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DOI
10.2308/accr-51892

Publication date
2018

Document Version
Final published version

Published in
The Accounting Review

THE ACCOUNTING REVIEW
Vol. 93, No. 3
May 2018
pp. 213–235

American Accounting Association
DOI: 10.2308/accr-51892

Voluntary Clawback Adoption and the Use of Financial Measures in CFO Bonus Plans

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ABSTRACT: Firms trade off CFOs' fiduciary duties against their decision-making duties when designing CFO bonus plans. Decreasing bonus incentives tied to financial measures benefits CFOs' fiduciary responsibilities at the expense of motivating their decision-making duties. As prior research indicates that clawbacks increase personal misreporting costs through the loss of previously awarded compensation, we examine whether clawbacks allow firms to increase incentives in CFO bonus contracts. Based on a sample of U.S. firms between 2007 and 2013, we find that clawbacks are associated with greater CFO bonus incentives. We also find the increase in incentives to be more pronounced for CFOs relative to other executives. Our results are moderated by firms' susceptibility to misreporting. The relation between clawbacks and incentives is weaker when firms experienced internal control deficiencies, have larger abnormal accruals, when CFOs are more vulnerable to pressure from CEOs, and when audit committees have less financial expertise and prestige.

Keywords: executive bonus plans; chief financial officer; clawback provisions.

I. INTRODUCTION

We study how the adoption of clawback policies affects the design of Chief Financial Officer (CFO) bonus plans. We focus on CFOs given that they are the top executives who are primarily responsible for the preparation and filing of the company's financial reports (Mian 2001). CFOs monitor the process of preparing financial reports and are viewed as watchdogs of financial reporting integrity. They must safeguard the quality of internal controls to reasonably assure that financial statements are reliable and free of material mistakes. This implies that, relative to other executives, CFOs are in a unique position to engage in accounting manipulations (Feng, Ge, Lou, and Shevlin 2011). Jiang, Petroni, and Wang (2010) examine both CEO and CFO incentives and find that especially CFO incentives are associated with accrual-based earnings management. CFOs can also be pressured by CEOs to manipulate accounting reports (Friedman 2014). To strengthen the role of the CFO as gatekeeper of financial reporting integrity, firms can deemphasize accounting measures in CFO bonus plans.[1] In this way, financial reporting is reinforced, given CFOs' influence over reported numbers (Indjejikian and Matějka 2009).

We appreciate the helpful comments and suggestions of Gregory S. Miller (editor), two anonymous referees, Maggie Abernethy, James Cannon, Isabella Grabner, Frank Hodge, Chris Ittner, Michal Matějka, Frank Moers, conference participants of the 2014 AAA MAS Midyear Meeting, the 2014 Accounting Conference at Temple University, the 2014 EIASM Conference on New Directions in Management Accounting, and workshop participants at Maastricht University, Tilburg University, and University of Groningen. All errors are our own.

Editor's note: Accepted by Gregory S. Miller, under the Senior Editorship of Mark L. DeFond.

Submitted: February 2015
Accepted: August 2017
Published Online: September 2017

[1] We use "financial measures" and "accounting measures" interchangeably. Accounting measures are the most often used financial measures in CFO bonus plans (R. Hoitash, U. Hoitash, and Johnstone 2012).

However, providing less financial bonus incentives to support their fiduciary role comes at the expense of incentivizing CFOs' decision-making duties. In general, firms trade off CFOs' fiduciary responsibilities against their decision-making duties.

Clawbacks can allow firms to more fully incentivize CFOs' decision-making duties without directly compromising their fiduciary responsibilities. Clawback provisions allow firms to *ex post* recoup compensation from executives after the occurrence of a specific trigger event (e.g., an accounting restatement due to a material noncompliance with a financial reporting requirement). Clawbacks were initiated by the Sarbanes-Oxley Act (SOX) in 2002, when the Securities and Exchange Commission (SEC) was authorized to recover incentive pay awarded to CEOs and CFOs in the case of restatements. The Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) of 2010 requires that listed firms adopt a policy to recapture excess incentive compensation paid on the basis of erroneous financial statements. It differs from SOX in that the firm's board of directors, rather than the SEC, enforces these clawbacks. Many firms have already adopted clawback provisions on a voluntary basis. If executives understand that after clawback adoption, publishing misstated accounting information will be penalized *ex post* through the loss of compensation, then they have fewer incentives to engage in accounting manipulation *ex ante* (Chan, K. Chen, T. Chen, and Yu 2012).

The purpose of this study is to examine whether clawback adoption is associated with greater bonus incentives tied to accounting measures for CFOs. We expect that clawbacks increase CFOs' personal misreporting costs because of the recovery of previously awarded compensation. Given that the propensity to misreport is a function of the financial incentives that CFOs face, as well as of the personal misreporting costs that they incur (Friedman 2014; Indjejikian and Matějka 2009), an increase in CFOs' misreporting costs may allow firms to more fully incentivize CFOs' decision-making duties without increasing their propensity to misreport. We test the joint hypothesis that clawbacks lead to an increase in misreporting costs for CFOs, and that this allows firms to increase incentives on financial measures in CFO bonus contracts. The maintained assumption here is that clawbacks lead to an increase in personal misreporting costs. Prior studies document significant effects associated with the adoption of clawbacks, such as fewer restatements, higher earnings response coefficients, and a decrease in accrual-based earnings management, indicative of increased misreporting costs after the adoption of clawbacks (Chan et al. 2012; Chan, K. Chen, T. Chen, and Yu 2015; deHaan, Hodge, and Shevlin 2013; Iskandar-Datta and Jia 2013). For example, deHaan et al. (2013, 1030) state that a "clawback provision increases the cost of being caught by increasing the likelihood that the firm's shareholders and board of directors will be able to recapture erroneously awarded performance-based compensation."[2]

Our study is focused on CFO bonus plans and, in particular, on how bonuses are tied to financial performance, as this reflects how firms trade off the provision of incentives to motivate productive effort against the potential for misreporting. This trade-off may affect CFO incentives differently to the incentives of other executives, as CFOs are the executive officers with unique responsibilities for financial reporting (Friedman 2014; Indjejikian and Matějka 2009; Mian 2001). For example, firms that adopt clawbacks and intend to emphasize their financial reporting integrity[3] may not want to counteract that effect by increasing CFOs' bonus incentives. On the other hand, the monetary penalty associated with clawbacks may have a larger incremental effect on CFOs, as they also face a greater threat of dismissal and weaker future labor market prospects in the case of accounting irregularities. Last, given that CFO effort is recognized as a main determinant of the quality of financial reports, prior to clawback adoption, firms have been under-incentivizing CFOs' decision-making duties to emphasize the role CFOs have as watchdogs for financial reporting integrity (Indjejikian and Matějka 2009). The implementation of clawbacks could enable firms to incentivize CFOs' decision-making duties more appropriately by increasing their bonus incentives.

We collected a sample of 8,098 firm-year observations from 1,560 Russell 3000 firms, of which 38 percent have a clawback policy in place. Given that firms self-selected into clawback adoption, we use difference-in-differences (DID) models combined with propensity score matching (PSM) in our analyses. DID models distinguish the effect of being a clawback adopter from the effect of the actual adoption. The PSM methodology addresses nonlinearities in the control variables and composes a control group similar to treatment firms (clawback adopters), except for the fact that the control firms do not adopt clawbacks.

Consistent with the idea that clawbacks are perceived by compensation committees as an effective deterrent against accounting manipulation by CFOs, we find an increased sensitivity of CFO bonuses to return on assets (*ROA*) following the implementation of clawbacks. We supplement this analysis that estimates the pay-for-performance sensitivity with an "explicit approach" using hand-collected data from proxy statements. We find that clawback adoption is associated with an increased weight on financial measures in CFO bonus plans. Subsequently, we proceed with our pay-for-performance analyses and

[2] Even in the presence of SOX, we do not expect that the effect of clawbacks on the propensity to misreport is negligible. First, prior studies document effects of clawback adoption that indicate an increase in misreporting costs. Second, accounting restatements persist after SOX (Burks 2011). Third, clawbacks have additional disciplining effects, given that they are easily enforceable relative to more costly actions, such as class action lawsuits.

[3] We perceive financial reporting integrity to be the *ex post* outcome of the *ex ante* propensity to misreport, where the propensity to misreport is a function of financial incentives and personal misreporting costs. We focus on the *ex ante* trade-off between incentives and the propensity to misreport after an increase in misreporting costs due to clawback adoption.

compare the sensitivity of bonuses to *ROA* following clawback adoption for CFOs relative to other named executive officers (NEOs). We find the increase in bonus incentives contingent on financial measures to be more pronounced for CFOs. This suggests that clawbacks have a marked effect on CFOs' misreporting costs and that clawbacks enable firms to more properly incentivize CFOs' decision-making duties, because concerns over financial reporting integrity could have prompted them to mute bonus incentives prior to clawback adoption. We compare fraud-based and performance-based clawbacks, considering that the latter type of clawbacks does not require misconduct. We find some evidence that suggests that the adoption of performance-based clawbacks has a larger positive effect on CFO bonus incentives. We also find that clawback adoption is associated with greater equity incentives for CFOs. Finally, we exploit cross-sectional variation by using different proxies for a firm's susceptibility to misreporting. In general, we find evidence that the sensitivity of CFO bonuses to *ROA* varies systematically with the extent to which the firm's accounting system is susceptible to misreporting. Specifically, the increase in CFO bonuses tied to accounting measures after adoption of clawbacks is less pronounced in subsamples with internal control material weakness disclosures, higher abnormal accruals, higher CEO power, and lower audit committee power.

We contribute to prior research in the following ways. First, we contribute to recent literature on CFOs and CFO compensation design. We find that CFO bonus contracts change after the implementation of clawback provisions, and that this change is more pronounced for CFOs relative to other executives. This suggests that clawbacks have a marked effect on CFOs' misreporting costs, which allows firms to more fully incentivize their decision-making duties. Second, we contribute to the literature on the effect of regulatory reforms on executive compensation. While prior studies primarily focused on how reforms affected the level and structure of executive compensation (e.g., Chhaochharia and Grinstein 2009), this study investigates an important accounting question as to how the implementation of clawback provisions affect the use of accounting measures in incentive contracts. We focus on annual bonus plans since these contracts often use earnings to measure managers' effort, and bonus payouts may proxy for the boards' evaluation of CFOs' performance (Hayes and Schaefer 2000). Note that while bonus contracts are typically smaller than equity incentives, our findings suggest that bonus plans are not inconsequential. We show that the use of accounting measures in bonus contracts is influenced by the implementation of clawbacks, and that it varies systematically with the risk of misreporting.

Third, while prior studies on regulatory reforms have focused on SOX, we examine one single provision from the DFA (i.e., the implementation of clawback provisions) that increases the personal misreporting cost, but does not necessarily change the misreporting costs of the firm. This allows for a more straightforward prediction of the relation between clawbacks and the use of accounting information in CFO bonus contracts relative to more complex reforms, such as SOX, that influence the personal misreporting costs of executives, but could also affect firms' misreporting costs.[4] In addition, our study contributes to prior clawback studies by showing how firms can benefit from clawbacks, as it enables them to more strongly motivate productive effort while, at the same time, safeguarding their financial reporting integrity. Fourth, we report evidence that firms systematically vary the sensitivity of CFO bonuses to accounting measures with the risk of misreporting. While it is argued that using reported performance to motivate productive effort leads to overstatements, our findings show that firms balance the provision of incentives against their concerns about the misreporting of accounting performance measures in the design of their incentive contracts.

The remainder of this paper is organized as follows. We review the literature and develop our hypothesis in Section II. In Section III, we describe the sample, empirical models, and variable measurement. We discuss our empirical findings in Section IV, and provide our conclusions and limitations in Section V.

II. LITERATURE REVIEW

CFOs and Accounting Manipulation

CFOs perform dual roles within corporations. On the one hand, as members of the executive management team, they have significant decision-making responsibilities. They make decisions on, e.g., financial planning and budgeting, cost reduction initiatives, debt versus equity financing, mergers and acquisitions, dividend and share repurchase policies, and treasury (Brav, Graham, Harvey, and Michaely 2005; Gore, Matsunaga, and Yeung 2011). On the other hand, CFOs play a key role in financial reporting. They have the ultimate responsibility over the preparation of financial statements (Mian 2001). Geiger and North (2006) document how appointments of new CFOs are associated with significant changes in abnormal accruals, indicative of CFOs' influence on corporate reporting choices. Ge, Matsumoto, and Zhang (2011) report significant CFO effects for a range of accounting choices (e.g., the choice for off-balance sheet activities). Bamber, Jiang, and Wang (2010) document how individual CFOs exhibit distinctive disclosure styles (e.g., the frequency of management forecasts). Recent studies also provide evidence

[4] For example, firms face negative stock price reactions and increased audit fees after internal control deficiency disclosures in the post-SOX era (Hammersley, Myers, and Shakespeare 2008; Hogan and Wilkins 2008).

that suggests that, relative to other executives, CFOs are in a unique position to engage in accounting manipulations. Graham, Harvey, and Rajgopal (2005) present survey evidence where the majority of CFOs acknowledge that personal incentives shape their financial reporting decisions. Jiang et al. (2010) examine both CEO and CFO incentives and find that especially CFO incentives are associated with accrual-based earnings management. Chava and Purnanandam (2010) find that CFOs' risk-taking incentives are more strongly associated with earnings smoothing through accruals, relative to CEO incentives. Kim, Li, and Zhang (2011) show how primarily CFO incentives, and much less so CEO incentives, are positively associated with firms' future stock price crash risk. While this suggests that CFOs manipulate the accounting system to attain personal financial gain, they could also be manipulating the financial reporting system because of the pressure their CEOs put on them (Friedman 2014). Dichev, Graham, Harvey, and Rajgopal (2013) report that 91 percent of the surveyed CFOs acknowledge that pressure from within the firm is one reason why they misrepresent economic performance by manipulating the accounting system. SEC Accounting and Auditing Enforcement Reports (AAERs) provide anecdotal examples of how CEOs put pressure on CFOs to manipulate accounts.[5]

Firms may want to emphasize the CFOs' role as the gatekeeper for the integrity of financial reports. Indjejikian and Matějka (2009) show how the design of CFO bonus plans, and, in particular, how bonuses are tied to financial performance, reflects the concerns about financial reporting integrity. Incentives tied to accounting measures motivate CFOs to perform their decision-making tasks, but also incentivize them on performance measures they themselves generate. However, lower bonus incentives benefit CFOs' fiduciary responsibilities, although this comes at the expense of properly incentivizing their decision-making duties.

Clawbacks

Recently, an increasing number of firms have attempted to reinforce their financial reporting integrity through voluntary adoption of clawback provisions. Clawbacks were initiated by Section 304 of SOX, where the Securities and Exchange Commission (SEC) was authorized to recover the bonuses paid to CEOs and CFOs of public companies in the case of restatements that arise due to material noncompliance with a financial reporting requirement as a result of willful misconduct. However, because of ambiguities in SOX 304 and the SEC's limited resources, SOX 304 has only been successfully enforced in a limited number of cases (Chan et al. 2012; Iskandar-Datta and Jia 2013).[6] The Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) of 2010 also has a section on clawback policies (Section 954 on "Erroneously Awarded Compensation"), which determines that the firm's board of directors, instead of the SEC, has to enforce a clawback. This regulation does not require misconduct, and clawback provisions typically also cover other executives within the firm than the CEO or CFO (Iskandar-Datta and Jia 2013). In all cases, CFOs are targeted by clawback provisions, as the SEC argues that clawbacks should expressly include the principal financial officer, given their responsibility for the financial information (SEC 2015). Many firms voluntarily adopted clawback provisions to be enforced by the board of directors.[7] By 2012, almost 72 percent of the Standard & Poor's (S&P) 500 firms had publicly disclosed their clawback policies. Clawback provisions are typically embedded in employment or compensation contracts. The most commonly listed events that would trigger clawbacks are restatements (86 percent), violation of fiduciary duties (58 percent), fraudulent activities (36 percent), and misrepresentation (19 percent). Because firm-initiated clawbacks aim to reduce concerns regarding accounting manipulation for personal financial gain, clawback provisions emphasize incentive pay and firms, in most cases, will recover up to the full amount awarded. According to Babenko, Bennett, Bizjak, and Coles (2015), the primary enforcer of a clawback provision is the compensation committee (in 60 percent of their sample), followed by the board of directors (34 percent). In slightly more than half of the cases, there is discretion in determining whether a trigger event occurred, and what amount has to be repaid.

Hypothesis

Clawbacks are expected to increase CFOs' misreporting costs. Clawbacks allow for recoupment of ill-gotten gains, whereas without a clawback policy in place, executives of firms can retain ill-gotten gains even after dismissal. Through

[5] With regard to HealthSouth Corporation (HRC), the SEC stated that when HRC's earnings fell short of Wall Street analysts' estimates, the CEO directed HRC's accounting personnel to "fix it" by artificially inflating the company's earnings to match Wall Street expectations. Regarding MCSi Inc., the SEC stated that the CFO, at the instigation of the CEO, resorted to simply making up revenue by means of fictitious journal entries (SEC 2006).

[6] First, it was determined in court that the SEC was the sole enforcer of Section 304. However, the SEC's limited resources constrained the number of cases to be enforced. Second, there were ambiguities regarding the meaning of the term "misconduct." Third, there was ambiguity on whether the CFO had to be personally involved in the misconduct. That is, it was unclear whether misconduct by another corporate employee sufficed as a trigger event for the recoupment of CEO and CFO incentive compensation (Chan et al. 2012; Iskandar-Datta and Jia 2013).

[7] Regulation S-K requires that publicly traded firms disclose in their annual proxy statement "policies and decisions regarding the adjustment or recovery of awards or payments if the relevant registrant performance measures upon which they are based are restated or otherwise adjusted in a manner that would reduce the size of an award or payment" (*Federal Register* 2006).

clawback adoption, an increase in the CFOs' personal cost for misreporting will decrease their propensity to misreport for any level of incentives (Friedman 2014; Indjejikian and Matějka 2009). Given that the propensity to misreport is a function of the financial incentives that CFOs face, as well as of the personal misreporting costs that they incur, an increase in CFOs' misreporting costs could allow firms to more fully incentivize CFOs' decision-making duties without increasing their propensity to misreport. Consistent with the notion that greater misreporting costs after clawback adoption encourage CFOs to produce more accurate financial statements, prior research on firm-initiated clawbacks documents positive market responses to adoption announcements, a lower likelihood of restatements, a higher earnings response coefficient, a lower incidence of meeting or beating earnings benchmarks, lower accrual-based earnings management, and lower (unexplained) audit fees (Chan et al. 2012, 2015; deHaan et al. 2013; Iskandar-Datta and Jia 2013). deHaan et al. (2013) examined the relation between clawback adoption and pay-for-performance sensitivity for CEOs. They document an increased pay-for-performance sensitivity for CEOs, which indicates greater misreporting costs after clawback adoption.

The adoption of clawbacks and the subsequent increase in CFO misreporting costs enable firms to more fully incentivize CFOs' decision-making duties while carefully balancing the provision of incentives to motivate productive effort against the potential for misreporting. Despite the possibility that firms using reported performance to motivate productive effort may need to tolerate some overstatements (Crocker and Slemrod 2007), firms have been providing muted incentives to their CFOs because they recognize that CFO effort is a main determinant of the integrity of financial reports (Friedman 2014; Indjejikian and Matějka 2009). Firms that have adopted clawback provisions and want to safeguard their financial reporting integrity might not want to counteract this effect by increasing the CFOs' bonus incentives. This is especially important for CFOs if one considers their focal role in financial reporting. On the other hand, clawbacks could have a marked effect on CFOs' misreporting costs and their propensity to misreport. Given the CFOs' special fiduciary role, the threat of dismissal after accounting irregularities is perceived to be greater for CFOs than for other executives. For example, Burks (2010) finds that after restatements, CFOs are more frequently dismissed than CEOs. The CFOs' expected future income (alternative labor market prospects) after dismissal is likely to be particularly weak, because many firms prefer to appoint CFOs with strong accounting credentials (Bernard, Ge, Matsumoto, and Toynbee 2017; Li, Sun, and Ettredge 2010). Hence, the monetary penalties associated with implementation of clawback provisions could have a more substantial effect on the wealth of CFOs compared to other executives who are less likely to be dismissed and have the ability to generate future income. In addition, increased misreporting costs to CEOs after clawback adoption could reduce the likelihood that CEOs will pressure CFOs to misreport. This may enable firms to deemphasize the role of CFOs as watchdogs for financial reporting integrity. Last, given that financial reporting integrity may be especially vulnerable to CFOs' propensity to misreport, firms apparently under-incentivized CFOs' decision-making duties prior to clawback adoption (Indjejikian and Matějka 2009). Firms can more fully incentivize CFOs' decision-making duties without immediately compromising financial reporting integrity because clawbacks lead to a significant increase in CFO misreporting costs. Given the earlier findings on the positive relation between firm-initiated clawbacks and financial reporting integrity, we expect that firms will perceive clawbacks as effective deterrents to accounting manipulation by CFOs. Therefore, clawbacks could enable firms to provide stronger CFO bonus incentives tied to financial measures. In sum, subsequent to clawback adoption, firms can increase the CFO bonus incentives contingent on accounting measures, as the likelihood of misreporting decreases when misreporting costs increase. We formulate our hypothesis as follows:

H1: The adoption of firm-initiated clawbacks is associated with greater CFO bonus incentives tied to accounting measures.

III. SAMPLE, MODELS, AND DATA

Sample Selection

We start with an initial sample from 2007 to 2013 of 21,509 observations from the Corporate Library clawback database. The Corporate Library database provides information on the clawback adoption of Russell 3000 firms on the basis of SEC filings. We excluded financial firms, as many of these firms in the U.S. received federal bailout funds during the financial crisis and are subject to mandatory clawback provision. In addition, such firms could face additional provisions and limitations (e.g., limits on compensation) that may influence our findings (Chan et al. 2012; deHaan et al. 2013; Iskandar-Datta and Jia 2013).

We collected data on firm fundamentals, executive compensation, and corporate governance from Compustat, Execucomp, and ISS; data on accounting restatements and internal control weaknesses from Audit Analytics; and data on class action lawsuits from the Securities Class Action Clearinghouse Database. Missing data led to the exclusion of 13,411 observations. Our final sample is composed of 8,098 firm-year observations of 1,560 firms. For our main tests of annual bonus changes on annual changes in accounting performance, this yields 7,181 usable observations. We supplemented our analyses on the full sample of publicly available data with analyses on a subset of our sample for which we hand-collected data from firms' proxy statements on the weights assigned to performance measures in CFO bonus plans.

TABLE 1
Descriptive Statistics

Panel A: Frequency of Clawback Adoption Across Sample Period

Year	Firms without Clawback Policy in Place		Firms with Clawback Policy in Place	
2007	808	(83%)	171	(17%)
2008	1,019	(80%)	255	(20%)
2009	867	(70%)	367	(30%)
2010	747	(62%)	458	(38%)
2011	642	(57%)	484	(43%)
2012	613	(49%)	640	(51%)
2013	365	(36%)	662	(64%)
Total	5,061	(62%)	3,037	(38%)

Panel B: Summary Statistics (Full Sample and by Clawback Adoption)

		Full Sample			*CLAW* = 0		*CLAW* = 1		Differences	
Variables	n	Mean	Med.	Std. Dev.	Mean	Med.	Mean	Med.	Mean	Med.
BONUS	8,098	422.7	264.1	652.5	304.6	185.1	494.3	326.2	***	***
Δ*BONUS*	7,181	13.14	3.85	504.9	15.2	2.27	12.8	5.10		
FINPM	1,784	78.3	80	22.8	78.8	85	78.2	80		
BONUS_FINPM	1,784	0.18	0.16	0.13	0.19	0.15	0.18	0.16	*	**
ROA	8,098	0.05	0.05	0.10	0.046	0.05	0.052	0.05	***	
Δ*ROA*	7,181	0.00	0.00	0.09	−0.00	0.00	0.001	0.000		
SIZE	8,098	7.54	7.43	1.58	6.85	6.69	7.98	7.93	***	***
GROWTH	8,098	2.35	2.08	35.76	2.44	2.08	2.28	2.07		
MARKETPERF	8,098	0.09	0.00	0.59	0.10	0.00	0.08	−0.01	**	
BUS_SEG	8,098	0.54	0.54	0.15	0.57	0.68	0.51	0.54	***	***
LEVERAGE	8,098	0.20	0.19	0.19	0.17	0.12	0.22	0.20	***	***
LAG_CAL	8,098	0.02	0.00	0.13	0.017	0.00	0.020	0.00		***
LAG_REST	8,098	0.11	0.00	0.31	0.12	0.00	0.11	0.00	**	**
FIRM_AGE	8,098	3.17	3.81	0.68	2.99	2.94	3.27	3.26	***	***
SD_ROA	8,098	0.05	0.05	0.05	0.06	0.05	0.05	0.05	***	***
TENURE	8,098	3.48	3.00	1.91	3.42	3.00	3.52	3.00	***	**
BOARD_SIZE	8,098	6.82	8.00	4.27	5.51	7.00	7.51	9.00	***	***
PER_OUT_DIR	8,098	0.60	0.75	0.35	0.51	0.70	0.64	0.78	***	***
BUSY_DIR	8,098	0.64	0.60	0.56	0.48	0.38	0.73	0.75	***	***
CEO_CHAIR	8,098	0.42	0.00	0.49	0.36	0.00	0.44	0.00	***	***
HAVE_CG	8,098	0.75	1.00	0.43	0.68	1.00	0.78	1.00	***	***
Δ*EQUITY_HOLDINGS*	3,811	174.2	146.2	174.5	220.1	140.3	129.9	153.8		**
RET	3,811	0.15	0.08	0.64	0.16	0.08	0.14	0.08		
ICMWD	7,181	0.11	0.00	0.31	0.13	0.00	0.10	0.00	***	***
ABN_ACCR	5,684	0.05	0.03	0.04	0.05	0.03	0.04	0.03	***	**
REL_CEOPOWER	7,177	1.59	1.25	1.34	1.57	1.25	1.61	1.25		
REL_AUCOMPOWER	5,611	1.25	1.11	0.95	1.01	0.96	1.38	1.24	***	***

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (two-tailed).
Table 1, Panel B shows the summary statistics of the main sample. Difference tests are based on t-tests and Wilcoxon rank-sum (Mann-Whitney) tests. Variables are defined in Appendix A.

From our full sample, 3,037 firm-year observations (38 percent) had a clawback policy in place, while the remaining 5,061 observations (62 percent) had not adopted clawbacks. Panel A of Table 1 reports the adoption of clawback policies across the sample period. We find that the number of firms with clawback policies in place has nearly tripled during our sample period, from 17 percent in 2007 up to 64 percent in 2013. Voluntary adoption of a clawback policy was rare before 2006. However,

since the 2008 financial crisis, public scrutiny of corporate practices and the anticipation of the DFA could have led firms to voluntarily install recoupment practices (Chan et al. 2012).

Empirical Models

In this section, we describe the models used to empirically test our hypothesis, and we describe the main variables of interest. Two different models are used to examine the sensitivity of the CFO bonus to accounting performance for clawback adopters *vis-à-vis* non-adopters. The first model looks at the relationship between CFO bonuses and accounting performance using a changes specification (Cadman, Klasa, and Matsunaga 2010; deHaan et al. 2013; Hoitash et al. 2012). Changes specifications are considered to be less susceptible to confounding variables that are invariant over time.

In our second model, we take a general approach to address self-selection concerns and exploit the panel data structure by using a difference-in-differences (DID) methodology (Ashenfelter 1978; Ashenfelter and Card 1985) in combination with propensity score matching (PSM). Given that whether to adopt clawback provisions is a voluntary decision of firms, this may raise endogeneity concerns, because adopters may differ from non-adopters in more respects than their clawback adoption decision. We focus on omitted variables associated with self-selection into the treatment (clawback adoption) that might also be associated with bonus incentives tied to financial measures. The DID methodology distinguishes the effect of a clawback adoption from the effect of company characteristics typically associated with the adoption of clawbacks. The PSM methodology addresses potential nonlinearities in control variables and composes a control group similar to the treatment firms (clawback adopters) except for the fact that the control firms did not adopt clawbacks during our sample period.

The regression equation for our first model is formulated as follows:

$$\Delta BONUS_{i,t} = \alpha_0 + \alpha_1 \Delta ROA_{i,t} + \alpha_2 \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_3 ADOPT_{i,t} + \sum \alpha_k CONTROLS + \varepsilon_{i,t}, \quad (1)$$

where $\Delta BONUS_{i,t}$ is defined as the change in the sum of the discretionary and non-discretionary CFO bonus in year t relative to year $t-1$; $\Delta ROA_{i,t}$ denotes the change in the accounting performance, defined as net income in year t divided by beginning-of-year's assets, in year t relative to year $t-1$; and $ADOPT_{i,t}$ represents an indicator variable equal to 1 if the firm has a clawback policy in place in year t, and 0 otherwise. The coefficient α_1 describes the relationship between *ROA* and the CFO bonus for firm-year observations that have not adopted a clawback (composed of all firm-year observations of non-adopters and the pre-adoption firm-year observations of adopters); the sum of $(\alpha_1 + \alpha_2)$ denotes the relationship between *ROA* and the CFO bonus for firms that have adopted a clawback policy (post-adoption firm-year observations of adopters); and α_2 represents the difference in the relationship between *ROA* and CFO bonuses for firms that have adopted a clawback *vis-à-vis* firms that have not. On the basis of our hypothesis, we expect $\alpha_2 > 0$.

The regression equation for our second (PSM-DID) model is formulated as follows:

$$\begin{aligned}\Delta BONUS_{i,t} = {} & \beta_0 + \beta_1 \Delta ROA_{i,t} + \beta_2 \Delta ROA_{i,t} * CLAW_i * AFTER_{i,t} + \beta_3 CLAW_i * AFTER_{i,t} + \beta_4 CLAW_i + \beta_5 AFTER_{i,t} \\ & + \beta_6 \Delta ROA_{i,t} * CLAW_i + \beta_7 \Delta ROA_{i,t} * AFTER_{i,t} + \sum \beta_k CONTROLS + \varepsilon_{i,t}, \end{aligned} \quad (2)$$

where $CLAW_i$ is an indicator variable equal to 1 if the firm adopts a clawback at one point during the sample period, and 0 otherwise; and $AFTER_{i,t}$ is an indicator variable equal to 1 for firm-years in which clawback adopters and control firms have clawback provisions in place, and 0 otherwise (each control firm is assigned an artificial adoption year based on when it is matched to the treatment firm even though it has never implemented a clawback). The *CLAW* variable controls for permanent differences between treatment and control firms, while the *AFTER* variable controls for trends common to both the treatment and the control group (Roberts and Whited 2013). $\Delta ROA * CLAW * AFTER$ represents the DID estimator of the effect of clawback adoption on the pay-for-performance sensitivity.

The coefficient β_1 describes the relation between *ROA* and the CFO bonus for control firms prior to the treatment; the sum of coefficients $(\beta_1 + \beta_6)$ denotes the relation between *ROA* and the CFO bonus for adopters prior to the treatment; the sum of coefficients $(\beta_1 + \beta_7)$ describes the relation between *ROA* and the CFO bonus for control firms after the treatment; and the sum of coefficients $(\beta_1 + \beta_2 + \beta_6 + \beta_7)$ represents the relation between *ROA* and the CFO bonus for adopters after the treatment. The coefficient of interest is the change in the bonus incentives before versus after adoption for clawback adopters, relative to the change before versus after for control firms.[8] On the basis of our hypothesis, we expect $\beta_2 > 0$.

[8] The key assumption of DID models is that the average change in outcome would have been the same for the treatment and control group in the absence of treatment. This parallel trend assumption requires the trend in the outcome prior to treatment to be the same for treatment and control groups. Treatment and control groups should be balanced after matching because if groups differ significantly along observables, then they may also differ along unobservables (Roberts and Whited 2013). We assume that any unobserved factors affect clawback and non-clawback adopters in a similar way.

Note that the model described in Equation (2) will be primarily used to compare the effect of clawback adoption on adopters versus non-adopters. Especially of interest is the coefficient on $\Delta ROA * CLAW * AFTER$. The model described in Equation (1) will be used mainly to assess what the effect is of clawback adoption within adopting firms (e.g., CFOs versus other NEOs) or how the effect of adoption varies within the subsample of adopters (e.g., dependent on their susceptibility to misreporting). Of interest here is the coefficient on $\Delta ROA * ADOPT$.

Propensity Score Matching

PSM mimics the random assignment in an experimental setting through the *ex post* construction of a control group, that is, identifying a control group similar to the treatment group with the only key difference that the comparison group did not participate in the treatment (i.e., in this case, did not adopt a clawback policy) (Rosenbaum and Rubin 1983). We employ a full-dimensional matching to ensure that firms that adopt or do not adopt a clawback share the same pre-treatment characteristics.

First, for our full sample, we run a logistic regression model that predicts the propensity score on the basis of determinants of clawback adoption identified in the prior literature (Chan et al. 2012, 2015; deHaan et al. 2013). Specifically, we match on: (1) firm fundamentals, such as firm size (*SIZE*), leverage (*LEVERAGE*), performance volatility (*SD_ROA*), and market performance (*MARKETPERF*); (2) proxies for financial reporting quality, such as internal control material weakness disclosures (*ICMWD*), accounting restatements (*REST*), and class action lawsuits (*CAL*); (3) proxies for corporate governance quality, such as the size of the board (*BOARD_SIZE*) and audit committee (*AUCOM_SIZE*); and (4) proxies for CFO entrenchment, such as CFO total compensation (*CFO_TOTCOMP*) and the ratio of CFO compensation to other executives' compensation (*COMP_CFOvsEXEC*). Industry and year indicators are included. All variables are measured over the prior fiscal year.

We start our matching procedure with our main sample of 1,560 firm observations. This sample contains 56 firms that adopted and subsequently discarded clawback policies during our sample period. We removed them as it is ambiguous whether they classify as treatment or control firms. We deleted firm observations when firms already had clawback policies in place for the first firm-year observation in our sample, as we do not have sufficient information to determine their adoption year (deHaan et al. 2013). As we match on lagged variables, we removed firms for which we had missing information for the determinants of clawback adoption in the pre-adoption year, thus excluding 320 firms. This left 540 treatment and 644 control firms for the first-stage estimation. Untabulated results indicate that adopting firms are larger ($p < 0.01$), are higher leveraged ($p < 0.1$), and have larger boards ($p < 0.05$). In addition, the ratios of CFOs' to other executives' compensation ($p < 0.01$) and market performance ($p < 0.1$) are negatively related to the likelihood of being a clawback adopter.

In a second step, for each year, we matched first-year adopters to firms in the same year that had not adopted a clawback during the sample period on the basis of lagged variables. Consistent with prior studies (e.g., Chan et al. 2012, 2015; Iskandar-Datta and Jia 2013), we used nearest-neighbor matching without replacement, i.e., each treatment and control firm appears only once in the sample. To ensure high matching quality, we set a caliper of 0.2 times the standard deviation of the propensity score (Rosenbaum and Rubin 1985). t-tests on differences in means of the matching variables indicate that matching was successful in achieving covariate balance, as no significant differences exist between the treatment and control group for all observed covariates. Of the 540 adopting firms that could be used for matching, 195 dropped out due to insufficient matching quality, so that 345 unique adopters and 345 non-adopters remained. This resulted in 3,626 firm-year observations for hypothesis testing of the PSM-DID model.

Measurement of Control Variables

Firm size, growth opportunities, and stock market performance are typically perceived to influence executive compensation (Cadman et al. 2010; Carter, Lynch, and Zechman 2009); therefore, we include those firm-level variables in the control function of the empirical models. Firm size is measured by the natural logarithm of the book value of total assets (*SIZE*). Growth opportunities (*GROWTH*) are measured by the market value of equity divided by the book value of equity. Stock market performance (*MARKETPERF*) is measured by the change in the market value of equity in the respective year, scaled by the end-of-year market value of the prior year, adjusted by the value-weighted market performance. Further, we include measures of firm complexity and financial condition that have typically been used in prior compensation literature (e.g., Armstrong, Jagolinzer, and Larcker 2010). We include the degree of diversification in different business segments (*BUS_SEG*), measured as segment sales over firm total sales squared, summed over all segments a firm operates in, and we include firm age (*FIRM_AGE*), measured as the natural logarithm of the number of years a firm exists in the Compustat database. To control for the influence of a firm's financial condition on executive compensation, we include leverage (*LEVERAGE*), measured as the current plus long-term debt divided by current book value of total assets. In addition, we measure earnings volatility (*SD_ROA*) as the standard deviation of the past five years' return on assets. Due to CFOs' fiduciary responsibilities, accounting misstatements can influence their compensation. We control for accounting restatements (*LAG_REST*) in the prior year.

Likewise, we also control for class action filings in the prior year (*LAG_CAL*). Finally, we incorporate a set of variables in our control vector to capture governance and CFO characteristics (Bushman, Chen, Engel, and Smith 2004; Larcker, Richardson, and Tuna 2007). We measure board size as the number of board members (*BOARD_SIZE*). In addition, we control for the fraction of outside directors on the board (*PER_OUT_DIR*), the average number of other boards on which outside directors serve (*BUSY_DIR*), and the separation of the roles of CEO and chairman through an indicator variable equal to 1 if the CEO serves as the chairman on the board, and 0 otherwise (*CEO_CHAIR*). We develop a proxy for CFO power by measuring CFO tenure (*TENURE*). We build indicator variables to address the data availability for the governance variables (*HAVE_CG*).[9] Consistent with prior literature, we include levels of the control variables in our analyses.[10] We include industry fixed effects based on two-digit SIC codes, and year fixed effects to account for variation across industries and over time.

Descriptive Statistics

Table 1, Panel B reports the summary statistics for the full sample, and separately for clawback adopters and non-adopters. The mean bonus for a CFO in our full sample is about $422K. The average CFO bonus tied to financial measures represents about 18 percent of the total CFO compensation in a given year (*BONUS_FINPM*). Our sample firms report a mean *ROA* of 5 percent, and face growth opportunities as indicated by a mean market-to-book ratio of 2.35. On average, the CEOs in our sample have longer tenure than the CFOs; on average, a CFO works almost four years in her current position. The firms, on average, finance about 20 percent of their assets through debt, and for 11 percent of the observations, at least one internal control material weakness is reported during the prior five years. Also, 11 percent of the firms had a restatement in the prior year, and 2 percent had a class action filing in the past year. We report summary statistics separately for clawback adopters versus non-adopters. An indicator variable (*CLAW*) is defined equal to 1 if a firm adopts a clawback during the sample period, and 0 otherwise. Difference tests are performed based on t-tests and Wilcoxon rank-sum tests. We find that compared to non-adopters, adopting firms have a significantly higher CFO bonus. In addition, adopters have a larger book value of assets, they operate in more business segments, and are more highly leveraged. We also find that clawback adopters have less internal control material weakness disclosures, have lower abnormal accruals, and some evidence that suggests that adopters have more class action filings and fewer restatements. In general, the sample characteristics are in line with findings in prior research (Chan et al. 2012; deHaan et al. 2013).

IV. EMPIRICAL FINDINGS

Main Analysis

Table 2 reports the regression estimates for the hypothesis tests. Panel A provides the results for the changes model (with $\Delta BONUS$ as dependent variable) described by Equation (1), while Panel B reports the findings for the PSM-DID changes model described by Equation (2). We report t-statistics based on robust regressions that exclude observations with Cook's $D > 1$, and subsequently perform Huber iterations followed by biweight iterations. Robust regressions outperform winsorizing or truncation techniques on outlier and leverage point detection, and produce more accurate results due to the processing of influential observations (Leone, Minutti-Meza, and Wasley 2015).[11] We control for firm characteristics, corporate governance characteristics, CFO characteristics, as well as for industry and year effects.

Overall, the results indicate that clawback adoption is associated with greater CFO bonus incentives contingent on accounting measures. For Table 2, Panel A, the coefficient on ΔROA, that reflects the relation between accounting performance and the CFO bonus for those observations that have not adopted the clawback, is positive and significant ($p < 0.01$). More importantly, the coefficient on $\Delta ROA * ADOPT$, that represents the difference in the relation between accounting performance and CFO bonus between clawback adopters and non-adopters, is also positive and significant ($p < 0.01$). This implies that the adoption of a clawback policy is associated with greater bonus incentives tied to financial measures for CFOs. The sum of coefficients ($\alpha_1 + \alpha_2$), that represents the relation between accounting performance and CFO bonuses for clawback adopters, is also positive and significant ($p < 0.01$). The PSM-DID model produces similar findings. That is, the coefficients on ΔROA and $\Delta ROA * CLAW * AFTER$ are positive and significant ($p < 0.01$ and $p < 0.05$, respectively).

[9] *HAVE_CG* equals 1 if data are available in the ISS database for *BOARD_SIZE, PER_OUT_DIR, BUSY_DIR,* and *EXEC_CHAIR,* and 0 otherwise. We set the missing data for the remaining observations to 0 (e.g., deHaan et al. 2013).

[10] The inclusion of changes (instead of levels) of our control variables does not affect our inferences.

[11] While many accounting studies winsorize or truncate the data, robust regressions use a sophisticated approach to maximally exploit the information within the data. Only points with high *bad leverage points* and *vertical outliers* (identified by Cook's $D > 1$) are deleted, and remaining potentially influential observations will be downward-weighted in an iterative process to avoid bias of the fitted regression line and the regression estimates. Leone et al. (2015) discuss the application of robust regressions in the accounting literature.

TABLE 2

CFO Bonus Incentives Contingent on Financial Measures and Clawback Adoption

Panel A: Full Sample Model

Variables		Predicted Sign	ΔBONUS Coefficient	ΔBONUS t-statistics
Intercept	α_0		−2.726	−0.26
ΔROA	α_1	+	196.4***	6.96
*ΔROA * ADOPT*	α_2	+	238.7***	3.89
ADOPT	α_3		−2.34	−0.44
SIZE			6.68***	3.13
MARKETPERF			55.35***	11.34
*MARKETPERF * ADOPT*			37.62***	4.31
GROWTH			−0.094*	−1.69
BUS_SEG			4.96	0.32
FIRM_AGE			3.48	0.86
LEVERAGE			−25.38*	−1.91
SD_ROA			−30.40	0.71
LAG_REST			−9.59	−1.44
LAG_CAL			76.88***	4.89
TENURE			−2.37*	−1.74
BOARD_SIZE			−2.72*	−1.80
PER_OUT_DIR			−1.76	−0.07
BUSY_DIR			2.35	0.39
CEO_CHAIR			4.41	0.84
HAVE_CG			24.03	1.06
Industry and Year Effects			Yes	
F-test ($\alpha_1 + \alpha_2$)			62.85***	
F-Statistic			11.63***	
R^2			0.11	
n			7,181	

Panel B: PSM-DID Model

Variables		Predicted Sign	ΔBONUS Coefficient	ΔBONUS t-statistics
Intercept	β_0		−40.91	−1.26
ΔROA	β_1	+	232.5***	3.37
*ΔROA * CLAW * AFTER*	β_2	+	227.6**	1.65
*CLAW * AFTER*	β_3		10.59	0.92
CLAW	β_4		−8.89	−0.99
AFTER	β_5		−10.35	−1.06
*ΔROA * CLAW*	β_6		1.50	0.02
*ΔROA * AFTER*	β_7		61.63	0.65
SIZE			3.59	1.16
MARKETPERF			55.85***	4.85
*MARKETPERF * CLAW * AFTER*			11.34	0.53
*MARKETPERF * CLAW*			5.99	0.37
*MARKETPERF * AFTER*			18.60	1.20
GROWTH			0.02	0.17
BUS_SEG			22.37	1.13
FIRM_AGE			4.17	0.77
LEVERAGE			−0.62	−0.04
SD_ROA			77.44	1.26

(continued on next page)

TABLE 2 (continued)

Variables	Predicted Sign	ΔBONUS Coefficient	ΔBONUS t-statistics
LAG_REST		−11.30	−1.33
LAG_CAL		79.32***	3.51
TENURE		−2.34	−1.33
BOARD_SIZE		−4.34**	−2.11
PER_OUT_DIR		29.46	0.90
BUSY_DIR		−2.55	−0.33
CEO_CHAIR		4.15	0.63
HAVE_CG		15.27	0.52
Industry and Year Effects		Yes	
F-test ($\beta_1 + \beta_2 + \beta_6 + \beta_7$)		45.93***	
F-Statistic		7.25***	
R^2		0.14	
n		3,626	

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (one-tailed when the coefficient sign is predicted, two-tailed otherwise).
This table examines the effect of clawback adoption on the sensitivity of CFO bonuses to accounting performance. Panels A and B report regression estimates from a robust regression of the following two models:

$$\Delta BONUS_{i,t} = \alpha_0 + \alpha_1 \Delta ROA_{i,t} + \alpha_2 \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_3 ADOPT_{i,t} + \sum \alpha_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (1)$$

and:

$$\Delta BONUS_{i,t} = \beta_0 + \beta_1 \Delta ROA_i + \beta_2 \Delta ROA_{i,t} * CLAW_i * AFTER_{i,t} + \beta_3 CLAW_i * AFTER_{i,t} + \beta_4 CLAW_i + \beta_5 AFTER_{i,t} + \beta_6 \Delta ROA_{i,t} * CLAW_i + \beta_7 \Delta ROA_{i,t} * AFTER_{i,t} + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (2)$$

t-statistics are based on robust regressions. Robust regression dropped one observation (no observations) during the estimation of the regression coefficients for the full sample (PSM-DID) model. Industry effects based on two-digit SIC codes and year fixed effects are included.
Variables are defined in Appendix A.

We repeated the analyses for a levels specification (i.e., regressing *BONUS* on *ROA*). Our inferences are not affected (non-tabulated). For the full sample model, the coefficients on *ROA* and *ROA* ∗ *ADOPT* are positive and significant (coefficients: 181, $p < 0.01$, and 341, $p < 0.01$, respectively). For the PSM-DID model, the coefficients on *ROA* and *ROA* ∗ *CLAW* ∗ *AFTER* are both positive and significant (coefficients: 251, $p < 0.01$, and 266, $p = 0.02$, respectively). In sum, the findings suggest that clawback adoption is associated with greater CFO bonus incentives tied to accounting measures. With respect to economic significance, for the PSM-DID models, clawback adoption leads to a 98 percent increase in the accounting-based pay-for-performance sensitivity.[12]

With regard to the control variables, consistent with the intuition that some firms also include market performance in executive bonus plans, we find a positive relation between bonus and market performance. However, we do not find a greater sensitivity of CFO bonuses to market performance following clawback adoption. In addition, we find some evidence that CFO bonuses are higher for larger firms, and lower when the firm is highly leveraged, when CFOs have longer tenure, and when boards become larger.

We performed analyses to assess the robustness of our findings (non-tabulated). First, as we have repeated firm observations in our panel data, we address the non-independence of our observations by repeating the main analysis using ordinary least squares (OLS) with Huber-White clustered standard errors that account for heteroscedasticity and autocorrelation. Second, we examine whether our results are robust to an alternative measure of accounting performance and use operating income scaled by beginning-of-year's assets (e.g., Carter et al. 2009). Third, we distinguish between early and late adopters, as late adopters may have adopted clawbacks because of institutional pressures (e.g., from investors), recommendations from legal advisors, or mimetic behavior. We classify firm-year observations as early adopting if the first year in which the clawback adoption is disclosed is 2007, 2008, or 2009. This results in 26 percent of the adopters being

[12] Prior studies report increases in the pay-for-performance sensitivities of about 131 percent following SOX and clawback adoption (Carter et al. 2009; deHaan et al. 2013).

classified as early adopters. Fourth, we also repeat the analyses while assuming full target updating, where the current-year target on accounting performance equals the realization of the prior year's accounting performance (Carter et al. 2009). This implies a levels-on-changes model (i.e., a regression of *BONUS* on ΔROA). Our findings from these robustness analyses are in line with our prior inferences. Finally, we examine whether the sensitivity of bonuses to accounting performance after clawback adoption differs for positive versus negative earnings changes (e.g., deHaan et al. 2013; Carter et al. 2009). Specifically, we define ΔROA^{+} (ΔROA^{-}) as the natural logarithm of 1 plus the change in *ROA* from the previous to the current year if $\Delta ROA \geq 0$, and 0 otherwise (as the change in *ROA* from the previous to the current year if $\Delta ROA < 0$, and 0 otherwise).[13] In line with prior studies, we find that bonuses respond to positive and negative earnings changes pre- and post-clawback adoption, and that bonus compensation seems to be more responsive to positive earnings changes (deHaan et al. 2013). Specifically, the coefficient on $\Delta ROA^{+} * CLAW * AFTER$ is positive and significant ($p < 0.01$). The coefficient on $\Delta ROA^{-} * CLAW * AFTER$ is positive and significant, but smaller in magnitude ($p < 0.05$).

Explicit Approach

In the prior analyses, we estimated the degree to which CFOs are awarded bonus incentives tied to financial measures by regressing CFO bonuses on accounting performance. However, the actual performance measures used in CFO bonus contracts are unknown. Therefore, we validate our earlier findings by using an explicit approach that extracts information from firm proxy statements about, among others, the explicit weights assigned to financial performance measures in their bonus contracts. We restrict our sample to the firms in our original sample that are also incorporated in the S&P 500 firms, as our data had to be hand-collected from the proxy statements and we expected disclosure quality to be higher for larger public firms (Lang and Lundholm 1993). Our original sample included 395 S&P 500 firms. For some observations, there was insufficient detail to extract the aggregate weight on financial performance measures in CFO bonus plans; thus, 35 firm observations were completely removed from the sample. While we removed all observations for which incentive plans for CEOs are only discussed in the proxy statements, we retained firm-years in which CFO bonus plans are described to be similar to the bonus plans of CEOs or those of other executive officers. Our final sample is composed of 1,784 firm-year observations.[14] Almost all firm-year observations in our sample have financial measures in their CFO bonus contracts. The most commonly employed financial measures in CFO bonus plans are earnings per share, operating income, and *ROA*. The average weight on financial measures in CFO bonus plans is 78 percent. The mean weight on financial measures shows a decrease in earlier years and an increase in later years of the sample period. A simple t-test shows a significant increase in the aggregate weight on financial measures after clawback adoption (non-tabulated). Further, we collected data on the use of nonfinancial performance measures in CFO bonus contracts. We find that in 40 percent (20 percent) [5 percent] of all CFO bonus contracts, nonfinancial measures related to general management (reporting and financing) [communication and teamwork] are part of the annual bonus plan. Our data show that the incidence of general management measures in CFO bonus plans increases from 37 percent in 2007 to 42 percent in 2013, and reporting and financing measures appear more often in bonus contracts in 2013 (24 percent) than in 2007 (17 percent). The mean weight in general management (reporting and financing) is 30 percent (19 percent) for those firm-year observations that assigned a non-zero weight on those measures.

In order to assess the effect of clawback adoption on the use of financial measures, we conducted a PSM analysis with the 1,784 firm-years. In line with the finding that larger firms are more likely to adopt clawbacks, in our current sample, 1,037 firm-year observations (58 percent) have a clawback policy in place, while 747 firm-year observations (42 percent) do not.[15] Because we have fewer control observations in our current smaller sample relative to the original sample, we employ a full sample matching with lagged values for the explanatory variables, and industry and year effects as described in Section III, but now match with replacement. That is, in order to have sufficient control firms available for the matching, we allow for the repeated use of control firms in the matching. The matching achieves covariate balance on all matching variables, and results in 94 unique pairs of treatment and control firms. With our matched sample of 1,037 firm-years, we examine the following two DID models:

[13] As bonus schemes are designed to more strongly reward positive earnings changes, in our empirical model, we allow for nonlinearity in our basic model specifications. Further, we allow for a concave relation between bonus changes and positive changes in *ROA,* thereby allowing for an infinite number of kink points in the bonus-payoff function (Carter et al. 2009). We exclude taxes because CFOs can actively manage taxes and be rewarded for doing so (Erickson, Heitzman, and Zhang 2013)

[14] We only require information about aggregate weights on financial measures. Some firms incentivize CFOs solely on the basis of financial measures, which corresponds to a weight of 100 percent. 191 (251) [247] {251} observations of the final sample are from 2007 (2008) [2009] {2010}. In addition, 252 [315] {277} observations are from 2011 [2012] {2013}.

[15] The fraction of firms with clawback policies increased over our sample period (from 36 percent in 2007 to 52 percent in 2009, to 65 percent in 2011, and to 78 percent in 2013).

TABLE 3

Percentage of CFO Bonus Contingent on Financial Measures and Clawback Adoption

Variables		Predicted Sign	*FINPM*	*BONUS_FINPM*
Intercept	β_0		155.4***	0.218***
			(8.51)	(2.80)
CLAW	β_1		−2.89	−0.022
			(−0.78)	(−1.23)
AFTER	β_2		−2.00	−0.013
			(−0.78)	(−0.97)
*CLAW * AFTER*	β_3	+	4.38*	0.034**
			(1.39)	(1.67)
Controls			Yes	Yes
Industry and Year Effects			Yes	Yes
F-Statistics			5.74***	5.07***
R^2			0.27	0.24
n			1,037	1,037

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (one-tailed when coefficient sign is predicted, two-tailed otherwise).

This table examines the effect of clawback adoption on the explicit weights assigned to financial measures in CFO bonus plans. The table reports regression estimates from an OLS regression of the following two models:

$$FINPM_{i,t} = \beta_0 + \beta_1 CLAW_i + \beta_2 AFTER_{i,t} + \beta_3 CLAW{*}AFTER_{i,t} + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (1)$$

and:

$$BONUS\_FINPM_{i,t} = \beta_0 + \beta_1 CLAW_i + \beta_2 AFTER_{i,t} + \beta_3 CLAW{*}AFTER_{i,t} + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (2)$$

t-statistics are based on OLS and are reported in parentheses. Standard errors are clustered on a firm level. Industry effects based on Fama-French classification and year fixed effects are included. *FINPM* and *BONUS_FINPM* are winsorized at the 1st and 99th percentiles.

Variables are defined in Appendix A.

$$FINPM_{i,t} = \alpha_0 + \alpha_1 CLAW_i + \alpha_2 AFTER_{i,t} + \alpha_3 CLAW_i{*}AFTER_{i,t} + \sum \alpha_k CONTROLS_{i,t} + \varepsilon_{i,t}, \quad (3)$$

and:

$$BONUS\_FINPM_{i,t} = \alpha_0 + \alpha_1 CLAW_i + \alpha_2 AFTER_{i,t} + \alpha_3 CLAW_i{*}AFTER_{i,t} + \sum \alpha_k CONTROLS_{i,t} + \varepsilon_{i,t}, \quad (4)$$

where $FINPM_{i,t}$ is defined as the percentage weight on financial performance measures in CFO bonus plans; and $BONUS\_FINPM_{i,t}$ is defined as the CFO target bonus contingent on financial performance measures, scaled by total compensation (Indjejikian and Matějka 2009). We cluster standard errors on the firm level to take into account that we have repeated control firms in our analyses (deHaan et al. 2013). We control for time effects through the inclusion of year dummies.

Our findings are reported in Table 3. The results suggest that clawback adoption is associated with a greater weight on financial measures in CFO bonus plans. That is, the coefficient on *CLAW * AFTER* is positive and significant in the models explaining *FINPM* and *BONUS_FINPM* ($p = 0.08$ and $p < 0.05$). We have also repeated the analyses using our full sample of 1,784 firm-year observations. Our inferences are not affected. That is, the coefficient on *ADOPT* is positive and significant for both models (non-tabulated). In sum, we conclude that our current results corroborate our earlier findings.

CFO Bonus Plans versus Bonus Plans of Other Named Executives

Given the unique responsibilities of CFOs as the key executive officers responsible for the financial reporting process, the impact of clawback adoption could be more pronounced for CFOs relative to other executives. The monetary penalty associated with clawbacks, in combination with the greater threat of dismissal, may have a more marked effect on the misreporting costs of CFOs because, with dismissal, their ability to generate future income is inhibited. In addition, firms that were reluctant to

TABLE 4

CFO versus Other Named Executives' Bonus Incentives and Clawback Adoption

Variables		Predicted Sign	ΔBONUS Coefficient	ΔBONUS t-statistics
Intercept	α_0		−4.56	−0.51
ΔROA	α_1	+	198.4***	12.22
$\Delta ROA * ADOPT$	α_2	+	177.0***	5.11
$ADOPT$	α_3		−3.55	−1.15
CFO	α_4		−0.16	−0.12
$CFO * \Delta ROA$	α_5		−4.79	−0.13
$CFO * \Delta ROA * ADOPT$	α_6	+	157.1**	1.94
$CFO * ADOPT$	α_7		6.12	1.09
Controls			Yes	
Industry and Year Effects			Yes	
F-test ($\alpha_2 + \alpha_6$)			20.74***	
F-test ($\alpha_5 + \alpha_6$)			4.37**	
F-Statistic			86.78***	
R^2			0.18	
n			33,568	

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (one-tailed when coefficient sign is predicted, two-tailed otherwise).

This table examines the effect of clawback adoption on the sensitivity of bonuses to accounting performance for CFOs versus other named executive officers. The table reports regression estimates from a robust regression of the following model:

$$\Delta BONUS_{i,t} = \alpha_0 + \alpha_1 \Delta ROA_{i,t} + \alpha_2 \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_3 ADOPT_{i,t} + \alpha_4 CFO_{i,t} + \alpha_5 CFO_{i,t} * \Delta ROA_{i,t} + \alpha_6 CFO_{i,t} * \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_7 CFO_{i,t} * ADOPT_{i,t} + \sum \alpha_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (1)$$

t-statistics are based on robust regressions. No observation is dropped in the robust regression procedure. Industry effects based on two-digit SIC codes and year fixed effects are included.

Variables are defined in Appendix A.

properly incentivize financial measures in CFO bonus plans, due to their key role in the financial reporting process, can now rely on clawbacks to deter undesired behavior of CFOs. Therefore, clawback adopters may now be able to adequately incentivize CFOs' decision-making responsibilities without compromising their fiduciary responsibilities. Here, we examine whether we observe a stronger shift toward accounting measures following clawback adoption in CFO bonus plans, relative to the shift in the bonus plans of other named executives. We follow a procedure similar to Wang (2010), where we use non-CFO executive officers as a control group. We duplicate our firm-year observations for other identifiable non-CFO executive board members. We examine the following model:

$$\Delta BONUS_{i,t} = \alpha_0 + \alpha_1 \Delta ROA_{i,t} + \alpha_2 \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_3 ADOPT_{i,t} + \alpha_4 CFO_{i,t} + \alpha_5 CFO_{i,t} * \Delta ROA_{i,t} + \alpha_6 CFO_{i,t} * \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_7 CFO_{i,t} * ADOPT_{i,t} + \sum \alpha_k CONTROLS + \varepsilon_{i,t}, \quad (5)$$

where CFO is an indicator variable equal to 1 if the executive is a CFO, and 0 otherwise. The coefficient α_2 represents the difference before versus after adoption for non-CFO executives. The sum of coefficients ($\alpha_2 + \alpha_6$) reflects the difference before versus after adoption for CFOs. So the coefficient α_6 represents the effect of clawback adoption for CFOs relative to non-CFOs. We expect that $\alpha_6 > 0$. The results are reported in Table 4.

The coefficient on $\Delta ROA * ADOPT$ in Table 4 is positive and significant ($p < 0.01$). This suggests that clawback adoption is associated with greater bonus incentives tied to financial measures for non-CFO executives. The coefficient of interest on $CFO * \Delta ROA * ADOPT$ is positive and significant ($p < 0.03$). This suggests that the increase in bonus incentives tied to financial measures is more pronounced for CFOs relative to other executives. So, in addition to the finding for non-CFO executives of a positive association between clawback adoption and bonus incentives tied to financial measures (deHaan et al. 2013), we also find this positive association to be more pronounced for CFOs relative to non-CFOs.

Performance-Based versus Fraud-Based Clawbacks

Up to now, we have treated clawback adopters as a homogeneous group. However, firms generally adopt either fraud-based clawbacks or performance-based clawbacks. Fraud-based clawbacks require misconduct to be triggered, while performance-based clawbacks require material reporting mistakes. This is in line with the distinction between intentional (irregularities) and unintentional (errors) misstatements, where irregularities are strongly associated with fraud-related class action lawsuits and errors are not (Hennes, Leone, and Miller 2008). The adoption of performance-based clawbacks can impose additional risk on CFOs if they are not in perfect control of the clawback trigger. Increased risk exposure can lead to an increase in the risk premium and a decrease in performance-based pay. However, to the extent that the adoption of performance-based clawbacks decreases the likelihood of both intentional and unintentional misstatements, and hence increases the financial reporting quality, it could increase the pay-for-performance sensitivity (deHaan et al. 2013). Our regression model is formulated as follows:

$$\begin{aligned}\Delta BONUS_{i,t} = {} & \beta_0 + \beta_1 \Delta ROA_{i,t} + \beta_2 \Delta ROA_{i,t} * CLAW_i * AFTER_{i,t} + \beta_3 CLAW_i * AFTER_{i,t} + \beta_4 CLAW_i + \beta_5 PB\_CLAW_i \\ & + \beta_6 PB\_CLAW_i * AFTER_{i,t} + \beta_7 AFTER_{i,t} + \beta_8 \Delta ROA_{i,t} * CLAW_{i,t} + \beta_9 \Delta ROA_{i,t} * PB\_CLAW_i \\ & + \beta_{10} \Delta ROA_{i,t} * PB\_CLAW_i * AFTER_{i,t} + \beta_{11} \Delta ROA_{i,t} * AFTER_{i,t} + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (6)$$

where *PB_CLAW* is an indicator variable equal to 1 if the firm will adopt performance-based clawback during the sample period, and 0 otherwise.[16] The difference in CFO bonus incentives before versus after adoption of fraud-based clawbacks is given by the sum of coefficients ($\beta_2 + \beta_{11}$), while the difference in bonus incentives before versus after adoption for performance-based clawbacks is given by the sum of coefficients ($\beta_2 + \beta_{10} + \beta_{11}$). So the difference before versus after adoption for the two types of clawback adopters is given by the coefficient on $\Delta ROA * PB\_CLAW * AFTER$. On the basis of earlier findings of deHaan et al. (2013), we expect $\beta_{10} > 0$. Our findings are reported in Table 5. Here, the coefficient on $\Delta ROA * PB\_CLAW * AFTER$ is positive, but insignificant. As a robustness analyses, we repeat our analysis as a levels model (we replace $\Delta BONUS$ by *BONUS* and replace ΔROA by *ROA* in the above equation). Here, we find a positive and significant coefficient on $ROA * PB\_CLAW * AFTER$ ($p = 0.04$). Overall, we find some evidence that suggests that the adoption of performance-based clawbacks is associated with a greater increase of CFO bonus incentives tied to financial measures.[17]

CFO Equity Incentives

Besides bonus incentives, CFOs are incentivized through equity-based compensation. We examined whether the adoption of clawback policies is also associated with the provision of equity incentives to CFOs. We focus our analyses on equity holdings. In line with our prior intuition, we expect that CFO equity holdings are more sensitive to market returns following clawback adoption. We examine the following regression model:

$$\begin{aligned}\Delta EQUITY\_HOLDINGS_{i,t} = {} & \beta_0 + \beta_1 RET_{i,t} + \beta_2 RET_{i,t} * CLAW_i * AFTER_{i,t} + \beta_3 RET_{i,t} * CLAW_i + \beta_4 RET_{i,t} * AFTER_{i,t} \\ & + \beta_5 CLAW_i * AFTER_{i,t} + \beta_6 CLAW_i + \beta_7 AFTER_{i,t} + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad (7)$$

where $\Delta EQUITY\_HOLDINGS$ is the change in the value of the stock option and stock portfolio (Jiang et al. 2010); and *RET* represents the stock market performance and denotes the percentage change in the firm's stock price. Table 6 reports the main results. The coefficient of interest, $RET * CLAW * AFTER$, is positive and significant ($p < 0.05$). This implies that clawback adoption is associated with increased sensitivity of the equity portfolio to market returns. Overall, the findings suggest that clawback adopters, in addition to providing greater bonus incentives tied to financial measures, also provide stronger equity incentives to their CFOs.

The Level and Structure of CFO Compensation

We follow the extant literature on the effect of regulatory reforms on executive compensation (e.g., Carter et al. 2009; Chhaochharia and Grinstein 2009; deHaan et al. 2013) and also examine the effect of clawback adoption on the level and structure of CFO compensation. Given the risk that CFOs of clawback adopters now stand to lose previously awarded compensation, firms can increase the fixed part of their compensation or alter the level of the variable compensation. Either of these can lead to changes in total compensation. Therefore, we examine the effect of clawback adoption ($CLAW * AFTER$) on CFO total compensation, CFO salary, CFO bonus, and CFO option awards, while including our standard

[16] In our main sample, 53 percent adopts a performance-based clawback.

[17] The coefficient on $\Delta ROA * CLAW * AFTER$ is positive and significant. This indicates that the adoption of fraud-based clawbacks is associated with greater CFO bonus incentives tied to financial measures relative to non-clawback adopters.

TABLE 5

Performance-Based versus Fraud-Based Clawback Adoption and CFO Bonus Incentives

Variables		Predicted Sign	ΔBONUS Coefficient	ΔBONUS t-statistics
Intercept	β_0		−42.71	−1.31
ΔROA	β_1	+	304.4***	6.93
$\Delta ROA * CLAW * AFTER$	β_2	+	334.7***	3.04
$CLAW * AFTER$	β_3		10.66	0.84
$CLAW$	β_4		−0.66	−0.06
PB_CLAW	β_5		−16.47	−1.64
$PB\_CLAW * AFTER$	β_6		4.23	0.33
$AFTER$	β_7		−9.78	−0.98
$\Delta ROA * CLAW$	β_8		−30.44	−0.57
$\Delta ROA * PB\_CLAW$	β_9		−207.4**	−2.26
$\Delta ROA * PB\_CLAW * AFTER$	β_{10}	+	61.42	0.36
$\Delta ROA * AFTER$	β_{11}		−32.15	−0.66
Controls			Yes	
Industry and Year Effects			Yes	
F-Statistic			7.08***	
R^2			0.14	
n			3,626	

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (one-tailed when coefficient sign is predicted, two-tailed otherwise).

This table examines the effect of clawback adoption on the sensitivity of CFO bonuses to accounting performance for fraud-based versus performance-based clawbacks. The table reports regression estimates from a robust regression of the following model:

$$\begin{aligned}\Delta BONUS_{i,t} = {} & \beta_0 + \beta_1 \Delta ROA_{i,t} + \beta_2 \Delta ROA_{i,t} * CLAW_i * AFTER_{i,t} + \beta_3 CLAW_i * AFTER_{i,t} + \beta_4 CLAW_i + \beta_5 PB\_CLAW_i + \beta_6 PB\_CLAW_i * AFTER_{i,t} \\ & + \beta_7 AFTER_{i,t} + \beta_8 \Delta ROA_{i,t} * CLAW_{i,t} + \beta_9 \Delta ROA_{i,t} * PB\_CLAW_i + \beta_{10} \Delta ROA_{i,t} * PB\_CLAW_i * AFTER_{i,t} + \beta_{11} \Delta ROA_{i,t} * AFTER_{i,t} \\ & + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

t-statistics are based on robust regressions. No observation is dropped in the robust regression procedure. Industry effects based on two-digit SIC codes and year fixed effects are included.

Variables are defined in Appendix A.

vector of control variables.[18] We find that clawback adoption has a positive effect on CFO salary, but we do not find significant effects for CFO total compensation, bonus, or option grants. Our finding on CFO salary suggests that CFOs are rewarded for the additional risk that is imposed on them with the introduction of clawbacks by means of higher (fixed) salaries. Our finding corroborates prior research on the effect that the adoption of clawback policies has on CEO salary levels (deHaan et al. 2013).

The Moderating Effect of the Firm's Susceptibility to Misreporting

In our final analysis, we exploit variation in firms' susceptibility to misreporting to examine how this moderates the relation between firm-initiated clawbacks and CFO bonus incentives tied to financial measures.[19] We, therefore, reestimate our prior findings in subsamples for high and low susceptibility to misreporting. We expect that the association between accounting

[18] Our results also speak to the compensation mix, as we include CFO total compensation as a control variable in our tests explaining salary, bonus, and option awards. In addition, we add an indicator variable for CFO turnover as a control in all tests because the level of compensation may include components from severance arrangements in the year of turnover. We also run additional tests excluding total compensation as a control to reflect the effect of clawbacks on the magnitude of the different compensation components. There, we find that $CLAW * AFTER$ is associated with greater stock grants.

[19] The number of observations is slightly smaller than for our main analyses because of missing values on the proxies for the susceptibility to misreporting. In the cases where we compose subsamples based on median splits, the subsamples are not perfectly balanced in size because of the decision to allocate observations with a median value to either the HIGH or LOW subsample. Our findings are similar in both cases.

TABLE 6

CFO Equity Incentives and Clawback Adoption

Variables		Predicted Sign	*ΔEQUITY_HOLDINGS* Coefficient	*ΔEQUITY_HOLDINGS* t-statistics
Intercept	β_0		−772.9***	−3.48
RET	β_1	+	1,398***	21.86
RET ∗ *CLAW* ∗ *AFTER*	β_2	+	246.8**	2.07
RET ∗ *CLAW*	β_3		−80.24	−0.95
RET ∗ *AFTER*	β_4		−90.17	1.08
CLAW ∗ *AFTER*	β_5		106.0	1.34
CLAW	β_6		−62.35	−1.08
AFTER	β_7		−14.55	−0.22
Controls			Yes	
Industry and Year Effects			Yes	
F-test ($\beta_1 + \beta_2$)			98.82***	
F-Statistics			32.71***	
R^2			0.40	
n			3,811	

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (one-tailed when coefficient sign is predicted, two-tailed otherwise).

This table examines the effect of clawback adoption on CFOs' equity incentives. The table reports regression estimates from robust regressions of the following model:

$$\Delta EQUITY\_HOLDINGS_{i,t} = \beta_0 + \beta_1 RET_{i,t} + \beta_2 RET_{i,t} * CLAW_i * AFTER_{i,t} + \beta_3 RET_{i,t} * CLAW_i + \beta_4 RET_{i,t} * AFTER_{i,t} + \beta_5 CLAW_i * AFTER_{i,t} + \beta_6 CLAW_i + \beta_7 AFTER_{i,t} + \sum \beta_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (1)$$

t-statistics are based on robust regressions. No observations are dropped in the robust regression procedures. Industry effects based on two-digit SIC codes and year fixed effects are included.

Variables are defined in Appendix A.

bonuses and CFO bonuses will be less pronounced in the subsamples characterized by a high susceptibility to misreporting. More importantly, for our hypothesis test, we expect that the association between the adoption of clawbacks and greater sensitivity of CFO bonuses to accounting performance will be weaker for firms characterized by a greater susceptibility to misreporting. We expect the coefficients on ΔROA and $\Delta ROA * ADOPT$ to be greater than zero for the subsamples characterized by a low susceptibility on misreporting. In addition, we test for significant differences in the coefficients on ΔROA and $\Delta ROA * ADOPT$ between subsamples of firms characterized by high versus low susceptibility to misreporting. We use four proxies indicative of a firm's susceptibility to misreporting.

Our first proxy is internal control material weakness disclosures (*ICMWD*). We argue that firms with recent *ICMWD* are more susceptible to misreporting.[20] As ineffective internal controls indicate the susceptibility of the accounting system to manipulation, we expect clawback adopters to be more reluctant to emphasize CFO bonus incentives contingent on accounting measures if they have experienced internal control deficiencies. The LOW subsample is composed of firms without any *ICMWD* in the preceding five years, and the HIGH subsample features firms with at least one *ICMWD* in the preceding five years (Hoitash et al. 2012).

We use the magnitude of absolute abnormal accruals (*ABN_ACCR*) as our second proxy for firms' susceptibility to misreporting based on the assumption that the accounting system is more susceptible to misreporting when earnings deviate from underlying cash flows (Indjejikian and Matějka 2009; Dichev et al. 2013). We expect that clawback adopters deemphasize CFO bonus incentives tied to accounting measures when they have greater abnormal accruals. *ABN_ACCR* denotes the average value of absolute performance-adjusted abnormal accruals over the last two years. The subsample HIGH (LOW) denotes those

[20] Prior literature documents that ICMW are associated with inadequate accounting resources, a lack of qualified accounting personnel, lack of segregation of duties, deficiencies in revenue recognition policies, deficiencies in the period-end reporting process and accounting policies, inappropriate account reconciliation, and inadequate internal controls in subsidiaries (Ge and McVay 2005). They are associated with greater abnormal accruals and lower accrual quality (Ashbaugh-Skaife, Collins, Kinney, and LaFond 2008).

firm-year observations with an absolute value on the performance-adjusted abnormal accruals equal to or higher (lower) than the sample median of the abnormal accruals.

We use the power of the CEO relative to the power of the CFO (*REL_CEOPOWER*) as our third proxy for the susceptibility to misreporting. Prior research indicates that powerful CEOs may pressure CFOs into accounting manipulation (Feng et al. 2011; Friedman 2014). *REL_CEOPOWER* is measured by CEO tenure at the current firm divided by CFO tenure, so that higher values indicate higher relative CEO power (Bedard, R. Hoitash, and U. Hoitash 2014; Friedman 2014). The subsample HIGH (LOW) denotes firm-year observations with relative CEO power equal to or higher (lower) than the sample median.

The power of the audit committee relative to the power of the CFO (*REL_AUCOMPOWER*) is our final proxy. Besides the CFO, audit committees can also influence financial reporting quality, as they can constrain earnings management in the form of accounting irregularities and abnormal accruals (Badolato, Donelson, and Ege 2014; Farber 2005; Klein 2002). Beck and Mauldin (2014) show how CFOs exert greater influence when audit committees are less powerful. We define *REL_AUCOMPOWER* as the product of the audit committee financial expertise and prestige divided by CFO prestige. Here, we assume that CFOs typically possess financial expertise. We measure the numerator as the natural logarithm of the number of financial experts on the audit committee and the number of outside board seats of audit committee members. We argue that a higher number of outside board seats indicates higher status and prestige of audit committee members (Badolato et al. 2014; Erkens and Bonner 2013). The denominator is the sum of 1 plus an indicator variable equal to 1 if the CFO has a board position, and 0 otherwise (Bedard et al. 2014). The subsample HIGH (LOW) denotes firm-year observations with relative audit committee power equal to or higher (lower) than the sample median.[21]

Our findings are reported in Table 7.[22] First, we find a positive association between accounting performance and CFO bonuses prior to clawback adoption, as indicated by a positive and significant coefficient for α_1. A test for significant differences for the coefficient α_1 across subsamples of high versus low susceptibility to misreporting indicates that, in most cases, a greater susceptibility to misreporting is associated with less CFO bonus incentives tied to financial measures prior to clawback adoption. Specifically, we find the relation between accounting performance and CFO bonuses to be weaker in the high *ICMWD* subsample, the high abnormal accruals subsample, and in the low relative audit committee power subsample.

When we turn to the effect of adoption of clawback policies on CFO bonus incentives, we find the positive effect to be less pronounced in those subsamples characterized by a high susceptibility to misreporting. We find that the coefficient α_2 is significantly smaller in the subsamples of high *ICMWD,* high abnormal accruals, and high relative CEO power. In sum, we find evidence to suggest that clawback adopters characterized by a greater susceptibility to misreporting emphasize the fiduciary role of CFOs as gatekeeper for financial reporting integrity by awarding them with relatively smaller increments in bonus incentives.

As additional non-tabulated robustness analyses, we repeat the analyses with the explicit weights on financial measures in CFO bonus contracts as the dependent variable (*FINPM* and *BONUS_FINPM*). As discussed in the section above, we hand-collected these data from the proxy statements, which led to a final sample of 1,784 firm-year observations. Given that we investigate the cross-sectional variation across clawback adopters, we use our full sample on the hand-collected data and subsequently test whether the coefficient on *ADOPT* is significantly different across subsamples of high versus low susceptibility to misreporting.[23] Despite the reduced power in this analysis, our findings corroborate some of our earlier findings. When we use *FINPM* as the dependent variable, we find the effect of clawback adoption to be significantly stronger in the subsample of high relative audit committee power ($p < 0.05$). When we turn to *BONUS_FINPM,* we find stronger effects for clawback adopters in the subsample of high relative audit committee power and the subsample of low relative CEO power ($p < 0.05$) (non-tabulated). All other tests comparing the coefficient on *ADOPT* across subsamples yield insignificant differences. In sum, our findings suggest that firms take the risk of misreporting into account when they design CFO bonus plans. That is, we find the positive effect of adoption of clawback policies on CFO bonus incentives to be less pronounced in subsamples characterized by a high susceptibility to misreporting.

[21] So the denominator is equal to 1 in all cases as CFOs, per definition, have financial expertise, and is equal to 2 if the CFO has a board position, as well. On average, 10 percent of the CFOs have a board position at their firm. The first quartile, the mean, and the third quartile of the number of audit committee members with financial expertise are 1, 1.83, and 3, respectively. Audit committees, on average, have 3.65 outside board seats with a first (third) quartile value of 2 (5).

[22] Our tests for *ROA* and *ROA* $*$ *ADOPT* are based on two-directional tests. Difference tests between subsamples are one-directional. The tests (one-tailed) for significant differences of $\Delta ROA * ADOPT$ across subsamples are based on the significance of the coefficients on $\Delta ROA * ADOPT$ when we interact this variable with the proxies for the susceptibility to misreporting, while also interacting all control variables with those proxies. The same procedure is used when testing for a significant difference of the main effect ΔROA across subsamples.

[23] The regression model is: $FINPM \text{ or } BONUS\_FINPM = \alpha_0 + \alpha_1 ADOPT + \sum \alpha_k \, CONTROLS + \varepsilon$.

TABLE 7

The Moderating Effect of the Susceptibility to Misreporting

		ΔBONUS							
		ICMWD		**Abnormal Accruals**		**Relative CEO Power**		**Relative Audit Committee Power**	
Variables		**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**	**HIGH**	**LOW**
Intercept	α_0	−97.29	−44.57*	−116.8***	−30.38	−50.07	−68.04**	7.401	275.5***
		(−1.46)	(−1.73)	(−3.12)	(−0.72)	(−1.14)	(2.17)	(0.09)	(3.16)
ΔROA	α_1	146.4**	205.4***	185.7***	360.0***	199.9***	195.6***	461.3***	273.0***
		(2.39)	(6.51)	(5.34)	(5.12)	(4.59)	(5.25)	(5.63)	(5.95)
*ΔROA * ADOPT*	α_2	−112.7	382.5***	130.2*	576.9***	51.10	411.3***	339.5**	177.7*
		(−0.93)	(5.43)	(1.74)	(4.02)	(0.55)	(4.92)	(2.29)	(1.92)
ADOPT	α_3	−3.991	−1.731	−4.379	−1.313	−2.51	−3.35	−9.07	1.14
		(−0.27)	(−0.31)	(−0.60)	(−0.15)	(−0.33)	(−0.56)	(−0.91)	(0.17)
Controls		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Year Effects		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F-test ($\alpha_1 + \alpha_2$)		0.10	85.75***	22.13***	54.36***	26.22***	64.62***	40.21***	30.98***
F-Statistic		5.89***	40.90***	5.66***	6.89***	9.27***	8.46***	5.90***	6.30***
R^2		0.32	0.36	0.13	0.15	0.11	0.15	0.16	0.15
n		795	6,386	2,842	2,842	3628	3,549	2,688	2,923
Diff. α_1 across high versus low subsamples		α_1_HIGH < α_1_LOW (*)		α_1_HIGH < α_1_LOW (**)		No significant difference in α_1		α_1_HIGH > α_1_LOW (**)	
Diff. α_2 across high versus low subsamples		α_2_HIGH < α_2_LOW (***)		α_2_HIGH < α_2_LOW (***)		α_2_HIGH < α_2_LOW (***)		No significant difference in α_2	

***, **, * Correspond to 1 percent, 5 percent, and 10 percent significance levels, respectively (one-tailed when the coefficient sign is predicted, two-tailed otherwise).
This table examines how firms' susceptibility to misreporting influences the relation between firm-initiated clawbacks and CFO bonus incentives tied to financial measures. The table reports regression estimates from a robust regression of the following model:

$$\Delta BONUS_{i,t} = \alpha_0 + \alpha_1 \Delta ROA_{i,t} + \alpha_2 \Delta ROA_{i,t} * ADOPT_{i,t} + \alpha_3 ADOPT_{i,t} + \sum \alpha_k CONTROLS_{i,t} + \varepsilon_{i,t} \quad (1)$$

in subsamples of high versus low susceptibility to misreporting. We use the following four proxies for misreporting: *ICMWD* is defined as the number of years in which the firm reported internal control deficiencies over the prior five years. The subsample HIGH (LOW) denotes those firm-year observations where at least one (no) internal control deficiency is reported during the prior five years. *ABN_ACCR* is defined as the average value of absolute performance-adjusted abnormal accruals over the last two years. The subsample HIGH (LOW) denotes those firm-year observations with an absolute value on the performance adjusted abnormal accruals equal or higher (lower) than the sample median of the abnormal accruals. Relative CEO power (*REL_CEOPOWER*) is defined as the CEO tenure divided by the CFO tenure. The subsample HIGH (LOW) denotes those firm-year observations with a relative CEO power equal or higher (lower) than the sample median. Relative audit committee power (*REL_AUCOMPOWER*) is the product of audit committee financial expertise and prestige, divided by CFO prestige: $(\ln(1 + AU\_BOARD) * \ln(1 + AU\_FINEXP))/(1 + CFO\_BOARD)$. The subsample HIGH (LOW) denotes those firm-year observations with a relative audit committee power equal or higher (lower) than the sample median. We expect $\alpha_1 > 0$ and $\alpha_2 > 0$ for the subsamples characterized by a low susceptibility to misreporting. The tests (one-tailed) for significant differences of α_1 and α_2 across the HIGH versus LOW subsamples are based on the significance of the coefficients on *ΔROA* and *ΔROA * ADOPT*, while we interact both with *ICMWD, ABN_ACCR, REL_CEOPOWER,* and *REL_AUCOMPOWER,* respectively, while, at the same time, also interacting all control variables with *ICMWD, ABN_ACCR, REL_CEOPOWER,* and *REL_AUCOMPOWER,* respectively. t-statistics are based on robust regressions and are reported in parentheses. For *ICMWD,* one (one) observation is dropped in the robust regression procedure for the HIGH (LOW) subsample. For abnormal accruals, one (zero) observation(s) are dropped in the robust regression procedure for the HIGH (LOW) subsample. For relative CEO power, two (zero) observations are dropped in the robust regression procedure for the HIGH (LOW) subsample. For relative audit committee power, no observations are dropped in the robust regression procedure for both subsamples. Industry effects based on two-digit SIC codes and year fixed effects are included.
Variables are defined in Appendix A.

V. SUMMARY AND CONCLUSIONS

CFOs have important decision-making duties, while they also have a focal role in the financial reporting process. Recent studies compare CEO and CFO incentives and provide empirical evidence that especially CFO incentives are associated with accounting manipulation. This may (partly) represent an unavoidable cost for firms, as they have to trade off the fiduciary duties against the decision-making duties of CFOs. Given that clawbacks increase the misreporting costs, we examined whether adoption of clawback provisions is associated with greater CFO bonus incentives tied to accounting measures. We find clawback adoption to be associated with greater CFO bonus incentives tied to accounting measures, and find the increase in bonus incentives to be more pronounced for CFOs relative to other named executive officers (NEOs). Interestingly, we find the greater bonus incentives for CFOs to be moderated by companies' susceptibility to misreporting.

As with any other study, our study has limitations. First, given that firms self-select into the clawback adoption, those that adopt clawbacks may differ in other respects from non-adopters than solely the adoption itself. We try to address this by combining a difference-in-differences methodology (DID) with propensity score matching (PSM). Second, our analyses are based on the implicit approach where we regress CFO bonus outcomes on accounting performance. This is informative of the bonus incentives tied to financial measures; however, in this approach, increases in target bonuses without a change in the weight on financial measures will also lead to an increase in pay-for-performance sensitivity. For a subset of our sample, we manually collected data about the incentive weights in CFO bonus plans. The findings from the analysis using the incentive weights are in line with our hypothesis, confirming our previous notion that CFO incentives change as a consequence of clawback adoption. Third, financial reporting integrity is the product of the propensity different executives have to misreport where we focus on the CFO due to their focal role in financial reporting. However, increased misreporting costs of other executives, such as CEOs, and their propensity to misreport can also influence the degree to which firms increase the pay-for-performance sensitivity of CFOs. Likewise, prior findings of an increased pay-for-performance sensitivity of CEOs can be driven by increased misreporting costs of CFOs. Our finding that clawbacks lead to a more pronounced increase in the pay-for-performance sensitivity of CFOs relative to NEOs substantiates the earlier articulated intuition that CFOs and their incentive compensation design play an important role in safeguarding firms' financial reporting integrity.

Finally, mandatory clawback adoption is pending. In July 2015, the SEC issued Proposed Rule 10D-1 that directs stock exchanges to establish listing standards that require firms to adopt a clawback policy.[24] Following the comment period, the rule has not been finalized yet. In April 2017, the House Financial Services Committee released a discussion draft of the Financial CHOICE Act aimed at revising some parts of the DFA. The proposed CHOICE Act has little impact on the clawback requirements as described in the DFA. Section 849 of this CHOICE Act limits the clawback obligation to only the executive officers who had control or authority over the financial reporting that resulted in the restatement. This only underlines our focus on CFOs and CFO incentive compensation design following the implementation of clawback policies. Irrespective of the final implementation of this regulation, the trend toward voluntary adoption continues. By mid-2015, the time the SEC issued Proposed Rule 10D-1, approximately 76 percent of the S&P 1500 firms had a voluntary clawback provision in place (Bakke, Mahmudi, and Virani 2016). This indicates that firm-initiated clawback provisions are perceived to be value-enhancing by shareholders and boards.

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[24] Under Proposed Rule 10D-1, clawbacks are triggered by accounting restatements, would apply to incentive-based compensation that had been awarded erroneously up to three years before the restatement, and would apply irrespective of an executive's responsibility for the restatement.

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APPENDIX A

Variable Definitions

Variable Name	Description
BONUS	Sum of discretionary and nondiscretionary annual CFO bonus.
ΔBONUS	Change in sum of discretionary and nondiscretionary annual CFO bonus.
FINPM	Percentage of CFO bonus contingent on financial performance measures.
BONUS_FINPM	CFO bonus contingent on financial performance measures, scaled by total compensation.
ROA	Net income divided by lagged total assets.
ΔROA	Change in *ROA* from previous to current year.
CLAW	Indicator variable equal to 1 if the firm will adopt clawback policy during the sample period, and 0 otherwise.
AFTER	Indicator variable equal to 1 if the firm has adopted a clawback policy for the respective year, and 0 otherwise. For non-adopters, it is equal to 1 for the same years as for the matched clawback adopter.
ADOPT	Indicator variable equal to 1 if the firm has adopted clawback policy for the respective year, and 0 otherwise.
SIZE	Natural logarithm of total assets.
GROWTH	Market value of equity divided by book value of equity.
MARKETPERF	Change in market value of equity in a year, scaled by the end-of-year market value of the prior year, adjusted by value-weighted market performance.
BUS_SEG	Firms' segment sales over firm total sales squared, summed over all segments a firm operates in.
LEVERAGE	Long-term plus current debt, divided by book value of total assets.
LAG_CAL	Indicator variable equal to 1 if a firm has a class action filing in the past year, and 0 otherwise, as reported in the Stanford Securities Class Action Clearinghouse database.
LAG_REST	Indicator variable equal to 1 if a firm restates earning in the past year due to accounting errors or irregularities, and 0 otherwise, as reported in Audit Analytics.
FIRM_AGE	Natural logarithm of number of years a firm exists in Compustat.
SD_ROA	Standard deviation of *ROA*.
TENURE	Tenure of the current CFO as reported in Execucomp.
BOARD_SIZE	Number of directors serving on the board as reported in ISS.
PER_OUT_DIR	Fraction of outside directors serving on the board as reported in ISS.
BUSY_DIR	Average number of other boards outside directors sit on as reported in ISS.
CEO_CHAIR	Indicator variable equal to 1 if the CEO is also chairman of the board as reported in ISS, and 0 otherwise.
HAVE_CG	Indicator variable equal to 1 if data for the corporate governance variables are available in ISS, and 0 otherwise.
ΔEQUITY_HOLDINGS	Change in the stock option and stock portfolio.
RET	Change in stock price, scaled by beginning-of-year stock price.
ICMWD	Proxy for firm's susceptibility to misreporting measured internal control material weaknesses disclosures, defined as an indicator variable being 1 if a firm reports material weaknesses in the last five years, and 0 otherwise.
ABN_ACCR	Proxy for firm's susceptibility to misreporting measured by the average value of absolute performance-adjusted abnormal accruals over the last two years.
REL_CEOPOWER	Proxy for firm's susceptibility to misreporting, measured by the CEO power relative to CFO power, defined as CEO tenure divided by CFO tenure.
REL_AUCOMPOWER	Proxy for firm's susceptibility to misreporting measured by the audit committee expertise (*AU_FINEXP*), audit committee prestige (*AU_BOARD*), and CFO prestige (*CFO_BOARD*), defined as: $(\ln(1 + AU\_BOARD) * \ln(1 + AU\_FINEXP))/(1 + CFO\_BOARD)$.