]) find that clawback adoption is mostly determined by prior executive misconduct and firm complexity. They also show that better corporate governance is positively associated with clawback adoption. Finally, they find that complex and profitable firms are associated with the adoption of more onerous provisions.

Brown, Davis-Friday, and Guler [2013]) find that the frequency of M&A transactions and goodwill impairments drive a firm's decision to adopt a clawback. Chen, Greene, and Owers [2013]) show that clawback adoption is negatively related to managerial risk aversion. They also find that firms adopt a clawback if CEO pay-performance sensitivity is high and abnormal accruals are low.

DeHaan, Hodge, and Shevlin [2013]) and Chan, Chen, Chen, and Yu [2012]) provide evidence that the mere adoption of a clawback improves firms' financial reporting quality and lead to an improvement in analysts' perceptions about their financial reporting quality. Based on the same sample Chan, Chen, and Chen [2013]) show that banks associate clawback adoption with better financial reporting quality by using more financial covenants and

performance pricing provisions in their loan contracts. Finally, Iskandar-Datta, and Jia [2013]) find that shareholders of adopting companies experience statistically significant positive stock-valuation consequences relative to non-adopters.

Fried, and Shilon [2011]) highlight differences in the substance of clawback policies and differentiate between "clear", "robust", or "discretionary" clawback policies by emphasizing certain aspects of clawback policies.

Yet no prior study examines the heterogeneity in clawback policies systematically; most studies ignore that clawback policies are heterogeneous and treat clawback adoption as a binary covariate. In contrast to these studies we analyze the economic consequences of having a high vs. a low deterrent clawback policy. We emphasize that the firm-level heterogeneity in the substance of clawback policies has economic consequences following clawback adoption. We expect that the economic consequences differ across firms due to the discretion inherent in each clawback provision.

2.2 Hypotheses Development

Clawback Deterrence and Accounting Restatements and Misstatements

Tying executive compensation to performance incentivizes managers to take actions in shareholders' interest. It also helps to reduce agency costs due to executives' self-serving behavior (Jensen, and Murphy [1990]). However, tying compensation to performance metrics provides managers with financial incentives to manipulate these metrics (Jensen [2005]). Extant literature has already shown that executives may manipulate accounting figures to increase their personal gains (Burns, and Kedia [2006], Harris, and Bromiley [2007], Johnson, Ryan, and Tian [2008]). Implementing a clawback policy helps to deter executives *ex ante* from misbehavior (e.g. accounting fraud) and imposes a monetary penalty on them *ex post* in case they misbehave. Furthermore, an enforced clawback imposes a reputational penalty as returning compensation can be embarrassing for executives (Fried, and Shilon [2011]).

As already outlined above, each clawback policy should describe an event or a series of events that trigger a potential compensation recoupment. According to Erkens, Gan, and Yurtoglu [2014]) firms use their freedom to design voluntarily adopted provisions according to their own tastes: 34% of all Russell 3000 firms that adopted a clawback between 2007 and 2012 include triggering events that are difficult to detect or to substantiate (e.g. intentional misbehavior). Ambiguities in the criteria used to implement a clawback policy are likely to decrease the likelihood of a recoupment.[6] Furthermore, they find that 49% of all clawback observations give the board of directors explicitly the discretion to activate their clawback powers. Even though a triggering event can be ascertained, the board can choose whether to forfeit excess pay or not.

Most clawback provisions include a financial restatement as a triggering event (Chan, Chen, Chen, and Yu [2012], DeHaan, Hodge, and Shevlin [2013], Fried, and Shilon [2011], Iskandar-Datta, and Jia [2013], Lombardi [2011]). As financial restatements/ misstatements are relatively easy to (objectively) determine, clawback policies are expected to decrease the likelihood of misconduct that ultimately results in a restatement/ misstatement. Executives are likely to be sophisticated enough to differentiate between serious attempts to recover potential excess pay and weak "cheap talk" provisions. They are more likely not to misbehave and to misstate if the probability of detection is high and if the punishment is severe (Becker [1968]). We therefore expect the following:

Hypothesis 1 (Clawback Deterrence): The likelihood of financial restatements and misstatements is lower after clawback adoption for high deterrent clawback adopters compared to low deterrent clawback adopters.

[6] Based on a sample of 225 S&P 500 firms with clawback provisions in 2010 Fried, and Shilon [2011]) find that 86% of their sample firms would not recoup excess pay unless the board made a finding of misconduct. The term misconduct is ambiguous, as it is neither defined in SOX nor in any other regulatory statutes and thus making its detection very difficult.

Deterrent Clawback Provisions and Audit Fees

Auditors need to "trust management representations and cannot continue with unresolved suspicions of management fraud without exposing themselves to significant litigation risk." (Hennes, Leone, and Miller [2008]). Audit fees reflect the level of efforts provided (Whisenant, Sankaraguruswamy, and Raghunandan [2003]). If auditor's assessment of litigation risk is high, they are expected to put more effort examining the firm, resulting in more time spent on auditing the firm and thus higher audit fees (Bell, Landsman, and Shackelford [2000], Seetharaman, Gul, and Lynn [2002]).[7]

To the extent that high deterrent clawbacks are more likely to deter executives from misbehavior and thus increase manager's incentives to report honestly, we expect a decrease in audit fees following adoption. We suggest that auditors would then attach more credibility to the quality of such firms' financial reports and thus may respond by examining firms with a high deterrent clawback less carefully, resulting in less time spent auditing and thus lower audit fees. To sum up, we state our second hypothesis as follows:

> **Hypothesis 2 (Auditors' Assessment):** Audit fees are lower after clawback adoption for high deterrent clawback adopters compared to low deterrent clawback adopters.

We might not observe results consistent with our second hypotheses for the following reason: Voluntarily adopting a high deterrent clawback likely signals a firm's commitment to high reporting integrity and thus the demand for higher audit quality. A control mechanism for assuring reporting quality and reducing fraudulent reporting behavior is to "purchase differentially higher-quality audit services." (Carcello, Hermanson, Neal, and Jr. [2002]). In addition to that, if the auditor understands that the customer (that is, the firm) puts high emphasis on reporting integrity, the auditor is likely to perform a higher-quality audit so as to

[7] We focus on litigation risk arising solely from the association with the quality of the client's financial report.

fulfill the customer's requirements and to maintain their business relationship. Performing a higher-quality audit increases the auditor's costs that are automatically passed on to the customer.

Deterrent Clawback Provisions and CEO Compensation

Finally, we concentrate on the costs to executives of having a clawback provision. Executives agreeing to a high deterrent clawback are likely to face a higher probability of having to return compensation even for reasons beyond their power, thereby imposing risk on them. Most clawbacks include a financial restatement or misstatement as a triggering event. However, reporting irregularities or errors can also result from more complex reporting rules and thus may also negatively affect executives. SEC Commissioner Troy A. Paredes emphasized his concerns in a 2012 speech "By way of illustration, an executive who has worked diligently and honestly at a company that has robust financial controls and top-notch procedures and systems may nonetheless have to pay back a considerable portion of his or her compensation if the company has to restate because of an accounting error."

Furthermore, returning compensation would not only result in a financial loss, but also in a reputational damage: "Having compensation clawed back would not only impose a financial cost on the executive but would also be embarrassing." (Fried, and Shilon [2011]). Executives who have to return their compensation would be officially held accountable for their misdeeds or at least be associated with the misreporting of their firms' financial reports in public. From an optimal contracting perspective, risk-averse agents would need to be compensated for the (increased) risk of recoupment and the associated reputational damage in case a clawback is enforced (Prendergast [1999]). As compensation arrangements can be adjusted jointly with clawback adoption, we expect an increase in executive pay following the adoption of clawbacks. This increase should be even more pronounced for high-deterrent clawbacks as they put executives under greater risk.

We therefore propose:

Hypothesis 3 (Increased CEO Compensation): CEO compensation is higher after clawback adoption for high deterrent clawback adopters than for low deterrent clawback adopters.

3. Sample and Methodology

3.1 Sample

The primary data source is the Corporate Library. The Corporate Library covers all clawback provisions included in the proxy (DEF 14A) statements of Russell 3,000 firms.[8] From this database, we select all non-financial firms that have a clawback provision in place between 2007 and 2012.[9,10] Panel A of Table 1 shows that there are 4,835 clawback provisions for a total of 1,618 unique firms over the six-year period. After eliminating 1,257 provisions that were adopted by financial companies, the base sample for further analyses consists of 3,578 provisions. This corresponds to 1,195 unique firms.

Panel B of Table 1 shows that the overall clawback adoption rate lies at about 25 percent for the six years under study. We also observe that the rate of adopters increased significantly over time: In 2007 the adoption rate was as low as 12 percent (269 out of 2,228 companies), increases to roughly 22 percent in 2009 (562/2,614), and peaks at over 38 percent in 2012 (849/2,215).

[8] One might argue that analyzing clawback provisions included in the proxy statements is not sufficient as individual compensation contracts may contain additional information that can potentially affect the deterrent effect of clawbacks. However, we only focus on publicly available information that can be easily accessed by any potential investor and analyst. Furthermore, firm policies that are publicly observable put firms under greater pressure to actually enforce them.

[9] The Corporate Library does not list clawback provisions prior to 2007. Babenko, Bennett, Bizjak, and Coles [2012b]) find that only 34 of S&P 1,500 firms adopted a clawback provisions between 2000 and 2006. Excluding these 34 firms will not likely change our results.

[10] We restrict our sample to non-financial firms since financial firms receiving funds under the Troubled Asset Relief Program (TARP) were obligated to implement a clawback provision in their executive compensation plans.

Panel C details the sample composition for the propensity-match Logit model. Due to missing data on independent variables and/ or inconsistent deterrent levels (see section 3.2) we eliminate 1,629 clawback observations. The final sample for matching high deterrent with low deterrent clawback adopters consists of 1,949 observations. This corresponds to 648 unique firms.

Panel D details the sample composition for our main multivariate analyses. The propensity matching results in 750 matched pairs of high- and low-deterrent clawback observations. This corresponds to 598 unique firms.

Please insert Table 1 about here.

To test our hypotheses, we obtain data on firms' corporate governance and ownership structure from the Corporate Library, data on executive compensation from ExecuComp, financial data from Compustat, and audit and financial restatement data from Audit Analytics.[11]

3.2 Clawback Deterrence

Our main independent variable, *High Deterrent Clawback,* is based on an index that captures the deterrent effect of voluntarily adopted clawbacks. It is developed based on a novel linguistic analysis of all 3,578 clawback provisions. Since the measurement of clawback deterrence is a complex exercise and involves subjective judgments, it is important to establish the validity of our construction procedure. We therefore involved many people in the index construction process. In the first step, each author read about 150 provisions very carefully to identify key words and phrases (components). We also employed two MBA

[11] This database is more comprehensive than the database provided by GAO (U.S. Government Accountability Office) as it uses a more thorough search technique to identify restatements (Burks [2011]). Furthermore, it only includes restatements that are subject to adjustment to previously issued financial statements as a result of a clerical error, fraud, or GAAP misapplication. It does not contain restatements resulting from changes in accounting rules (Karpoff, Koester, Lee, and Martin [2013])

students with a long-lasting practical experience in the consultancy industry. Based on another set of 300 provisions they came up with their own list of clawback components. In the second step, we consolidated our findings and discussed this list with compensation consultants, lawyers, and colleagues. Based on these discussions we adjusted and revised our list of words and phrases in the third step. We then crosschecked this list with a randomized sample of another 300 provisions. In total, we manually analyzed about 25% (1,000) of all clawback provisions and obtained a list of about 1,500 words and phrases. These words and phrases are the different components that can be put together to obtain any clawback provision.

By taking into account related (finance, accounting and law) literature, shareholder proposals on clawbacks, our interview with the Chief Corporate Governance Officer of UAW,[12] the "Principal Elements of a Leading Practices Recoupment Policy", discussions with lawyers and compensation consultants, we identified five different dimensions of a clawback policy. They deal with the following questions: (i) What triggers a clawback?; (ii) How is a clawback enforced?; (iii) What compensation types are covered by a clawback?; (iv) Which groups of employees are covered by a clawback?; and (v) What time period is covered by a clawback? All clawback components (words and phrases from our screening procedure) are next attributed to one of these five dimensions. They build the sub-indices that reflect each dimension. We label them (i) Trigger, (ii) Enforcement, (iii) Compensation Coverage, (iv) Employee Coverage, and (v) Time Period. Each sub-index captures the deterrent effect of the underlying provision with regard to the dimension it represents. The higher the value of each sub-index, the more deterrent the provision is with regard to its dimension. To ease comparability and interpretation, we standardize each sub-index and then transform them into [0,1]-intervals. We give some more details and statistics about each sub-index in the following paragraphs.

[12] UAW is leading the $300 billion investor coalition that has developed with six large pharmaceutical companies the "Principal Elements of a Leading Practices Recoupment Policy".

The Trigger index captures all events that trigger the process of (potentially) recouping compensation. Most clawback provisions (81 percent) can be triggered by a financial restatement. A restatement itself is a non-discretionary event that requires no assessment on part of the board. However, companies typically associate further hurdles with the restatement event. Those hurdles are difficult to prove and, hence, a clawback is very unlikely. Consider, for example, AOL's 2012 clawback policy: It states that the company can recover executive compensation if it is "required to prepare an accounting restatement as a result of the intentional misconduct by an officer". Waste Management's 2009 clawback even goes further by requiring a restatement that "results to materially increase an award or payment". In both cases, the companies have to overcome various hurdles in order to exercise their clawback powers. First, the restatement needs to be a result of *misconduct*. Second, the misconduct needs to be a deliberate choice of the executive (*intentional*). And third, the restatement needs to *materially* increase executive pay. All these hurdles decrease the likelihood of a potential clawback. By contrast, Abercrombie & Fitch's 2012 clawback explicitly states that payments must be repaid "without any requirement of misconduct on part of the participant". Other events that trigger a potential clawback include the breach of post-employment agreements (17 percent), termination for cause (7 percent) and criminal behavior (7 percent), among others. It follows that clawbacks which are triggered by events that are easy to prove receive a higher Trigger index compared to provisions including hurdles for recovery. Panel A of Table 2 shows that the standardized and transformed Trigger index has a mean of 0.26, a median of 0.25, and a standard deviation of 0.15. It indicates that firms value the discretion to determine whether to trigger a clawback or not.

The Enforcement index captures whether clawback policies grant boards discretion to forego recovery. Ideally, a deterrent clawback policy mandates directors to claw back excess-

pay if a triggering event has occurred. Companies, however, incorporate further hurdles and grant companies further discretion when deciding whether to enforce and implement an already triggered clawback. Lexmark International's 2007 provision, for example, states that "the company may recoup" excess incentive compensation. In contrast, the 2009 provision of Belden Inc. obligates the company to recoup any incentive compensation by stating that the CEO and CFO "must forfeit certain bonuses and profits". It follows that clawback provisions that grant directors only a low level of discretion over the enforcement of a clawback receive a higher Enforcement value compared to provisions that give directors the discretion to act. Panel A of Table 2 shows that the standardized and transformed Enforcement index has a mean of 0.54, a median of 0.60 and a standard deviation of 0.23.

The Compensation Coverage index captures which types of compensation are subject to a potential forfeiture. We distinguish between direct gains (e.g. cash payments, bonus payments) and indirect gains (profits from selling shares). We also search each provision for deferred compensation/ unvested stock options and take into account whether the forfeiture applies to long- and/or short-term payments. The majority of all policies cover incentive compensation in general (67 percent). Only 20 percent also recoup indirect compensation (e.g. gains from selling shares). Panel A of Table 2 reveals that the standardized and transformed Compensation Coverage index has a mean of 0.39, a median of 0.33 and a standard deviation of 0.16.

The Employee Coverage index focuses on the various employee groups and/or individuals that are affected by the clawback policy. A deterrent provision does not only cover the current CEO and CFO of a given company (as regulated under SOX 2002), but also executives in general, its directors, and at best even former employees. Descriptive statistics reveal that 21 percent of all clawback explicitly cover all executives, no matter of their precise

positions in the firm. Only 7 percent also cover all former executives that have already left the company. Focusing on specific positions within a firm, most provisions explicitly mention NEOs (24 percent), CEOs (2 percent), and CFOs (1 percent). Panel A of Table 2 shows that the standardized and transformed Employee Coverage index has a mean of 0.39, a median of 0.25 and a standard deviation of 0.20.

The Time Period index captures the look-back period of each provision. The look-back period specifies how far a company can go back in time to recoup the compensation that was paid to its employees. A longer look-back period makes a policy more deterrent. Panel A of Table 2 shows that the standardized and transformed Time Period index has a mean of 0.18, a median of 0, and a standard deviation of 0.32.

The final *Deterrent Index* is the sum of all standardized and transformed sub-indices:

$$\textit{Deterrent Index} = \textit{Trigger} + \textit{Enforcement} + \textit{Compensation Coverage} + \\ + \textit{Employee Coverage} + \textit{Time Period}$$

Panel A of Table 2 reveals that the overall Deterrent Index ranges from 0.25 to 3.72 with a mean of 1.77, a median of 1.72, and a standard deviation of 0.55. Firms obviously highly value the discretion whether or not to exercise their clawback powers. Untabulated statistics also illustrate that the Deterrent Index and its sub-indices do not really change over time, implying a degree of stickiness in the structure of clawback provisions.

Consider, as an example for a low deterrent clawback provision, Hawaiian Electric Industries' (HEI) 2010 clawback policy:

> *"The Compensation Committee incorporates the following elements and practices [...]: "Clawback"* ***capability*** *through an executive compensation recovery policy to recoup* ***incentive awards*** *paid to* ***executives*** *who are found to be* ***personally responsible for fraud, gross negligence or intentional misconduct that causes a restatement*** *of HEI's financial statements."*

HEI's provision lies in the 1st percentile of the Deterrent Index. Its deterrent value of 0.66 computes as follows: Trigger index of 0.08 ("*personally responsible for fraud, gross negligence or intentional misconduct that causes a restatement"*), plus Enforcement index of 0 (the policy does not mention whether the company will take any actions following the triggering of a clawback, it only states that it has a "*capability"*), plus Employee Coverage index of 0.25 ("*executives*"), plus Compensation Coverage index of 0.33 ("*incentive awards*"), plus Time Period index of 0 (no mentioning of a look-back period).

Consider next Thor Industries', Inc. 2012 policy as an example for a high deterrent provision:

> *"The Company formally adopted a* ***three-year*** *clawback policy* ***requiring recoupment*** *from* ***executives (and all recipients of incentive compensation*** *throughout the Company and its operating Subsidiaries) by the Company of the difference between the amount of incentive-based compensation paid and the amount payable based upon a subsequent* ***restatement*** *of the operating Subsidiary's and/or the Company's financial statements. For managerial level employees who receive* ***equity incentive compensation*** *based on their employer/operating Subsidiary's financial performance, the Company* ***will seek*** *recoupment of the difference between the amount of incentive compensation paid and the amount that is subsequently determined to have been payable in the event of any restatement that concerns the employer/operating Subsidiary's financial statements. This newly adopted clawback policy* ***does not require fault or malfeasance*** *by any employee before compensation must be repaid. It simply requires repayment of* ***any incentive-based compensation*** *that is subsequently determined to have been paid based upon mistaken financial information that requires a restatement."*

Thor Industries' provision lies in the 99% percentile of the Deterrent Index. Its deterrent value of 0.66 computes as follows: Trigger index of 0.60 *(restatement that does not require fault or malfeasance*), plus Enforcement index of 0.80 (*requiring recoupment; will seek recoupment*), plus Employee Coverage index of 0.75 (*executives and all recipients of incentive compensation*), plus Compensation Coverage index of 0.50 (*(equity) incentive compensation*), plus Time Period index of 1 (*three-year look-back period*).

Please insert Table 2 about here.

Our main variable of interest is *High Deterrent Clawback*. It is an indicator variable equal to unity if the Deterrent Index is above the yearly sample median, and zero if it is below the yearly sample median. Companies may restructure their clawback provisions from year to year, and, hence, also their deterrent level may change. We therefore require sample firms to be consistently assigned to either the low deterrent or high deterrent group of clawback adopters.

3.3 Methodology and Variables

We acknowledge that evidence consistent with our hypotheses might simply indicate that only better-governed and better quality firms adopt high deterrent clawback policies. Adopting a high deterrent clawback may signal already high accounting quality rather than cause accounting quality to improve. To minimize the impact of this and other potential confounders, we use a difference-in-differences design combined with a propensity-score matched control sample. This approach allows us to examine whether there is a firm-level heterogeneity in the economic consequences between high and low deterrent clawback firms that share highly similar characteristics. Moreover, company characteristics that predict the adoption of high deterrent clawbacks can also be associated with our outcome variables. We apply a strict matching procedure to assure that the only difference between high deterrent and low deterrent firms is indeed the deterrent level of their clawback provisions.

In a first step, we therefore model the decision to adopt a high deterrent clawback provision and match each treatment firm with one control firm that has a similar propensity to adopt a high deterrent clawback, but did not do so. The matching procedure aims to obtain matched firm pairs that are highly similar on covariates reflecting corporate governance, executive compensation, ownership, and firm characteristics.

More specifically, we follow prior literature (Babenko, Bennett, Bizjak, and Coles [2012a], Chan, Chen, and Chen [2013], DeHaan, Hodge, and Shevlin [2013]) and include all variables that are likely to influence the decision to implement a (high deterrent) clawback by estimating the following first-stage logistic model:

$$\begin{aligned}\text{High Deterrent Clawback} = {} & \alpha + \beta_1 \text{ Board Size} + \beta_2 \text{ Busy Directors} \\ & + \beta_3 \text{ CEO Chair} + \beta_4 \text{ Independent Directors} + \beta_5 \text{ Executives' Pay Slice} + \\ & \beta_6 \text{ CEO Tenure} + \beta_7 \text{ Size} + \beta_8 \text{ Research and Development} + \beta_9 \text{ Stock} \\ & \text{Return Volatility} + \beta_{10} \text{ Audit Committee Size} + \beta_{11} \text{ Board Meetings} + \beta_{12} \\ & \text{Management Ownership} + \beta_{13} \text{ Institutional Majority} + \beta_{14} \text{ Sales Growth} \\ & + \beta_{15} \text{ Leverage} + \beta_{16} \text{ Profitability} + \beta_{17} \text{ Past Restatement} + \beta_{18} \text{ Tobin's Q} \\ & + \beta_{19} \text{ Fog Index} + \Sigma\beta_k \text{ (Industry and Year)} + \varepsilon \qquad (1)\end{aligned}$$

High Deterrent Clawback is a binary variable equal to one if the Deterrent Index is above the yearly sample median, and zero if it is below the yearly sample median. Factors such as asset structure, accounting practices, government regulation, and industry competition may vary across industries. To account for these differences, we include a set of industry dummies defined at the 2-digit SIC level. We also include year dummies to control for macroeconomic effects. To reduce concerns of overstated significance levels due to within-firm correlation of error terms we use standard errors clustered at the firm level. We use a one-to-one matching procedure without replacement based on all 3,578 clawback observations with available data. We require a maximum propensity score difference (caliper) of 0.03. Larger differences will not result in matches, and all observations whose differences lie within the caliper's radius will be chosen (Baum [2006]).

After selecting the matched firm pairs we analyze the impact of adopting a high deterrent clawback vs. a low deterrent clawback on various economic outcomes. Our second-stage model for these analyses is specified as follows:

$$Y = \alpha + \beta_1 \text{ High Deterrent Clawback} + \beta_2 \text{ After} + \beta_3 \text{ High Deterrent Clawback * After}$$
$$+ \Sigma\beta_k \text{ Control Variables} + \Sigma\beta_l \text{ (Industry and Year)} + \varepsilon \quad (2)$$

Y_{it} is the consequence under study. It is *restatement*, *misstatement*, *audit fees*, or one of the following four components of CEO compensation: *total compensation*, *salary*, *bonus* and *option grants*. As before, *High Deterrent Clawback* is a binary variable equal to one if the Deterrent Index is above the yearly sample median, and zero if it is below the yearly sample median. Hence, the coefficient β_1 captures the difference between high and low deterrent clawback firms before the adoption of a clawback. *After* is a binary variable equal to one for the period after clawback adoption, and zero before clawback adoption. We require at least two years of data before and after clawback adoption. The coefficient β_2 therefore captures the time trend for the control group of low deterrent adopters. β_3, our coefficient of interest, is the difference-in-differences estimator in *Y* following clawback adoption between high deterrent and low deterrent clawback firms. It captures the incremental effect of adopting a high deterrent clawback policy relative to before the adoption and to firms adopting a low deterrent clawback. Depending on the consequence under study, we include different sets of control variables. We always include industry and year fixed effects and cluster standard errors by year (for the restatement and misstatement analyses), or by firm (for the audit fees and compensation analyses). The detailed model specifications are outlined in the next sections.

Clawback Deterrence and Accounting Restatements and Misstatements

When analyzing the effect of clawback deterrence on restatements and misstatements, we improve upon the prior literature in the following ways: First, we exclude all financial restatements/ misstatements that have had a positive net effect on firms' net income (191 restatements) or shareholders' equity (110 restatements). As clawbacks aim to deter

misbehavior that is detrimental to shareholders, this approach helps us to identify treatment effects with more precision.

Second, we do not only analyze consequences attached to the actual filing of a restatement with the SEC, but also to the misstatement period that is affected by each restatement. We do so for two reasons. First, focusing solely on restatement filings can be misleading. A decrease in filings could, for instance, merely signal executives' reluctance to file a restatement in order to avoid the activation of a clawback, rather than an increase in financial reporting integrity. Second, the filing of restatements marks the end of the misbehavior period. It occurs after a potentially long period of consecutive misstatements. The decision to misbehave and to misstate financial results, however, can occur long before the filing itself. According to the restatement data obtained from Audit Analytics, the average time lag between the start of the misstatement period and the restatement filing for our clawback sample is 28 months. We therefore distinguish between firm years that mark i) the start of an accounting violation (*Misstatement Begin*), ii) the end of an accounting violation (*Misstatement End*), and iii) the year in which the violation was filed with the SEC (*Restatement*). Moreover, we also identify firm years that are affected by accounting violations (all years between and including the start and the end of a violation period) (*Misstatement*). Consider, for instance, the following example: A firm starts to misstate its financial statements in 2008 and stops to misstate in 2010. The filing with the SEC is in 2011. Hence, the *Misstatement Begin* variable takes the value of one for firm-year 2008, and zero for all other firm-years; the *Misstatement End* variable takes the value of one for firm-year 2010, and zero otherwise; the *Restatement* variable takes the value of one for firm-year 2011, and zero otherwise; and the *Misstatement* variable takes the value of one for firm-years 2008, 2009, and 2010, and zero for all other firm years. Our main analysis focuses on the variables *Restatement* and *Misstatement*.

To test Hypothesis 1 for the impact of clawback deterrence on accounting restatements

and misstatements, we estimate the following logistic model:

$$\text{Restatement/ Misstatement} = \alpha + \beta_1 \text{ High Deterrent Clawback} + \beta_2 \text{ After} + \beta_3 \text{ High Deterrent Clawback * After} + \beta_4 \text{ Board Meetings} + \beta_5 \text{ Management Ownership} + \beta_6 \text{ Independent Directors} + \beta_7 \text{ Audit Committee Size} + \beta_8 \text{ Prior Restatement} + \beta_9 \text{ Return on Assets} + \beta_{10} \text{ Discretionary Accruals} + \beta_{11} \text{ Loss} + \beta_{12} \text{ Size} + \beta_{13} \text{ Change in Receivables} + \beta_{14} \text{ \% Soft Assets} + \beta_{15} \text{ Cash Flow} + \beta_{16} \text{ Leverage} + \Sigma\beta_k \text{ (Industry and Year)} + \varepsilon \quad (3)$$

Our main variables of interest are *High Deterrent Clawback, After*, and the interaction of the two. We control for the influence of corporate governance on the likelihood of accounting restatements and misstatements by including the following variables in the model: *Board Meetings* (the number of board meetings held per year), *Management Ownership* (the fraction of outstanding shares held by the top management team and directors), *Independent Directors* (the fraction of independent directors on the board), and *Audit Committee Size* (the total number of audit committee members). Following Dechow, Ge, Larson, and Sloan [2011]) we include the following variables to examine the likelihood of filing a restatement: *Discretionary Accruals* (the modified Jones Model of Discretionary Accruals), *Change in Receivables* (the change in accounts receivables divided by average total book assets), *% Soft Assets* (total book assets minus net property, plant, and equipment minus cash minus short-term investments divided by total assets), *Cash Flow* (cash flow from financing activities divided by average total book assets), and *Leverage* (long term debt and debt in current liabilities divided by total assets).

Finally, we also control for the following firm-specific variables: *Prior Restatement* (equal to one if the firm's financial statements have been restated for either of the trailing two years, and zero otherwise), *Return on Assets* (income before extraordinary items divided by lagged total assets), *Loss* (equaling one if net loss is reported, and zero otherwise), and *Size*

(natural log of total book assets).

Deterrent Clawback Provisions and Audit Fees

Auditors need to "trust management representations and cannot continue with unresolved suspicions of management fraud without exposing themselves to significant litigation risk." (Hennes, Leone, and Miller [2008]). Audit fees reflect the level of efforts provided (Whisenant, Sankaraguruswamy, and Raghunandan [2003]). If auditor's assessment of litigation risk is high, they are expected to put more effort examining the firm, resulting in more time spent on auditing the firm and thus higher audit fees (Bell, Landsman, and Shackelford [2000], Seetharaman, Gul, and Lynn [2002]).

To the extent that high deterrent clawbacks are more likely to deter executives from misbehavior and thus increase manager's incentives to report honestly, we expect a decrease in audit fees following adoption. We suggest that auditors would then attach more credibility to the quality of such firms' financial reports and thus may respond by examining firms with a high deterrent clawback less carefully, resulting in less time spent auditing and thus lower audit fees. To sum up, we state our second hypothesis as follows:

> **Hypothesis 2 (Auditors' Assessment):** Audit fees are lower after clawback adoption for high deterrent clawback adopters compared to low deterrent clawback adopters.

We might not observe results consistent with our second hypotheses for the following reason: Voluntarily adopting a high deterrent clawback likely signals a firm's commitment to high reporting integrity and thus the demand for higher audit quality. A control mechanism for assuring reporting quality and reducing fraudulent reporting behavior is to "purchase differentially higher-quality audit services." (Carcello, Hermanson, Neal, and Jr. [2002]). In

addition to that, if the auditor understands that the customer (that is, the firm) puts high emphasis on reporting integrity, the auditor is likely to perform a higher-quality audit so as to fulfill the customer's requirements and to maintain their business relationship. Performing a higher-quality audit increases the auditor's costs that are automatically passed on to the customer.

Deterrent Clawback Provisions and CEO Compensation

Finally, we concentrate on the costs to executives of having a clawback provision. Executives agreeing to a high deterrent clawback are likely to face a higher probability of having to return compensation even for reasons beyond their power, thereby imposing risk on them. Most clawbacks include a financial restatement or misstatement as a triggering event. However, reporting irregularities or errors can also result from more complex reporting rules and thus may also negatively affect executives. SEC Commissioner Troy A. Paredes emphasized his concerns in a 2012 speech "By way of illustration, an executive who has worked diligently and honestly at a company that has robust financial controls and top-notch procedures and systems may nonetheless have to pay back a considerable portion of his or her compensation if the company has to restate because of an accounting error."

Furthermore, returning compensation would not only result in a financial loss, but also in a reputational damage: "Having compensation clawed back would not only impose a financial cost on the executive but would also be embarrassing." (Fried, and Shilon [2011]). Executives who have to return their compensation would be officially held accountable for their misdeeds or at least be associated with the misreporting of their firms' financial reports in public. From an optimal contracting perspective, risk-averse agents would need to be compensated for the (increased) risk of recoupment and the associated reputational damage in case a clawback is enforced (Prendergast [1999]). As compensation arrangements can be

adjusted jointly with clawback adoption, we expect an increase in executive pay following the adoption of clawbacks. This increase should be even more pronounced for high-deterrent clawbacks as they put executives under greater risk.

We therefore propose:

Hypothesis 3 (Increased CEO Compensation): CEO compensation is higher after clawback adoption for high deterrent clawback adopters than for low deterrent clawback adopters.

3.4 Descriptive Statistics

Panels B and C of Table 2 present descriptive statistics for all dependent and independent variables. Panel B focuses on the propensity-matched sample (1,500 observations), whereas Panel C presents statistics for the full sample of clawback provisions (up to 3,578 observations). The variable distributions are relatively similar across the two samples. The propensity-matched sample, however, consists of firms that are – on average – larger, and hence, also have larger audit committees and larger boards. Moreover, they spend less on research and development expenses and are more profitable compared to the full sample of clawback adopters. As we will show later, the most important is that low deterrent and high deterrent clawback adopters are similar with regard to various company characteristics, despite the deterrence level of their clawback provision.

4. Empirical Findings

4.1 Propensity-Score Matching

As already outlined above, we implement a propensity score matching procedure (Rosenbaum and Rubin 1983) to select matched pairs of low and high deterrent clawback observations. We estimate the probability of adopting a high deterrent clawback provision

with the Logit model as outlined in equation (1). We run the selection model on 1,949 observations with available data. Table 3 presents the results.

Please insert Table 3 about here

We find that the following variables are statistically significant (see Panel A of Table 3): The number of *Busy Directors* is significantly positively associated with the decision to adopt a high deterrent clawback, suggesting that busy directors have the necessary oversight and experience to enforce the implementation of high deterrent provisions. *Research and Development Expenditures* and *Stock Return Variability* are negatively related to high deterrent clawbacks. These findings are consistent with the idea that more complex and more risky firms tend to adopt low deterrent provisions to retain talented managers. Finally, the *Fog Index*, a measure for linguistic complexity of each clawback provision, is positively associated with the deterrent level of clawbacks.

For each high deterrent clawback company (treatment company) we select one low deterrent clawback company (control company) that meets all of the following three conditions: (1) the control company must have a similar propensity to adopt a high deterrent clawback as the treatment company in the year preceding the adoption of a clawback, (2) the control company must not have adopted a high deterrent clawback after the adoption of a clawback by the treatment company, and (3) the control company must have adopted a low deterrent clawback after the adoption of a high deterrent clawback by the treatment company. We set the maximum difference in the propensity scores between treatment and control companies to 0.03, which is very strict compared to other studies on clawback adoption (Chan, Chen and Chen 2013, for example, choose a caliper of 0.1). This procedure ensures that our treatment and control samples are highly similar on the relevant sets of covariates.

The matching procedure results in 750 matched firm pairs with a caliper difference below 0.03, totaling 1,500 observations. For robustness tests, we also rerun all our tests with the maximum number of observations available (full sample). All findings are similar in magnitude and significance.

Panel B of Table 3 provides descriptive statistics on company characteristics for the treatment sample (750 firm-years) and the control sample (750 firm-years). We find that the companies do not differ significantly in all variables. The smallest p-value is 0.19 for the variable *Research and Development.* Moreover, the mean (median) percentage bias for the full set of variables is at 2.6 (3) only. This provides credit to our matching procedure and ensures that treatment and control companies do not differ significantly for the observed variables before adopting a clawback.

4.2 Univariate Analyses

We first report univariate tests on changes in restatements, misstatements, audit fees, and executive compensation around the initiation of high and low deterrent clawbacks for the treatment and control samples. The results are reported in Table 4. For each consequence variable, we calculate the mean value for up to four years in the pre-adoption and the post-adoption period. We ensure to have data available for at least two years before and after the adoption of a clawback. We then test the statistical and economic significance of the change in each outcome variable around the initiation year.

Panel A of Table 4 shows that the percentage of years in which a restatement is filed with the SEC drops from 6.47 percent to 3.96 percent for the treatment companies. This represents a nearly 39 percent reduction after the initiation of a high deterrent clawback. The percentage of years in which a restatement is filed for the control sample increases from 4.63 percent to 5.07 percent (an increase of 9 percent). While the mean difference between the treatment and control companies is significant at the 10%-level in the pre-adoption period, it

remains significant after adoption. As a consequence, the difference-in-differences estimator between the treatment and control companies around the initiation of a high deterrent clawback is highly significant at the 5 percent level.

Similarly, the percentage of years affected by a misstatement decreases from 3.47 percent to 2.99 percent for the treatment companies (see Panel B). This represents a decrease of nearly 14 percent. On the other hand, the percentage of years affected by a misstatement increases from 3.74 percent to 6.38 for the control companies, which represents a 70 percent increase. In addition, while there is no significant difference between the treatment and control companies before the initiation of a clawback, treatment companies have significantly fewer years affected by a misstatement than control companies after the adoption of a clawback.

Panel C reveals that the natural logarithm of audit fees increases from 14.78 to 15.12 for treatment firms. This is an increase of about 2.3 percent. For control firms, audit fees increase at a smaller rate of 1.1 percent, going up from 14.85 to 15.01. While the difference between treatment and control firms is insignificant before the clawback adoption, it is highly significant after initiation of a clawback. Hence, the difference-in-differences estimator is positive and statistically significant. In terms of economic significance, audit fees increase by about 0.5m USD for low deterrent adopters, whereas they increase for about 1m USD for high deterrent adopters. Taking the time trend and the general effect of adopting a clawback into account, audit fees of high deterrent adopters increase on average by 1.2 percent more than those of low deterrent adopters.

Panel D shows that total compensation did increase for both treatment and control firms after the adoption of a high (low) deterrent clawback provision. There is, however, no significant difference between high deterrent and low deterrent adopters before and after the adoption of the clawback. Consequently, the difference-in-differences estimator is insignificant letting us to conclude that adopting a high deterrent clawback does not come

with additional costs compared to adopting a low deterrent clawback. Hence, we do not observe an impact of clawback deterrence on executives' pay level.

– Please insert Table 4 about here –

4.3 Clawback Deterrence and Accounting Restatements and Misstatements

Panel A of Table 5 presents results of testing Hypothesis 1 (equation (2A)). In Model 1a we focus on *Restatement* as the dependent variable, and in Model 2a on *Misstatement* as the dependent variable.

The coefficient on *High Deterrent Clawback* is significantly positive (p-value = 0.014) and represents the difference in the likelihood of restatements between treatment and control firms before clawback adoption. The positive coefficient indicates that treatment firms are more likely to file a restatement before clawback adoption than control firms. This finding helps to alleviate our concern that mainly better governed firms self-select into adopting a high deterrent clawback.

The coefficient on *High Deterrent Clawback * After* is negative and highly significant (p-value = 0.011), which is consistent with hypothesis 1. Evaluated at the means, the marginal probability of restatement is 6.6 percent lower among treatment firms relative to control firms, and between the pre- and post-adoption periods. For robustness tests, we also estimate the same model based on all 3,578 clawback observations without matching high deterrent clawbacks to low deterrent clawback. The results are shown in Model 1b and are qualitatively similar to those reported for Model 1a.[13] High deterrent adopters are associated with a significant decline in the probability of restatements following adoption (p-value = 0.053).

We also estimate equation (2A) with *Misstatement* as the dependent variable (Model 2a). *Misstatement* takes the value of unity if an accounting year is affected by a restatement,

[13] Data availability restricts this sample to 2,863 observations.

and zero otherwise. The results reported in Panel B of Table 5 show that the coefficient on *High Deterrent Clawback * After* is negative and highly significant (p-value = 0.001). This finding is also consistent with hypothesis 1. Evaluated at the means, the marginal probability of misstatement is 9.2% lower. We also repeat Model 2a with all clawback observations (Model 2b).[14] The results are qualitatively similar to those reported for Model 2a.

Taken together, the results in Panel A and B of Table 5 imply that high deterrent adopters have a lower likelihood to misstate in the post-adoption compared to the pre-adoption period. Our findings suggest that a high deterrent clawback policy is more effective to deter executives from misreporting than a low deterrent policy.[15]

- Please insert Table 5 about here. -

4.4 Clawback Deterrence and Audit Fees

Table 6 reports results of testing hypothesis 2. We therefore estimate equation 2C and focus on *Audit Fees* as the dependent variable.

Model 3a presents the results based on the propensity-matched sample. The coefficient on *High Deterrent Clawback* is significantly negative (p-value = 0.072) suggesting that treatment firms pay lower audit fees before adoption. Surprisingly, the coefficient on *High Deterrent Clawback * After* is positive and significant (p-value = 0.025), which is not consistent with hypothesis 2. We suggest that companies adopting a high deterrent clawback pay more attention to financial reporting quality. Thus, they are more willing to detect accounting fraud and exhibit higher auditing costs. Their auditors are likely to examine these firms more carefully and thus may spend more time on auditing the firm. Another potential explanation for the increase in audit fees can be the presence of more severe agency problems

[14] Data availability restricts this sample to 2,824 observations.
[15] Note that the marginal probabilities differ between the propensity-matched sample and the full sample. This is mainly due to the different sample compositions.

in companies after adopting a high deterrent clawback provision. Some executives can be expected to search for other channels through which they can tunnel company wealth to their own accounts. In order to prevent and detect such misbehavior, audit companies need to examine company accounts more carefully. Furthermore, the adoption of a high deterrent clawback may be related to internal control weaknesses, hence increasing the time and energy spent by the auditor.

We also estimate the same model based on all clawback observations (Model 3b).[16] The results are similar to those reported for Model 3a.

- Please insert Table 6 about here. -

4.5 Clawback Deterrence and CEO Compensation

Panel A of Table 7 shows the effect of high and low deterrent adopters on various CEO compensation features. We do not find that CEO compensation increases after firms adopting a high deterrent clawback.[17] We expected – at least – an increase in base salary since it is not tied to the CEOs performance and thus constitutes the risk-free part of her compensation. Furthermore, high deterrent adopters were expected to compensate their executives for the increased risk of recoupment to retain them in the company. Hence, hypothesis 3 is not supported by the data.

We suggest two possible explanations for our findings. First, adopting firms may see a high deterrent clawback as a strong device to deter executives from misbehavior. They may regard the damages resulting from accounting fraud and other detrimental activities as being higher than the increased costs from higher compensation. Extant literature shows that restatements are associated with executives and firms experiencing reputational harm and

[16] Data availability restricts this sample to 2,890 observations.
[17] We do not find any significant results if we re-estimate equation (5).

with a decline in market value (Gertsen, van Riel, and Berens [2006], Hennes, Leone, and Miller [2008]).

Second, the managerial power approach (Bebchuk, and Fried [2003], Bebchuk, Fried, and Walker [2002]) suggests that executives have considerable power to influence their own pay, and part of their compensation will reflect their power to extract rents. The need to conceal rent extraction can produce inefficient compensation schemes, which may provide perverse incentives and reduce shareholder value. Consistent with this view, Bertrand, and Mullainathan [2001]) suggest that departures from shareholder wealth maximization represent evidence for pure rents going to CEOs, which they term "skimming". Beneficial aggregate shocks generate pure rents within the firm and frictions in the market for corporate control allow CEOs to skim a large fraction of these rents for themselves. It is also possible that part of the CEO compensation is attributable to scarce CEO talent (Rosen [1981]) rather than frictions in the market for corporate control. Both explanations hold that a special part of CEO compensation consists of rents or *quasi*-rents that are not attributable to performance metrics.

To sum up, there may be no need to increase compensation as executives already receive an amount that is not justified under performance related arguments. Viewed from this lens, the adoption of an effective clawback policy will not necessarily lead to an increase in CEO compensation.

- Please insert Table 7 about here -

5. Extensions and Robustness Tests

Misstatement Period

To further validate the robustness of our findings, we again estimate equation 2A but use *Misstatement Begin* and *Misstatement End* as the dependent variables. *Misstatement Begin* is a binary variable equaling one for firm-years in which companies started to misstate

their accounts, and zero otherwise. *Misstatement End* is a binary variable equal to one for firm-years in which companies stopped to misstate their accounts. Coming back to the example from above (misstatement between 2008 and 2010, filing with the SEC in 2011), the *Misstatement Begin* (*Misstatement End*) variable *is* 1 for the year 2008 (2010), and zero for all other years. We aim to assess the deterrent effect more accurately by using two different points in time for the misstatement period. We again use the propensity-matched sample and the full sample to examine the effectiveness of high deterrent clawback policies.

Panel A and B of Table 8 show that the coefficients of interest (*High Deterrent Clawback * After*) are still highly significant and negative for all sample specifications.[18]

- Please insert Table 8 about here. -

Placebo Shocks

Ideally, the adoption of high-deterrent clawback policies should approximate a randomized experiment. The clawback provisions should be applied as-if-at-random to some firms, but not to similar firms. However, clawback policies are not adopted at random. Thus, a core challenge is to justify the as-if-random nature of the clawback adoption (Rosenzweig, and Wolpin [2000]). One major concern hereby is the different pre-treatment trends in treatment and control groups for the outcome variable. If such trends exist, then even without the clawback adoption these trends might have either continued, or might have reversed. To check whether our results are due to the adoption of a high-deterrent clawback policy and not to trends inherent in the data, we employ a number of placebo tests to assess the credibility of our difference-in-differences design. We do so by placing a placebo shock at the pre-adoption period dated *t*-2 (*t* being the original year of clawback adoption) and restricting the sample to five years spanning *t-4* to *t*). We also placed a placebo shock at the period dates *t-1* and

[18] Note that the coefficient on High Deterrent Clawback * After in Model 2f is negative and significant at the 10% level (p-value = 0.091).

restricted the analysis to three years spanning (*t-1, t* and *t+1)*. Table 9 shows the results of placing a placebo shock at the period dated *t-2*. All placebo tests produce null results, as expected, with the exception of the analysis of *Misstatement* for all clawback adopting firms. The interaction term in the misstatement model, however, is positive and significant at the 10 percent level only. Moreover, when matching high deterrent firms with low deterrent firms the interaction term is insignificant again. Overall, the results of our placebo tests reassure that the consequences documented in our main analyses are indeed caused by differences in deterrent levels and not due to time trends inherent in the data.

- Please insert Table 9 about here. -

High- and low deterrent clawbacks vs. no-clawbacks

Prior studies have so far only analyzed the effect of adopting a clawback provision versus not adopting a clawback provision. The question therefore arises how the deterrent level of clawbacks impacts the economic consequences relative to not adopting a clawback at all. To allow for this benchmark test, we rerun all analyses but compare high (low) deterrent clawback adopters to non-adopters. We do so by including indicator variables in our consequence models. The indicator variable takes on the value of unity if a firm has adopted a high (low) deterrent clawback provision, and zero if the firm has not adopted a clawback provision. We also match high (low) deterrent clawback adopters to non-adopters based on a propensity score matching procedure that models the likelihood of adopting a high (low) deterrent clawback provision. Finally, we pool all high and low deterrent clawback observations together and analyze the joint effect of adopting a clawback – no matter of its deterrent level – versus not adopting a clawback on the economic consequences. This latter test serves as an additional analysis to benchmark our overall results.

Table 10 presents our findings. In general, we find that high deterrent clawback provisions have a statistically and economic significant impact on all consequences: High deterrent clawback adopters experience fewer restatements and misstatements, have higher audit fees and pay more total compensation relative to non-clawback firms. In contrast, low deterrent clawback adopters do not benefit from lower incidences of restatements and misstatements, but also pay higher audit fees and more total compensation to their executives relative to no clawback adopters.

- Please insert Table 10 about here. -

Difference-in-differences with Post-treatment Effects

None of the prior studies on the effects of clawback adoption study the timing of the hypothesized effects. Clawback adoption can have an impact on outcomes which may emerge over time in a pattern that cannot be neatly captured as a change in level, a change in trend, or both (Atanasov, and Black [2014]). To allow for a change in both level and trend, we interact our *High Deterrent Clawback * After* variable with three time dummies for the three post-clawback adoption years.

The results indicate that the effects we document for the misstatements capture a decrease in levels starting in the first post-clawback adoption year, whereas for restatements and audit fees we observe a change only in the second post-clawback adoption year. None of the three post-clawback adoption dummies is significant in CEO compensation equations, which is consistent with our main results.

Effectiveness of Clawback Provisions

A natural question concerns the degree to which firms with high deterrent clawback provisions are more likely to recoup excess-pay following a triggering event than firms with a

low deterrent provision. To address this issue, we used Factiva and Lexis Nexis to examine whether clawback firms have activated their clawbacks following a financial restatement. We did not find any case in which firms publicly disclose the enforcement of their clawback policies. We suggest two explanations for this finding: First, firms do simply not disclose the activation of their clawbacks. Companies are not mandated to publicly disclose their clawback actions: "Companies usually do not disclose the specifics when they use clawbacks. Most settle behind closed doors rather than battle over responsibility and fault in open court." (Olson [2012]). This already caused for discontentment from shareholders who initiated shareholder proposals to strengthen clawback provisions in general, but also to disclose any clawback action.[19] Second, although firms themselves may have not recovered compensation, clawbacks are still effective. While the time period may be too short to capture the full magnitude of such effects, the empirical evidence we present here is consistent with the notion that high deterrent clawback policies are likely to change managerial behavior *ex ante*.

6. Conclusion

Until now, companies are not mandated to adopt a clawback provision. Nevertheless, hundreds of companies have already adopted such provisions between 2007 and 2012 – five years after the SOX clawback and years before the introduction of the DFA clawback. In this study, we analyze the economic consequences of voluntarily adopted clawbacks. Specifically, we focus on the firm-level heterogeneity in the economic consequences of adoption as we recognize that these provisions differ heavily with regard to their deterrent effects.

We find that firms adopting a high deterrent clawback experience significantly less restatements and misstatements following adoption relative to low deterrent clawback adopters. We suggest that high deterrent clawbacks are more effective to deter executives

[19] In 2013 six Fortune 200 firms (Amgen Inc., Bristol-Myers Squibb Company, Eli Lilly and Company, Johnson & Johnson, Merck & Co. and Pfizer) joined thirteen institutional investors in enforcing a set of principles designed to strengthen existing clawback policies. Among other things, the set of principles include disclosure of enforced clawbacks or non-clawback action (PRNewswire [2013]).

from misbehavior *ex ante* than low deterrent provisions. Furthermore, we find that audit fees are higher for high deterrent adopters suggesting that they are more willing to detect accounting fraud, and therefore exhibit higher auditing costs as their auditors have to examine their financial reports more carefully. Finally, we do not find evidence that clawback adoption is associated with higher costs in terms of higher CEO compensation.

Our results enhance our understanding of firms' voluntary use of corporate governance mechanisms. They reveal that companies and executives can play the system by ostensibly adopting governance tools that are appreciated by shareholders, but essentially are only poorly implemented. The mere adoption of such a governance mechanism does not guarantee its success. In fact, only the implementation matters. Furthermore, our findings should be of interest to shareholder initiatives and regulatory bodies to better understand how firm-level clawbacks should be designed to be effective.

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APPENDIX

Definition of Variables

Firm-Specific Variables		
Variable	**Description**	**Data Source**
Advertising Expense	Advertising expenses divided by total sales	Compustat
After	1 for periods following clawback adoption, and 0 otherwise	Own computation
Audit Fees	Natural logarithm of total audit fees	Audit Analytics
Big 4 Auditor	1 for being audited by a BIG 4 audit firm, and 0 otherwise	Audit Analytics
Cash Flow	Cash flow divided by average total book assets	Compustat
Change in Receivables	Change in accounts receivables divided by average total book assets	Compustat
Deterrent Index	Sum of five standardized and [0; 1]-transformed sub indices: Compensation Coverage + Employee Coverage + Enforcement + Time Period + Trigger. Each sub index is based on a linguistic analysis of a firm's clawback provision which was obtained from the Corporate Library. The deterrent index measures the deterrent level of each clawback provision. The higher the index value, the more deterrent a clawback provision is.	Corporate Library; own computation
Discretionary Accruals	Discretionary accruals according to the modified Jones model as in Dechow, Ge, Larson and Sloan (2011)	Compustat; own computation
Fog Index	The Fog Index measures the readability of English writing. The index estimates the years of formal education needed to understand the text on a first reading. It is calculated as follows: Fog = (words per sentence + percent of complex words) * 0.4, where complex words are defined as words with three syllables or more.	Own computation
High Deterrent Clawback	1 if the deterrent level (measured by the Deterrent Index) of a firm's clawback provision is above the yearly sample median, and 0 otherwise	Own computation
Industry	Fama-French industry classification	Compustat
Leverage	Long term debt and debt in current liabilities divided by total book assets	Compustat
Loss	1 if the firm reports a net loss in the period, and 0 otherwise	Compustat
Misstatement	1 for firm-years that belong to a misstatement period and that are not positively affected by the accounting restatement, and 0 otherwise	Audit Analytics
Misstatement Begin	1 for firm-years that mark the beginning of a misstatement period and that are not positively affected by the accounting restatement, and 0 otherwise	Audit Analytics
Misstatement End	1 for firm-years that mark the ending of a misstatement period and that are not positively affected by the accounting restatement, and 0 otherwise	Audit Analytics
Past Restatement	1 if a firm has had an earnings restatement before it adopted a clawback provision for the first time, and 0 otherwise	Audit Analytics

Prior Restatement	1 if a firm has had an earnings restatement in the trailing two years, and 0 otherwise	Audit Analytics
Research and Development	Research and development expenditures divided by total sales	Compustat
Restatement	1 for firm-years in which a firm filed an accounting restatement with the SEC and for which the cumulative net effect was not positive, and 0 otherwise	Audit Analytics
Return on Assets	Income before extraordinary items divided by lagged total assets	Compustat
Sales Growth	One-year growth in total sales	Compustat
Soft Assets	Soft assets divided by total book assets, whereas soft assets are defined as: total book assets – total property, plant and equipment (net) – cash and short-term investments	Compustat
Tobin's Q	Book value of long-term debt and debt in current liabilities plus the market capitalization of the firm divided by total book assets	Compustat
Size	Natural logarithm of total book assets	Compustat

Governance Variables		
Variable	**Description**	**Data Source**
Audit Committee Size	Two-years moving average of the total number of audit committee members	Corporate Library
Board Meetings	Number of board meetings held by a firm's board of directors as reported in its most recent proxy filing	Corporate Library
Board Size	Total number of directors on a firm's board of directors	Corporate Library
Busy Directors	Two-years moving average fraction of directors with more than four corporate directorships	Corporate Library
CEO Chair	1 if the CEO is also chairman of the board of directors, and 0 otherwise	Corporate Library
CEO Tenure	Natural logarithm of a CEO's tenure (in years)	ExecuComp
Independent Directors	Fraction of independent directors on a firm's board of directors	Corporate Library
Insider Ownership	Fraction of outstanding shares held by a firm's top management team	Corporate Library
Institutional Majority	1 if the majority of outstanding shares are held by institutions, and 0 otherwise	Corporate Library
Executive Compensation Variables		
Variable	**Description**	**Data Source**
Bonus	Natural logarithm of total non-equity incentive compensation: including bonus and other non-equity incentive compensation	ExecuComp
Executives' Pay Slice	Total compensation of a firm's top three executives scaled by the one-year moving average earnings before interest and taxes	ExecuComp
Grants	Black-Scholes value of stock options granted.	ExecuComp
Salary	Natural logarithm of base salary.	ExecuComp
Total Compensation	Sum of salary, bonus, (option) grants and all other compensation	ExecuComp

Table 1

Clawback Adoption Rates and Sample Selection

Panel A presents the number of firms that voluntarily adopted a clawback provision between 2007 and 2012. Panel B details the clawback adoption rates over time. Panel C shows the sample composition for the propensity-match Logit model to match high-deterrent clawback adopters with low-deterrent clawback adopters. Panel D details the sample selection for our multivariate analyses.

Panel A: Number of Clawback Adopters

Number of clawback provisions over 2007-2012 in the RUSSELL 3000	4,835*
Exclusion of financial firms	-1,257
Base sample that serves for the construction of the Deterrent Index	3,578**
* Corresponds to 1,618 unique firms ** Corresponds to 1,195 unique firms	

Panel B: Clawback Adoption Rates of Non-Financial Firms over Time

	2007 - 2012	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
Firm-years with a clawback	3,578	269	399	562	717	782	849
Total number of firm-years	14,651	2,228	2,749	2,614	2,468	2,377	2,215
Adoption rate (in %)	24.42	12.07	14.51	21.5	29.05	32.9	38.33
Change in adoption rate (in %)			+2.44	+6.99	+7.55	+3.85	+5.43

Panel C: Sample Composition for the Propensity-Match Logit-Model

Number of clawback observations	3,578
Elimination of observations due to missing data and/or inconsistent deterrent levels	-1,629
Final sample for propensity-score analysis	**1,949***
* Corresponds to 648 unique firms	

Panel D: Sample Composition for the Propensity-Matched Multivariate Analyses

Number of propensity matched high-deterrent clawback observations	750
Number of propensity matched low-deterrent clawback observations	750
Final sample for propensity-matched multivariate analysis	**1,500***
* Corresponds to 598 unique firms	

Table 2

Panel A presents summary statistics of the Deterrent Index and each of its sub indices. The Deterrent Index is computed as the sum of five sub indices: Compensation Coverage, Employee Coverage, Enforcement, Time Period, and Trigger. Each sub-index is standardized and transformed into a [0,1]-interval. The higher the value of each sub-index, the more deterrent a clawback provision is with regard to the dimension of the respective sub-index. Panel B presents descriptive statistics of the dependent and independent variables based on the propensity-matched sample (750 low-deterrent and 750 high-deterrent clawbacks). Panel C presents descriptive statistics of the dependent and independent variables based on the full sample of clawback provisions (1,706 low-deterrent and 1,872 high-deterrent clawbacks). Variables are as described as in the Appendix.

Panel A: Deterrent Index

	Obs.	Mean	Std. Dev.	Min	Median	Max
Trigger	3,578	0.26	0.15	0.00	0.25	1.00
Enforcement	3,578	0.54	0.23	0.00	0.60	1.00
Compensation Coverage	3,578	0.39	0.16	0.00	0.33	1.00
Employee Coverage	3,578	0.39	0.20	0.00	0.25	1.00
Time Period	3,578	0.18	0.32	0.00	0.00	1.00
Deterrent Index	3,578	1.77	0.55	0.25	1.72	3.72

Panel B: Descriptive Statistics for the Propensity-Matched Sample

Dependent Variables	Obs.	Mean	Std. Dev.	Min	Median	Max
Restatement	1,500	0.05	0.21	0.00	0.00	1.00
Misstatement	1,500	0.05	0.20	0.00	0.00	1.00
Audit Fees	1,500	15.25	1.07	12.45	15.22	20.60
Total Compensation	1,500	8.68	0.80	6.13	8.73	10.84
Independent Variables	**Obs.**	**Mean**	**Std. Dev.**	**Min**	**Median**	**Max**
Advertising Expense	1,500	0.01	0.03	0.00	0.00	0.27
Audit Committee Size	1,500	6.98	2.66	2.00	7.00	16.00
BIG 4 Auditor	1,500	0.96	0.18	0.00	1.00	1.00
Board Meetings	1,500	8.21	3.35	4.00	7.00	34.00
Board Size	1,500	19.19	5.45	7.00	19.00	42.00
Cash Flow	1,500	-0.03	0.09	-0.65	-0.03	0.72
CEO Chair	1,500	0.58	0.49	0.00	1.00	1.00
CEO Tenure	1,500	7.48	0.87	2.71	7.60	9.68
Change in Receivables	1,500	0.01	0.03	-0.17	0.00	0.20
Discretionary Accruals	1,500	0.00	0.04	-0.39	0.00	0.40
High-Deterrent Clawback	1,500	0.50	0.50	0.00	1.00	1.00
Independent Directors	1,500	0.11	0.15	0.00	0.08	0.80
Insider Ownership	1,500	0.06	0.12	0.00	0.02	0.98
Leverage	1,500	0.24	0.17	0.00	0.23	1.11
Loss	1,500	0.08	0.28	0.00	0.00	1.00

Past Restatement	1,500	0.33	0.47	0.00	0.00	1.00
Prior Restatement	1,500	0.17	0.43	0.00	0.00	1.00
Research and Development	1,500	0.03	0.06	0.00	0.00	0.46
Return on Assets	1,500	0.06	0.07	-0.56	0.06	0.77
Sales Growth	1,500	0.06	0.18	-0.81	0.05	2.39
Soft Assets	1,500	0.58	0.22	0.07	0.62	0.98
Size	1,500	8.58	1.58	4.86	8.52	12.72

Panel C: Descriptive Statistics for the Full Sample of Clawback Adopters

Dependent Variables	**Obs.**	**Mean**	**Std. Dev.**	**Min**	**Median**	**Max**
Restatement	3,578	0.05	0.22	0.00	0.00	1.00
Misstatement	3,578	0.04	0.20	0.00	0.00	1.00
Audit Fees	3,299	14.99	1.10	11.91	14.91	20.60
Total Compensation	2,723	8.55	0.93	2.09	8.64	10.98
Independent Variables	**Obs.**	**Mean**	**Std. Dev.**	**Min**	**Median**	**Max**
Advertising Expense	3,410	0.01	0.03	0.00	0.00	0.47
Audit Committee Size	3,305	6.58	2.64	0.00	6.00	18.00
BIG 4 Auditor	3,578	0.87	0.34	0.00	1.00	1.00
Board Meetings	3,285	8.45	3.78	3.00	8.00	38.00
Board Size	3,305	18.08	5.71	6.00	18.00	48.00
Cash Flow	3,417	-0.02	0.14	-0.65	-0.03	2.05
CEO Chair	3,300	0.52	0.50	0.00	1.00	1.00
CEO Tenure	2,702	7.43	0.91	2.71	7.53	9.68
Change in Receivables	3,412	0.01	0.04	-0.87	0.00	0.36
Discretionary Accruals	3,329	0.00	0.05	0.51	0.00	0.40
High-Deterrent Clawback	3,578	0.52	0.50	0.00	1.00	1.00
Independent Directors	3,262	0.13	0.16	0.00	0.09	0.80
Insider Ownership	3,278	0.08	0.15	0.00	0.03	0.98
Leverage	3,400	0.25	0.20	0.00	0.23	1.93
Loss	3,418	0.18	0.37	0.00	0.00	1.00
Past Restatement	3,578	0.34	0.47	0.00	0.00	1.00
Prior Restatement	3,578	0.18	0.43	0.00	0.00	1.00
Research and Development	3,410	0.06	0.57	0.00	0.00	20.84
Return on Assets	3,417	0.04	0.11	-1.22	0.05	0.77
Sales Growth	3,409	0.07	0.28	-1.00	0.05	6.46
Soft Assets	3,412	0.57	0.22	0.01	0.60	0.98
Size	3,418	8.07	1.72	3.23	7.99	13.59

Table 3

Panel A reports the results of the propensity-match Logit-model to match high-deterrent clawback observations with low-deterrent clawback observations. The matching procedure results in 750 paired observations. Panel B presents descriptive statistics to assess the validity of our matching procedure. Variables are as described as in the Appendix.

Panel A: Propensity-Match Logit-Model

Independent Variables	High Deterrent Clawback	Marginal Prob.
Board Size	-0.017	-0.004
	(-0.70)	
Busy Directors	3.702**	0.820
	(2.04)	
CEO Chair	-0.183	-0.041
	(-1.03)	
Audit Committee Size	0.025	0.005
	(0.53)	
Board Meetings	-0.006	-0.001
	(-0.26)	
Independent Directors	0.621	0.138
	(0.80)	
Management Ownership	-0.348	-0.077
	(-0.52)	
Institutional Majority	-0.113	-0.025
	(-0.57)	
Executives' Pay Slice	-0.254	-0.056
	(-1.31)	
CEO Tenure	-0.126	-0.028
	(-1.49)	
Sales Growth	-0.029	-0.006
	(-0.09)	
Size	-0.063	-0.014
	(-0.81)	
Research and Development	-2.809*	-0.622
	(-1.75)	
Stock Return Volatility	-22.517**	-4.988
	(-2.01)	
Leverage	-0.150	-0.033
	(-0.32)	
Profitability	-0.402	-0.089
	(-0.33)	
Past Restatement	0.234	0.052
	(0.97)	
Tobin's Q	-0.004	-0.001
	(-0.03)	
Fog Index	0.379**	0.084
	(2.21)	

Year and Industry Fixed Effects	Yes
R^2	0.33
Observations	1,949

Panel B: Validity of the Matching Procedure

Variable	Mean of Propensity-Matched Obs.		% Bias	t-test	
	High-deterrent	Low-deterrent		t-value	p-value
Deterrent Index	2.20	1.32	256.6	49.20	0.00
Board Size	18.80	18.71	1.7	0.32	0.75
Busy Directors	0.02	0.02	1.8	0.37	0.71
CEO Chair	0.58	0.60	-3.0	-0.58	0.56
Audit Committee Size	6.66	6.52	5.3	1.03	0.30
Board Meetings	8.24	8.34	-3.5	-0.66	0.51
Outside Directors	0.10	0.09	4.0	0.77	0.44
Management Ownership	0.06	0.06	1.6	0.33	0.74
Institutional Majority	0.85	0.85	-0.4	-0.07	0.94
Executives' Pay Slice	0.06	0.07	-3.1	-0.61	0.54
CEO Tenure	7.46	7.50	-4.7	-0.91	0.36
Sales Growth	0.06	0.07	-3.3	-0.61	0.54
Size	8.55	8.62	-4.0	-0.76	0.45
Research and Development	0.03	0.04	-6.8	-1.30	0.19
Stock Return Volatility	0.02	0.02	-3.2	-0.63	0.53
Leverage	0.24	0.24	-0.9	-0.17	0.86
Profitability	0.16	0.16	0.4	0.07	0.94
Past Restatement	0.04	0.04	-0.7	-0.13	0.90
Tobin's Q	1.59	1.58	1.2	0.23	0.82
Fog Index	3.45	3.45	-0.2	-0.04	0.97
Mean Bias	2.6				
Median Bias	3				

Table 4

This table presents before-after tests for high-deterrent and low-deterrent clawback adopters for each of our four variables of interest: *Restatement, Misstatement, Audit Fees* and *Total Compensation*. For each variable, we tabulate the mean value up to four years before and after the adoption of a clawback (subject to data availability). We then test the statistical and economic significance of the change. Panel A focuses on the outcome variable *Restatement*; Panel B reports the univariate test statistics for the *Misstatement* variable; Panel C displays the results relating to *Audit Fees*, and Panel D presents results for the *Total Compensation* variable. Each Panel shows separate test statistics for i) the propensity-matched sample of 750 high- and 750 low-deterrent clawback observations, and ii) the full sample of 1,872 high- and 1,706 low-deterrent clawback observations. ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

Panel A: Univariate Tests for the Likelihood of Accounting Restatements

Propensity-Matched Sample (N = 1,500)			
Restatement Rates	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	6.76%	3.60%	-3.14%***
Low-Deterrent Clawback	3.56%	4.76%	1.20%
Difference (High – Low)	3.20%*	-1.14%	-4.36%**

Full Sample (N = 3,578)			
Restatement Rates	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	6.47%	3.96%	-2.51%***
Low-Deterrent Clawback	4.63%	5.07%	0.44%
Difference (High – Low)	1.83%*	-1.11%*	-2.94%**

Panel B: Univariate Tests for the Likelihood of Accounting Misstatement

Propensity-Matched Sample (N = 1,500)			
Misstatement Rates	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	4.50%	2.08%	-2.42%**
Low-Deterrent Clawback	3.55%	6.86%	3.31%**
Difference (High – Low)	0.95%	-4.78***	-5.73%***

Full Sample (N = 3,578)			
Misstatement Rates	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	3.47%	2.99%	-0.48%
Low-Deterrent Clawback	3.74%	6.38%	2.63%**
Difference (High – Low)	-0.27%	-3.39***	-3.11%**

Panel C: Univariate Tests for Audit Fees

Propensity-Matched Sample (N = 1,500)			
ln(1 + Audit Fees)	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	14.93	15.36	0.43***
Low-Deterrent Clawback	15.18	15.31	0.13*
Difference (High – Low)	-0.25***	0.05	0.30***

Full Sample (N = 3,578)			
ln(1 + Audit Fees)	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	14.78	15.12	0.34***
Low-Deterrent Clawback	14.85	15.01	0.16***
Difference (High – Low)	-0.07	0.11**	0.18**

Panel D: Univariate Tests for Total Compensation

Propensity-Matched Sample (N = 1,500)			
ln(1 + Total Compensation)	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	8.45	8.75	0.30***
Low-Deterrent Clawback	8.56	8.76	0.20***
Difference (High – Low)	-0.11*	-0.01	0.10

Full Sample (N = 3,578)			
ln(1 + Total Compensation)	Before Adoption	After Adoption	Difference (After – Before)
High-Deterrent Clawback	8.40	8.62	0.22***
Low-Deterrent Clawback	8.37	8.63	0.26***
Difference (High – Low)	0.03	-0.01	-0.04

Table 5

This table shows the effect of high- and low-deterrent clawback provisions on the likelihood of accounting restatements. The dependent variable takes the value of unity for each year in which a firm files a restatement with the SEC, and zero otherwise. The first two columns display Logit-estimates and marginal probabilities using the propensity-matched sample of 750 high- and 750 low-deterrent clawback provisions. The last two columns present Logit-estimates and marginal probabilities for the full sample of 3,578 clawback provisions with available data on independent variables. Standard errors are robust to clustering at the year-level. ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

	Propensity-Matched Sample		**Full Sample**	
	Restatement	**Marginal Prob.**	**Restatement**	**Marginal Prob.**
High-Deterrent Clawback	0.871**	0.034	0.337	0.015
	(2.01)		(0.93)	
High-Deterrent Clawback x After	-1.381**	-0.055	-0.643*	-0.029
	(-2.28)		(-1.86)	
After	0.766	0.030	0.045	0.002
	(1.78)		(0.20)	
Board Meetings	0.017	0.001	0.005	0.001
	(0.25)		(0.11)	
Management Ownership	-3.990**	-0.157	-0.876	-0.039
	(-2.43)		(-0.96)	
Independent Directors	1.459**	0.057	0.103	0.005
	(2.07)		(0.24)	
Audit Committee Size	-0.058	-0.002	-0.004	0.001
	(-1.44)		(-0.15)	
Prior Restatement	0.148	0.006	0.393**	0.017
	(0.55)		(2.43)	
Return on Assets	-7.569***	-0.298	-1.640**	-0.073
	(-4.40)		(-2.43)	
Discretionary Accruals	-3.162	-0.125	-1.782**	-0.079
	(-1.16)		(-1.58)	
Loss	0.025	0.001	0.152	0.007
	(0.03)		(0.42)	
Size	-0.103	-0.004	-0.055	-0.002
	(-1.11)		(-0.51)	
Change in Receivables	4.671	0.184	1.474	0.065
	(0.64)		(0.58)	
% Soft Assets	-0.899	-0.035	0.640	0.028
	(-1.37)		(1.58)	
Cash Flow	0.329	0.001	-0.244	-0.011
	(0.06)		(-0.64)	
Leverage	0.908	0.036	1.167*	0.052
	(0.89)		(1.88)	
Year and Industry Fixed Effects	Yes		Yes	
Pseudo R^2	0.14		0.07	
R^2	0.26		0.18	
Observations	1,500		2,979	

Table 6

This table shows the effect of high- and low-deterrent clawback provisions on the likelihood of misstatements. The dependent variable takes the value of unity for each year that is affected by an accounting restatement, and zero otherwise. The first two columns display Logit-estimates and marginal probabilities using the propensity-matched sample of 750 high- and 750 low-deterrent clawback provisions. The last two columns present Logit-estimates and marginal probabilities for the full sample of 3,578 clawback provisions with available data on independent variables. Standard errors are robust to clustering at the year-level. ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

	Propensity-Matched Sample		**Full Sample**	
	Misstatement	**Marginal Prob.**	**Misstatement**	**Marginal Prob.**
High-Deterrent Clawback	0.394	0.025	-0.009	-0.001
	(0.74)		(-0.02)	
High-Deterrent Clawback x After	-1.974***	-0.075	-0.964***	-0.038
	(-3.25)		(-2.58)	
After	1.056***	0.040	0.830***	0.033
	(2.56)		(3.41)	
Board Meetings	-0.050	-0.002	-0.057	-0.002
	(-0.72)		(-1.24)	
Management Ownership	-0.821	-0.031	0.137	0.005
	(-0.54)		(0.20)	
Independent Directors	1.213	0.046	-0.276	-0.011
	(1.24)		(-0.40)	
Audit Committee Size	0.042	0.002	0.035	0.001
	(0.43)		(0.61)	
Prior Restatement	0.368	0.014	0.190	0.007
	(1.47)		(0.81)	
Return on Assets	-8.533***	-0.325	-3.067***	-0.121
	(-4.89)		(-2.93)	
Discretionary Accruals	-2.299	-0.087	-2.086*	-0.082
	(-0.90)		(-1.78)	
Loss	-0.558	-0.021	-0.214	-0.008
	(-1.13)		(-0.53)	
Size	-0.133	-0.005	-0.037	-0.002
	(-0.98)		(-0.35)	
Change in receivables	6.830*	0.260	6.993**	0.275
	(2.04)		(2.26)	
% Soft Assets	-0.876	-0.033	0.961	0.038
	(-0.99)		(1.54)	
Cash Flow	1.797	0.068	0.424	0.017
	(0.76)		(1.32)	
Leverage	1.033**	0.039	1.217***	0.048
	(2.38)		(2.92)	
Year and Industry Fixed Effects	Yes		Yes	
Pseudo R^2	0.16		0.10	
R^2	0.24		0.18	
Observations	1,500		2,995	

Table 7

This table shows the effect of high- and low-deterrent clawback provisions on audit fees. The first column displays OLS-estimates using the propensity-matched sample of 750 high- and 750 low-deterrent clawback provisions. The second column presents OLS-estimates for the full sample of 3,578 clawback provisions with available data on independent variables. Standard errors are robust to clustering at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

	Audit Fees	
	Propensity-Matched Sample	**Full Sample**
High-Deterrent Clawback	-0.094*	-0.003
	(-1.70)	(-0.09)
High-Deterrent Clawback x After	0.136**	0.067*
	(2.43)	(1.67)
After	-0.086**	-0.031
	(-2.05)	(-0.90)
Board Meetings	0.011**	0.012***
	(2.00)	(3.36)
Independent Directors	-0.152	-0.099
	(-1.14)	(-1.11)
Audit Committee Size	0.024**	0.008
	(2.35)	(1.04)
Big 4 Auditor	0.210*	0.139*
	(1.89)	(1.94)
Sales Growth	-0.440***	-0.266***
	(-5.41)	(-5.16)
Advertising Costs	1.197	0.628
	(1.64)	(1.11)
Research and Development	-0.630*	-0.001
	(-1.73)	(-0.31)
Discretionary Accruals	-0.046	0.122
	(-0.15)	(0.68)
Prior Restatement	0.137*	0.066*
	(1.96)	(1.41)
Loss	0.183***	0.155***
	(3.22)	(4.85)
Size	0.590***	0.551***
	(35.13)	(43.23)
Cash Flow	-0.563***	-0.422***
	(-3.58)	(-4.64)
Year and Industry Fixed Effects	Yes	Yes
Adjusted R^2	0.78	0.76
Observations	1,500	3,005

Table 8

This table shows the effect of high- and low-deterrent clawback provisions on various compensation features. Panel A displays OLS-estimates using the propensity-matched sample of 750 high- and 750 low-deterrent clawback provisions. Panel B presents OLS-estimates for the full sample of 3,578 clawback provisions with available data on independent variables. Standard errors are robust to clustering at the firm-level. ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

Panel A: Propensity-Matched Sample

	Total Compensation	**Salary**	**Bonus**	**Grants**
High-Deterrent Clawback	-0.010	-0.031	0.087	0.194
	(-0.22)	(-1.32)	(0.48)	(0.61)
High-Deterrent Clawback x After	0.002	-0.001	-0.082	0.150
	(0.03)	(-0.02)	(-0.38)	(0.39)
After	0.034	-0.009	0.053	0.025
	(0.81)	(-0.43)	(0.30)	(0.08)
Board Meetings	0.003	0.001	-0.016	-0.054
	(0.71)	(0.19)	(-0.89)	(-1.65)
Independent Directors	0.011	-0.007	0.417	-0.639
	(0.10)	(-0.06)	(1.02)	(-0.70)
CEO Chair	0.130***	0.029	0.123	0.294
	(3.59)	(0.92)	(0.91)	(1.05)
CEO Tenure	0.039	0.073***	-0.011	-0.023
	(1.83)*	(5.88)	(-0.16)	(-0.16)
Sales Growth	0.145	-0.193**	0.946***	-0.132
	(1.50)	(-2.37)	(2.67)	(-0.22)
Research and Development	0.410	-0.193	1.110	2.585
	(1.22)	(-0.98)	(1.55)	(0.86)
Prior Restatement	-0.001	0.038	0.161	-0.114
	(-0.01)	(1.22)	(1.08)	(-0.34)
Loss	-0.067	-0.084	-1.014***	-0.532
	(-1.32)	(-1.31)	(-3.97)	(-1.46)
Size	0.406***	0.166***	0.503***	0.584***
	(32.30)	(9.81)	(12.15)	(5.58)
Cash Flow	-0.515***	-0.227***	-0.908*	0.726
	(-3.54)	(-3.23)	(-1.89)	(0.64)
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.682	0.309	0.227	0.178
Observations	1,500	1,500	1,500	1,500

Panel B: Full Sample

	Total Compensation	Salary	Bonus	Grants
High-Deterrent Clawback	0.064	-0.010	0.143	0.552**
	(1.11)	(-0.28)	(0.86)	(2.16)
High-Deterrent Clawback x After	-0.099*	-0.021	-0.173	-0.129
	(-1.87)	(-0.47)	(-0.90)	(-0.44)
After	0.107**	0.043	0.219	0.159
	(2.01)	(1.29)	(1.38)	(0.65)
Board Meetings	-0.003	-0.002	-0.035**	-0.034
	(-0.50)	(-0.26)	(-2.30)	(-1.37)
Independent Directors	-0.095	-0.022	0.064	-0.629
	(-0.88)	(-0.25)	(0.18)	(-0.89)
CEO Chair	0.144***	0.046	0.142	0.359
	(3.53)	(1.55)	(1.22)	(1.51)
CEO Tenure	0.005	0.061***	-0.060	-0.063
	(0.21)	(4.96)	(-0.98)	(-0.54)
Sales Growth	0.354	-0.254***	1.377***	-0.369
	(0.30)	(-3.08)	(4.68)	(-0.80)
Research and Development	0.510	-0.251	-0.518	2.658
	(1.55)	(-1.48)	(-0.66)	(1.45)
Prior Restatement	-0.032	-0.016	0.019	0.117
	(-0.72)	(-0.48)	(0.14)	(0.42)
Loss	-0.186***	-0.060*	-1.644***	-0.780***
	(-3.97)	(-1.70)	(-9.00)	(-2.94)
Size	0.385***	0.166***	0.472***	0.497***
	(21.22)	(12.22)	(11.89)	(5.46)
Cash Flow	-0.377**	-0.074	-0.973**	-0.089
	(-2.12)	(-0.53)	(-2.40)	(-0.11)
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes
Adjusted R^2	0.513	0.272	0.253	0.153
Observations	2,531	2,531	2,531	2,531

Table 9

This table shows the effect of high- and low-deterrent clawback provisions on the likelihood of misstatements. In Panel A the dependent variable takes the value of unity for each year in which a firm starts to misstate its financial statements, and zero otherwise. In Panel B the dependent variable takes the value of unity for each year in which a firm stops to misstate its financial statements, and zero otherwise. In each Panel, the first two columns display Logit-estimates and marginal probabilities using the propensity-matched sample of 750 high- and 750 low-deterrent clawback provisions. The last two columns present Logit-estimates and marginal probabilities for the full sample of 3,578 clawback provisions with available data on independent variables. Standard errors are robust to clustering at the year-level. ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

Panel A: Beginning of Misstatements

	Propensity-Matched Sample		**Full Sample**	
	Misstatement Begin	**Marginal Prob.**	**Misstatement Begin**	**Marginal Prob.**
High-Deterrent Clawback	0.486	0.012	-0.065	-0.001
	(0.99)		(-0.14)	
High-Deterrent Clawback x After	-2.255***	-0.054	-1.440***	-0.032
	(-5.70)		(-3.00)	
After	1.291**	0. 031	0.975**	0.022
	(2.40)		(2.54)	
Board Meetings	-0.121	-0. 003	-0.086	-0.002
	(-1.46)		(-1.26)	
Management Ownership	-0.746	-0. 018	-0.111	-0.003
	(-0.41)		(-0.11)	
Independent Directors	0.137	0. 003	-0.743	-0.018
	(0.06)		(-0.57)	
Audit Committee Size	-0.008	0. 001	-0.005	0.001
	(-0.06)		(-0.07)	
Prior Restatement	0.238	0. 006	0.230	0.005
	(0.84)		(0.90)	
Return on Assets	-6.943***	-0. 168	-3.756**	-0.085
	(-5.26)		(-1.99)	
Discretionary Accruals	-0.402	-0. 010	-2.260	-0.051
	(-0.12)		(-0.91)	
Loss	-0.012	-0. 001	-0.026	-0.001
	(-0.03)		(-0.05)	
Size	-0.095	-0. 002	-0.019	-0.001
	(-0.70)		(-0.12)	
Change in Receivables	8.643	0. 209	11.510	0.260
	(1.23)		(1.53)	
% Soft Assets	-1.120	-0. 027	1.008**	0.023
	(-1.15)		(2.07)	
Cash Flow	1.358	0. 033	0.175	0.004
	(0.56)		(0.32)	

Leverage	2.248**	0.054	0.921	0.021
	(2.54)		(1.60)	
Year and Industry Fixed Effects	Yes		Yes	
Pseudo R^2	0.18		0.14	
Observations	1,500		2,841	

Panel B: Ending of Misstatements

	Propensity-Matched Sample		**Full Sample**	
	Misstatement End	**Marginal Prob.**	**Misstatement End**	**Marginal Prob.**
High-Deterrent Clawback	0.558	0.016	0.078	0.002
	(0.68)		(0.15)	
High-Deterrent Clawback x After	-2.260**	-0.067	-0.934*	-0.029
	(-2.42)		(-1.78)	
After	1.150**	0.034	0.818*	0.025
	(2.00)		(1.87)	
Board Meetings	-0.006	-0.001	-0.025	-0.001
	(-0.09)		(-0.63)	
Management Ownership	0.129	0.004	0.473	0.015
	(0.10)		(0.69)	
Independent Directors	0.732	0.021	-0.446	-0.014
	(0.78)		(-0.73)	
Audit Committee Size	0.059	0.002	0.029	0.001
	(0.70)		(0.57)	
Prior Restatement	0.220	0.007	0.184	0.006
	(0.78)		(0.88)	
Return on Assets	-8.288***	-0.243	-2.322**	-0.072
	(-5.35)		(-2.12)	
Discretionary Accruals	-3.185**	-0.093	-2.363*	-0.074
	(-2.56)		(-1.93)	
Loss	-0.176	-0.005	-0.128	-0.004
	(-0.28)		(-0.30)	
Size	-0.155	-0.005	-0.020	-0.001
	(-0.92)		(-0.19)	
Change in Receivables	5.569	0.163	3.992**	0.124
	(1.29)		(2.26)	
% Soft Assets	-0.813	-0.024	0.892	0.028
	(-0.79)		(1.08)	
Cash Flow	1.485	0.044	0.667**	0.021
	(0.68)		(2.18)	
Leverage	-0.319	-0.009	0.979*	0.030
	(-0.27)		(1.80)	
Year and Industry Fixed Effects	Yes		Yes	
Pseudo R^2	0.16		0.07	
Observations	1,500		2,956	

Table 10

This table presents results of placing a placebo shock at the pre-adoption period dated *t*-2 (*t* being the original year of clawback adoption) and restricting the sample to five years spanning *t-4* to *t*). Panel A shows the effect of high and low deterrent clawback provisions on the likelihood of restatements and misstatements, and on audit fees and total compensation using the propensity-matched sample of 750 high- and 750 low-deterrent clawback provisions with available data on independent variables. Panel B shows the effect of high and low deterrent clawback provisions on the likelihood of restatements and misstatements, and on audit fees and total compensation for the full sample of 3,578 clawback provisions with available data on independent variables. All models include control variables and year and industry fixed effects. Standard errors are robust to clustering at the year-level (Restatement and Misstatement) or firm-level (Audit Fees and Total Compensation). ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

Panel A: Propensity-Matched Sample

	Restatement	**Misstatement**	**Audit Fees**	**Total Compensation**
High-Deterrent Clawback	0.151	0.909***	-0.037	-0.051
	(0.18)	(2.60)	(-0.62)	(-0.84)
High-Deterrent Clawback x After	0.901	0.162	-0.060	0.083
	(0.84)	(0.39)	(-1.15)	(1.34)
After	-0.503	-0.470	0.031	-0.062
	(-0.89)	(-1.21)	(0.73)	(-1.44)
Control Variables	Yes	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.38	0.21	0.704	0.576
Observations	977	1,008	1,093	1,148

Panel B: Full Sample

	Restatement	**Misstatement**	**Audit Fees**	**Total Compensation**
High-Deterrent Clawback	0.128	-0.114	-0.035	0.062
	(0.39)	(-0.55)	(-0.82)	(0.79)
High-Deterrent Clawback x After	0.097	0.415*	0.01	-0.041
	(0.23)	(1.94)	(0.40)	(-0.65)
After	-0.446	-0.789***	0.019	0.052
	(-1.06)	(-3.90)	(0.65)	(0.99)
Control Variables	Yes	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.373	0.215	0.72	0.368
Observations	2,313	2,359	2,405	2,005

Table 11

This table presents results of Logit and OLS regressions on the impact of i) adopting a clawback versus not adopting a clawback, ii) adopting a high-deterrent clawback versus not adopting a clawback, and iii) adopting a low-deterrent clawback versus not adopting a clawback on the likelihood of restatements and misstatements, and on audit fees and total compensation. The indicator variable in each model takes on the value of unity if i) a firm adopted a clawback, ii) a firm adopted a high-deterrent clawback, and iii) a firm adopted a low-deterrent clawback, and zero if the firm did not adopt a clawback at all. The upper part of each panel presents results based on propensity-score matched samples of i) adopters and non-adopters, ii) high-deterrent adopters and non-adopters, and iii) low-deterrent adopters and non-adopters. The middle part of each panel presents results based on samples of i) all adopting and non-adopting firms, ii) all high-deterrent adopting and non-adopting firms, and iii) all low-deterrent adopting and non-adopting firms. The lower part of each panel presents results of a Difference-in-Differences analysis in conjunction with a propensity-matched control sample of i) adopters and non-adopters, ii) high-deterrent and non-adopters, and iii) low-deterrent and non-adopters. Non-adopters were assigned random adoption years. Panel A focuses on the likelihood a restatement, Panel B on the likelihood of a misstatement, Panel C on audit fees, and Panel D on total compensation. All models include control variables and year and industry fixed effects. Standard errors are robust to clustering at the year-level (Panels A and B) or firm-level (Panels C and D). ***, **, * denote significance at the 1%, 5%, and 10% level. Variables are as described as in the Appendix.

Panel A: Restatement

	Indicator Variables		
	Clawback vs. No Clawback	**High-Deterrent vs. No Clawback**	**Low-Deterrent vs. No Clawback**
	Propensity-Matched Sample		
Indicator Variable	-0.140	-0.200***	0.005
	(-1.26)	(-2.73)	(0.02)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.057	0.091	0.062
Observations	4,712	2,698	2,378
	Full Sample		
Indicator Variable	-0.177**	-0.193***	-0.143
	(-2.24)	(-3.43)	(-0.84)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.038	0.040	0.040
Observations	12,890	11,497	11,375
	Difference-in Differences Analysis with Propensity-Matched Control Sample		
Indicator Variable * After	-0.124	-1.095**	0.388
	(-0.41)	(-2.01)	(1.25)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.050	0.103	0.047
Observations	4,033	1,806	2,478

Panel B: Misstatement

	Indicator Variables		
	Clawback vs. No Clawback	**High-Deterrent vs. No Clawback**	**Low-Deterrent vs. No Clawback**
	Propensity-Matched Sample		
Indicator Variable	-0.409***	-0.894***	0.019
	(-5.89)	(-3.95)	(0.17)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.071	0.115	0.074
Observations	4,743	2,728	2,396
	Full Sample		
Indicator Variable	-0.376***	-0.707***	-0.094
	(-4.67)	(3.64)	(-1.51)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.0409	0.405	0.040
Observations	12,890	11,497	11,375
	Difference-in Differences Analysis with Propensity-Matched Control Sample		
Indicator Variable * After	0.506**	-0.832**	0.655***
	(2.52)	(-2.51)	(2.97)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.076	0.134	0.081
Observations	4,033	1,806	2,496

Panel C: Audit Fees

	Indicator Variables		
	Clawback vs. No Clawback	**High-Deterrent vs. No Clawback**	**Low-Deterrent vs. No Clawback**
	Propensity-Matched Sample		
Indicator variable	0.098***	0.104***	0.075**
	(4.24)	(3.78)	(2.33)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.732	0.741	0.732
Observations	4,822	2,784	2,494
	Full Sample		
Indicator variable	0.108***	0.134***	0.089***
	(5.33)	(5.63)	(3.19)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.545	0.711	0.695
Observations	12,938	11,573	11,413
	Difference-in Differences Analysis with Propensity-Matched Control Sample		
Indicator Variable * After	0.018	0.118**	0.015
	(0.46)	(2.31)	(0.31)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.732	0.738	0.738
Observations	4,087	1,806	2,599

Panel D: Total Compensation

	Indicator Variables		
	Clawback vs. No Clawback	**High-Deterrent vs. No Clawback**	**Low-Deterrent vs. No Clawback**
	Propensity-Matched Sample		
Indicator variable	0.103**	0.097*	0.126**
	(2.38)	(1.81)	(2.09)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.402	0.328	0.369
Observations	3,838	2,250	1,969
	Full Sample		
Indicator variable	0.078	0.064	0.071*
	(2.33)	(1.59)	(1.82)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.425	0.403	0.340
Observations	8,760	7,546	7.443
	Difference-in Differences Analysis with Propensity-Matched Control Sample		
Indicator Variable * After	0.038	-0.041	-0.150
	(0.56)	(-0.82)	(-1.20)
Control Variables	Yes	Yes	Yes
Year and Industry Fixed Effects	Yes	Yes	Yes
Pseudo/ adjusted R^2	0.434	0.624	0.374
Observations	3,460	1,806	1,969