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DIFFERENCES ACROSS AUDIT FIRM TYPES IN ASSESSMENTS OF NON-PROFIT ORGANIZATIONS' FEDERAL COMPLIANCE

By

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ABSTRACT

DIFFERENCES ACROSS AUDIT FIRM TYPES IN ASSESSMENTS OF NON-PROFIT ORGANIZATIONS' FEDERAL COMPLIANCE

By

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This paper investigates whether different types of auditors provide different assessments of noncompliance with federal regulations and deficiencies in internal control structures in a financial statement and compliance audit setting. Audit firms are separated into three types - market leaders, non-market leader brand name, and non-brand name - with the expectation that market leaders provide the best assessments, and non-market leader brand name firms provide better assessments than non-brand name firms. While prior studies consistently indicate that users of financial statements and companies hiring auditors believe there are quality differences between auditors, there is little research on how these audit quality differences translate into specific differences in the auditors' assessments and judgments. Using a database of almost 77,000 compliance and financial statement audit results for non-profit organizations for the fiscal years 1997 through 2000, I find market leader and non-market leader brand name auditors report more noncompliance with federal regulations in the form of questioned costs and findings than non-brand name auditors, consistent with audit quality theory. I also find that the market leader brand name auditor reports more findings than non-market leader brand name auditors. However, in contrast to expectations, and after controlling for the number and extent of errors identified by the auditor, I find the market leader brand name auditor is marginally less likely (rather than more likely) than non-brand name auditors to qualify

their report on an organization's compliance with federal regulations. I find no other differences between auditor types in their likelihood of qualifying their opinion on compliance with federal regulations. Also, in contrast to expectations, I find the market leader brand name auditor is marginally less likely to report deficiencies in internal controls than non-market leader brand name auditors who are significantly less likely to report internal control deficiencies than non-brand name auditors. Overall, these results provide mixed results on the quality effects of market leader and brand name auditors.

Dedicated to my parents, Jack and Sarah, for their unending love and support.

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Chapter One

INTRODUCTION

DeAngelo (1981) hypothesizes that audit firms differentiate themselves based on quality and that larger audit firms are expected to provide higher quality audits. Much of the audit quality literature indicates that quality differences are inferred by both users of financial statements and companies selecting an auditor. These studies have used the audit firm type - specialist/non-specialist or brand name/non-brand name - as a proxy for quality. However, few studies directly test for quality differences between auditor types, and the results from those studies have been mixed.

This study will test whether there are quality differences in the assessments made by different types of auditors. Consistent with the prior literature, I separate auditors into three groups - market leader brand name, non-market leader brand name, and non-brand name[1] - and test for differences in the assessments made by these three types of auditors.

1.1 Motivation

Theory predicts that there are quality differences in auditors, and users have inferred these differences consistent with the theory. However, without understanding how those quality differences present themselves in either the auditors' reports or the related financial statements, the true benefits of hiring different types of auditors cannot be determined. Prior research indicates that brand name auditors reduce management's

[1] Brand name auditors consist of the five largest auditors in the United States which are commonly referred to as the Big Five. The market leader auditor is the auditor that audits the largest percentage of total federal expenditures in this data set.

ability to manipulate earnings, as measured by discretionary accruals or differences between forecasted and audited earnings (see Becker, et. al. [1998], Francis, et. al. [1999], Davidson and Neu [1993], and Clarkson [2000]). Concerns regarding the reliability of these indirect measures of earnings management (discretionary accruals as estimated by the Jones model or forecast errors) limit the interpretability of the results. In addition, outside of earnings management, there has been little research on differences in auditors' other assessments and judgments. Without a clearer understanding of the actual differences in more diverse auditor assessments and judgments, clients, users of financial statements, and regulators cannot properly assess what effect audit quality should have on their decisions.

This study uses a database maintained by the United States Federal Clearinghouse of the results of financial statement and compliance audits performed in accordance with the Office of Management and Budget's A-133 requirements (A-133 audit). These audits are required for all non-profit organizations receiving significant funding from federal agencies, and require the auditor to issue an opinion on the organization's financial statements, schedule of federal awards, and compliance with federal requirements, in addition to providing a report on the organization's internal control structure and identified questioned costs and findings. Therefore, in addition to the audit opinion on the financial statements, this database allows an investigation of other decisions made by the auditor including an assessment of the organization's internal control structure, compliance with federal regulations, and compliance with specific grant requirements.

The majority of organizations in the database are not audited by large, brand name auditors, making this a very different setting from many prior audit quality studies, where

over 90% of the organizations (publicly traded companies) are audited by brand name auditors. By investigating the effects of different types of auditors on the reporting of questioned costs, I am also able to estimate possible financial implications to an organization of hiring different types of auditors. In addition, because the database includes the same organizations over time, unobservable organizational factors that stay constant over time can be controlled for, including the specific qualities of the client that may influence auditor selection and which have plagued prior studies.

1.2 Overview of Hypotheses

Non-profit organizations that receive federal funds are required to maintain compliance with all federal regulations stipulated within their federal grant documents. Auditors of these federal grants must perform tests to determine whether the organization has maintained compliance with the regulations, and must document all instances of noncompliance as well as express an opinion on whether the organization has maintained material compliance with the regulations.

Using DeAngelo's (1981) definition of audit quality - the joint probability that an auditor will both discover an error and report that error - I hypothesize that a higher quality auditor will identify and report more noncompliance with federal regulations, and will identify and report more deficiencies in an organization's internal control structure. DeAngelo (1981) hypothesizes that larger audit firms provide higher audit quality. In addition, the prior literature has theorized that specialist firms will provide higher quality than non-specialist firms as they are more likely to invest significant resources in becoming a specialist. The prior literature has used market share as one measure of

specialists. I use this same measure and identify one brand name audit firm that has a market share significantly higher than any other audit firm in the sample, and call this firm the market leader. I test the effect of both audit firm size and extent of specialization together by investigating whether the market leader brand name auditor reports more noncompliance with federal regulations and more deficiencies in internal controls than non-market leader brand name auditors, and whether non-market leader brand name auditors report more noncompliance with federal regulations and more deficiencies in internal controls than non-brand name auditors.

1.3 Overview of Research Design

Four hypotheses are tested to determine the effects of the three different types of auditors (market leader brand name - further referred to as market leader, non-market leader brand name - further referred to as other brand name, and non-brand name auditors) on the levels of reported questioned costs, findings, material noncompliance with federal regulations, and reportable conditions. The four models are estimated using multivariate fixed effects and first differencing techniques, and additional alternate tests are performed to ensure the robustness of the results.

The hypotheses are tested using almost 77,000 observations from 35,850 different non-profit organizations over a four-year period from 1997-2000. All of the data for the main tests of the hypotheses was obtained from the United States Federal Clearinghouse's website. Additional financial data was obtained from the non-profit organizations' Internal Revenue Service's Form 990's maintained on Guidestar's website.

1.4 Overview of Results

Overall, the empirical results are mixed. I find the market leader and other brand name auditors report more errors in the form of questioned costs and findings than non-brand name auditors. I also find the market leader auditor reports more questioned costs and findings than other brand name auditors in a levels but not changes model. However, in contrast to expectations, and after controlling for the number and extent of errors identified by the auditor, I find the market leader auditor is marginally less likely (rather than more likely) than non-brand name auditors to qualify their report on an organization's compliance with federal regulations. I find no difference between market leader and other brand name auditors, or between other brand name and non-brand name auditors, in their likelihood of qualifying their opinion on compliance with federal regulations. Also, in contrast to expectations, I find the market leader other brand name auditors are less likely to report deficiencies in internal controls than non-brand name auditors, and the market leader auditor is marginally less likely to report internal control deficiencies than other brand name auditors.

The remaining chapters are laid out as follows: Chapter 2 includes a discussion of the prior literature, Chapter 3 provides detailed background on the A-133 audits which are the basis for the dataset, and Chapter 4 presents the hypotheses for the study. Chapter 5 includes a discussion of the methodology used in the paper and the paper concludes with the results in Chapter 6.

Chapter Two

THEORY DEVELOPMENT

2.1 Size as Quality Measure

DeAngelo (1981) defines audit quality as the "market-assessed joint probability that a given auditor will *both* (a) discover a breach in the client's accounting system, and (b) report the breach," (p. 186). DeAngelo hypothesizes that larger audit firms have more ability to specialize and innovate through technology, thereby increasing the likelihood that they will discover a breach in the accounting system. She also contends that larger audit firms are more independent from their clients, thereby increasing the likelihood that they will report an identified breach. Using these assumptions, DeAngelo hypothesizes that larger firms provide higher quality audits.

Many studies following DeAngelo (1981) assume DeAngelo's hypothesis that larger firms provide higher quality audits. These studies investigate both the relationship between audit firm size and organizational (client) factors, and the effects of audit firm size on the decisions of users of financial statements. The results are generally consistent with the theory that organizations select larger audit firms when agency costs are high (for example, see DeFond [1992], Firth and Smith [1992], and Simunic and Stein [1987][2]). Studies on risk and leverage indicate that higher risk firms tend to select larger audit firms (see Datar, Feltham and Hughes [1991], Firth and Smith [1992], Clarkson and Simunic [1994], Copley, Gaver, and Gaver [1995], Firth and Liau-Tan [1998], and Lee, et. al.

[2] Beasley and Petroni (2001) investigate the relationship between board composition and audit quality. They include variables to control for agency costs, and find results on these control variables consistent with the theory that firms with higher agency costs select higher quality auditors.

[1999])[3]. There are also generally consistent results which indicate that financial statements audited by larger audit firms are relied upon more heavily by decision makers than financial statements audited by smaller audit firms (for example, see Allen [1994], Balvers, et. al. [1988], Beatty [1989], and Teoh and Wong [1993]).

Two previous studies investigate the effect of brand name on an organization's audit fee and estimate the fee premium paid to the brand name auditors. Craswell, et. al. (1995) find that Australian publicly traded companies are willing to pay approximately 30% more to obtain a brand name auditor and Beattie, et. al. (2000) in a current working paper find English fund raising charities are willing to pay a fee premium averaging 18.5% for a brand name auditor. Assuming that organizations will pay more for a higher quality audit, both of these studies provide results that are consistent with DeAngelo's hypothesis that larger audit firms provide higher quality audits.

A small number of studies directly test DeAngelo's theory with mixed results, depending on how quality is actually measured. Two studies using an external evaluation of compliance with specific auditing standards as their measure of quality find results consistent with DeAngelo. Among smaller, non-Big Six, audit firms, Colbert and Murray (1998) find larger firms receive more unqualified AICPA Private Companies Practice Section Peer Review reports than smaller firms. In the non-profit setting, O'Keefe, et. al. (1994) find that Big Eight audit firms have fewer violations of generally accepted

[3] Titman and Trueman (1986) and Thornton and Moore (1993) both provide analytical models that suggest higher risk firms would select lower quality auditors, as opposed to higher quality auditors. Simunic and Stein (1987) find empirical results consistent with this hypothesis, and Feltham, Hughes and Simunic (1991) find no consistent significant results. However, these earlier studies do not control for audit fee, or audit supply, which can have a significant impact on the results. The later studies which find a positive relationship control for the audit supply effect.

auditing standards on California school district audits as determined by California State Controller reviews.

When qualities of the actual financial statements are used as a measure of quality, the results become less consistent. Krishnan and Schauer (2000) investigate the financial statement disclosures of voluntary health and welfare non-profit organizations. Using the Statements of Financial Accounting Standards Nos. 93 and 99, and the AICPA guide *Audits of Voluntary Health and Welfare Organizations*, they determine what financial statement disclosures are required. These requirements include disclosures on accounts such as investments, depreciation, pledges, and donated services. They review individual financial statements and calculate the number of correct required disclosures made. A disclosure is coded as "correct" if it is required and it has been properly disclosed. A disclosure is also coded as "correct" if the disclosure was not required, and it was properly not disclosed. For instance, if the organization does not have investments, they do not need an investment disclosure. Krishnan and Schauer find that the financial statements of voluntary health and welfare non-profit organizations audited by larger audit firms have more correct financial statement disclosures than those audited by smaller audit firms.

Becker, et. al. (1998), Francis, et. al. (1999), and Davidson and Neu (1993) find that larger audit firms are associated with a reduction in the extent of earnings management in the financial statements[4]. These three studies use indirect measures of earnings management as measures of financial statement quality. Becker, et. al. and Francis, et. al. use the level of discretionary accruals as estimated from a modified Jones

model and Davidson and Neu use the difference between audited and forecasted earnings. However, when more direct measures of financial statement quality are used, the results are not consistent. Clarkson (2000) investigates the relationship between audit firm type and financial forecast accurancy. Forecast accuracy is measured as the absolute difference between the forecasted earnings disclosed in an IPO prospectus and the actual realized earnings for the period forecasted. Clarkson finds results consistent with larger audit firms being associated with more accurate financial forecasts than smaller audit firms, although Firth and Smith (1992) do not. In addition, Petroni and Beasley (1996) are unable to find any differences in the estimation errors of claim loss reserves of property casualty insurers between financial statements audited by Big Eight and non-Big Eight audit firms.

2.2 Market Share as Quality Measure

Audit firms may choose to specialize in a specific industry, and would be expected to provide a higher quality audit than a firm which has not specialized in that industry. A number of studies have investigated the relationship between specialization and client factors. DeFond (1992) uses specialization as well as size as a measure of audit quality and finds organizations with higher agency costs are more likely to select specialist auditors. In direct tests of quality, Brown and Raghunandan (1995) and O'Keefe, et. al. (1994) find that specialist auditors had fewer audit deficiencies than non-specialist auditors as determined by quality controls reviews performed by federal agency Inspector Generals and the California State Controller's Office, respectively.

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[4] Clarkson (2000) is unable to reproduce Davidson and Neu's results when additional controls for risk are

2.3 Summary

In summary, prior research consistently shows that organizations and decision makers believe that larger firms provide higher quality audits than smaller firms. However, research investigating actual differences in the auditors' products has resulted in inconsistent results. Studies that look at these differences have focused primarily on broad measures of earnings management. There is a lack of a clear understanding of the differences in auditors' judgments and assessments made throughout the audit between larger and smaller firms, or between audit firms considered to be high and low quality. The remainder of this study seeks to provide a better understanding of these differences.

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included in the regression models.

Chapter Three

A-133 AUDIT BACKGROUND

Non-profit organizations that receive greater than $300,000 in federal funding (i.e., grants from federal agencies) are required to have an annual or biennial audit performed in accordance with the Office of Management and Budget's Circular A-133 (A-133 audit). This circular requires the auditor to provide opinions on the organizations' financial statements, schedule of federal awards, and compliance with federal regulations. The auditor must also provide a report on the organizations' internal control system and a schedule of findings and questioned costs.

The organizations' financial statements consist of the statement of financial position, statement of activities, and statement of cash flows prepared in accordance with generally accepted accounting principles (GAAP). These statements correlate directly with the balance sheet, income statement, and statement of cash flows of a for-profit organization. The schedule of federal awards provides a detail of all federal money received by the organization, indicating the grant number and name, the total grant amount, the amount received to date, and the federal agency from which the money was received. This schedule is comparable to schedules included in a for-profit organization's notes to the financial statement that provide detail for specific combined numbers on the financial statements (i.e., a detailed schedule of fixed assets or debt).

When an organization receives federal funds, it must agree to adhere to specific government regulations governing the use of those funds and must maintain an adequate system of internal controls. For example, government regulations require non-profits to

make attempts to use minority firms when seeking subcontractors, adequately monitor subrecipients, and maintain sound internal control policies. In an A-133 audit, the auditor must assess the organization's compliance with these requirements and provide an opinion as to whether or not there have been material instances of noncompliance by the organization, as well as provide a report on the internal control system, documenting whether or not there were reportable conditions and/or material weaknesses in the internal control structure. In a for-profit audit, there is no comparable report to the opinion on compliance, but auditors are required to provide a report to the audit committee or board of directors when there are reportable conditions or material weaknesses of internal control similar to the one required for non-profit organizations. (AICPA Professional Standards, AU Section 325.16).

The final report provided by the auditor is the schedule of findings and questioned costs, and is especially relevant for this study. This report details all instances of noncompliance with federal regulations. Findings are any instances of noncompliance that do not have a direct financial impact, while questioned costs have a direct financial impact on the grants. For instance, most organizations are required to submit financial and performance reports regularly to the granting agencies. If an organization fails to submit these reports or submits them late, this would be considered a finding but not a questioned cost as the failure to remit reports on time would have no impact on the grant funds expended. In contrast, if an auditor found that the organization charged one grant with costs that were incurred under another grant, those costs would be considered questioned. Costs charged to grants selected for substantive audit tests that cannot be supported by underlying documentation would also be considered questioned costs. In

addition, federal regulations limit the amounts and types of certain expenses. For example, reimbursable salaries are limited to a government maximum, and costs such as alcohol are specifically excluded from reimbursement. If an auditor finds that organizations have charged these types of expenses to a grant, they will be included as questioned costs. In addition, an auditor will also require adjustments to the financial statements for any questioned costs or findings that have a direct effect on the presentation of the financial statements.

The auditor is required to report all identified instances of noncompliance and questioned costs, regardless of materiality, in the schedule of findings and questioned costs. Although there is no direct corollary of this schedule in a for-profit audit, the schedule of findings and questioned costs is similar to a listing of audit differences and adjustments.

Chapter Four

HYPOTHESES

In the A-133 audit setting, auditors must have an understanding of not only GAAP requirements for non-profit organizations, but must also have specialized knowledge of grant requirements and federal regulations to adequately perform their job. In addition to the normal state education requirements, all auditors providing A-133 audits must meet a minimum standard of 24 hours of continuing professional education specifically in government and A-133 courses. Firms can also choose to provide more education and training to their employees to increase their efficiency and effectiveness on these audits, and therefore differentiate themselves based on quality.

Organizations that receive federal funds are often dependent on the continuation of those funds to remain solvent. The identification of questioned costs or findings, reports of material noncompliance with federal regulations, or internal control deficiencies can result in a reduction or discontinuance of federal funding, and therefore could have a significant negative impact on the organization's ability to continue to operate. As such, organizations may have an incentive to attempt to dissuade an auditor from reporting any noncompliance. Therefore, the auditors' independence is clearly important in these audits.

If audit quality is defined as done in Chapter 2 as the "market-assessed joint probability that a given auditor will *both* (a) discover a breach in the client's accounting system, and (b) report the breach," (DeAngelo [1981], p. 186) higher quality auditors are expected to find and report more compliance and internal control problems than lower quality auditors, assuming the same rate of problems across the auditors' clients. In an A-

133 audit, higher quality auditors are expected to have a better understanding of all government regulations and the requirements for an adequate system of internal controls. A higher quality auditor will design and perform more effective audit tests to identify costs that are questionable, policies that are not in compliance with federal regulations, and significant deficiencies in the internal control structure. In addition, higher quality auditors are less likely than lower quality auditors to be influenced by clients' desires not to include these issues in their A-133 audit reports.

As discussed in Chapter 2, DeAngelo proposes that larger audit firms are more likely to provide higher quality audits due to their greater resources for increased training and their larger client base that allows them more independence from individual clients. In prior audit quality studies using DeAngelo's hypothesis, the largest audit firms with a brand name have been grouped together and compared to all other audit firms.

Prior audit quality studies have also investigated whether specialist audit firms provide a higher quality audit than non-specialist audit firms. One measure of specialization used in these studies is the extent of market share an auditor has in a particular market. An audit firm is considered a specialist in these studies if the firm audits greater than 10% of the available audit market. This study uses the same definition of specialist or market leader[5].

I combine the two streams of audit quality research and test whether specialist or market leader auditors provide better quality audits than other brand name auditors, who are expected to provide higher quality audits than non-brand name auditors. Based on the

[5] Only one firm - a brand name auditor - met this definition of specialization and therefore there are no non-brand name auditors included as a market leader.

prior research and the expectations related to auditors' performance in A-133 audits, the following hypotheses are tested:

H1: The market leader auditor will report more questioned costs than other brand name auditors who will report more questioned costs than non-brand name auditors, ceteris paribus.

H2: The market leader auditor will report more findings than other brand name auditors who will report more findings than non-brand name auditors, ceteris paribus.

H3: The market leader auditor will issue more qualified opinions on an organization's compliance with federal regulations than other brand name auditors who will report more qualified opinions on an organization's compliance than non-brand name auditors, ceteris paribus.

H4: The market leader auditor will identify and report more reportable conditions in internal control structures than other brand name auditors who will report more reportable conditions than non-brand name auditors, ceteris paribus.

Chapter Five

METHODOLOGY

5.1 Data

The entire contents of the Federal Clearinghouse database were downloaded in November 2000. This database consists of all A-133 audit reports and summary reports submitted to the Federal Clearinghouse, and are available to the public through the Internet at http://harvester.census.gov/sac. The database was started in 1997 and continues through 2000. Therefore an organization could be included up to four times. There were a total of 87,567 organization-years included in the database. One thousand four hundred eighty-nine (1,489) observations were excluded because the organization did not receive a complete financial statement audit (i.e., received a program audit). An additional 1,239 observations were excluded because they were for biennial rather than annual audits. Organizations are identified in the database by their employer identification number (EIN - similar to the CUSIP for public companies), provided to them by the Internal Revenue Service. It is possible for organizations to file more than one report for each employer identification number in a given year[6], and it is possible for these reports to be received by the Federal Clearinghouse at different times. Therefore, to reduce the possibility that year-to-year comparisons do not contain the same reports for each EIN, these observations were excluded from the database, thereby decreasing the sample by an additional 3,118 observations. The financial health of an organization may have some impact on the regressions included in this study. However, there is no

[6] The same EIN can be used for different divisions, departments (in the case of governmental organizations), or locations (in the case of nursing homes and hospitals) that are under the same

independent measure of financial health included within the database or available externally[7]. Therefore, 660 observations with going concern opinions, and 221 with no data on the going concern opinion, were excluded to eliminate potential effects on the regression models of poor financial health, as measured by the auditors. Finally, 3,883 observations that were audited by state auditors were excluded as the focus of this study is on CPA firms. The remaining sample includes 76,957 organization-years of data. Because each regression includes different variables, and certain data may be missing for individual observations, the sample size for each regression is different, and is less than the total observations in the sample. The number of observations used for each regression is included in the tables.

5.2 Models

5.2.1 Hypotheses One and Two - Questioned Costs and Findings

Actual questioned costs and findings are all instances of noncompliance with federal regulations. Identified questioned costs and findings include only those costs or client policies that the auditor finds during testwork and reports as not being in compliance with federal regulations. Because auditors do not test 100 percent of all costs charged to every grant, identified questioned costs and findings are not equivalent to actual questioned costs and findings. Identified questioned costs and findings are a function of the extent of testwork performed by the auditor, the auditor's understanding of the federal regulations, the effectiveness of the auditor's tests, and the willingness of the

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management. If each of these divisions, departments or locations requires a separate audit report, the same EIN will be used for each.

[7] The IRS database that includes organizations' 990 filings are not available for the time period in this study.

auditor to report those questioned costs. All of these factors together represent the auditor's quality. Therefore, identified questioned costs and findings, which are what is included in the auditors' reports, and hence the dataset for this study, are expected to be a function of actual questioned costs and findings and auditor quality.

Actual questioned costs and findings are hypothesized to increase for organizations that are less familiar with federal regulations, i.e., organizations in their first year of receiving federal funds. As the complexity and number of federal regulations increase, management's ability to monitor all costs charged to each program and all policies required for each program decreases. Although all federal agencies must use the same general standards that are included in the OMB A-133 regulations, each agency may also institute additional regulations. As the number of federal agencies from which an organization receives funding increases, the complexity of the federal requirements increases, and therefore the expected extent of questioned costs and findings also increases.

Management may be able to mitigate the difficulties in monitoring numerous programs by instituting effective internal controls. Strong internal controls help to ensure that all costs charged to individual grants and all organizational policies are accurate and meet federal regulations, and therefore indications of weak internal controls may also be indications of environments where higher questioned costs and findings are expected. External factors, including regulatory and economic factors, may also have some impact on the occurrence of questioned costs or findings.

The theoretical models for hypotheses one and two combine those factors which affect the occurrence of actual questioned costs and findings as discussed above, with the

quality of the auditor, which impacts the identification and reporting of questioned costs and findings. The model used is:

Reported Q.C. or Reported Findings = f(Audit Quality, Familiarity, Complexity, Internal Controls, External Factors)

This equation can be estimated by replacing the individual constructs included in the equation with observable variables. The actual equations used to test hypotheses one and two are included below with a discussion following for each of the variables:

$$QC\%_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 Y98_t + \beta_8 Y99_t + \beta_9 Y00_t + \varepsilon_{it}$$

and

$$FIND_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 Y98_t + \beta_8 Y99_t + \beta_9 Y00_t + \varepsilon_{it}$$

Because questioned costs are generally limited by an organization's total federal expenditures, questioned costs reported by the auditor as a percent of total federal expenditures (QC%) is used as the dependent variable[8] for hypothesis one, while total findings reported (FIND) is used as the dependent variable for hypothesis two.

To test each of the hypotheses directly, audit quality is separated into three measures - market leader, other brand name, and non-brand name. Each regression

[8] The absolute value of total questioned costs is used as there are a few observations where total questioned costs are negative. Negative questioned costs can result from differences between total federal expenditures from federal agency documentation and total federal expenditures from the organization's documentation. This usually occurs when there is a federal reimbursement check in transit. Results do not change when these negative observations are eliminated.

includes a dummy variable for the market leader auditor (ML) and other brand name auditors (OBN)[9]. ML (OBN) is coded "1" if the audit firm is a market leader auditor (other brand name auditor) and "0" otherwise. Consistent with prior studies that investigate the effects of specialization or market leadership as a measure of audit quality (see Craswell, et. al. [1995], DeFond [1992], and Beattie, et. al [2000]), I designate all auditors auditing greater than 10% of total federal expenditures in the sample as a market leader. Only one audit firm, KPMG, meets this definition of a market leader, auditing approximately 22% of the total federal expenditures in the database. I expect a positive coefficient on both ML and OBN, and I expect the coefficient on ML to be greater than the coefficient on OBN.

Familiarity with federal regulations is measured using the variable called NEW. Fiscal year 1997 is the first year the database was maintained and therefore is the first year any organization can be included in the database. For any organization whose first A-133 report is after 1997, NEW is coded as "1" in the first year that the information is included, and is "0" otherwise[10].

The complexity of federal programs is measured by two variables - the total number of programs for which an organization receives funding (PROG - a proxy for the total number of agencies from which an organization receives funding)[11] and the natural

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[9] There is no dummy variable explicitly for non-brand name auditors as these firms are identified by being coded "0" in both the market leader and other brand name auditor dummies.

[10] Using this measure, any organization whose first year of receiving federal funding was 1997 will be miscoded. The results of additional tests to determine the effects of this miscoding are reported in Chapter 6.

[11] The total number of agencies is not included in the database. However, this information can be determined manually by reviewing each report individually and counting the number of different agencies represented as evidenced by the individual programs listed on an organizations' schedule of federal awards. Based on a random sample of 100 organization years included in the dataset, the correlation between the number of federal programs and the number of different agencies from which an organization receives

log of total federal expenditures (LFED). The indication of reportable conditions (RC) is included to control for the quality of the internal control structure and year dummies (Y98, Y99, and Y00) are included to control for general regulatory and economic environmental factors that can change from year to year.

5.2.2 Hypothesis Three - Compliance with Federal Regulations

Material noncompliance with federal regulations occurs when an organization does not comply with those regulations that have a material effect on the federal programs under which they are operating. Auditors form their opinion on whether or not an organization has material instances of noncompliance by reviewing the extent and nature of findings and questioned costs identified throughout the audit. Given this, actual material noncompliance is expected to be affected by many of the same factors that affect an organization's actual questioned costs and findings - management's familiarity with federal programs, complexity of regulations, and the strength of the internal control structure, as well as regulatory and economic factors.

Similar to the previous discussion on questioned costs and findings, actual material noncompliance does not equal reported material noncompliance, since the latter is dependent on the quality of the auditor. I estimate the effects of auditor type on the likelihood of an organization receiving a qualified opinion on its federal regulation compliance by controlling for those organizational factors that are expected to impact actual material noncompliance. I also control for the level and extent of reported

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funding is approximately 72%. This correlation appears to be sufficiently high to support using the number of federal programs as a proxy for the number of different agencies, as well as a control for the number and complexity of federal programs under which an organization operates.

questioned costs and findings as these should have a direct impact on the opinion. The equation estimated is:

$$MNC_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 FIND_{it} + \beta_8 QC\%_{it} + \beta_9 Y98_t + \beta_{10} Y99_t + \beta_{11} Y00_t + \varepsilon_{it}$$

where:

MNC_{it} = dummy variable indicating whether there was a qualified opinion on compliance with federal regulations at time t (0 indicates an unqualified opinion, 1 otherwise)

All other variables are defined as above in hypotheses one and two.

5.2.3 Hypothesis Four - Reportable Conditions in Internal Controls

Reportable conditions in internal controls are "matters that...represent significant deficiencies in the design or operation of the internal control structure, which could adversely affect the organization's ability to record, process, summarize, and report financial data..." (AICPA Professional Standards, AU Section 325.02). They are expected to be affected by the organization's familiarity with federal programs as well as the complexity and extent of the federal regulations, and external regulatory and economic factors. Higher quality auditors are expected to be more likely to identify and report reportable conditions in internal controls because of their more effective testwork and their greater independence from their clients. The equation used to test this hypothesis is:

$$RC_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 Y98_t + \beta_7 Y99_t + \beta_8 Y00_t + \varepsilon_{it}$$

where all variables are defined as above under hypotheses one and two.

5.3 Controls for Organizational Factors

Organizations select their own auditor. Prior audit quality literature indicates that certain organizational factors such as risk and extent of agency costs are associated with the choice of the specific quality level of the auditor (see discussion in Section 2.1 for details on the prior literature). These organizational factors may correlate with the dependent variables included in this study, and it is therefore important to control for these in order to obtain interpretable results. The panel data nature of the dataset, with the same organizations included for a number of years, is used to control for these organizational factors, with each organization acting as its own control. Using fixed effects and first differencing estimation techniques, all organizational factors that do not change over time are controlled for, and therefore should have no effect on the results of the study.

Chapter Six

RESULTS AND SUMMARY

6.1 Descriptive Statistics

Panel A of Table 1 provides descriptive statistics on the continuous variables included in this study. The organizations' federal expenditures vary considerably, ranging from $27,055 to more than $16.7 billion. Questioned costs range from $0 to more than $34.1 million, and total findings reported by the auditor range from 0 to 105. The low means for questioned costs and findings of $9,200 and .49, respectively, are due mainly to the significant number of observations with zero questioned costs and findings. Based on a comparison of the means and medians for total federal expenditures and questioned costs, it is apparent that the data is skewed toward smaller organizations and organizations with fewer questioned costs. The mean number of programs organizations manage is 10, with a range from 1 to 1,605.

(Insert Table 1 about here)

Panel B of Table 1 provides the descriptive statistics for the binary variables included in the regressions. There are 2,241 observations audited by the market leader, KPMG, and 4,872 observations audited by one of the other brand name audit firms[12]. The remaining 69,844 observations were audited by a non-brand name firm. Approximately 4% of all observations received a report indicating material noncompliance with federal regulations, while almost 23% of the observations had indications of significant deficiencies in their internal control systems as evidenced by reportable conditions. These statistics indicate that many of these organizations have

considerable problems with their internal control structures, and therefore may be able to benefit greatly from external audits.

Tables 2 and 3 provide descriptive statistics on individual sub-groups of observations within the dataset.

(Insert Table 2 about here)

It is evident from Table 2, Panel A that organizations with a market leader or an other brand name auditor have significantly more federal expenditures, questioned costs, numbers of programs, and numbers of findings than organizations with a non-brand name auditor. Within brand name audited organizations, market leader audited organizations have significantly more in federal expenditures and findings than organizations audited by other brand name auditors.

Based on the univariate comparisons in Panel B of Table 2, market leader and other brand name audited organizations are less likely to receive a qualified opinion on their compliance with federal regulations or receive a report of reportable conditions than non-brand name audited organizations. These comparisons, however, do not control for differences in the sizes of each organization's federal program activities and other organizational factors that will be used in the multiple regression analyses.

(Insert Table 3 about here)

Panels A and B of Table 3 provide a comparison of the regression variables for organizations that switched among the three auditor types - market leader, other brand name, and non-brand name. Panel A provides the statistics for organizations that decreased their expected level of audit quality, while Panel B presents the statistics for

[12] Given that the data spanned 1997 through 2000, the period in which Price Waterhouse merged with

those organizations that increased their expected level of audit quality. There are a total of 514 organization-years in which an organization changed their type of auditor. There were 121 changes from a market leader auditor to a non-brand name auditor (a decrease of two levels of expected audit quality - further referred to as a two-level decrease), and 285 changes from either a market leader auditor to an other brand name auditor, or from an other brand name auditor to a non-brand name auditor (a decrease of one level of expected quality - further referred to as a one-level decrease). There were 77 changes from a non-brand name auditor to a market leader auditor (an increase of two levels of expected audit quality - further referred to as a two-level increase), and 31 changes from either a non-brand name auditor to an other brand name auditor or from an other brand name auditor to a market leader auditor (an increase of one level of expected audit quality - further referred to as a one-level increase).

The results in Panel A indicate that organizations that had both one-level and two-level decreases in the type of auditor had large decreases in federal expenditures in the year of the change. The decrease for one-level changes is statistically different than the increase seen in federal expenditures for organizations that did not shift their auditor type. Organizations that had a two-level decrease in auditor had a large decrease in the number of programs they managed in the year of the change, which is statistically different from the increase in the number of programs for organizations that did not change auditor type. Contrary to expectations, organizations that decreased their level of expected audit quality had more reportable conditions noted in the year of the change than organizations that did not change auditors. In addition, organizations with a two-level decrease had a larger

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Coopers and Lybrand, firms with either of these two auditors were coded as "PWC".

increase in reportable conditions than organizations with a one-level decrease in auditor type.

The only significant difference among the organizations reported in Panel B of Table 3 is the difference in federal expenditures. Organizations that had a one-level increase in the type of auditor had a significantly larger increase in federal expenditures than organizations that did not change their auditor type. Although the difference in questioned costs between organizations increasing their auditor level and organizations not changing their auditor type is not statistically significant at a 5% or lower level, it is in the expected direction. This is also true with the difference in findings. There was an increase in the number of reported findings for organizations that increased their expected audit quality level, although it is not statistically different than the no shift organizations. Contrary to expectations, but consistent with the univariate results in Panel A, organizations that increased their expected level of quality show a decrease in reportable conditions as compared to no shift organizations, although, again, the difference is not statistically significant.

Table 4 provides simple Pearson correlations among the variables included in the regressions. Most of the correlations are significant and in the expected direction. For instance, as the number of programs and level of federal expenditures increase, organizations have more questioned costs, findings, and material noncompliance with federal regulations. In addition, organizations that have deficiencies in their internal control systems (as evidenced by reportable conditions) are also more likely to have questioned costs and findings. Organizations with market leader or other brand name auditors are associated with larger questioned costs and findings, but contrary to

expectations, they have fewer reportings of material noncompliance and reportable conditions than organizations with non-brand name auditors.

6.2 Hypotheses Tests

6.2.1 Hypothesis One - Questioned Costs

The results for hypothesis one using both a fixed effects levels and first differencing changes model are included in Table 5. Both models were estimated using OLS. The coefficients on both ML and OBN are consistent across the levels and changes regressions, and each are significant at a 10% or better level, using a one-tailed test. The results indicate that both the market leader and other brand name auditors report more questioned costs than non-brand name auditors. In addition, the larger coefficient on ML as compared to OBN in the levels model indicates that the market leader auditor reports more questioned costs than other brand name auditors, as predicted by hypothesis one (one tailed p-value<0.01). The coefficient estimate for ML is not significantly greater than that for OBN in the changes model, although the difference is in the expected direction (one tailed p-value<0.14). Organizations that select the market leader auditor can expect, on average, $61,600 more in questioned costs than organizations with a non-market leader auditor, and organizations with an other brand name auditor can expect $23,100 more in questioned costs than organizations with a non-brand name auditor (based on average federal expenditures of approximately $7,700,000).

(Include Table 5 about here)

The results on the control variables are generally consistent between the levels and changes model, although many of them are not statistically or economically significant.

The existence of reportable conditions in an organization's internal control system, however, is associated with a 0.004 increase in questioned costs as a percent of total federal expenditures, or approximately $30,800. The number of programs an organization manages does not impact questioned costs, although as federal expenditures increase, questioned costs as a percent of federal expenditures decrease, indicating that questioned costs do not increase ratably with federal expenditures.

6.2.2 Hypothesis Two - Findings

The effects of different types of auditors on the number of findings reported are included in Table 6. Both the levels and changes models were estimated using OLS. Consistent with hypothesis two, the market leader and other brand name auditors report significantly more findings than non-brand name auditors (one tailed p-value<0.01 and 0.05 for the levels and changes models, respectively). Determining whether market leaders report more findings than other brand name auditors depends on the model used. The levels model indicates a significant difference at a p-value<0.05, but the changes model does not indicate a significant difference between the two designations within brand name auditors (both using a one tailed test).

(Insert Table 6 about here)

Most of the control variables are significant, and are in the expected direction in both the changes and the levels models. As the number of programs and the level of federal expenditures increases, so do the number of findings. The results of the model also indicate that organizations less familiar with federal programs are more likely to have more findings, as are organizations that have poor internal controls.

6.2.3 Hypothesis Three - Material Noncompliance

The results of the effect of auditor type on the issuance of a report indicating material noncompliance with federal regulations are included in Table 7. Both the levels and changes models were estimated using OLS. Contrary to expectations, after controlling for the number of findings and extent of questioned costs, both the levels and changes models indicate that the market leader auditor is less likely, rather than more likely than non-brand name auditors, to issue a qualified opinion on compliance with federal regulations (significant at two tailed p-value<0.07). Therefore, given an organization with the same number of findings and the same amount of questioned costs, a market leader auditor will be less likely than a non-brand name auditor to issue a qualified opinion on that organization's compliance. This appears to be an indication that the market leader auditor is providing lower quality than non-brand name auditors. Also contrary to expectations, other brand name auditors are not significantly more likely than non-brand name auditors to issue a qualified opinion on compliance, and may actually be less likely to report material noncompliance (two tailed p-value near 0.20). Again, this indicates that other brand name auditors are not providing higher quality assessments as expected. There is no statistical difference in the likelihood of a qualified opinion on compliance among the brand name firms, regardless of being a market leader or not.

(Insert Table 7 about here)

As expected, as the number of findings and the extent of questioned costs increase, organizations are more likely to have material noncompliance reports issued. In addition, organizations with indications of reportable conditions in their internal control systems are more likely to have qualified opinions on their federal program compliance.

The number of programs does not appear to have any effect on an organization's compliance, although an increase in total federal expenditures does tend to increase the likelihood of receiving a qualified opinion on compliance (one tailed p-value<0.10).

6.2.4 Hypothesis Four - Reportable Conditions

The effect of audit quality on the reporting of reportable conditions is included in Table 8. Both the levels and changes models were estimated using OLS. Market leaders and other brand name auditors are significantly less likely to report reportable conditions than non-brand name auditors. In addition, market leaders are even less likely to issue reportable conditions letters than other brand name auditors (two tailed p-value<0.08). Both of these results are in direct contradiction to those proposed in hypothesis four. Holding other organizational factors constant, auditors that are deemed "higher quality" by users of financial statements are less likely to report significant deficiencies in an organization's internal control structure. Assuming that all the proper controls have been included in the model, the brand name auditors are identifying, reporting, or both identifying and reporting less instances of reportable conditions than non-brand name auditors.

(Insert Table 8 about here)

As expected, the results on the control variables indicate organizations in their first year of receiving federal funds are more likely to have reportable conditions. In addition, as the size of an organization's federal programs increase, so does the organization's likelihood of having reportable conditions.

6.3 Additional Estimation Methods

6.3.1 Hypotheses One and Two - Questioned Costs and Findings

More than 90% of all observations in the dataset have zero questioned costs or zero findings. Although the linear estimation models used earlier provide a reasonable and easily interpretable estimation of the effects of different types of auditors on the measures of audit quality, the Tobit model provides another method to estimate the coefficients while controlling for the large number of zeroes in the population (Wooldridge [2000])[13]. Therefore, a Tobit model was estimated using maximum likelihood estimation to test hypotheses one and two. The results of this estimation technique for both hypotheses are included in Table 9.

(Insert Table 9 about here)

The magnitudes of the coefficients from the Tobit estimation cannot be directly compared to those from the fixed effects model. However, the Tobit coefficient estimates for the market leader and other brand name auditors for the questioned costs model are positive and have similar significance levels to those estimated using fixed effects estimation. Similar to the results found in the OLS estimated changes model, market leader auditors do not report statistically more questioned costs than other brand name auditors (one tailed p-value<0.26), although the difference is in the expected direction. Combining the results of the fixed effects, first differencing and Tobit models, it appears that market leader and other brand name auditors report more questioned costs than non-

[13] The Tobit model provides an opportunity to test both the direct effects of the independent variables on the dependent variable, as well as the effects of the independent variables on the dependent variable given that the dependent variable is greater than zero. This additional estimation is not relevant to the current study, and therefore the results of this estimation are not provided.

brand name auditors, but there may be no difference between reported questioned costs for market leader and other brand name audited organizations.

The Tobit results for findings indicate results consistent with those found from the estimates of the coefficients in the fixed effects model. The market leader auditor reports statistically more findings than both the other brand name auditors (p-value<0.04) and the non-brand name auditors (p-value<0.001). In addition, the other brand name auditors reports statistically more findings than the non-brand name auditors (p-value<0.01). Therefore, hypothesis two is supported using both a fixed effects linear estimation as well as the Tobit estimation which better controls for the significant incidences of zero findings in the population.

6.3.2 Hypotheses Three and Four - Material Noncompliance with Federal Regulations and Reportable Conditions

Hypotheses three and four are tested using levels models with dependent variables that are discrete, taking on values of zero or one. Each of these models was re-estimated using a maximum likelihood estimate of a conditional logit model which better controls for the discrete nature of the dependent variables, while also controlling for those organizational factors that do not change over time (Greene [1997]). The results of these estimations are included in Table 10.

(Insert Table 10 about here)

The results of the logit models can be compared on direction and significance to the estimates obtained from the fixed effects estimates included in Tables 7 and 8. For both hypotheses, the coefficients on other brand name auditors are negative and highly

significant. In addition, the market leader auditor is significantly less likely than both other brand name and non-brand name auditors to report reportable conditions (hypothesis four). These results are generally consistent with the results discussed in Section 6.2, although the results from the logit model on the material noncompliance hypothesis are more significant than those reported earlier. Together, these results continue to suggest that market leaders and other brand name auditors report fewer qualified opinions on compliance with federal regulations and fewer reportable conditions than do non-brand name auditors. Because the magnitudes of the coefficients have no economic meaning, no translation was performed to compare the magnitudes of the logit estimates with those reported in Tables 7 and 8.

6.4 Sensitivity Tests

6.4.1 Miscoding of "NEW"

The variable NEW is used to proxy for the familiarity of the organization with federal grant requirements, and is coded as "1" in the first year that an organization is included in the database if that year is not 1997. NEW is coded as zero for all organizations in 1997 because that is the first year of the database, and therefore is the first year that all organizations are included in the database. If an organization received federal funds for the first time in 1997, although they are "new" to federal programs, NEW would still be coded as zero. To determine if this miscoding affects the results, all 1997 data was eliminated and the same equations were estimated for each hypothesis using both the fixed effects and changes models.

The results from these tests are mixed. In the questioned costs regression (testing hypothesis one), estimates of the two coefficients on ML (market leader) and OBN (other brand name) are slightly larger than those with all of the data included, and are still significant at p-value<0.10. In the findings regression, the estimates of the coefficients on ML and OBN were not significantly different than zero. The results for the material noncompliance model were similar to the results found with all of the data included (reported in Table 7), in that the estimates of the coefficients on ML and OBN were negative, but not consistently significant across both the fixed effects and changes estimations. The results on hypothesis four, reportable conditions, are generally consistent with those reported in Table 8, however the market leader coefficient was not statistically greater than the other brand name coefficient.

When the 1997 data is eliminated from the population, the number of observations drops from 76,957 to 54,379. In addition, the average number of years that an organization is included in the database drops from 2.15 with the 1997 data included, to 1.66 without the 1997 data[14]. Both of these decreases could account for the slightly inconsistent results found with the smaller dataset. Much of the power for the tests of the hypotheses comes from the large number of observations included in the estimation. In addition, both the fixed effects and changes models rely on organizations remaining in the sample for at least two years; any reduction in the average number of years that an

[14] When the 1997 data is deleted, approximately 12,000 of the 54,300 observations represent organizations with only one year of data in the remaining data set. The fixed effects estimation technique time-demeans each observation, meaning that the organization average for each variable is subtracted from the actual variable value. For organizations with only one year of data, the average and the actual value for each variable is the same, and the time demeaned values (or values used in the regression estimation) are zero. Therefore, although these organizations still remain in the dataset and in the regression, they have no effect on the regression results. [Wooldridge, 2000]

organization is included in the dataset will have detrimental effects on the power of the tests. Even with this reduction in power, the results of this additional test indicate that the miscoding of the variable "NEW" does not greatly affect the results reported earlier.

6.4.2 Additional Measure of Size

Prior audit quality literature has found that the size of an organization is significantly correlated with the type of auditor selected. In this study, I hypothesize that the size or complexity of an organization may also correlate with each of the dependent variables used in this study. Therefore, in order to obtain interpretable results, it is important that a measure of size be included in the models. I have used the log of total federal expenditures as a measure of size. However, it is possible for organizations to be quite large with few federal program expenditures, and therefore this measure of size may not adequately control for the real size of the organization.

The database used for this study does not include any additional financial variables that can be used as another measure of size. Therefore, additional financial information was obtained from another source – the Guidestar website (available to the public on the Internet at www.Guidestar.org). This website maintains copies of Internal Revenue Service Form 990's (the tax return for a non-profit organization), as well as summary financial data for over 700,000 non-profit organizations.

I selected a sample of organizations from the original database used for this study, attempting to obtain a sample with similar characteristics on the dependent variables as those in the original database. The sample was selected using a stratified random sampling technique. I first stratified the original database into two populations –

organizations with zero questioned costs and organizations with positive questioned costs. I then randomly selected a representative sample from each population subgroup. For instance, I selected approximately 95% of the sample from the subgroup with zero questioned costs, and 5% of the sample from the subgroup with positive questioned costs, similar to the rates found in the entire population. I also compared the occurrence of positive findings, a qualified opinion on compliance with federal regulations, and the reporting of reportable conditions in the sample obtained to the rates in the entire population to ensure that the sample selected had similar occurrences of these conditions as those found in the total database. In order to increase the power of the tests, I also selected additional observations in which the organization changed their auditor type, which will assist in increasing the variance on the independent variables of interest.

For each of the organizations selected, I obtained the total assets, total revenues and total expenditures for each organization as reported on and included in Guidestar's database. The organization had to have at least two concurrent years of Form 990's in Guidestar's database in order to be included in the sample. Without two concurrent years, the fixed effects and first difference estimations cannot be performed.

The final sample included 494 observations. The results of the regression analyses are not reported as they generally report insignificant results, with or without the additional financial measures. This is because of the very small number of observations. The additional data can be used to determine if total federal expenditures is an adequate measure of size. Therefore, I calculated the correlation between total federal expenditures and the newly obtained size measures of total assets, total revenues, and total expenditures to determine if federal expenditures is a reasonable proxy for these other

measures of size. The correlations range from 0.917 (federal expenditures and total assets) to 0.961 (federal expenditures and total expenses). All of the correlations are highly significant (two tailed p-value<0.00), thereby providing support for the use of total federal expenditures as a reasonable measure of size.

6.4.3 Another Test for the Effects of Size

As discussed above in Section 6.4.2, it is important in this study to control for the size of an organization as size may correlate with both the type of auditor selected and the dependent variables in the study. It is evident from Table 2 that the federal expenditures of organizations audited by market leaders and other brand name auditors are very different than the federal expenditures of organizations audited by non-brand name auditors. To provide an additional robustness check that size is not driving the results previously reported, I ran the regressions on a subset of the data where organizations were matched on size.

To obtain the matched dataset, first, average federal expenditures was calculated for each organization. Then, for each organization audited by the market leader, I found a similar sized organization audited by an other brand name firm, and a similar sized organization audited by a non-brand name firm. An organization was considered to be similar in size if its average federal expenditures was within 10% of the average federal expenditures of the market leader audited organization. A match had to be obtained in both the other brand name and the non-brand name subsets of data or the original organization was eliminated.

There were 1,057 organizations audited for at least one year by the market leader auditor. This represents 2,239 total observations audited by the market leader. A match was found for all but five organizations (representing 12 observations). The final matched sample included 2,226 observations audited by the market leader, 1,685 observations audited by an other brand name auditor, and 2,196 observations audited by a non-brand name auditor. Within the matched sample, mean (median) federal expenditures are $30,900,000 ($5,950,663) for market leader audited organizations, $28,900,000 ($5,842,887) for other brand name audited organizations, and $22,100,000 ($4,758,965) for non-brand name audited organizations[15].

Each of the four regressions was re-estimated with the matched data using an OLS estimate of the fixed effects model. The results are generally consistent with those obtained in the original estimations reported in Section 6.3, and are therefore not reported in a separate table. In both the questioned costs and findings regressions, I find the market leader and other brand name auditors report more questioned costs and more findings than non-brand name auditors. The market leader coefficient is significant using a one tailed p-value<0.001 and the other brand name coefficient is significant using a one tailed p-value<0.08 in both regressions. In both regressions, I do not find any statistical difference between the market leader and other brand name auditors. The results for the material noncompliance regression (hypothesis three) indicate no statistically significant differences among auditor types, although the coefficients on both ML and OBN are

[15] These means are statistically different using a two tailed p-value<0.001. However, given the large number of observations in the sample, obtaining three subsets of matched data with statistically equivalent means is virtually impossible. Even dropping observations where a match within 5% could not be identified results in means that are statistically different using a two tailed p-value<0.05. The means and medians are

negative - similar to the results reported in Table 7. Similar to the results previously reported on reportable conditions (hypothesis four), within the matched dataset, market leader and other brand name auditors report less reportable conditions than non-brand name auditors (two tailed p-value<0.001) and the market leader reports marginally less reportable conditions than other brand name auditors (two tailed p-value<0.11). These results are generally consistent with those reported in Table 8, although they are in direct contrast to the hypothesized results.

6.4.4 Extreme Observations

Included in the database were ten observations in which total questioned costs exceeded total federal expenditures. For each observation, I reviewed the copy of the schedule of questioned costs and findings in the Federal Clearinghouse's database to ensure that there was not a data entry error. I then re-estimated the questioned costs model for hypothesis one without these large observations included. The results were unchanged from those reported in Table Five.

6.4.5 Summary of Additional Robustness Tests

The results on the robustness tests discussed above are generally consistent with the results obtained using the original models and estimation methods. Although some of the additional tests result in less significance than was found with the original models, this appears to be due to the reduction in the amount of data used for estimation. The results provided in the original analyses are generally significant; however, much of the

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not economically very different. Therefore, this sample of the data is reasonable to determine the effects of

power for the tests comes from the large number of observations in the data set. Therefore, it is not unusual to expect insignificant results when the data set is reduced in size.

6.5 Summary

In summary, the results on the hypotheses are mixed. Based on the results in this study, users of financial statements can expect that market leaders and other brand name auditors will find and report more financial errors (questioned costs) and specific instances of noncompliance (findings) than non-brand name auditors, holding all other factors constant. This result is consistent with the proposal that market leaders and other brand name auditors provide higher quality audits than non-brand name auditors. However, market leader auditors are less likely that non-brand name auditors to issue qualified opinions on compliance with federal regulations, and both market leaders and other brand name auditors are less likely to report reportable conditions in internal controls than non-brand name auditors. Assuming that all the proper control variables have been included in the regression, these results are consistent with market leaders and other brand name auditors providing lower quality than non-brand name auditors.

6.6 Implications and Future Research

As with prior audit quality literature, the results of this study are mixed. Whether market leader and other brand name auditors provide better quality depends on the measure of quality used in the study. The results are generally consistent with

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size.

expectations when questioned costs and findings are used as the quality measure, but they are not consistent with expectations when the auditors' reporting of reportable conditions or opinion on material compliance are used as the quality measure. These inconsistent results indicate that additional research needs to be conducted to determine the true nature of the relationship between auditor type and audit quality.

Future research related to this study might investigate why market leader and other brand name auditors report more questioned costs and findings, but report less material noncompliance with federal regulations. It is possible that larger and more specialized auditors have different decision making processes than smaller and less specialized auditors in terms of assessing the materiality of these errors. Future research might investigate the decision processes of the different audit firm types.

The data used in this study also provides a rich environment for additional research. A large number of the organizations in the dataset have poor internal control structures, and may therefore provide an excellent setting to test the effects of the adequacy of internal controls on organizational performance. In addition, future research might investigate whether organizations compensate for their poor internal control structures by controlling agency problems with other techniques, such as having a more active board of directors or selecting higher quality auditors.

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Table 1
Descriptive Statistics - All Data

Panel A – Continuous Variables (All Data)

Variable	Mean (Median)	Standard Deviation	Minimum	Maximum
Federal Expenditures (FED)	7,701,029 (1,167,189)	145,000,000	27,055	16,701,635,000
Questioned Costs (QC)	9,200 (0)	265,679	0	34,183,000
Questioned Cost Percent (QC%)	0.20% (0)	3.3%	0	471.66%
Number of Programs (PROG)	10 (6)	27.4	1	1,605
Findings (FIND)	0.49 (0)	1.65	0	105

Panel B – Binary Variables (All Data) - Percentage of Occurrences of a 1

	All Data (N = 76,957)
Market Leader (ML)	2.91%
Other Brand Name (OBN)	6.33%
Material Noncompliance (MNC)	3.77%
Reportable Conditions (RC)	22.83%
New (NEW)	16.90%

LEGEND

Federal Expenditures (FED)	= total federal expenditures
Questioned Costs (QC)	= absolute value of total questioned costs identified by the auditor
Questioned Cost Percent (QC%)	= absolute value of questioned costs identified by the auditor as a percent of total federal expenditures
Number of Programs (PROG)	= number of different federal programs
Findings (FIND)	= total findings identified by the auditor
Market Leader (ML)	= dummy variable indicating market leader auditor (1 if market leader, 0 otherwise)
Other Brand Name (OBN)	= dummy variable indicating other brand name auditor (1 if other brand name, 0 otherwise)

Table 1
(continued)

Material Noncompliance (MNC)	=	1 if other than unqualified opinion issued by auditor on compliance with federal regulations, 0 otherwise
Reportable Conditions (RC)	=	1 if reportable condition identified by auditor, 0 otherwise
New (NEW)	=	1 if first year of data included in database is other than 1997, 0 otherwise

Table 2
Descriptive Statistics - Comparisons Between Auditor Types

Panel A - Comparison of Auditor Types
Means (Medians)

	Market Leader (N = 2,241)	Other Brand Name (N = 4,872)	Non-Brand Name (N = 69,844)	*
Federal Expenditures (FED)	61,100,000 (6,018,362)	28,900,000 (3,725,993)	4,505,830 (1,074,990)	a,b,c
Questioned Cost (QC)	58,413 (0)	49,994 (0)	4,791 (0)	b,c
Questioned Cost Percent (QC%)	0.005 (0)	0.002 (0)	0.002 (0)	a,c
Number of Programs (PROG)	26.66 (9)	24.92 (8)	8.48 (6)	b,c
Findings (FIND)	1.13 (0)	0.79 (0)	0.45 (0)	a,b,c

Panel B - Comparison of Auditor Types
Binary Variables - Percentage of Occurrences of a 1

	Market Leader (N = 2,241)	Other Brand Name (N = 4,872)	Non-Brand Name (N = 69,844)	*
Material Noncompliance (MNC)	1.78%	1.64%	3.99%	b,c
Reportable Conditions (RC)	7.36%	6.22%	24.48%	a,b,c
New (NEW)	11.2%	13.75%	17.31%	a,b,c

LEGEND

Federal Expenditures (FED) = total federal expenditures
Questioned Costs (QC) = absolute value of total questioned costs identified by the auditor
Questioned Cost Percent (QC%) = absolute value of questioned costs identified by the auditor as a percent of total federal expenditures
Number of Programs (PROG) = number of different federal programs
Findings (FIND) = total findings identified by the auditor

Table 2
(continued)

Material Noncompliance (MNC)	= 1 if other than unqualified opinion issued by auditor on compliance with federal regulations, 0 otherwise
Reportable Conditions (RC)	= 1 if reportable condition identified by auditor, 0 otherwise
New (NEW)	= 1 if first year of data included in database is other than 1997, 0 otherwise

* a Market leader audited organizations are statistically different than other brand name audited organizations at a p-value<0.05.

b Other brand name audited organizations are statistically different than non-brand name audited organizations at a p-value<0.05.

c Market leader audited organizations are statistically different than non-brand name audited organizations at a p-value<0.05.

ns No significant differences

Table 3
Descriptive Statistics - Comparisons Between Changes in Auditor Types

Panel A - Expected Quality Decreases
Continuous Variables - Means (Medians)
Binary Variables - Percentage of Occurrences of "1"

	Decrease Two Levels of Quality[1] (N = 121)	Decrease One Level of Quality[2] (N = 285)	No Shift (N = 40,857)	*
ΔFederal Expenditures (ΔFED)	-549,027 (139,978)	-1,199,273 (46,842)	598,027 (45,984)	c
ΔQuestioned Costs (ΔQC)	-28,691 (0)	-47,722 (0)	-1,050 (0)	ns
ΔQuestioned Cost Percent (ΔQC%)	-0.006 (0)	-0.000 (0)	-0.000 (0)	ns
ΔNumber of Programs (ΔPROG)	-2.149 (0)	-0.702 (0)	0.205 (0)	b
ΔFindings (ΔFIND)	-0.339 (0)	-0.091 (0)	-0.071 (0)	ns
ΔMaterial Non-compliance (ΔMNC)	1.65%	1.05%	-0.42%	ns
ΔReportable Conditions (ΔRC)	15.70%	5.26%	-2.04%	a,b,c

Table 3
(continued)

Panel B - Expected Quality Increases
Continuous Variables - Means (Medians)
Binary Variables - Percentage of Occurrences of "1"

	Increase Two Levels of Quality[1] (N = 77)	Increase One Level of Quality[2] (N = 31)	No Shift (N = 40,857)	*
ΔFederal Expenditures (ΔFED)	6,413,512 (770,433)	8,115,603 (294,644)	598,027 (45,984)	d
ΔQuestioned Costs (ΔQC)	38,946 (0)	274,171 (0)	-1,050 (0)	ns
ΔQuestioned Cost Percent (ΔQC%)	0.003 (0)	0.036 (0)	-0.000 (0)	ns
ΔNumber of Programs (ΔPROG)	2.286 (0)	2.129 (1)	0.205 (0)	ns
ΔFindings (ΔFIND)	0.442 (0)	0.548 (0)	-0.071 (0)	ns
ΔMaterial Non-compliance (ΔMNC)	-1.30%	0%	-0.42%	ns
ΔReportable Conditions (ΔRC)	-9.09%	-6.45%	-2.04%	ns

LEGEND

ΔFederal Expenditures (FED) = change in total federal expenditures in year of auditor change

ΔQuestioned Costs (QC) = change in absolute value of total questioned costs identified by the auditor in year of auditor change

ΔQuestioned Cost Percent (QC%) = change in absolute value of questioned costs identified by the auditor as a percent of total federal expenditures in year of auditor change

ΔNumber of Programs (PROG) = change in number of different federal programs in year of auditor change

ΔFindings (FIND) = change in total findings identified by the auditor in year of auditor change

ΔMaterial Noncompliance (MNC) = change in opinion on material compliance in year of auditor change (-1 indicates change from unqualified opinion to other-than-unqualified opinion, 0 indicates no change, and 1 indicates change from other-than-unqualified to unqualified)

Table 3
(continued)

ΔReportable Conditions (RC)	=	change in reportable conditions in year of auditor change (-1 indicates a change from no reportable conditions to at least one reportable condition, 0 indicates no change, and 1 indicates a change from at least one reportable condition to no reportable conditions)

[1] This column provides data for organizations that changed between a market leader auditor and a non-brand name auditor. These are organizations that changed their expected level of quality by two levels.

[2] This column provides data for organizations that changed between a market leader auditor and an other brand name auditor or between an other brand name auditor and a non-brand name auditor. These are organizations that changed their expected level of audit quality by one level.

* a Organizations decreasing their expected audit quality by two levels (from market leader to non-brand name) are statistically different than organizations decreasing their expected audit quality by one level (from market leader to other brand name or from other brand name to non-brand name) at a two-sided p-value<0.05.

b Organizations decreasing their expected audit quality by two levels (from market leader to non-brand name) are statistically different than organizations not changing their auditor type at a two-sided p-value<0.05.

c Organizations decreasing their expected audit quality by one level (from market leader to other brand name or from other brand name to non-brand name) are statistically different than organizations not changing their auditor type at a two-sided p-value<0.05.

d Organizations increasing their expected audit quality by one level (from other brand name to market leader or from non-brand name to other brand name) are statistically different than organizations not changing their auditor type at a two-sided p-value<0.05.

ns No significant differences

Table 4
Pearson Correlations

	QC	QC%	MNC	RC	FIND	ML	OBN	PROG	LFED	NEW
QC	1.000									
QC%	**.220**	1.000								
MNC	**.063**	**.104**	1.000							
RC	**.033**	**.055**	**.245**	1.000						
FIND	**.267**	**.122**	**.245**	**.317**	1.000					
ML	**.032**	**.016**	**-.018**	**-.064**	**.067**	1.000				
OBN	**.040**	.003	**-.029**	**-.103**	**.047**	**-.045**	1.000			
PROG	**.099**	-.004	**.009**	**.017**	**.127**	**.105**	**.141**	1.000		
LFED	**.100**	**-.013**	**.015**	**-.031**	**.172**	**.209**	**.230**	**.343**	1.000	
NEW	-.006	.004	**.011**	.005	-.000	**-.026**	**-.022**	**-.079**	**-.131**	1.000

Items in **bold** are significant at the 5% or less level.

LEGEND

QC = questioned costs identified by the auditor at time t

QC% = questioned costs identified by the auditor as a percent of total federal expenditures at time t

MNC = dummy variable indicating whether there was a qualified opinion on compliance with federal regulations at time t (0 indicates an unqualified opinion, 1 otherwise)

RC = dummy variable indicating whether there was at least one reportable condition in internal controls identified at time t (1 indicates at least one internal control reportable condition, 0 otherwise)

FIND = total findings identified by the auditor at time t

ML = dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)

OBN = dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)

PROG = number of different federal programs at time t

LFED = natural log of total federal expenditures at time t

NEW = dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)

Table 5
Hypothesis 1 – Questioned Costs

$$QC\%_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 Y98_t + \beta_8 Y99_t + \beta_9 Y00_t + \varepsilon_{it}$$

		N = 76,836			N = 41,269		
		Levels[a]			**Changes[a]**		
	Expected Sign	**Coefficient**		**Std. Error**	**Coefficient**		**Std. Error**
ML	+	.008	***	.0019	.009	*	.0071
OBN	+	.003	**	.0016	.003	**	.0019
NEW	+	-.000		.0005	-.000		.0004
PROG	+	.000		.0000	.000		.0000
LFED	+	-.001	***	.0003	-.001		.0006
RC	+	.004	***	.0004	.004	***	.0007
Y98	n/a	-.000		.0002	n/a		n/a
Y99	n/a	-.000		.0002	.000		.0004
Y00	n/a	-.001		.0008	-.000		.0005
constant	n/a	.017	***	.0049	-.000		.0003

R^2 = .003 and .002 for levels and changes models, respectively.

ML > OBN at p-value < .005 and .133 for levels and changes model, respectively (one-sided test)

LEGEND

*, **, *** Significant at 10%, 5%, and 1% levels, respectively, based on one-sided t-tests for all variables with predicted signs equal to actual signs. For variables without predicted signs, and for those whose actual sign are different than predicted, p-values are based on two-sided tests. P-values for the changes model are based on standard errors robust to general serial correlation and heteroskedasticity.

$QC\%_{it}$ = absolute value of total questioned costs identified by the auditor as a percent of total federal expenditures at time t

ML_{it} = dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)

OBN_{it} = dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)

NEW_{it} = dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)

Table 5
(continued)

$PROG_{it}$	=	number of different federal programs at time t
$LFED_{it}$	=	natural log of total federal expenditures at time t
RC_{it}	=	dummy variable indicating whether reportable conditions were reported by the auditor at time t (1 if reportable condition reported, 0 otherwise)
$Y98_t$-$Y00_t$	=	dummy variables to indicate year at time t

[a] Both models are estimated using OLS estimation. The levels model is estimated using fixed effects estimation. In the changes model, the variables in the regression are the changes from time t-1 to t for each variable as defined above. The changes in dummy variables are specified as:

ΔML_{it}	=	dummy variable indicating the change in the type of market leader auditor from time t-1 to t (-1 indicates change from market leader to non-market leader, 0 indicates no change, and 1 indicates change from non-market leader to market leader)
ΔOBN_{it}	=	dummy variable indicating the change in the type of non-market leader auditor from time t-1 to t (-1 indicates change from other brand name to non-brand name, 0 indicates no change, and 1 indicates change from non-brand name to other brand name)
ΔRC_{it}	=	dummy variable indicating the change from time t-1 to t in the organization's report on internal controls (-1 indicates a change from no reportable conditions to at least one reportable condition, 0 indicates no change, and 1 indicates a change from at least one reportable condition to no reportable conditions)

Table 6
Hypothesis 2 – Findings

$$FIND_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 Y98_t + \beta_8 Y99_t + \beta_9 Y00_t + \varepsilon_{it}$$

		N = 76,945			N = 41,365		
		Levels[a]			**Changes[a]**		
	Expected Sign	**Coefficient**		**Std. Error**	**Coefficient**		**Std. Error**
ML	+	.404	***	.0856	.348	**	.1756
OBN	+	.237	***	.0688	.325	**	.1415
NEW	+	.026		.0203	.026	*	.0166
PROG	+	.002	***	.0008	.003	**	.0016
LFED	+	.067	***	.0154	.096	***	.0205
RC	+	.907	***	.0188	.874	***	.0255
Y98	n/a	-.064	***	.0100	n/a		n/a
Y99	n/a	-.105	***	.0107	.020		.0151
Y00	n/a	-.160	***	.0352	-.016		.0246
constant	n/a	-.666	***	.2178	-.065	***	.0109

R^2 = .06 and .05 for levels and changes models, respectively.

ML > OBN at p-value < .035 and .453 for levels and changes model, respectively (one-sided test)

LEGEND

*, **, *** Significant at 10%, 5%, and 1% levels, respectively, based on one-sided t-tests for all variables with predicted signs equal to actual signs. For variables without predicted signs, and for those whose actual sign are different than predicted, p-values are based on two-sided tests. P-values for the changes model are based on standard errors robust to general serial correlation and heteroskedasticity.

$FIND_{it}$ = total number of findings identified by the auditor at time t

ML_{it} = dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)

OBN_{it} = dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)

NEW_{it} = dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)

$PROG_{it}$ = number of different federal programs at time t

Table 6
(continued)

$LFED_{it}$	=	natural log of total federal expenditures at time t
RC_{it}	=	dummy variable indicating whether reportable conditions were reported by the auditor at time t (1 if reportable condition reported, 0 otherwise)
$Y98_t$-$Y00_t$	=	dummy variables to indicate year at time t

[a] Both models are estimated using OLS estimation. The levels model is estimated using fixed effects estimation. In the changes model, the variables in the regression are the changes from time t-1 to t for each variable as defined above. The changes in dummy variables are specified as:

ΔML_{it}	=	dummy variable indicating the change in the type of market leader auditor from time t-1 to t (-1 indicates change from market leader to non-market leader, 0 indicates no change, and 1 indicates change from non-market leader to market leader)
ΔOBN_{it}	=	dummy variable indicating the change in the type of non-market leader auditor from time t-1 to t (-1 indicates change from other brand name to non-brand name, 0 indicates no change, and 1 indicates change from non-brand name to other brand name)
ΔRC_{it}	=	dummy variable indicating the change from time t-1 to t in the organization's report on internal controls (-1 indicates a change from no reportable conditions to at least one reportable condition, 0 indicates no change, and 1 indicates a change from at least one reportable condition to no reportable conditions)

Table 7
Hypothesis 3 – Material Noncompliance with Federal Regulations

$$MNC_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 FIND_{it} + \beta_8 QC\%_{it} + \beta_9 Y98_t + \beta_{10} Y99_t + \beta_{11} Y00_t + \varepsilon_{it}$$

		N = 76,846			N = 41,269		
		Levels[a]			**Changes[a]**		
	Expected Sign	**Coefficient**		**Std. Error**	**Coefficient**		**Std. Error**
ML	+	-.020	*	.0127	-.018	*	.0138
OBN	+	-.020		.0102	-.018		.0098
NEW	+	.004		.0030	.004	*	.0028
PROG	+	.000		.0001	.000		.0001
LFED	+	.004	*	.0023	.003		.0025
RC	+	.070	***	.0029	.065	***	.0055
FIND	+	.019	***	.0007	.019	***	.0027
QC%	+	.520	***	.0327	.555	***	.0987
Y98	n/a	-.001		.0015	n/a		n/a
Y99	n/a	-.002		.0016	.001		.0024
Y00	n/a	.001		.0052	.004		.0044
constant	n/a	-.038		.0322	-.002		.0015

R^2 = .095 and .046 for levels and changes models, respectively.

ML < OBN at p-value < .984 and .981 for levels and changes model, respectively (two-sided test)

LEGEND

*, **, *** Significant at 10%, 5%, and 1% levels, respectively, based on one-sided t-tests for all variables with predicted signs equal to actual signs. For variables without predicted signs, and for those whose actual sign are different than predicted, p-values are based on two-sided tests. P-values for the changes model are based on standard errors robust to general serial correlation and heteroskedasticity.

MNC_{it} = dummy variable indicating whether there was a qualified opinion on compliance with federal regulations at time t (0 indicates an unqualified opinion, 1 otherwise)

ML_{it} = dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)

Table 7
(continued)

OBN_{it}	=	dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)
NEW_{it}	=	dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)
$PROG_{it}$	=	number of different federal programs at time t
$LFED_{it}$	=	natural log of total federal expenditures at time t
RC_{it}	=	dummy variable indicating whether reportable conditions were reported by the auditor at time t (1 if reportable condition reported, 0 otherwise)
$FIND_{it}$	=	total number of findings identified by the auditor at time t
$QC\%_{it}$	=	absolute value of total questioned costs identified by the auditor as a percent of total federal expenditures at time t
$Y98_t$-$Y00_t$	=	dummy variables to indicate year at time t

[a] Both models are estimated using OLS estimation. The levels model is estimated using fixed effects estimation. In the changes model, the variables in the regression are the changes from time t-1 to t for each variable as defined above. The changes in dummy variables are specified as:

ΔMNC_{it}	=	dummy variable indicating the change in material noncompliance from time t-1 go t (-1 indicates change from unqualified opinion to other-than-unqualified opinion, 0 indicates no change, and 1 indicates change from other-than-unqualified to unqualified)
ΔML_{it}	=	dummy variable indicating the change in the type of market leader auditor from time t-1 to t (-1 indicates change from market leader to non-market leader, 0 indicates no change, and 1 indicates change from non-market leader to market leader)
ΔOBN_{it}	=	dummy variable indicating the change in the type of non-market leader auditor from time t-1 to t (-1 indicates change from other brand name to non-brand name, 0 indicates no change, and 1 indicates change from non-brand name to other brand name)
ΔRC_{it}	=	dummy variable indicating the change from time t-1 to t in the organization's report on internal controls (-1 indicates a change from no reportable conditions to at least one reportable condition, 0 indicates no change, and 1 indicates a change from at least one reportable condition to no reportable conditions)

Table 8
Hypothesis 4 – Reportable Conditions in Internal Controls

$$RC_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 Y98_t + \beta_7 Y99_t + \beta_8 Y00_t + \varepsilon_{it}$$

		N = 76,945			N = 41,365		
		Levels[a]			**Changes[a]**		
	Expected Sign	**Coefficient**		**Std. Error**	**Coefficient**		**Std. Error**
ML	+	-.136	***	.0225	-.143	***	.0304
OBN	+	-.091	***	.0181	-.087	***	.0223
NEW	+	.017	***	.0053	.018	***	.0049
PROG	+	.000		.0002	-.000	**	.0002
LFED	+	.012	***	.0041	.009	**	.0046
Y98	n/a	-.020	***	.0026	n/a		n/a
Y99	n/a	-.038	***	.0028	.002		.0042
Y00	n/a	-.069	***	.0093	-.012		.0085
constant	n/a	.092		.0573	-.019	***	.0026

R^2 = .017 and .002 for levels and changes models, respectively.

ML < OBN at p-value < .063 and .071 for levels and changes model, respectively (two-sided test)

LEGEND

*, **, *** Significant at 10%, 5%, and 1% levels, respectively, based on one-sided t-tests for all variables with predicted signs equal to actual signs. For variables without predicted signs, and for those whose actual sign are different than predicted, p-values are based on two-sided tests. P-values for the changes model are based on standard errors robust to general serial correlation and heteroskedasticity.

RC_{it} = dummy variable indicating whether reportable conditions were reported by the auditor at time t (1 if reportable condition reported, 0 otherwise)

ML_{it} = dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)

OBN_{it} = dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)

NEW_{it} = dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)

Table 8
(continued)

$PROG_{it}$	=	number of different federal programs at time t
$LFED_{it}$	=	natural log of total federal expenditures at time t
$Y98_t$-$Y00_t$	=	dummy variables to indicate year at time t

[a] Both models are estimated using OLS estimation. The levels model is estimated using fixed effects estimation. In the changes model, the variables in the regression are the changes from time t-1 to t for each variable as defined above. The changes in dummy variables are specified as:

ΔRC_{it}	=	dummy variable indicating the change from time t-1 to t in the organization's report on internal controls (-1 indicates a change from no reportable conditions to at least one reportable condition, 0 indicates no change, and 1 indicates a change from at least one reportable condition to no reportable conditions)
ΔML_{it}	=	dummy variable indicating the change in the type of market leader auditor from time t-1 to t (-1 indicates change from market leader to non-market leader, 0 indicates no change, and 1 indicates change from non-market leader to market leader)
ΔOBN_{it}	=	dummy variable indicating the change in the type of non-market leader auditor from time t-1 to t (-1 indicates change from other brand name to non-brand name, 0 indicates no change, and 1 indicates change from non-brand name to other brand name)

Table 9
Tobit Estimation of Hypotheses One and Two
Questioned Costs and Findings

$$QC\%_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 Y98_t + \beta_8 Y99_t + \beta_9 Y00_t + \varepsilon_{it}$$

$$FIND_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 Y98_t + \beta_8 Y99_t + \beta_9 Y00_t + \varepsilon_{it}$$

Panel A - Tobit Estimates

		N = 76,836			N = 76,945		
		Questioned Costs[a]			**Findings[a]**		
	Expected Sign	**Coefficient**		**Std. Error**	**Coefficient**		**Std. Error**
ML	+	.070	**	.032	1.955	***	.472
OBN	+	.048	**	.028	1.076	***	.395
NEW	+	.012		.010	.176	*	.128
PROG	+	.000		.000	.003		.003
LFED	+	.009	*	.007	.301	***	.093
RC	+	.117	***	.008	4.281	***	.101
Y98	n/a	-.010	**	.004	-.294	***	.061
Y99	n/a	-.015	***	.005	-.477	***	.066
Y00	n/a	-.050	**	.021	-1.217	***	.251
constant	n/a	-.743	***	.022	-15.807	***	.280

R^2 = .15 and .13 for questioned costs and findings models, respectively.

ML < OBN at p-value < .261 and .039 for questioned costs and findings models, respectively (one-sided tests)

LEGEND

*, **, *** Significant at 10%, 5%, and 1% levels, respectively, based on one-sided t-tests for all variables with predicted signs equal to actual signs. For variables without predicted signs, and for those whose actual sign are different than predicted, p-values are based on two-sided tests. P-values for the changes model are based on standard errors robust to general serial correlation and heteroskedasticity.

$QC\%_{it}$ = absolute value of total questioned costs identified by the auditor as a percent of total federal expenditures at time t

Table 9
(continued)

$FIND_{it}$	=	total number of findings identified by the auditor at time t
ML_{it}	=	dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)
OBN_{it}	=	dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)
NEW_{it}	=	dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)
$PROG_{it}$	=	number of different federal programs at time t
$LFED_{it}$	=	natural log of total federal expenditures at time t
RC_{it}	=	dummy variable indicating whether reportable conditions were reported by the auditor at time t (1 if reportable condition reported, 0 otherwise)
$Y98_t$-$Y00_t$	=	dummy variables to indicate year at time t

[a] Coefficient estimates were obtained using tobit estimation. The actual models estimated include each of the independent variables as well as organization time-averages for each independent variable to account for firm heterogeneity. The coefficients on the averages have not been included in this table.

Only the direction and significance of the Tobit estimated coefficients can be directly compared to the fixed effects estimates included in Tables 5 and 6. The magnitudes of the Tobit coefficients cannot be directly compared to the magnitudes of the estimates from the fixed effects models.

Table 10
Logit Estimation of Hypotheses Three and Four
Material Noncompliance and Reportable Conditions

$$MNC_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 RC_{it} + \beta_7 FIND_{it} + \beta_8 QC\%_{it} + \beta_9 Y98_t + \beta_{10} Y99_t + \beta_{11} Y00_t + \varepsilon_{it}$$

$$RC_{it} = \alpha_i + \beta_1 ML_{it} + \beta_2 OBN_{it} + \beta_3 NEW_{it} + \beta_4 PROG_{it} + \beta_5 LFED_{it} + \beta_6 Y98_t + \beta_7 Y99_t + \beta_8 Y00_t + \varepsilon_{it}$$

Panel A - Logit Estimates

		N = 76,836			N = 76,945		
		Material Noncompliance[a]			**Reportable Conditions[a]**		
	Expected Sign	**Coefficient**		**Std. Error**	**Coefficient**		**Std. Error**
ML	+	-.408		.937	-1.637	***	.341
OBN	+	-2.289	***	.866	-1.253	***	.287
NEW	+	.259	*	.183	.402	***	.096
PROG	+	.021	*	.013	.001		.003
LFED	+	.143		.128	.199	***	.063
RC	+	1.464	***	.119	n/a		n/a
FIND	+	.337	***	.034	n/a		n/a
QC%	+	9.356	***	2.046	n/a		n/a
Y98	n/a	-.029		.082	-.298	***	.041
Y99	n/a	-.129		.091	-.581	***	.045
Y00	n/a	-.145		.370	-1.325	***	.186

R^2 = .19 and .02 for material noncompliance and reportable conditions models, respectively.

ML < OBN at p-value < .068 and .318 for the material noncompliance and reportable conditions models, respectively (two-sided test)

LEGEND

*, **, *** Significant at 10%, 5%, and 1% levels, respectively, based on one-sided t-tests for all variables with predicted signs equal to actual signs. For variables without predicted signs, and for those whose actual sign are different than predicted, p-values are based on two-sided tests. P-values for the changes model are based on standard errors robust to general serial correlation and heteroskedasticity.

MNC_{it} = dummy variable indicating whether there was a qualified opinion on compliance with federal regulations at time t (0 indicates an unqualified opinion, 1 otherwise)

Table 10
(continued)

ML_{it}	=	dummy variable indicating auditor market leader at time t (1 if market leader brand name, 0 otherwise)
OBN_{it}	=	dummy variable indicating other brand name auditor at time t (1 if other brand name, 0 otherwise)
NEW_{it}	=	dummy variable indicating whether the current year is the first year that the organization is receiving federal funds (1 if the first year included in the database is not 1997, 0 otherwise)
$PROG_{it}$	=	number of different federal programs at time t
$LFED_{it}$	=	natural log of total federal expenditures at time t
RC_{it}	=	dummy variable indicating whether reportable conditions were reported by the auditor at time t (1 if reportable condition reported, 0 otherwise)
$FIND_{it}$	=	total number of findings identified by the auditor at time t
$QC\%_{it}$	=	absolute value of total questioned costs identified by the auditor as a percent of total federal expenditures at time t
$Y98_t$-$Y00_t$	=	dummy variables to indicate year at time t

[a] Coefficient estimates obtained using conditional fixed effects logit estimation. Only the direction and significance of the logit estimated coefficients can be directly compared to the fixed effects estimates included in Tables 7 and 8. The magnitudes of the logit coefficients cannot be directly compared to the magnitudes of the estimates from the fixed effects models.