

Monitoring by Auditors: Case of Public Housing Authorities*

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ABSTRACT: In this paper, we examine pre-audit and post-audit financial information for public housing authorities (PHAs) to provide evidence on the role of audits in financial reporting. We find that auditors make significant adjustments across all PHA balance sheet and income statement categories, which for a significant percentage of audits are material. We consistently find evidence of audits reducing positive bias in net accounts receivable; net property, plant and equipment; and discretionary accruals. Finally, we find no evidence that auditors restrain management opportunism in key balance sheet and income statement accounts or in discretionary accruals when management has incentives to meet financial ratios. Overall, our results suggest that audits significantly reduce misstatements in financial statements, reduce positive bias in some aspects of the financial statements, but that, at least in this setting, do not reduce bias related to management incentives to meet financial ratios.

Key words: auditor monitoring; auditor conservatism; audit adjustments; financial reporting quality; public housing authorities

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I. INTRODUCTION

In this paper, we take advantage of the unique reporting requirements of public housing authorities (PHAs) to examine the direct effect of an audit on financial reporting. While audits are widely believed to be a means of improving financial reporting and mitigating agency costs, there is little direct evidence in the prior literature. Further, the spectacular audit failures in the early part of the century highlight the need to better understand the role of auditors in financial reporting. To help better understand this role, we examine whether the audit process results in significant adjustments to the financial statements of PHAs, whether the adjustments are consistent with reducing positive bias in the financial statements, and whether the adjustments vary based on a PHA's need to meet financial ratio targets.

Pre-audit financial information is proprietary and frequently limited in availability. As a result, there are few studies that directly examine the effect of the audit on financial statements. Kinney and Martin (1994) is one notable exception.¹ In evaluating 13 studies of auditor adjustments, they find that, on average, auditors reduce positive bias in the financial statements, often by a material amount. We take advantage of PHA reporting requirements to file both pre-audit and post-audit financial information with the U.S. Department of Housing and Urban Development (HUD) and extend the results in Kinney and Martin in five ways. First, we examine both the direction and magnitude of audit related adjustments. Due to differences across the datasets they examine, Kinney and Martin are able to assess the direction of misstatements

¹ Prior research examining audit-related adjustments including the studies underlying Kinney and Martin (1994) has not focused on the broad question of the role of auditors in financial reporting. Instead, the objectives of these studies include developing and analyzing techniques for detection of misstatements (Kinney 1979; Hylas and Ashton 1982; and Wright and Ashton 1989), the relation between misstatements and control factors (Wallace and Kreutzfeldt 1991) and inherent risk (Houghton and Fogarty 1991), the decision to waive adjustments (Iceman and Hillison 1991 and Wright and Wright 1997) and evaluation of the misstatement characteristics including location and causes (Kreutzfeldt and Wallace 1986).

(under or overstatement) but are limited in their ability to examine the magnitude of misstatements. Next, we examine audit related adjustments considering industry-wide financial incentives. While Kinney and Martin (1994) find auditors reduce positive bias on average suggesting auditors constrain management opportunism, they are unable to directly examine this question. Third, we provide evidence of auditor effects over a more recent time frame. Changes in financial reporting and the audit environment (i.e. technology, licensing including the 150 hour requirement, the structure of the industry with consolidation and sell off of consulting units, scandals, and regulation) suggest the effect of audits on financial information in our sample period may differ from those performed in the 1970s and early 1980s (time period examined in Kinney and Martin [1994]). Next, our setting allows us to examine a wide cross-section of accounting firms, where Kinney and Martin were limited to essentially Big 8 auditors. Finally, we extend examination of the role of the auditor into the non-profit literature. Five of the nine datasets Kinney and Martin examine explicitly exclude non-profit firms while the remaining datasets consist of “representative” samples of audit firm clients which may or may not include non-profits.

We begin by examining audit related changes in summary balance sheet and income statement information. Using over 10,000 observations across five years for almost 3,000 non-profit public housing authorities, we find that auditors make significant adjustments across all PHA balance sheet and income statement categories. Further, for between 29 and 45 percent of the PHAs, the change in net income or total assets is material, depending on the materiality threshold used. Given that changes in financial information filed with HUD pre- to post-audit

likely *understates* the effect of an audit on the financial statements, we conclude that audits significantly reduce misstatements in financial statements.²

Next, we examine whether auditors appear to respond to asymmetric incentives to reduce positive bias. We find evidence that auditors of PHAs are more likely to reduce positive bias in accounts receivable, fixed assets and discretionary accruals, but not in other accounts in the financial statements. However, these represent areas commonly considered highly susceptible to manipulation.

Finally, we examine whether audit adjustments are related to PHA incentives to meet financial ratios, and find that the evidence does not support this hypothesis. It is unclear whether this is due to lack of sufficient incentives and/or accounting ability to undertake opportunistic reporting on average, a failure by auditors to detect and correct opportunism, a deliberate strategy by auditors based on the potentially low risk PHAs represent, insufficient measures of incentives and opportunism, or some combination thereof.

The remainder of the paper is organized as follows: Section II provides institutional background on public housing authorities. Section III provides the hypothesis development and section IV discusses the data used in the study. The final results and discussion are included in section V. Section VI concludes the paper.

II. INSTITUTIONAL DETAILS

Public housing authorities (PHAs) exist to assist the Department of Housing and Urban Development (HUD) in meeting its mission “to increase home ownership, support community

² Kinney and Martin (1994) suggest that examination of audit adjustments likely understates the effect of auditing for three reasons. First, client firms anticipating an audit may be more careful in maintaining their accounting records and less likely to bias amounts involving managerial discretion or judgment. In our setting this is reinforced by the fact that both sets of numbers are examined by HUD. Second, the approach does not include misstatements prevented because the client consulted with the auditor prior to recording the transaction. Finally, the approach does not include misstatements that were avoided due to client controls in place to reduce audit effort and fees.

development and increase access to affordable housing free from discrimination,” (www.hud.gov). PHAs, established by individual cities or counties as need arises, own, maintain, and operate housing for low income individuals and families. While PHAs are ultimately responsible to HUD, each city or county maintains a Board of Commissioners, appointed by the city mayor (or other similar position), whose responsibility is direct oversight of the PHA. Although HUD provides some guidelines, the Boards of Commissioners are responsible for hiring, reviewing, and setting compensation for the PHA manager. The corporate and accounting structure of each PHA varies depending on the size; smaller PHAs contract out much of their accounting and financial statement preparation while larger PHAs have financial officers and/or staff.

Public housing authorities provide a unique opportunity to directly examine the effect of auditing. HUD, as the major source of funding for public housing authorities, requires PHAs to file pre-audit financial information within two months of fiscal year-end and audited financial statements within nine months of year-end. In addition to the annual audit requirements, HUD evaluates each PHA annually on four factors: financial (30 points), physical (30 points), management (30 points), and resident (10 points), summarized in a PHAS score totaling 100 points.³ The PHAS score is used to classify a PHA as a high performer, standard performer, or troubled performer. A PHA is classified as a high performer if its PHAS score is 90 or above and it receives at least 60% on all four factors. A standard performer has a score in the range $60 < \text{PHAS} < 90$ and receives at least 60% on the financial, physical, and management factors. All

³ The financial factor is scored based on the PHA’s financial performance in six areas – current ratio, months expendable fund balance, tenant receivable outstanding, occupancy loss, expense management/utility consumption, and net income. The physical component is scored based on results of an inspection of the PHA’s property for over 500 conditions. The management component is scored based on results of a PHA’s certification of its management performance over six items – vacant unit turnaround time, capital funds, workorders, annual inspections, security and economic self-sufficiency. Finally, the resident factor is scored based on an annual survey of resident satisfaction. <http://www.hud.gov/offices/reac/atglance.cfm>

other PHAs are considered troubled. High performers are eligible for capital fund bonuses and may be eligible for biannual, rather than annual, physical inspections, while troubled PHAs are more closely supervised by the local HUD field office, and continual troubled ratings could result in the PHA being referred to the HUD Enforcement Center and eventually suspended or disbarred (http://www.hud.gov/utilities/intercept.cfm?/offices/reac/products/PDFs/PHAS_NASS.ppt).

The financial portion of the PHAS score is based on the PHA’s performance on the following six ratios:

	<u>Financial Score Component</u> ⁴	<u>Points</u>
CR	Current ratio	9.0
MEXP	Number of months expendable fund balance	9.0
TRO	Tenant receivables outstanding	4.5
OL	Occupancy loss	4.5
UTIL	Expense management/utility consumption	1.5
NIFB	Net income as a percent of expendable fund balance	1.5
	Total	<u>30.0</u>

The current ratio, a slightly modified version of the traditional current assets to current liabilities ratio, is used to assess the PHA’s liquidity. The number of months expendable fund balance measures the adequacy of reserves by determining how many months of expenses can be paid with current assets. Tenant receivables outstanding is the number of days in accounts receivable and measures how efficiently the PHA collects tenant receivables. Occupancy loss

⁴ Appendix A provides the details of the calculations for each financial score component.

measures the percent of apartments not leased during the year. Expense management/utility consumption measures the efficiency of the PHA by determining the weighted cost per apartment. Net income as a percent of expendable fund balance measures how adequately the PHA is managing its operations. Scoring for CR, MEXP, TRO and OL is relative to other PHAs of similar size across the country and UTIL is scored relative to other PHAs of similar size in the same region. Scoring for NIFB is based on meeting a specified target, essentially positive net income. Appendix A provides details on the calculations of each of the ratios and Appendix B provides the details on the point allocations for each of the ratios.

In addition to the HUD-specific regulations and controls discussed above, public housing authorities that receive more than \$300,000 in federal funding are required to submit to an audit performed in accordance with the Office of Management and Budget's Circular No. A-133 (A-133 audit).⁵ The A-133 audit requires a specially trained auditor to provide an opinion on the financial statements, schedule of federal awards, and compliance with federal regulations.⁶ In addition, the auditor must provide a report on the adequacy of internal controls and a summary of findings and questioned costs.

III. HYPOTHESIS DEVELOPMENT

Jensen and Meckling (1976) suggest that monitoring by an independent third party auditor is a means of reducing agency costs.⁷ Consistent with this hypothesis, Watts and Zimmerman (1983) find that audits in some form have been around since the early development of corporations, the 1200s. However, the spectacular audit failures in the early part of the century

⁵ The limit was raised to \$500,000 in June 2003.

⁶ Auditors performing A-133 audits are required to receive training specific to A-133 and/or federal government Yellow Book audits.

⁷ Jensen and Meckling (1976) define agency costs as monitoring expenditures by the principal, bonding expenditures by the agent, and loss in welfare experienced by the principal due to the agent's not acting in the principal's best interest.

(e.g. Enron, WorldCom, Health South, and Parmalat) highlight the need to better understand the role of auditors in financial reporting.

Mitigating Misstatements

The primary means independent auditors have to reduce agency costs is by reducing financial statement misstatements. Auditors are expected to plan and perform their audit to detect material misstatements, (Statement on Auditing Standards No. 1, AICPA). Evaluating 13 studies of auditor-related adjustments over the period 1975 to 1988 across a variety of mostly for-profit industries, Kinney and Martin (1994) find that audits reduce financial statement misstatements. Based on the nine data bases included in their analysis, Kinney and Martin find that “60 to 90 percent of the audits have non-zero adjustments and about 20 to 60 percent have ‘material’ aggregate adjustments,” (p.154), indicating that auditors identify at least one misstatement in the majority of audits.

That said, the effect of audits on misstatements in PHA financial statements is unknown. The Kinney and Martin results may not apply to non-profit PHAs. As noted earlier, five of the nine datasets Kinney and Martin examine explicitly exclude non-profit firms while the remaining datasets consist of “representative” samples of audit firm clients which may or may not include non-profits. Further, there have been substantial changes in the financial reporting and audit environments over the last two decades (i.e. computing technology, CPA licensing including the 150 hour requirement, the structure of the accounting industry with consolidation and sell off of consulting units, business and accounting scandals, and regulation). The effect these changes have on the number and magnitude of misstatements in unaudited financial statements and the auditors’ ability to detect and correct misstatements is unknown. We hypothesize that:

H₁: Audits reduce the magnitude of misstatements in PHA financial statements, ceteris paribus.

Auditor Conservatism

Research on auditor conservatism and litigation risk suggests that auditors face asymmetric incentives to constrain financial management and reduce opportunism by managers. For example, Lys and Watts (1994) and Heninger (2001) find that auditor litigation risk increases with income increasing accruals. Nelson et al. (2002) find that managers are more likely to attempt to increase current year income, but that auditors are more likely to require adjustment. Further, Kinney and Martin (1994) find that in addition to reducing misstatements in general, on average, auditors significantly reduce pre-audit earnings and assets through the proposal of adjusting entries. If incentives for auditor conservatism carry over to audits of public housing authorities, we hypothesize that:

H₂: Audits reduce positive management bias in financial statements, ceteris paribus.

Mitigating Earnings Management

Extensive prior research indicates management has incentives to “adjust” financial statements to maximize personal and firm wealth, (see Healy and Wahlen [1999] for summary). Much of this research focuses on for-profit corporations (e.g. Healy 1985; McNichols and Wilson, 1988; Hand 1989; Jones 1991; and DeFond and Jiambalvo 1994) and agency conflicts that give rise to incentives to manipulate financial information may be reduced but not eliminated in a non-profit entity. While the conflict between shareholders and managers is removed, there remains the potential for managers to “consume excessive perquisites, exert lower effort, or expend resources on activities peripheral to the stated mission” (Krishnan et al.

2006, 402). Leone and Van Horn (2005) and Krishnan et al. (2006) find that nonprofit entities respond to incentives to opportunistically report their financial information.

As discussed above, HUD is the major source of funding and monitoring for PHAs. In order to maintain access to capital and to avoid costly additional regulatory monitoring, PHAs have incentives to increase their four-part PHAS score, the main tool used by HUD for evaluation. As a result, financial incentives for PHAs focus on meeting pre-established thresholds for financial ratios.^{8,9} The use of financial ratios as an element of monitoring by HUD is similar to monitoring via debt covenants. Positive accounting theory suggests that debt covenants provide managers with incentives to choose accounting policies that reduce the risk of violation (Watts and Zimmerman 1986). In a for-profit setting, DeFond and Jiambalvo (1994) and Sweeney (1994) find evidence of financial manipulation by firms prior to debt covenant violations.

Again, auditors are expected to plan and perform their audit to detect material misstatements which include both errors and fraud (Statement on Auditing Standards No. 1 and Statement on Auditing Standards No. 99, AICPA). Consistent with this, Hirst (1994) finds auditors are sensitive to managerial incentives to make income adjusting accruals. If auditors reduce management opportunism as part of mitigating material misstatements, then in response to PHA-specific incentives we expect a reduction in bias in pre-audit financial data included in PHAS ratios for those PHAs most likely to have biased the financial data. We test the following hypothesis:

⁸ Based on discussions with public housing authority administrators and HUD personnel, compensation is generally not explicitly tied to financial performance. As a result, there are no direct incentives to meet financial targets to increase managers' compensation.

⁹ In terms of PHAs' incentives to manage financial information, it is important to note that HUD assesses the financial component of the PHAS score using the unaudited financial information filed within two months of fiscal year-end. HUD adjusts the financial score and penalizes the PHA by reducing the PHAS score only if there are significant differences once the audited financial information is filed (within nine months of fiscal year-end).

H₃: Audits reduce management bias intended to meet PHAS ratios, *ceteris paribus*.

IV. DATA AND DESCRIPTIVE STATISTICS

Data

The data used in this study was obtained from the United States Department of Housing and Urban Development (HUD) under the Freedom of Information Act. Both pre- and post-audited financial data, as well A-133 audit results, were requested for all non-profit public housing authorities.¹⁰ The original dataset included 12,440 observations for 3,163 different PHAs from 1999-2003, with the average organization included in the dataset for four years. Observations were eliminated if both pre- and post-audit data was not available (1,673 observations for 134 PHAs). Observations that were non-consecutive (200 observations for 45 PHAs) were also eliminated as lagged or lead values were required for discretionary accrual calculations. The resulting dataset has 10,567 observations for 2,984 PHAs.

The original dataset includes financial data at the general ledger level for each federal program for each PHA for each year, both pre-and post-audit. For each PHA, we combined the program level data into PHA-level data for each year, both pre- and post-audit. Because of the large amount of data, we then combined the appropriate general ledger accounts into the following financial statement subtotals for analysis: total assets (ASSET), total revenue (REV), total operating expenses (OPEXP), net income (NETINC), net accounts receivable (NETAR), other current assets (OCASS), fixed assets (NETPPE), other non-current assets (ONCASS), current liabilities (CLIAB), and non-current liabilities (NCLIAB).

¹⁰ All public housing authorities included in this study are non-profit. While PHAs can be for-profit or non-profit, only financial data on non-profits is publicly available from HUD.

Descriptive Statistics

Table 1 provides descriptive data for all PHAs in the dataset. Pre- and post-audit mean (median) assets are \$18,300,000 (\$3,500,000) while revenues are \$5,960,000 and \$5,950,000 (\$940,000 and \$950,000) pre-audit and post-audit, respectively. Mean (median) net income is \$117,834 (-\$5,195) pre-audit and \$106,493 (-\$3,346) post-audit. In untabulated results, total pre-audit (post-audit) assets range from \$41,877 (\$53,718) to \$6.16 billion (\$6.17 billion) and total pre-audit (post-audit) revenues range from \$19,257 (\$19,197) to \$2.69 billion (\$2.65 billion). Net income ranges from a \$212 million (\$233 million) net loss to a \$134 million (\$145 million) net gain pre-audit (post-audit), respectively.

(Insert Table 1 here)

The last two columns provide descriptive data on the make-up of the PHAs' income statement and balance sheet. Mean (median) operating expenses are 59 (57) percent of total revenue both pre- and post-audit, while mean (median) pre-audit and post-audit net income are -3.1% percent and -2.7 percent (-0.7 percent and -0.5 percent) of total revenue, respectively. Not surprisingly, the majority of assets are held in property, plant, and equipment with a mean (median) of 79 (83) percent both pre- and post-audit. Net accounts receivable makes up less than 2 percent of total assets, consistent with the majority of tenants' rent being paid for by grants from the Department of Housing and Urban Development. The majority of PHAs' liabilities are current; more than half of PHAs have no long-term liabilities.

V. RESULTS AND DISCUSSION

Mitigating Misstatements

If monitoring by auditors reduces misstatements in financial information, then to the extent there are significant misstatements in the unaudited financial information, we expect the

audited financial information to differ significantly from the unaudited information. We begin by examining whether the absolute value of the change from pre- to post-audit is significantly different from zero for financial statement summary data. Columns two and three of Panel A in Table 2 provide the mean change from pre- to post-audit in balance sheet and income statement summary data and the significance based on t-test comparisons. All of the mean changes are significantly different from zero indicating that on average, auditors required significant adjustments to correct misstatements found throughout the balance sheet and income statement. To mitigate the influence of extreme observations, we winsorize the data by changing the values for the 100th percentile each year for each variable to equal the highest value in the 99th percentile, and changing the values for the 1st percentile each year for each variable to equal the lowest value in the 2nd percentile. Columns four and five repeat the analysis with the winsorized data, with the same results. Finally, in order to reduce the effects of size, we analyze the absolute value of the change (winsorized¹¹) from pre- to post-audit scaled by total assets, and again find all mean scaled changes are significantly different from zero.¹²

(Insert Table 2 here)

We analyzed the magnitude of adjustments identifying the number and percent of PHAs that had material adjustments to their unaudited data. Panel B of Table 2, presents the number and percent of all observations that had adjustments to net income (columns two and three) and total assets (columns four and five) above several potential materiality thresholds - 5 percent of net income, ½ percent of total assets, and ½ percent of total revenue.¹³ Depending on the

¹¹ All further analyses are performed using winsorized data.

¹² We perform the same analysis using the absolute value of the percent change calculated as $(| \text{audited value} - \text{unaudited value} |) / \text{unaudited value}$ and find similar results.

¹³ SEC Staff Bulletin No. 99, “Materiality” identifies 5% of net income as a reasonable starting point for determining materiality. Messier, et al. recommend using ½ percent of total revenues or total expenses for non-profit

materiality threshold used, between 29 and 45 percent of all observations had adjustments to net income or total assets that would be considered material, consistent with Kinney and Martin's (1994) findings of 20 to 60 percent of observations having material adjustments. Given many adjustments affect both the income statement and balance sheet, we also examine the number and percent of PHAs with material adjustments to both net income and total assets (columns six and seven). Twenty-two to 33 percent of observations had material adjustments to both net income and assets.

The results in panels A and B support Hypothesis One that auditors reduce misstatements in the financial statements. Further, it appears that auditors reduce *material* misstatements in a significant percentage of engagements.

Auditor Conservatism

Hypothesis Two predicts that audits reduce positive bias in the financial statements. We take a four-pronged approach to testing this hypothesis. First, we analyze changes in the summary financial data expecting the change in assets and revenues from pre- to post-audit will be negative and the change in liabilities and expenses will be positive. Our next two tests focus on overstatement and understatement corrections, with the first test analyzing total overstatement and understatement corrections and the second test analyzing only material overstatement and understatement corrections. Finally, we analyze the change in discretionary accruals from pre- to post-audit expecting a reduction in discretionary accruals across PHAs.

Analysis of Changes

The last four columns of Panel A of Table 2 provide the results of the univariate analyses to determine if the mean signed changes in assets and revenues are negative, and the mean

entities, and Kinney and Martin (1994) use $\frac{1}{2}$ percent of total revenues and $\frac{1}{2}$ percent of total assets as materiality thresholds. The actual materiality thresholds used in the individual audit engagements is unavailable.

signed changes in liabilities and expenses are positive. We perform the test using both raw changes and changes scaled by total assets, and the results are mixed. The mean changes and scaled changes in NETAR and NETPPE are negative and significant and the mean changes in CLIAB and NCLIAB are positive and significant, consistent with expectations. However, the mean change and scaled changes in OPEXP, OCASS, and ONCASS are significant but in the incorrect direction.

Analysis of Overstatement and Understatement Corrections

Next, we compare overstatement and understatement corrections in Panel C of Table 2 using winsorized data. If auditors reduce positive bias, we expect average magnitude of overstatement corrections to be greater than average magnitude of understatement corrections of assets and revenue and the reverse for liabilities and expenses. The results are mixed. We find four of the nine comparisons are significant and in the correct direction: average overstatement corrections are significantly greater than average understatement corrections for REV, NETAR, and NETPPE and average understatement corrections are significantly greater than average overstatement auditor corrections for NCLIAB for the both change from pre- to post-audit and change scaled by total assets. However, four of nine comparisons are significant and in the incorrect direction for both change and scaled change: average understatement corrections were greater than average overstatement corrections for OCASS and ONCASS, and average overstatement corrections were greater than average understatement corrections for OPEXP and CLIAB, generally inconsistent with auditors constraining income and asset overstatements.

Panel D of Table 2 provides the number and percent of observations with material overstatement and material understatement corrections to determine whether there is a significant difference in the incidence of material corrections. If auditors reduce positive bias, we expect

more material corrections of overstatements than understatement of net income and total assets. The results on corrections to assets are consistent with expectations as seen with the higher percent of material overstatement corrections than material understatement corrections. However, the percent of material understatement corrections of net income is approximately the same as the percent of material overstatements across all three measures of materiality.

Analysis of Discretionary Accruals

Our final test of H₂ examines whether auditors reduce positive bias in the financial statements by reigning in discretionary accruals. A long stream of literature uses discretionary accruals as a measure of earnings management (e.g. McNichols and Wilson 1988; Jones 1991; DeFond and Jiambalvo 1994). More recent research has found that auditors are sensitive to (Hirst 1994) and reduce accruals-based earnings management (Becker et al. 1998; Francis et al. 1999; and Kim et al. 2003).

Following suggestions by Francis et al. (2005) and Kothari et al. (2005), we estimate pre-audit and post-audit discretionary accruals (DAC) as the residual from the following cross-sectional, modified Jones-type regression:

$$\frac{TAC_{it}}{TA_{it-1}} = +\beta_0 + \beta_1 \frac{1}{TA_{it-1}} + \beta_2 \frac{\Delta Rev_{it} - \Delta AR_{it}}{TA_{it-1}} + \beta_3 \frac{PPE_{it}}{TA_{it-1}} + \beta_4 ROA_{it-1} + \varepsilon_{it} \quad (1)$$

where TAC_{i,t} is firm i's total accruals in year t. The electronic data available from HUD does not include cash flow statement line items. As a result, we adopt a balance sheet approach to calculating total accruals, where total accruals is defined as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt minus the

depreciation and amortization.¹⁴ Hribar and Collins (2002) find that in the absence of significant events that break down the articulation between the balance sheet and income statement, the error in accruals estimates from a balance sheet approach is low. Since such events (e.g. mergers and acquisitions, divestitures, and foreign currency translation) are rare in this industry, there should be little error in the estimate of total accruals.

$TA_{i,t-1}$ is firm i 's total assets in year $t-1$, $\Delta REV_{i,t}$ is the change in firm i 's revenues between year $t-1$ and t , $\Delta AR_{i,t}$ is the change in firm i 's accounts receivable between year $t-1$ and t , $PPE_{i,t}$ is firm i 's property plant and equipment in year t , and $ROA_{i,t-1}$ is firm i 's return on assets in year $t-1$ calculated as total net income in year $t-1$ divided by total assets in year $t-1$.

We examine the change in discretionary accruals from pre- to post-audit to determine if auditors are constraining manipulation of the financial statements. The results are provided in the final column of Table 2, Panel A. The mean change in DAC is -0.005 and is statistically different from zero, consistent with auditors reducing positive discretionary accruals in the financial statements.

Summary of Hypothesis Two Results

Together, the results for H_2 are mixed. In contrast to expectations, we find the changes from pre- to post-audit in OPEXP and ONCASS inconsistent with the hypothesis, and we do not find more material overstatement corrections than understatement corrections in net income. However, we find changes in NETAR, NETPPE, and NCLIAB consistent with auditors being

¹⁴ We calculate total accruals as follows: Total Accruals = Δ Total Receivable, net of all Allowances + Δ Investments, Restricted for Pymt of Current Liabilities + Δ Prepaid Expenses & Other Assets + Δ Inventory + Δ Allowance for Inventory Obsolesce + Δ Interprogram, Due from + Δ Assets Held for Sale – [Δ Accounts Payable < 90 days + Δ Accounts Payable > 90 days + Δ Accrued Wage/Payroll Taxes Payable + Δ Accrued Compensated Absences, Current Portion + Δ Accrued Contingency Liability + Δ Accrued Interest Payable + Δ Accounts Payable, HUD PHA Programs + Δ Accounts Payable, PHA Projects + Δ Accounts Payable, Other Gov't + Δ Tenant Security Deposits + Δ Deferred Revenue + Δ Other Current Liabilities + Δ Accrued Liabilities, Other + Δ Interprogram, Due to)] - Depreciation Expense

more concerned with overstatement of assets and understatement of liabilities. In addition, there are more material overstatement corrections than understatement corrections in assets, and the change from pre- to post-audit in discretionary accruals is significant and negative. All of these findings are consistent with auditors constraining positive bias in the financial statements.

NETAR and NETPPE are considered to be more susceptible to manipulation than other accounts given the subjectivity of allowances and depreciation elements (including useful lives, salvage values, and depreciation methods), and the results are consistent with auditors focusing on potential manipulation in these accounts. Consistent with auditors focusing on the areas more susceptible to manipulation, we also find results consistent with the hypothesis for changes in discretionary accruals from pre- to post-audit.

Mitigating Earnings Management

Hypothesis Three predicts auditors will reduce bias in the ratios used in the financial portion of the PHAS score. We expect that PHAs close to meeting the financial ratio thresholds to earn points toward the PHAS score have the greatest incentives to report opportunistically (Burgstahler and Dichev, 1997 and Degeorge and Zeckhauser, 1999). As a result, we examine PHAs that just meet each ratio using pre-audit data. For each ratio, we divide the PHAs that met the threshold into deciles.¹⁵ PHAs are coded as NEAR a ratio if they are in the decile just above the ratio threshold. See details of the coding in Appendix B.

Our first test of H_3 compares the mean changes in the PHAS financial ratio and the underlying financial statement categories between NEAR PHAs and all other PHAs; the results

¹⁵ Deciles are determined by size category and year for all ratios except UTIL consistent with HUD point determinations. For UTIL, we determined deciles by region in addition to size category and year consistent with HUD.

are provided in Table 3. We expect the changes from pre- to post-audit in the ratios and the ratio components to be more conservative for PHAs NEAR the ratio threshold than for PHAs not NEAR the ratio threshold. The expected direction of the difference between PHAs NEAR the ratio and all other PHAs are provided in the second column. For example, we expect the change in NETAR and OCASS for PHAs just meeting the current ratio (NEAR CR) to be significantly more negative or less positive (<) than the change in these variables for other PHAs. Because CLIAB is in the denominator of the current ratio, we expect the change in CLIAB for PHAs NEAR CR to be greater than (>) the change for all other PHAs.

(Insert Table 3 here)

A number of the changes in the ratios and ratio components are significantly different between PHAs NEAR and all other PHAs. The changes in the current ratio and CLIAB are significantly different between PHAs just meeting the CR threshold and all other PHAs, however the difference is in the opposite direction of that expected; PHAs just meeting the CR threshold had larger increases to CR on average and larger decreases to CLIAB than other PHAs. The significant differences between PHAs near the MEXP threshold and those not near for the ratio itself (MEXP) and NETAR are also in the wrong direction, as are the significant differences for TRO and TENAR under tenant receivables outstanding, OPEXP under the energy consumption (UTIL) ratio, and NIFB and NETINC under the net income/expendable fund balance (NIFB) ratio. We ran the test comparing the ratio components for PHAs that are NEAR any ratio (rather than a specific ratio) to all other PHAs; the results are generally consistent with those reported except OCASS is significant in the incorrect direction when using NEAR any ratio. Finally, we ran the same analysis using the change in variables scaled by total assets with similar results,

except the change in NETAR scaled by total assets for PHAs near CR is significantly more negative than for all other PHAs, a result in the predicted direction.

Our second test of H₃ examines whether auditors reduce bias in the PHAS financial ratios by reducing discretionary accruals. First we compare the mean change in discretionary accruals between PHAs NEAR any ratio and all other PHAs, expecting more conservative changes in discretionary accruals for NEAR PHAs. As seen in the last row of Table 3, the mean change in discretionary accruals is -0.003 for NEAR PHAs and -0.006 for all other PHAs. While the means are significantly different from one another, they are in the wrong direction; we expect more negative changes in discretionary accruals for NEAR PHAs.

Next, we estimate the following regression which allows us to control for potential correlated factors:

$$\Delta DAC_{it} = +\beta_0 + \beta_1 NRANY_{it} + \beta_2 LNA_{it} + \beta_3 PROG_{it} + \beta_4 IC_{it-1} + \beta_5 OPROB_{it-1} + \beta_6 TOP50_{it} + \beta_7 FEE_{it} + \beta_8 \Delta DAC_{it-1} + \varepsilon_{it} \quad (2)$$

where the variables are discussed below.

ΔDAC is the change in discretionary accruals from pre- to post-audit as estimated using the modified Jones-type model discussed above. $NRANY$ is coded as 1 if the PHA was NEAR at least one of the five financial ratios during the year, 0 otherwise. We expect β_1 to be negative and significant if auditors constrain management bias (as measured by discretionary accruals) more when PHAs have a greater incentive to manipulate financial data.

The remaining variables are control variables. LNA , the natural log of assets, and $PROG$, the total number of federal programs the PHA manages, control for the size and complexity of the PHA, respectively. We expect there is greater scope for changes in discretionary accruals for large and complex entities without any specific intent of management to bias the financial data.

Weak internal controls and/or poor accounting could affect the level of and resulting change in discretionary accruals without any specific intent of management to bias the financial data. IC is coded as 1 if the PHA had reportable conditions or material weaknesses reported in the previous year, 0 otherwise and OPROB is coded as 1 if the PHA received a going concern audit opinion, an other-than-unqualified audit opinion, indications of findings or questioned costs, or indications of material noncompliance with federal regulations¹⁶. We also include the lagged change in discretionary accruals as an additional control for organizational factors that affect discretionary accruals or audit adjustments that are not related to management bias of financial data.

We also control for the likely effectiveness of the auditor in identifying and correcting misstatements. DeAngelo (1981) hypothesizes that audit quality improves with auditor size, and significant prior research finds that corporations and users of financial statements believe large auditors provide higher quality audits, (e.g. Craswell et al. 1995; Beattie et al. 2001; Allen 1994; Balvers et al. 1988; Beatty 1989; Teoh and Wong 1993). While most prior research uses the Big 5/non-Big 5 designation for measures of audit quality, we use a Top 50/non-Top 50 categorization because of the significant diversity in firms auditing PHAs. TOP50 is coded as 1 if the auditor is one of the top 50 auditors as ranked by *Accounting Today*, 0 otherwise.^{17, 18} Finally, we include the natural log of the audit fee (FEE) as an additional control for auditor effectiveness.

(Insert Table 4 here)

¹⁶ PHAs are required to adhere to all federal regulations related to expenditures. Findings are instances of noncompliance with federal regulations that have no financial effect (i.e., submitting quarterly reports late), and questioned costs are instances of noncompliance with federal regulations that have a financial effect (i.e., overpaying employees).

¹⁷ We use the annual rankings published in *Accounting Today* for each of our sample years.

¹⁸ We also run the regressions using the Big 5 designation with no change in the results.

The results of estimating this regression are provided in Table 4. Results for β_1 are not as expected; the coefficient on NRANY is significant, but positive, indicating the change in discretionary accruals is more positive or less negative for PHAs near any of the financial ratios than for those not NEAR. The positive significant coefficient on FEE indicates that the change in audited discretionary accruals increases as the audit fee increases. The significant negative coefficient on ΔDAC_{t-1} is consistent with accruals reversing over time. Given the results reported in Tables 3 and 4, our tests do not provide support for the hypothesis that PHA audits reduce management bias to meet financial ratio thresholds.

Summary of Hypothesis Three Results and Sensitivity Analysis

None of the tests performed support H_3 , that audits reduce bias related to PHAs' need to meet financial ratios. One potential explanation for the lack of findings could be due to PHAs' inability to manipulate the data. Many of the small PHAs may not have internal accounting departments or staff and instead may contract their accounting to an external accounting firm. In that case, the external accountant would have no incentive to bias the financial data. We separated the PHAs into two size categories based on median assets; PHAs with assets less than the median were considered small and PHAs with assets above the median were considered large.¹⁹ We then re-ran the analyses presented in Table 3 by size. The results (not tabulated) do not provide support for this explanation; large PHAs that are NEAR are not more likely to have more conservative adjustments to ratio financial data.

Another potential explanation for the lack of findings is that we did not adequately control for size in the comparison of ratio components between NEAR PHAs and all other PHAs, presented in Table 3. To determine if this is true, we ran the multivariate regression

¹⁹ We also used quintiles to categorize size with the first and second quintiles of assets considered small and the fourth and fifth quintiles considered large; the results are the same.

(equation 2) using the change in each of the nine financial statement summary categories as the dependent variable. None of these results (not tabulated) support the hypothesis; the coefficient on NRANY was either not significant (in seven of the regressions) or positive and significant (in two of the regressions).

We also consider whether our measure of discretionary accruals lacks the power/sensitivity to capture management opportunism and auditor detection and correction in this setting. We repeat the analyses in Tables 3 and 4 using two alternative measures of discretionary accruals - total accruals (TAC) and the residual provision for bad debts for total receivables based on McNichols and Wilson (1988). The results using TAC are similar to those for DAC in both analyses. The results using the McNichols and Wilson model are not significant for either analysis.

There are a number of other potential explanations for our findings. It is possible that the pre-audit financial data provided by the PHA are not complete. While PHAs are expected to submit completed financial data to HUD, and there is a penalty for large changes in the ratios from pre- to post-audit, as part of the audit the auditors may be providing many of the closing or year-end adjusting entries which would not be expected to be biased in any specific direction.²⁰ Second, while PHAs have incentives to maintain a high PHAS score (reduced oversight by HUD and access to capital), the incentives may not be strong enough to induce PHAs to attempt financial statement manipulation. Finally, we may not find results because we have failed to consider all of the correlated control variables. However, using the change (rather than levels) in our measures of management discretion from pre- to post-audit mitigates some of this concern.

²⁰ Nineteen percent of the sample observations received a penalty from HUD due to large changes in their financial ratios pre- to post-audit.

VI. CONCLUSION

Audits are widely believed to be a means of improving financial reporting and mitigating agency costs. However, pre-audit financial information is proprietary and frequently limited in availability. As a result, there are few studies that directly examine the effect of the audit on financial statements. The unique reporting requirements of public housing authorities provide an opportunity to examine the direct effect of an audit on financial reporting.

We find that audits result in adjustments to the financial statements of PHAs, a significant portion of which are material. In addition, we find adjustments to net accounts receivable, net property, plant, and equipment, and discretionary accruals, areas commonly considered highly susceptible to manipulation, are more likely to reduce positive bias. However, audit adjustments to other financial statement elements are not consistent with auditors broadly correcting positive bias. Finally we find no evidence that audit adjustments reduce bias in the face of incentives to manage financial information. Overall, our results suggest that audits significantly reduce misstatements in financial statements, reduce positive bias in some aspects of the financial statements, but that, at least in this setting, audit adjustments do not broadly reflect auditor incentives to reduce positive bias nor management incentives to meet financial ratios.

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Appendix A
Details of Financial Score Component Calculations

Ratio	Numerator	Denominator
Current Ratio (CR)	Cash + Net Accounts Receivable + Unrestricted Investments + Investments Restricted for Payment of Current Liabilities + Prepaid and Other Assets	Total Current Liabilities – Interprogram Due To
Months Expendable Fund Balance (MEXP)	Cash + Net Accounts Receivable + Unrestricted Investments + Investments Restricted for Payment of Current Liabilities + Prepaid and Other Assets – Total Current Liabilities + Current Portion of Long-Term Debt for Capital Projects + Interprogram Due To – Long-Term Debt, net of Current for Operating Borrowings	(Debt Principal Payments for Enterprise + Total Operating Expenses + Extraordinary Maintenance + Non-Capitalized Casualty Losses + Debt Principal Payments for Governmental Funds + Dwelling Units Rent Expense ¹)/12
Tenant Receivables Outstanding (TRO)	Tenant Accounts Receivable	Total Tenant Revenue ¹ /365
Occupancy Loss (OL)	Number of Unit Months Leased	Gross Number of Units ⁱⁱ
Expense Management/Utility Consumption (UTIL)	.34*Administrative Expenses + .10*Tenant Services Expenses + .03*Utilities Expenses + .10*Ordinary Maintenance and Operations + .10*Protective Services Expenses + .33*General Expenses	Number of Unit Months Leased
Net Income Divided By Expendable Fund Balance (NIFB)	Excess of Operating Revenue Over Operating Expenses – Capital Grants – Extraordinary Maintenance - Non-Capitalized Casualty Losses – Housing Assistance Payments – Fraud Losses – Capital Outlays for Governmental – Dwelling Units Rent Expense ¹	Cash + Net Accounts Receivable + Unrestricted Investments + Investments Restricted for Payment of Current Liabilities + Prepaid and Other Assets – Total Current Liabilities + Current Portion of Long-Term Debt for Capital Projects + Interprogram Due To – Long-Term Debt, net of Current for Operating Borrowings

ⁱ Equation provides for adjustments to convert the PHA’s ratio to the full accrual basis if the PHA uses the modified accrual basis of accounting.

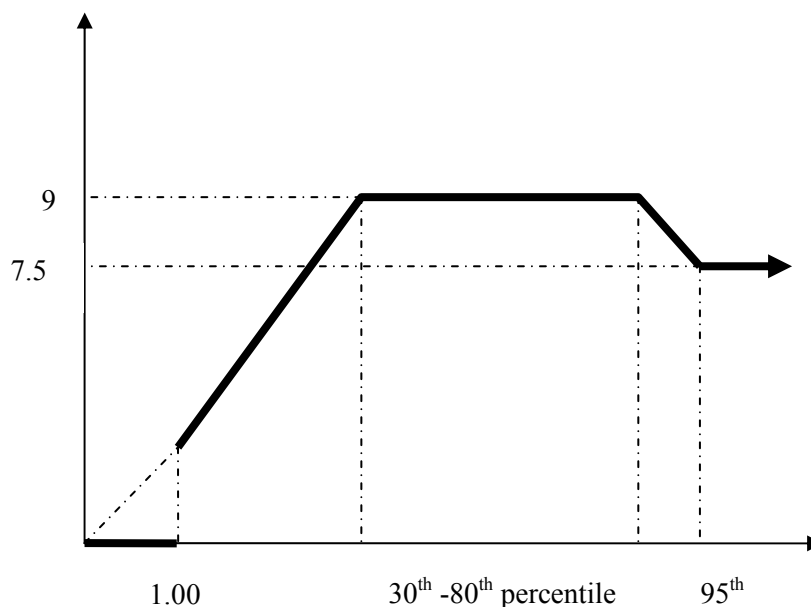
ⁱⁱ This fraction is subtracted from 1 to obtain the loss ratio.

Appendix B
Point Allocation Details and NEAR Coding for Ratios

Current Ratio and Months Expendable Fund Balance

Point Allocation

The point allocation for the current ratio (CR) and months expendable fund balance (MEXP) is dependant on the PHA's actual CR and MEXP as compared to both a set standard, and to the ratios of other PHAs of similar size¹. PHAs receive no current ratio points if $CR < 1.00$ and no months expendable points if $MEXP < 1.00$. Point allocations for each ratio gradually increase up to 9.00 if the ratio is greater than 1.00 and the PHA is below the 80th percentile of PHAs in their size group. Point allocations gradually decrease from 9.00 to 7.50 for PHAs above the 80th percentile but below the 95th percentile of PHAs in their group, and all PHAs above the 95th percentile in their group earn 7.50 points.



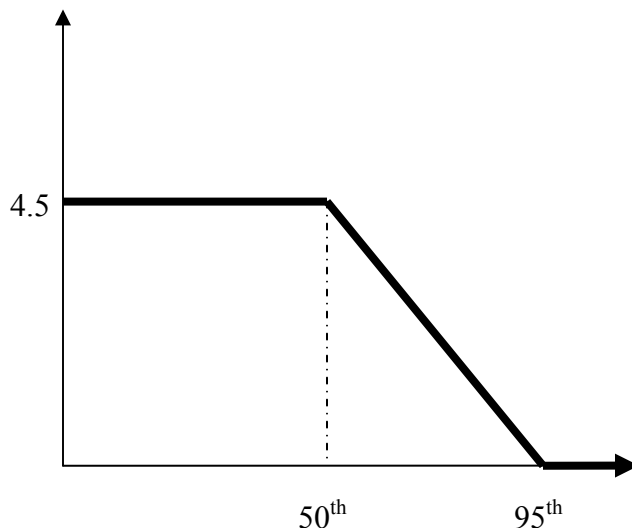
NEAR Coding

We define an organization as NEAR CR (NEAR MEXP) if they are in the lowest decile of all similar sized PHAs with $CR \geq 1$ ($MEXP \geq 1$), as measured each year.

Tenant Receivables Outstanding

Point Allocation

The point allocation for tenant receivables outstanding (TRO) is dependant on the PHA's actual TRO as compared to the ratios of other PHAs of similar size. PHAs receive 4.5 points if they fall within the 50th percentile, gradually decreasing points between the 50th and 95th percentile, and zero points if they are above the 95th percentile of PHAs in their size group for each ratio.



NEAR Coding

Using preliminary data submitted from January 1999 through June 2001, HUD established the 50th percentile and 90th percentile thresholds to be used for actual point allocations (Federal Register 2000). We used these pre-established thresholds rather than the actual 50th percentile to be consistent with HUD, and coded an organization as NEAR TRO if their ratio was in the highest decile less than the established 50th percentile threshold of organizations of similar size. The coding was performed separately for each year.

Expense Management/Utility Consumption

Point Allocation

PHAs receive the full 1.5 points if their expense management/utility consumption ratio (UTIL) is below the 95th percentile of all similar-sized PHAs in their region and no points if they are above the 95th percentile.

NEAR Coding

Similar to TRO, HUD established a threshold value for UTIL based on preliminary data (Federal Register 2000). We used these pre-established thresholds, and coded an organization as NEAR UTIL if their ratio was in the highest decile less than the established 95th percentile threshold of similar-sized PHAs within the same region. The coding was performed separately for each year.

Net Income as a Percent of Expendable Fund Balance

Point Allocation

The point allocation by HUD related to the net income as a percent of expendable fund balance (NIFB) is dependent on whether or not the PHA has positive or negative expendable fund balance and net income or a net loss. Per Federal Register, December 21, 2000, points are allocated as follows:

	Negative Expendable Fund Balance	Positive Expendable Fund Balance
Positive Net Income	1.5 points	1.5 points
Negative Net Income	0 points	1.5 points if the net loss is less than or equal to 20% of expendable fund balance. 0 points if the net loss is greater than 20% of expendable fund balance.

NEAR Coding

We coded observations meeting either of the following conditions as meeting the NIFB point requirement if (a) net income is positive; or (b) net income is negative, expendable fund balance is positive, and the net loss is less than 20% of expendable fund balance. An observation was coded as NEAR NIFB if their NIFB was in the lowest decile of all similar-sized PHAs meeting the requirement. The coding was performed separately for each year.

¹ HUD categorizes PHAs into one of six size groups depending on the number of rental units operated by the PHA. See Federal Register 2000.

Figure 1
Definition of Variables used in Tables

ASSET	Total assets at end of year
REV	Total revenue
OPEXP	Total operating expenses
NETINC	Total net income
NETAR	Net accounts receivable
OCASS	Total of all current assets less net accounts receivable
NETPPE	Net property, plant and equipment
ONCASS	Total of all non-current assets less property, plant and equipment
CLIAB	Total current liabilities
NCLIAB	Total non-current liabilities
DAC	Discretionary accruals, calculated as the residual from modified Jones regression
TENAR	Total accounts receivable from PHA tenants
TENREV	Total revenue from PHA tenants
CR	Current ratio; calculation detailed in Appendix A
MEXP	Months expendable fund balance; calculation detailed in Appendix A
TRO	Tenant receivable outstanding; calculation detailed in Appendix A
UTIL	Expense management/utility consumption; calculation detailed in Appendix A
NIFB	Net income/expendable fund balance; calculate detailed in Appendix A
NEAR	Coded as 1 if observation meets ratio and is within first decile of all PHAs meeting the ratio; 0 otherwise
NRANY	Coded as 1 if observation is NEAR for any of the five financial ratios; 0 otherwise
LNA	Natural log of assets
PROG	Number of federal programs managed by PHA
IC	Coded as 1 if auditor identified reportable conditions or material weaknesses in internal controls; 0 otherwise
OPROB	Coded as 1 if PHA received a going concern opinion, other-than-unqualified opinion on the financial statements, indications of findings, indications of questioned costs, or indications material non-compliance with federal regulations; 0 otherwise
TOP50	Coded as 1 if PHA auditor was in top 50 audit firms as reported by <i>Accounting Today</i> ; 0 otherwise
FEE	Natural log of audit fee
Δ DAC	Post-audit discretionary accruals less post-audit discretionary accruals

TABLE 1
Descriptive Statistics for 2,984 Public Housing Authorities from 1999-2003

<u>Variable²</u>	Percent of Total¹					
	Pre-audit Quartile 1 (Quartile 3)	Post-audit Quartile 1 (Quartile 3)	Pre-audit Mean (Median)	Post-audit Mean (Median)	Pre-audit Mean (Median)	Post-audit Mean (Median)
ASSET	1,368,464 (8,521,991)	1,362,254 (8,496,633)	18,300,000 (3,473,495)	18,300,000 (3,477,293)		
REV	328,305 (2,987,363)	328,261 (2,987,363)	5,959,227 (939,170)	5,949,393 (945,718)		
OPEXP	203,418 (1,356,126)	203,636 (1,356,493)	2,874,666 (512,494)	2,884,696 (513,210)	59.29% (57.02%)	58.95% (56.74)
NETINC	-107,356 (108,212)	-102,211 (107,691)	117,834 (-5,195)	106,493 (-3,346)	-3.14% (-0.71%)	-2.70% (-0.46%)
NETAR	2,027 (117,662)	2,122 (109,234)	568,884 (17,597)	546,858 (17,428)	1.55% (0.55%)	1.46% (0.55%)
OCASS	180,681 (1,387,600)	181,202 (1,401,790)	4,161,115 (490,245)	4,191,203 (490,954)	15.49% (15.51%)	18.30% (15.63%)
NETPPE	1,102,416 (6,843,055)	1,094,650 (6,808,772)	11,300,000 (2,820,956)	11,300,000 (2,817,789)	79.43% (82.75%)	79.34% (82.60%)
ONCASS	0 (0)	0 (0)	2,282,251 (0)	2,310,747 (0)	0.85% (0.00%)	0.90% (0.00%)
CLIAB	35,041 (478,968)	35,807 (479,739)	1,787,921 (116,211)	1,801,064 (119,216)	83.06% (100.00%)	82.88% (100.00%)
NCLIAB	0 (94,155)	0 (103,549)	3,448,662 (0)	3,466,635 (0)	16.94% (0.00%)	17.12% (0.00%)
DAC	-0.062 (0.028)	-0.069 (0.020)	-0.006 (0)	-0.011 (0)		

¹ Income statement categories (OPEXP and NETINC) were divided by total revenue; asset categories (NETAR, OCASS, NETPPE, and ONCASS) were divided by total assets (ASSET); liability categories (CLIAB and NCLIAB) were divided by total liabilities.

² Variables defined in Figure 1.

TABLE 2
Results of Testing whether Auditors Reduce the Magnitude of Misstatements (H1) and whether Auditors Reduce Bias in Financial Data (H2)

Panel A – Mean Absolute Change and Mean Signed Change from Pre-Audit to Post-Audit Value and Significance of Change as Compared to Zero

<u>Variable</u> ¹	<u> Change</u> ²	<u>Sig</u>	<u>Winsor.</u> ³		<u>Winsor.</u> ³		<u>Sig</u>	<u>Winsor.</u> ³		<u>Sig</u>
			<u> Change </u>	<u>Sig</u>	<u> Change /Assets</u>	<u>Sig</u>		<u>Change</u> ⁴	<u>Sig</u>	
REV	131,511	***	63,130	***	0.010	***	1,558		-0.000	
OPEXP	76,341	***	33,991	***	0.005	***	-2,232	**	-0.001	***
NETINC	137,337	***	63,571	***	0.011	***	3,150	*	0.000	
NETAR	89,903	***	32,513	***	0.003	***	-13,323	***	-0.001	***
OCASS	4,191,203	***	60,723	***	0.006	***	19,773	***	0.001	***
NETPPE	372,646	***	160,431	***	0.030	***	-39,167	***	-0.009	***
ONCASS	104,166	***	24,600	***	0.002	***	6,836	***	0.000	**
CLIAB	164,974	***	63,529	***	0.007	***	4,043	*	-0.000	
NCLIAB	136,857	***	39,830	***	0.004	***	5,604	***	0.001	**
DAC	N/A ⁵		N/A ⁵		0.033	***	N/A ⁵		-0.005	***

Panel B – Number and Percent of Material Auditor-Corrected Misstatements

<u>Greater than:</u>	<u> \u0394 Net Income </u>		<u> \u0394Asset </u>		<u> \u0394Net Income and \u0394Asset </u>	
	<u># Obs.</u>	<u>% Obs.</u> ⁶	<u># Obs.</u>	<u>% Obs.</u> ⁶	<u># Obs.</u>	<u>% Obs.</u> ⁶
5%* Pre-Audit Net Income	4,362	41.28%	4,636	43.87%	3,410	32.27%
1/2%*Pre-Audit Assets	3,073	29.08%	3,775	35.72%	2,286	21.63%
1/2%*Pre-Audit Revenue	4,410	41.73%	4,712	44.59%	3,468	32.82%

Panel C – Comparison of Auditor Corrected Understatements and Overstatements and Number of Observations of No Change from Pre-Audit to Post-Audit Values (Winsorized³)

<u>Variable¹</u>	<u>No Change</u>		<u>Auditor Corrected Understatement</u>		<u>Auditor Corrected Overstatement</u>		<u>Significance⁷</u>		
	<u>N</u>	<u>N</u>	<u>Change⁴</u>	<u>Chg/Asset</u>	<u>N</u>	<u>Change⁴</u>	<u>Chg/Asset</u>	<u>Change</u>	<u>Chg/Asset</u>
REV	5,013	3,101	110,339	0.017	2,453	-132,463	-0.022	***	***
OPEXP	4,899	3,047	55,071	0.008	2,621	-73,019	-0.012	***	***
NETINC	4,209	3,270	107,806	0.019	3,088	-103,379	-0.018		
NETAR	6,344	1,973	51,389	0.007	2,250	-107,635	-0.010	***	***
OCASS	5,668	2,930	145,154	0.012	1,969	-109,882	-0.014	***	*
NETPPE	5,896	2,385	268,637	0.045	2,286	-461,319	-0.090	***	***
ONCASS	9,403	543	305,878	0.021	621	-151,143	-0.013	***	***
CLIAB	4,742	3,273	109,079	0.011	2,552	-123,155	-0.014	*	***
NCLIAB	7,932	1,251	191,887	0.021	1,384	-130,663	-0.012	***	***

Panel D – Number and Percent of Material Auditor-Corrected Understatements and Overstatements

<u>Greater than:</u>	<u> \u0394 Net Income </u>		<u> \u0394Asset </u>		<u> \u0394NI and \u0394Asset </u>	
	<u># Obs</u>	<u>% Obs⁸</u>	<u># Obs</u>	<u>% Obs⁸</u>	<u># Obs</u>	<u>% Obs⁸</u>
5%* Pre-Audit Net Income 						
Under	2,253	68.90%	2,391	73.52%	1,166	63.34%
Over	2,109	68.30%	2,245	75.21%	1,051	63.77%
½%*Pre-Audit Assets						
Under	1,585	48.47%	1,922	59.10%	791	42.97%
Over	1,488	48.19%	1,853	62.08%	739	44.84%
½%*Pre-Audit Revenue						
Under	2,264	69.24%	2,439	75.00%	1,202	65.29%
Over	2,146	69.49%	2,273	76.15%	1,076	65.29%

¹ Variables defined in Figure 1.

² Column includes the mean absolute value change. Absolute value change is calculated for each observation as |audited value – unaudited value|. Median change was zero for all variables. *, **, *** Mean is different from zero at p-value < 0.10, 0.05, and 0.01, respectively.

³ Means and t-tests can be greatly affected by extreme values. Therefore, the data was winsorized by changing the values for the 100th percentile each year for each variable to equal the highest value in the 99th percentile, and changing the values for the 1st percentile each year for each variable to equal the lowest value in the 2nd percentile.

⁴ Column indicates the mean change in each variable. Change is calculated for each observation as (audited value – unaudited value). *, **, *** Mean is different from zero at p-value < 0.10, 0.05, and 0.01, respectively.

⁵ By design, DAC is scaled by assets; raw unscaled changes cannot be calculated.

⁶ Percent of observations calculated as the number of observations divided by 10,567, the total number of observations in the dataset.

⁷ Significance is for t-test comparison of differences between the magnitudes of auditor-corrected overstatement and auditor-corrected understatement. *, **, *** reflect p-values of < 0.10, 0.05, and 0.01, respectively.

⁸ Percent of observations calculated as the number of observations with a material understatement or overstatement correction divided by the total number of observations with understatement corrections or overstatement corrections depending on the row heading.

TABLE 3
Results of Testing whether Auditors Reduce Bias in Financial Ratios: Comparison of Mean Changes for Variables Included in PHAS Ratio Calculations and DAC between PHAs Just Meeting the Ratio Pre-Audit (NEAR) and All Other PHAs (Winsorized¹)

<u>Ratio/Variable³</u>	<u>Expectation: PHAs NEAR > or < All Other PHAs</u>	<u>Mean Change²</u>		<u>Sig.</u>
		<u>PHAs NEAR⁴</u>	<u>All Other PHAs</u>	
Current Ratio (CR)	<	0.271	-0.094	***
NETAR ²	<	-18,483	-12,753	
OCASS	<	25,120	19,183	
CLIAB	>	-19,470	6,640	***
Months Expenses (MEXP)	<	0.140	-0.012	***
NETAR	<	-6,034	-14,114	*
OCASS	<	8,911	20,951	
CLIAB	>	3,011	4,155	
OPEXP	>	-4,391	-1,998	
Tenant Receivables Outstanding (TRO)	>	-0.179	0.083	***
TENAR	>	-306.68	81.39	***
TENREV	<	-2,409	-2,534	
Energy (UTIL)	>	-0.168	-0.218	
OPEXP	>	-9,925	-1,695	*
Net Inc./Expendable Fund Bal. (NIFB)	<	0.169	0.010	***
REV	<	9,812	711	
OPEXP	>	-7,774	-1,663	
NETINC	<	19,440	1,479	***
DAC	<	-0.003	-0.006	**

¹ Means and t-tests can be greatly affected by extreme values. Therefore, the data was winsorized by changing the values for the 100th percentile each year for each variable to equal the highest value in the 99th percentile, and changing the values for the 1st percentile each year for each variable to equal the lowest value in the 2nd percentile.

² T-tests also run using change scaled by total assets. Results are generally the same as reported except the change in NETAR scaled by total assets is significantly more negative for PHAs near CR than other PHAs, consistent with expectations.

³ Variables and ratios defined in Figure 1. Details on ratio calculations are included in Appendix A.

⁴ PHAs are coded as NEAR for each ratio if they are within the first decile of PHAs meeting the ratio threshold as measured by size category and year. See Appendix B for details on the coding.

***, **, * Change for PHAs NEAR the ratio is significantly different from all other PHAs at p-value < .01, .05, or .10, respectively.

TABLE 4
Regression Results for Testing Hypothesis 3 – Audits Reduce Management Bias to Meet PHAS Ratios

$$\Delta DAC_{it} = \alpha + \beta_1 NRANY_{it} + \beta_2 LNA_{it} + \beta_3 PROG_{it} + \beta_4 IC_{it-1} + \beta_5 OPROB_{it-1} + \beta_6 TOP50_{it} + \beta_7 FEE_{it} + \beta_8 \Delta DAC_{it-1} + \varepsilon$$

<u>Variable¹</u>	<u>Expected Sign</u>	<u>Coefficient Estimate</u>	<u>Standard Error</u>	
NRANY _t	-	0.005	0.002	**
LNA _t		-0.002	0.001	
PROG _t		0.000	0.001	
IC _{t-1}		0.004	0.003	
OPROB _{t-1}		-0.005	0.003	*
TOP50 _t		-0.013	0.010	
FEE _t		0.004	0.001	***
ΔDAC _{t-1}		-0.268	0.024	***
Constant		-0.019	0.016	

Pseudo-R² = 5.17%
N = 7,394

¹ All variables defined in Figure 1.

*, **, *** Coefficient is different from zero at p-value < 0.10, 0.05, and 0.01, respectively. Significance is based on one-tailed tests when the coefficient is in the predicted direction, and two-tailed tests when the coefficient is not in the predicted direction or there was no predicted direction. Regression estimated using maximum-likelihood logit estimation, and standard errors are calculated using Huber/White robust estimates.