A NEW ERA FOR THE BIG 8? EVIDENCE ON THE ASSOCIATION BETWEEN EARNINGS QUALITY AND AUDIT FIRM TYPE

A Dissertation

by

CORY ALAN CASSELL

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

May 2009

Major Subject: Accounting

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Approved by:

Chair of Committee,	Thomas C. Omer
Committee Members,	Gary A. Giroux
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	Michael S. Wilkins
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ABSTRACT

A New Era for the Big 8? Evidence on the Association Between Earnings Quality and Audit Firm Type. (May 2009)

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Chair of Advisory Committee: Dr. Thomas C. Omer

I examine the association between earnings quality and audit firm type using a three-tiered audit firm classification scheme which allows for an explicit examination of the quality of Second-Tier audited earnings. My tests are motivated by the lack of competition in the market for audit services, theoretical arguments which suggest a positive association between audit firm size and audit quality, evidence pointing to the rapid post-Andersen growth in Second-Tier audit practices, and the lack of empirical research that fully differentiates audit firm type.

My results indicate that the post-Andersen growth of Second-Tier audit firms coincides with improved Second-Tier audit quality, relative to the other audit firm types (Big N and other non-Big N). Specifically, the results indicate that Second-Tier client earnings quality was not distinct from that of other non-Big N clients in the pre-Andersen period. However, in the post-Andersen period, the results indicate that Second-Tier client earnings quality was higher than that of other non-Big N clients. Moreover, the post-Andersen results provide partial evidence suggesting that there is no

difference in Second-Tier and Big N client earnings quality and, thus, lend some credence to the notion of a new era for the Big 8.

These results convey important information to market participants (e.g., investors, underwriters, analysts, etc.) who wish to assess the extent to which financial statements are likely to be free from opportunistic managerial manipulation, to clients that are contemplating switching to a Second-Tier audit firm, to government agencies who have expressed concern over the state of competition in the market for audit services, and to those who have promoted the use of Second-Tier audit firms in the wake of SOX-related resource constraints.

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CHAPTER I

INTRODUCTION

The Sarbanes-Oxley Act of 2002 (SOX) was passed in the wake of corporate scandals at Enron, Worldcom, and others. The scandals led to the demise of Arthur Andersen and a reduction in the number of the largest auditing firms from five to four, raising concerns about auditor choice, price, quality, and concentration. The United States General Accounting Office (GAO)[1] examined these concerns in a SOX mandated study entitled Public Accounting Firms: Mandated Study on Consolidation and Competition. The GAO report, released in July of 2003, stated,

> GAO found that smaller accounting firms faced significant barriers to entry – including lack of staff, industry and technical expertise, capital formation, global reach, and reputation – into the large public company audit market. As a result, market forces are not likely to result in the expansion of the current Big 4. Furthermore, certain factors and conditions could cause a further reduction in the number of major accounting firms (GAO 2003).

SOX exacerbated competition and concentration concerns by prohibiting clients from engaging their auditor to perform certain types of non-audit services.[2] In a 2005 speech, SEC Chairman Christopher Cox characterized the current situation as follows,

> The fact that so few firms are available to perform such a critical role in the capital formation process has been the subject of discussion for some time now. It isn't just that a large public company seeking auditing services has only four

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This dissertation follows the style of *The Accounting Review*.

[1] The General Accounting Office was renamed the Government Accountability Office in 2004.

[2] The 2003 GAO report provides an example of the impact of the SOX mandated prohibition on certain types of non-audit services on competition in the market for audit services. The report describes a multinational petroleum company currently using a Big N firm for auditing and outsourcing its internal audit function to another Big N firm. If this company wished to change auditors, it would be left with only two Big N audit firms from which to choose, assuming the remaining two Big N audit firms have a local and sufficiently staffed office to perform the audit work (GAO 2003).

> firms from which to choose. In some cases, because of geographic demands or industry specialization, a company may even have only one realistic choice. In other cases, because of auditor-independence rules, a company that uses one or more of the Big Four for non-audit services may find itself in a position where it simply can't consider changing auditors (Cox, 2005).

Concerns about the lack of competition in the market for audit services have been expressed by various other stakeholders including the U.S. Treasury Department's Advisory Committee on the Auditing Profession, audit clients, and audit firm executives, among others (U.S. Department of the Treasury 2008). According to a 2008 GAO survey, about 60% of large (Fortune 1000) firms and 50% of midsize firms view the level of audit market competition as inadequate (GAO 2008).

In this paper, I perform tests to examine the characteristics of a group of audit firms that appear to be best situated to alleviate some of the concerns described above. Specifically, a distinct group of national audit firms (e.g., BDO Seidman, Grant Thornton) has emerged in the wake of Andersen's collapse and the implementation of SOX, and anecdotal evidence suggests that these audit firms (hereafter, Second-Tier) have been successful in competing for former Big N clients (Byrnes 2005; Gullapalli 2005; GAO 2006).[3] Moreover, the Public Company Accounting Oversight Board (PCAOB) has encouraged the use of Second-Tier audit firms as an alternative to Big N audit firms in light of SOX-related resource constraints faced by the Big N audit firms.[4]

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[3] The term Big N refers to the Big 5 audit firms (Arthur Andersen, Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers) and their predecessors (Arthur Young, Coopers & Lybrand, Deloitte, Haskins, & Sells, and Touche Ross) prior to Andersen's collapse, and to the surviving Big 4 audit firms thereafter. The term Second-Tier refers to Grant Thornton, BDO Seidman, the Crowe Group, and McGladrey and Pullen as discussed later in the paper.

[4] Kayla Gillan of the PCAOB commented, "I urge Audit Committees to challenge the assumption that every company must use a Big 4 firm, or risk being perceived as somehow of lesser worth. Even if a company is very large, with a very complex financial structure and decentralized operations, I suggest that

The post-Andersen/SOX growth of Second-Tier audit firms has been persistent with Second-Tier revenue growth exceeding that for Big N audit firms in each year since 2003. Moreover, the difference between Second-Tier and Big N revenue growth has increased in every year since 2004 (Public Accounting Report 2003, 2004, 2005, 2006). Second-Tier audit firm growth has received extensive press coverage with some suggesting that Second-Tier audit firms have joined the Big 4 to form a new era of the Big Eight. Among these, Robert Kueppers (deputy CEO of Deloitte and Touche) stated, "We are sort of back to being the Big Eight again. The eight largest firms are working together to have a voice" (O'Sullivan 2007).

Despite the rapid growth of Second-Tier audit practices, relatively little research has been performed to examine Second-Tier audit quality. To date, most research examining the association between various proxies for real and/or perceived audit quality and auditor size uses a dichotomous classification scheme for the variable of interest (i.e., Big N versus non-Big N) resulting in Second-Tier audit firms being grouped together with other non-Big N audit firms. I extend prior research examining the association between audit quality and audit firm size by employing a three-tiered audit firm classification scheme which allows for an explicit assessment of Second-Tier audit quality. Specifically, I perform tests to assess the relative quality of Big N, Second-Tier, and other non-Big N audits in the years before and after Andersen's collapse and posit that the gap between Big N and Second-Tier (Second-Tier and other non-Big N)

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the Audit Committee should also consider the so-called 'second tier' of audit firms. I dislike using that term because it implies that the firms are secondary in quality – which I strongly believe is false…" (Grant Thornton 2006).

audit quality may have decreased (increased) post-Andersen because the post-Andersen growth in Second-Tier audit firm client portfolios may have altered the economic incentives faced by Second-Tier audit firms (e.g., at-risk economic rents that are larger in magnitude, increased litigation exposure, etc.), improved their ability to attract and train specialized personnel, or altered the characteristics of their client base.

To investigate this issue, I examine the association between audit quality and audit firm type using measures of reported earnings quality.[5] In the context of my study, earnings quality can be defined as the extent to which earnings are free from opportunistic managerial manipulation. I perform tests using three proxies from the prior literature to capture the magnitude and/or direction of opportunistic managerial manipulation. The earnings quality proxies include: discretionary accruals, estimated using a performance adjusted version of the modified-Jones model (Jones 1991; Dechow et al. 1995; Kothari et al. 2005); accruals quality, estimated using a modified version of the Dechow and Dichev model (Dechow and Dichev 2002; McNichols 2002); and an estimate of the probability of material accounting manipulation, estimated using the F-Score model in Dechow et al. (2008). I use a pre- versus post-Andersen design, where

[5] Audit quality is inherently unobservable. Prior research has examined various observable audit outcomes (e.g., going concern reporting accuracy, frequency of financial statement restatements, earnings quality metrics, etc.) to make inferences about audit quality. Following this line of research, I examine three alternative earnings quality metrics to make inferences about pre- to post-Andersen changes in Second-Tier audit quality. Throughout the remainder of the paper, I use the terms audit quality and earnings quality interchangeably to refer to the same underlying and unobservable construct of audit quality.

the pre-Andersen period is fiscal years 1988 through 2000, and the post-Andersen period is fiscal years 2001 through 2006.[6]

My results on the association between audit quality and audit firm type indicate that the post-Andersen growth of the Second-Tier audit practices coincides with an improvement in Second-Tier audit quality, relative to the other audit firm types (Big N and other non-Big N). Specifically, I document a pre- to post-Andersen improvement in Second-Tier client earnings quality, relative to the other audit firm types (Big N and other non-Big N). Using the two accruals-based earnings quality proxies, the results indicate that Second-Tier client earnings quality was generally not distinct from that of other non-Big N clients in the pre-Andersen period. However, in the post-Andersen period, the results indicate that Second-Tier client earnings quality was higher than that of other non-Big N clients. Additionally, the post-Andersen period results provide some evidence suggesting that Second-Tier client earnings quality was comparable to Big N client earnings quality. Results from tests using the F-Score as the earnings quality proxy yield mixed results. Specifically, univariate tests and portfolio analyses generally suggest a pre- to post-Andersen decrease in the probability of material accounting manipulation for Second-Tier clients. However, the significance of these changes varies depending on the sample being examined and the tests performed.

This study makes three contributions to the literature. First, because I examine the association between audit quality and audit firm type using an audit firm partition

[6] My predictions about changes in the relative quality of Second-Tier audited earnings are not based on a specific event (e.g., the collapse of Arthur Andersen or the implementation of SOX) but rather on a series of events which enabled Second-Tier audit firms to grow their practices over time. Thus, my tests examine the average improvement in the quality of Second-Tier audited earnings in the years after Andersen's collapse, relative to the years preceding Andersen's collapse.

that distinguishes between Second-Tier and other non-Big N audit firms, the results provide preliminary evidence about a group of audit firms who have received relatively little attention by researchers to date. This evidence is important because the post-Andersen growth of Second-Tier audit practices suggests that these firms may be best situated to help alleviate concerns about the potential for limited competition in the market for audit services. Second, because the results indicate a difference in earnings quality between Second-Tier clients and other non-Big N clients and potentially little difference in earnings quality between Second-Tier clients and Big N clients post-Andersen, future investigations of earnings quality related issues should consider a trichotomous design . Finally, because my results suggest that Second-Tier client earnings are of higher quality than that of other non-Big N clients and, in some instances, comparable to that of Big N clients, the results provide support for efforts by government agencies to promote the use of Second-Tier audit firms as an alternative to a Big N audit.

The next chapter provides background information on the role of accruals, earnings quality, the association between auditor size and audit quality, and Second-Tier audit firms. I discuss the empirical methodology, including the earnings quality proxies and model development, in Chapter III. Chapter IV provides a description of the data used, primary empirical results, and sensitivity analyses performed for each of the earnings quality proxies. The final chapter concludes.

CHAPTER II

BACKGROUND

Accounting Accruals and Earnings Quality

Accounting earnings is equal to the sum of operating cash flows and accounting accruals and provides a summary measure of firm performance. Prior research has shown that accrual-based earnings provide a superior measure of firm performance, relative to cash flows alone (Dechow 1994; Subramanyam 1996). This is because accounting accruals help to mitigate timing and matching problems which make cash flows a noisy measure of firm performance. However, because the accrual process requires managers to make subjective, and often complex, estimates of future outcomes, financial statements may contain material intentional or unintentional errors stemming from the accrual estimation process.

Accrual-related managerial manipulation can arise because of the complex and subjective nature of the accrual estimation process coupled with incentives which could entice managers to over or understate the financial results of the firm. Managers are faced with numerous incentives to manipulate earnings. Because managers' compensation is often linked to firm performance through employment contracts and the value of managers' stock and stock-option holdings depend on stock price (which depends on firm performance), manager wealth is closely tied to the performance of the firm. Prior research indicates that managers do, in fact, make opportunistic reporting

decisions in an attempt to maximize personal wealth.[7] However, the ability of managers to manipulate earnings is constrained by a number of factors. These factors include historical accounting decisions which limit managers' ability to exercise future discretion (Barton and Simko 2002), and the firm's external auditor (Becker et al. 1998), among others. As discussed below, the extent to which opportunistic reporting decisions survive the audit process to be presented in the financial statements is expected to vary with the quality of the external auditor.

In this study, I examine the association between earnings quality and audit firm type. In the context of my study, earnings quality can be defined as the extent to which reported earnings contain opportunistic managerial manipulation of the accrual estimation process. I perform tests using two accruals-based proxies used in prior literature to capture the magnitude and/or direction of opportunistic managerial manipulation. The proxies include an estimate of the discretionary component of total accruals based on the modified Jones model (Jones 1991; Dechow et al. 1995; Kothari et al. 2005) and an estimate of accruals quality based on a modified version of the Dechow and Dichev model (Dechow and Dichev 2002; McNichols 2002).

Prior research provides support for the use of accruals-based earnings quality metrics as suitable surrogates for audit quality. Specifically, prior research documents an association between discretionary accruals estimates and audit outcomes such as auditor litigation, opinion qualifications, and auditor changes. For example, Heninger (2001) provides evidence that discretionary accruals are positively associated with the risk of

[7] For example, Efendi et al. 2006 find that the likelihood of a financial statement restatement increases significantly when the CEO has sizable holdings of in-the-money stock options.

litigation. Prior research also documents a positive association between discretionary accruals estimates and the issuance of qualified audit opinions (Bartov et al. 2000), audit failures (Geiger and Raghunandan 2002), and auditor changes (DeFond and Subramanyam 1998).

The third, and final, earnings quality proxy examined in this study is based on the recent work of Dechow et al. (2008). Dechow et al. (2008) model the likelihood of material accounting manipulation using a large sample of firms that have allegedly manipulated their financial statements. Material accounting manipulation is evidenced by the receipt of an SEC issued Accounting and Auditing Enforcement Release (AAER). Using the set of coefficients generated from estimating Dechow et al.'s (2008) manipulation prediction model, I generate a firm-specific estimate of the probability of manipulation which is then used as an earnings quality proxy.

Auditor Size and Audit Quality

Although audit quality is an unobservable aspect of the financial reporting process, prior theoretical and empirical research suggests that audit quality is increasing in audit firm size. Theoretical research suggesting an association between audit quality and audit firm size is provided by DeAngelo (1981), Simunic and Stein (1996), and Dopuch and Simunic (1980, 1982), among others. DeAngelo (1981) suggests that audit quality increases in audit firm size because client-specific economic rents (generated through client-specific startup costs) serve as collateral against opportunistic behavior on the part of the auditor. Because the total value of these economic rents is increasing in the number and size of audit clients, large audit firms have more to lose in the event of

an audit failure. As a result, large audit firms have less incentive to allow opportunistic reporting decisions (DeAngelo 1981).

Simunic and Stein (1996) suggest that audit quality is increasing in audit firm size because large audit firms are perceived to have 'deep pockets'. This perception could encourage investor lawsuits which should entice large audit firms to perform high quality audits. Finally, Dopuch and Simunic (1980, 1982) suggest that audit quality is increasing in auditor size because larger auditors employ observable characteristics associated with audit quality (e.g., specialized training, peer reviews, etc.).

A large body of empirical evidence supports these theoretical arguments. For example, Palmrose (1988) documents that non-Big N auditors are sued more often than are Big N auditors, suggesting a higher incidence of audit failure for non-Big N audit firms. Feroz et al. (1991) document that non-Big N firms have a higher incidence of SEC sanctions and penalties stemming from SEC issued Accounting and Auditing Enforcement Releases (AAERs). Menon and Williams (1991) find that clients and investment bankers have a preference for Big N auditors for an initial public offering (IPO). Beatty (1989) finds that IPO returns are higher for non-Big N clients, suggesting less of an IPO under-pricing problem for Big N clients. Blokdijk et al. (2006) find that Big N audit firms are more effective in allocating audit hours, resulting in audits that are deemed to be of higher quality. Krishnan and Schauer (2000) find that non-Big N firms are less likely to comply with generally accepted accounting principles. Teoh and Wong (1993), show that the earnings response coefficient (ERC) is higher for clients of Big N audit firms, suggesting that financial statement credibility is higher for clients of Big N

audit firms. Mansi et al. (2004) and Pittman and Fortin (2004) find that the cost of debt financing is lower for Big N clients suggesting that Big N audited financial reports are more credible. Similarly, Khurana and Raman (2004) show that Big N audited financial reports are perceived as being more credible because clients of Big N audit firms have a lower *ex ante* cost of equity capital. Finally, Behn et al. (2007) show that analysts' forecast accuracy is higher and forecast dispersion is lower, for firms audited by a Big N audit firm.

A number of studies have also examined the association between audit firm size and opportunistic financial reporting behavior (Becker et al. 1998; Francis et al. 1999). The tests performed in these studies generally estimate the magnitude and/or direction of opportunistic behavior using models which estimate the discretionary component of total accruals (i.e., Jones 1991). For example, Becker et al. (1998) and Francis et al. (1999) show that clients of non-Big N audit firms report discretionary accruals that are significantly higher than discretionary accruals reported by clients of Big N audit firms. These results are consistent with Big N audit firms placing greater constraint on aggressive financial reporting behavior than non-Big N audit firms. Their results are confirmed in later studies which examine the association between earnings management and other characteristics of the audit (e.g. auditor tenure) which also include an indicator variable for audit firm size (Big N versus non-Big N). For example, in their study examining the association between earnings management and auditor tenure, Myers et al. (2003) show that the magnitude of discretionary accruals is lower for clients of Big N audit firms.

Second-Tier Audit Firms

As discussed above, prior research suggests that Big N audit firms outperform non-Big N audit firms in a variety of empirical contexts. However, most research examining the association between various proxies for real and/or perceived audit quality and audit firm type uses a dichotomous classification scheme for the variable of interest (i.e., Big N versus non-Big N) so that Second-Tier audit firms are classified together with other non-Big N audit firms. Recent events in the market for audit services suggest that this approach may no longer be warranted. Specifically, a distinct group of national audit firms (e.g., BDO Seldman, Grant Thornton) has emerged, and anecdotal evidence suggests that these Second-Tier audit firms have been successful in competing for former Big N audit firm clients since Andersen's collapse and since the implementation of SOX (Byrnes 2005; Gullapalli 2005). The post-Andersen/SOX growth of Second-Tier audit firms has been persistent with revenue growth exceeding that for Big N audit firms in each year since 2003. Moreover, the difference between Second-Tier and Big N revenue growth has increased in every year since 2004 (Public Accounting Report 2003, 2004, 2005, 2006).

Several recent studies provide mixed evidence on the quality of Second-Tier audits, relative to other audit firm types. Geiger and Rama (2006) examine the association between audit firm type and going-concern reporting accuracy. Their results suggest no difference in Second-Tier versus other non-Big N going-concern reporting accuracy. Francis et al. (1999) examine discretionary accrual estimates (both signed and absolute value) and perform univariate tests which indicate a three-tiered audit quality

hierarchy. Specifically, using data from 1988-1994, their results indicate that the magnitude of discretionary accruals are smallest for Big N clients, followed by clients of national audit firms (i.e., Second-Tier audit firms), followed by clients of all other audit firms.[8]

Farag and Alam (2008) examine pre- to post-SOX changes in Second-Tier audit quality and differences between Second-Tier and Big N audit quality in each period. Using the accruals quality measure proposed by Dechow and Dichev (2002) as the proxy for audit quality, their results indicate that Big N auditors provide higher quality audits in both periods and no pre- to post-SOX change in Second-Tier audit quality. Boone et al. (2008) test for post-SOX differences in Big N, Second-Tier, and other non-Big N audit quality using a variety of proxies for real and/or perceived audit quality. With respect to real audit quality, their results suggest that Big N and Second-Tier clients have lower discretionary accruals, relative to other non-Big N clients, and that there is no difference in the magnitude Big N and Second-Tier client discretionary accruals. Results of tests using proxies for perceived audit quality (e.g., *ex ante* cost of capital estimates) yield mixed results. Finally, Cassell et al. (2007) examine the perceived financial reporting credibility of Second-Tier audit firm clients in the periods before and after Andersen's collapse in 2001. Using a firm-specific estimate of the *ex ante* cost of equity capital as their proxy for perceived financial reporting credibility, the study finds that

[8] Francis et al.'s (1999) examination of Second-Tier (national) audit firms is limited to univariate tests of differences in discretionary accruals estimates by audit firm type over the years 1988-1994. As such, their results provide important initial evidence on the characteristics of Second-Tier audits. My study extends their analysis to examine discretionary accruals estimates in a multivariate framework where other determinants of the magnitude and/or direction of discretionary accruals estimates are controlled for. Moreover, my tests employ alternative earnings quality proxies and focus on a recent event in the market for audit services, namely, the rapid post-Andersen growth of Second-Tier audit practices.

perceived financial reporting credibility of Second-Tier audit firm clients is comparable to that of other non-Big N audit firm clients, and significantly lower than that of Big N audit firm clients, in the pre-Andersen period. However, post-Andersen, the results indicate that the financial reporting credibility of Second-Tier audit firm clients is comparable to that of Big N audit firm clients and significantly higher than that of other non-Big N audit firm clients. In supplemental analyses, the authors find similar results when tests are performed using the earnings response coefficient (ERC) as the proxy for perceived financial reporting credibility.

I extend this line of research in a number of ways. First, I contrast Second-Tier audit quality with both Big N and other non-Big N audit firms in the pre- and post-Anderson periods. As a result, I am able to assess the effect of the rapid post-Anderson Second-Tier audit firm growth on the audit quality hierarchy from prior research. Second, prior audit quality research generally relies on theoretical arguments suggesting a positive association between auditor size and audit quality. In contrast, my design allows for explicit tests of the theory that audit quality is associated with audit firm size. Because of the substantial growth in Second-Tier audit practices, this represents a unique opportunity to test this association in a dynamic setting. Finally, I perform extensive tests to examine one aspect of audit quality, the resulting quality of reported earnings, using three alternative measures of earnings quality.

I include the following four firms in my Second-Tier audit firm category: Grant Thornton LLP (GT), BDO Seidman LLP (BDO), The Crowe LLP (CROWE), and McGladrey and Pullen LLP (MP). This classification scheme is supported by the most

recent report issued by the Public Accounting Report which ranks audit firms based on the number of public clients audited, total revenue, and other measures of audit firm size.[9] According to the Public Accounting Report's 2006 ranking of the top 100 audit firms, GT, BDO, CROWE, and MP rank 5th through 8th respectively, based on the number of public clients. In terms of total revenue, MP, GT, BDO, and CROWE rank 5th through 8th respectively in the 2006 report (Public Accounting Report 2006).[10]

Despite the rapid growth of Second-Tier audit firms in the post-Andersen era, Big N audit firms continue to enjoy a significant size advantage over Second-Tier audit firms. For example, the largest Second-Tier audit firms in terms of total revenue (MP with total revenue of $1.3 billion) and number of public clients (GT with 411 public clients) remain much smaller than the smallest Big 4 audit firm (KPMG with total revenue of $4.4 billion and 1,254 public clients) (Public Accounting Report 2006).

However, I posit that the gap between Big N and Second-Tier (Second-Tier and other non-Big N) audited earnings quality may have decreased (increased) post-Andersen because the post-Andersen growth in Second-Tier audit firm client portfolios may have altered the economic incentives faced by these firms (e.g., at-risk economic rents that are larger in magnitude, increased litigation exposure, etc.), improved their

[9] The primary Second-Tier classification scheme examined in this study is based on the 2006 Public Accounting Report. However, a historical review of the Public Accounting Report's rankings reveals that the composition of the Second-Tier has changed over time. Specifically, when audit firms are ranked according to various aspects of audit firm size (e.g., total revenue, number of clients, etc.) in each year since 1988, the four firms that I include in my primary definition of the Second-Tier would not be ranked 5th through 8th throughout the entire sample period (1988-2006). To alleviate potential concerns relating to the changing composition of the Second-Tier, I perform tests to examine the sensitivity of my results to the exclusion of years preceding the establishment of a clear-cut Second-Tier.

[10] This classification scheme is also supported by a recent article in CFO.com entitled "Back to the Big Eight?" which identifies GT, BDO, CROWE, and MP as the "second-tier" firms and indicates that these firms are working together with the Big 4 to provide input to regulators and to form the Center for Audit Quality (O' Sullivan 2007).

ability to attract and train specialized personnel, or altered the characteristics of their client base. My hypothesis is motivated by prior theoretical (DeAngelo 1981; Dopuch and Simunic 1980, 1982; Simunic and Stein 1996) and empirical (Palmrose 1988; Feroz et al. 1991; Menon and Williams 1991; Beatty 1989; Krishnan and Schauer 2000; Blokdijk et al. 2006; Teoh and Wong 1993; Mansi et al. 2004; Pittman and Fortin 2004; Khurana and Raman 2004; Behn et al. 2007; Becker et al. 1998; Francis et al. 1999) research which suggests that audit quality is increasing in audit firm size and by evidence pointing to the rapid growth of Second-Tier audit practices in the post-Andersen period (Public Accounting Report 2003, 2004, 2005, 2006).

CHAPTER III

EMPIRICAL METHODOLOGY

As discussed above, I perform tests using three proxies which have been used in the prior literature to investigate the magnitude and/or direction of opportunistic managerial manipulation. I discuss the estimation of each of these proxies and the associated empirical models in detail in the remainder of this chapter.

Discretionary Accruals

My primary empirical tests employ a firm-specific estimate of the discretionary component of total accruals. Specifically, I estimate the discretionary component of total accruals using a performance-adjusted modified Jones model because Kothari et al. (2005) show that inferences are more reliable when this measure is used. Following Kothari et al. (2005), I estimate the following model by year and industry (based on 2-digit SIC codes) and I eliminate industry-years with less than 10 firm-year observations:

$$TA_t/ASSETS_{t-1} = \alpha + \beta_1\, 1/ASSETS_{t-1} + \beta_2\, (\Delta SALES_t - \Delta AR_t)/ASSETS_{t-1} + \beta_3\, PPE_t/ASSETS_{t-1} + \beta_4\, ROA + e_t \quad (1)$$

where:

TA = Total accruals (COMPUSTAT # 18 – COMPUSTAT # 308)

ASSETS = Total assets (COMPUSTAT # 6)

SALES = Total sales (COMPUSTAT # 12)

AR = Accounts receivable (COMPUSTAT # 2)

PPE = Property, plant, and equipment (COMPUSTAT # 7)

ROA = Return on assets (COMPUSTAT # 18 / COMPUSTAT # 6 prior year)

and

e_t = discretionary accruals

Following prior studies, I examine the association between earnings quality and audit firm type using both signed (SIGN_DA) and absolute value (ABS_DA) discretionary accruals (Becker et al. 1998; Frankel et al. 2002; Myers et al. 2003). According to Klein (2002), ABS_DA captures managers' intervention in reporting accounting earnings and should capture the magnitude of opportunistic reporting decisions regardless of the direction of the opportunistic behavior. However, it is possible that auditors have an asymmetric view of income increasing versus income decreasing opportunistic reporting decisions. Therefore, I examine the association between earnings quality (using SIGN_DA as the proxy for earnings quality) and audit firm type. As discussed below, I examine the association between SIGN_DA and audit firm type separately for firms with estimated positive discretionary accruals and firms with estimated negative discretionary accruals.

My empirical model estimates the association between earnings quality (using either ABS_DA or SIGN_DA as the proxy for earnings quality) and audit firm type in the pre- and post-Andersen periods, and pre- to post-Andersen changes in the association between earnings quality and audit firm type, while controlling for additional factors that are associated with discretionary accrual estimates. Specifically, the model is as follows:

$$DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + B_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \varepsilon \quad (2)$$

where:

DA = Absolute value (ABS_DA) or signed (SIGN_DA) firm-specific estimate of the discretionary accrual component of total accruals estimated using a performance-adjusted modified Jones model.

BIGN = a dummy variable coded 1 if the client engages a Big N audit firm, and 0 otherwise.

SEC_TIER = a dummy variable coded 1 if the client engages a Second-Tier audit firm, and 0 otherwise.

POST = a dummy variable coded 1 if the observation is from 2001-2006, and 0 otherwise.

lnASSETS = the natural log of total assets (COMPUSTAT data item # 6) measured as of fiscal year-end.

CFO = cash flow from operations (COMPUSTAT data item # 308) scaled by lagged total assets.

ABS_TA = the absolute value of total accruals (COMPUSTAT data item # 18 – COMPUSTAT data item # 308) scaled by lagged total assets.

LEV = ratio of total debt to total assets (COMPUSTAT data item # 9 / COMPUSTAT data item # 6).

AGE = the total number of years for which total assets was reported in COMPUSTAT.

TENURE = the number of consecutive years that the firm has retained their current auditor.

σ^{REV}= The standard deviation of sales (COMPUSTAT # 12) deflated by total assets over the current and prior four years.

and

σ^{CFO} = The standard deviation of cash flow from operations (COMPUSTAT # 308) deflated by total assets over the current and prior four years.

The natural log of total assets (lnASSETS) is included as a proxy for firm size because accrual activity is expected to vary with firm size (Dechow and Dichev 2002). Cash flow from operations (CFO) is included as a control variable because there is a negative correlation between cash flow and accruals (Dechow 1994; Sloan 1996). The absolute value of total accruals (ABS_TA) is included to control for the firm's accruals-generating potential (Becker et al. 1998). Leverage (LEV) is included because DeFond and Jiambalvo (1994) find an association between debt covenant violations and discretionary accrual choice. Firm age (AGE) is included because prior research suggests that accrual characteristics change with changes in the firm life cycle (Anthony and Ramesh 1992). Auditor tenure (TENURE) is included because Myers et al. (2003) find that firms with longer auditor tenure report discretionary accruals that are smaller in magnitude. The standard deviation of revenue (σ^{REV}) and the standard deviation of cash flow from operations (σ^{CFO}) is included because Hribar and Nichols (2007) show that operating volatility is highly correlated with absolute value discretionary accruals estimates and that statistical inferences may be biased if the partitioning variable of interest (here, auditor type) is also correlated with operating volatility.[11] Finally, I also include industry indicator controls (based on 2 digit SIC codes) to control for differences in discretionary accrual estimates across industries.

[11] Descriptive statistics suggest that auditor type is, in fact, correlated with operating volatility. Specifically, Big N clients generally exhibit the lowest operating volatility, followed by Second-Tier clients and other non-Big N clients.

Accruals Quality

Although discretionary accruals estimates generated using variations of the Jones (1991) model have been used extensively in prior earnings management research, this approach has also been subject to extensive criticism (Guay et al. 1996; Bernard and Skinner 1996). Recently, many researchers have adopted an approach suggested by Dechow and Dichev (2002) who model the association between current period accruals and past, current, and future cash flows. Dechow and Dichev (2002) argue that, because their model provides a measure of the extent to which current accruals map into operating cash flows, the model provides a more direct measure of accruals quality.

I use a modified version of the Dechow and Dichev (2002) model as suggested by McNichols (2002) and implemented by Srinidhi and Gul (2007) to generate a firm-specific accruals quality estimate. Following McNichols (2002), I estimate the following model by year and industry (based on Fama and French 1997 industry classifications) and I eliminate industry-years with fewer than 20 firm-year observations:

$$TCA_t = \alpha + \beta_1 OCF_{t-1} + \beta_2 OCF_t + \beta_3 OCF_{t+1} + \beta_4 \Delta REV_t + \beta_5 PPE_t + e_t \quad (3)$$

where:

TCA = Total current accruals (ΔCOMPUSTAT # 4 – ΔCOMPUSTAT # 1 - (ΔCOMPUSTAT # 5 – ΔCOMPUSTAT # 34)), scaled by average total assets (COMPUSTAT # 6).

OCF = Operating cash flow (COMPUSTAT # 308), scaled by average total assets (COMPUSTAT # 6).

ΔREV = Change in revenues (COMPUSTAT #12), scaled by average total assets (COMPUSTAT # 6).

PPE = Property, plant, and equipment (COMPUSTAT # 7), scaled by average total assets (COMPUSTAT # 6).

and

e_t = Residual

Following Srinidhi and Gul (2007), my proxy for accruals quality (ABS_DD) is equal to the absolute value of the residual obtained from Model 3.[12] My empirical tests are based on the following multivariate model which estimates the association between accruals quality (ABS_DD) and audit firm type in the pre- and post-Andersen periods, and pre- to post-Andersen changes in the association between accruals quality and audit firm type, while controlling for additional factors that are associated with accruals quality estimates. Specifically, the model is as follows:

$$\begin{aligned} ABS\_DD = {} & \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER \\ & + B_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 lnOPCYCLE \\ & + \beta_8 \sigma^{REV} + \beta_9 \sigma^{\overline{CFO}} + \beta_{10} LOSS + \varepsilon \end{aligned} \quad (4)$$

where:

ABS_DD = Absolute value firm-specific estimate of accruals quality estimated using a modified Dechow and Dichev (2002) model.

lnOPCYCLE = The natural log of OPCYCLE; OPCYCLE = (360 / (sales / average accounts receivable)) + (360 / (cost of goods sold / average inventory)); for firms in the business services industry, OPCYCLE = (360 / (sales / average accounts receivable)); sales = COMPUSTAT # 12; accounts receivable = COMPUSTAT # 2; cost of goods sold = COMPUSTAT # 41; inventory = COMPUSTAT # 3.

LOSS = A dummy variable coded 1 if net income (COMPUSTAT # 172) is less than zero, 0 otherwise.

[12] This approach is suggested by Dechow and Dichev (2002) as an alternative version of their primary accruals quality measure which is based on the standard deviation of firm-specific residuals over a rolling five year window. In the context of my study, a firm-year accruals quality measure is preferred because, absent the deletion of all firms who experienced a change in auditor type, a given firm-specific accruals quality estimate could be generated for a firm with more than one auditor type during the five year estimation window. I discuss sensitivity tests which use the primary Dechow and Dichev (2002) accruals quality measure in Chapter IV.

and

all other variables are as defined previously.

Model 4 includes several control variables as suggested by Dechow and Dichev (2002). The natural log of total assets (lnASSETS) is included as a proxy for firm size because large firms are generally more stable which is expected to translate into smaller accrual estimation errors (Dechow and Dichev 2002). Also, accrual estimation errors are expected to be positively associated with the length of the operating cycle (lnOPCYCLE) and operating volatility (σ^{REV}, σ^{CFO}, LOSS) (Dechow and Dichev 2002). Finally, I also include industry indicator controls (based on 2 digit SIC codes) to control for differences in accruals quality estimates across industries.

Likelihood of Manipulation

The two empirical proxies that I have described thus far attempt to decompose total or current accruals and identify the portion that appears to be driven by managerial discretion. These models use firm and industry characteristics to estimate the accruals decomposition and generate firm-specific estimates of the magnitude and/or direction of the discretionary behavior. An alternative to this approach is proposed by Dechow et al. (2008) who model the likelihood of material accounting manipulation. Specifically, Dechow et al. (2008) identify a large sample of firms who have allegedly manipulated their financial statements as evidenced by an Accounting and Auditing Enforcement Release (AAER) issued by the SEC. The authors develop a prediction model to assess the likelihood of manipulation using a set of AAER firms and a corresponding set of public firms that did not receive an AAER. Using the coefficients from their prediction

model, a set of firm-specific probability estimates can be found. The estimated probability represents the likelihood that the firm, based on firm characteristics, would report manipulated financial statements. The firm-specific probability is then scaled to derive a firm-specific score which Dechow et al. (2008) term the F-Score.

Dechow et al. (2008) estimate their prediction model using three variations on the set of independent variables. The first variation includes only financial statement variables (e.g., change in receivables, change in cash sales, etc.). The second adds off-balance sheet and non-financial variables (e.g., abnormal change in employees). Finally, the third variation adds stock market based variables (e.g., lagged market-adjusted stock return). The authors evaluate the set of model estimates in terms of correct classification rates, sensitivity, and type I and II errors. In each case, the results indicate that the additional variables included in the second and third model variations do not improve the model diagnostics. Specifically, the model estimate that includes only financial statement variables has the highest classification rate and the lowest incidence of Type I and II errors. Accordingly, my tests of the likelihood of manipulation utilize the coefficient estimates generated by this variation of the Dechow et al. 2008 model (see Dechow et al. 2008, Table 7 Panel A). Specifically, the model is written as follows:

$$\text{Logit}_{\text{F-Score}} = -6.789 + 0.817(\text{RSST}) + 3.230(\Delta\text{AR}) + 2.436(\Delta\text{INV}) + 0.122(\Delta\text{CASH\_SALE}) - 0.992(\Delta\text{EARNINGS}) + 0.972(\text{ISSUE}) \quad (5)$$

where:

RSST = Richardson et al. (2006) accruals measure (ΔWC + ΔNCO + ΔFIN)/average total assets; WC = (COMPUSTAT # 4 – COMPUSTAT #1) – (COMPUSTAT # 5 – COMPUSTAT # 34); NCO = (COMPUSTAT # 6 – COMPUSTAT # 4 – COMPUSTAT # 32) – (COMPUSTAT # 181 – COMPUSTAT # 5 – COMPUSTAT # 9); FIN = (COMPUSTAT # 193 + COMPUSTAT # 32) – (COMPUSTAT # 9 + COMPUSTAT # 34 + COMPUSTAT # 130).

ΔAR = Change in accounts receivable (COMPUSTAT # 2), scaled by average total assets.

ΔINV = Change in inventory (COMPUSTAT # 3), scaled by average total assets.

ΔCASH_SALE = Percentage change in CASH_SALE; CASH_SALE = COMPUSTAT # 12 - ΔAR (unscaled).

ΔEARNINGS = Change in EARNINGS; EARNINGS = COMPUSTAT # 18, scaled by average total assets.

ISSUE = An indicator variable coded 1 if the firm issued securities during the year; ISSUE = 1 if COMPUSTAT # 108 > 0 or COMPUSTAT # 111 > 0.

and

F-Score = A scaled probability of manipulation; $[\exp(\text{Logit}_{\text{F-Score}})]/[1 + \exp(\text{Logit}_{\text{F-Score}})]$, scaled by the unconditional probability of manipulation which Dechow et al. (2008) calculate as 0.00345.

I perform univariate tests and audit firm client portfolio analyses using the firm-specific F-Score estimates derived using the model described above. Specifically, my tests include univariate tests of differences in means by period (pre- and post-Andersen) and auditor type. In addition, I construct annual F-Score deciles and compute the

percentage of Big N, Second-Tier, and other non-Big N clients which fall into the two highest deciles (firms that are most likely to have a financial statement manipulation) in each period. These analyses are then used to evaluate whether it appears that Second-Tier clients have a reduced probability of manipulation post-Andersen, relative to the pre-Andersen period, and to compare changes in the Second-Tier client portfolio to the changes observed in the client portfolios of the other auditor types.

Controls for Potential Selection Bias

Although audit firm selection (by the client) and client selection (by the auditor) are likely driven by auditor characteristics and client risk characteristics (e.g., auditor size, client size, leverage, and operating performance) which are included as control variables in Models 2 and 4, it is possible that additional factors influence the joint selection decision. These omitted factors could induce a selection bias which may influence the results. I employ two alternative methods to address potential concerns relating to such a selection bias.

First, I employ a two-stage Heckman (1979) procedure where the first-stage model predicts the selection of a Big N auditor.[13] The selection model includes each of the control variables in the respective outcome model (Models 2 and 4).[14] I then compute and include the inverse Mills ratio (INVMILLS) as a control for omitted factors

[13] The selection equation models the selection of a Big N versus non-Big N auditor. Accordingly, subsequent estimations of Models 2 and 4 which include a control for self-selection bias include a single inverse Mills ratio (INVMILLS). When a three-tiered dependent variable is used in the selection model (e.g., Big N, Second-Tier, and other non-Big N) and multiple inverse Mills ratios are included in the estimation of Models 2 and 4, severe multicollinearity issues arise. Nevertheless, untabulated results indicate that these issues do not alter the tenor of the reported results.

[14] The Heckman (1979) procedure is generally implemented by including additional variables which are not included in the outcome model as predictors of the selection decision. However, Maddala (1983) and Wooldridge (2002) argue that additional variables are not technically necessary and that the inclusion of inappropriate variables could be problematic.

correlated with the decision to select a Big N auditor. Second, I perform tests on a restricted sample which excludes all observations for any company that switched audit firm type (e.g., from Big N to Second-Tier, from Second-Tier to other non-Big N, etc.) during the sample period. In the following chapter, I report results of four alternative specifications of Models 2 and 4: no control for selection bias, control for selection bias using the Heckman (1979) approach or the restricted sample approach, and control for selection bias using both the Heckman (1979) approach and the restricted sample approach.

CHAPTER IV

DATA AND EMPIRICAL RESULTS

In this chapter, I describe data collection, descriptive statistics, and multivariate results for tests performed using each of the three earnings quality proxies described in the preceding chapter. To date, most evidence pointing to the post-Andersen growth in Second-Tier audit practices is based on individual statistics and/or anecdotal evidence which do not provide a complete picture of the relative speed or magnitude of their growth. I begin this chapter with an empirical analysis of Second-Tier audit firm growth to provide a more comprehensive view of changes in Second-Tier audit firm practices.

Evidence on the Growth of Second-Tier Audit Firms

To provide a comprehensive measure of the growth of Second-Tier audit practices, relative to Big N audit firms, I performed a principle components analysis (PCA) which included data capturing various aspects of Second-Tier and Big N audit firm growth during the period 1998-2007. PCA is based on a mathematical algorithm which attempts to reduce the dimensionality of a dataset by transforming (potentially) correlated variables into a set of uncorrelated principal components. To perform the analysis, I collected data on the percentage growth in total audit firm revenue, percentage growth in total number of professionals, percentage growth in the number of audit firm offices, and percentage growth in the number of SEC clients for each Big N and Second-Tier firm during the period 1998-2007 from the Public Accounting Report (2003, 2004, 2005, 2006, 2007). Thus, the PCA attempts to reduce the dimensionality

across four aspects of audit firm growth and identify certain commonalities in the data. The resulting principle components can be viewed as independent (e.g., uncorrelated) aspects of audit firm growth and the resulting factor scores can be viewed as measures of the magnitude of audit firm growth for that aspect.

Results from the principle components analysis indicate two components with eigenvalues greater than one. The first component, which is primarily associated with the percentage change in revenue and the percentage change in the number of professionals, explains approximately 40 percent of the variation in the four measures. The second component is primarily associated with the percentage change in the number of offices and the percentage change in the number of SEC clients and explains approximately 26% of the remaining variation in the four measures. Figures 1 and 2 provide a graphical display of the factor scores for each of the two components and for each of the four measures used in the principle components analysis by year and auditor type.[15] The results for the factor scores for component 1 (Figure 1 Panel A) are strongest with Second-Tier growth exceeding Big N growth in each year except 2001. The remaining graphs (Figure 1 Panel B and Figure 2) indicate a consistent pattern in which Second-Tier growth exceeds that of Big N firms in a majority of the years since 2001. In sum, the analyses in Figures 1 and 2 provide empirical evidence suggesting that the post-Andersen growth of Second-Tier audit firms was rapid, exceeded that of Big N audit firms, and was multi-dimensional. As such, these results provide support for my

[15] The factor score inputs (e.g., change in total revenue, change in number of professionals, etc.) and summary factor scores (e.g. Component 1 and 2) are generated for each individual audit firm in each year. The analyses in Figures 1 and 2 are based on annual means calculated by auditor type.

examination of Second-Tier audit quality characteristics and for the motivation behind my hypothesis which suggests an improvement in Second-Tier client earnings quality resulting from their growth.

Discretionary Accruals

Data

All data used in this section are collected from COMPUSTAT. The sample period begins in 1988 because this is the first year in which specific non-Big N audit firms are identified by COMPUSTAT. I perform tests on two samples (i.e., the full sample and the restricted sample) using observations from 1988 through 2006. The pre-Andersen period is fiscal years 1988 through 2000 and the post-Andersen period is fiscal years 2001-2006. For both samples, I delete firms incorporated in a foreign country, firms in regulated and financial industries (i.e., with SIC codes 4000 through 4999 and 6000 through 6999), firms with total assets less than $1 million (COMPUSTAT data item # 6), firms with missing COMPUSTAT data needed to estimate the discretionary accruals model (Model 1), firms with missing auditor information (COMPUSTAT data item #149), and firms with missing COMPUSTAT data items needed to construct the variables included in Model 2. For each year, I determine which observations are in the top or bottom 1 percent of the distribution of cash flow from operations (CFO) and signed discretionary accruals (SIGN_DA) and delete these observations to limit the influence of outliers on my results (Myers et al. 2003). These procedures yield a sample which consists of 87,157 company-year observations (69,890 Big N audited

observations, 5,347 Second-Tier audited observations, and 11,920 other non-Big N audited observations).

As discussed above, I also perform tests on a restricted sample to address the potential selection biases associated with audit firm and/or client selection. The restricted sample excludes all observations for any company that switched audit firm type (e.g., from Big N to Second-Tier, from Second-Tier to other non-Big N, etc.) during the sample period. This procedure eliminates 26,085 company-year observations and yields a restricted sample comprised of 61,072 company-year observations (54,245 Big N audited observations, 1,218 Second-Tier audited observations, and 5,609 other non-Big N audited observations). Table 2 summarizes the derivation of the full and restricted samples.

Descriptive Statistics

Descriptive statistics for the dependent variables (ABS_DA and SIGN_DA) are presented in Table 3 (for the full sample) and Table 4 (for the restricted sample). In Table 3 Panel A, I present descriptive statistics for the full sample by audit firm type, pooled over the entire sample period (1988-2006). With respect to absolute value discretionary accrual estimates (ABS_DA), the statistics in Panel A indicate that Big N audit firm clients report discretionary accruals that are smaller in magnitude than those reported by Second-Tier audit firm clients ($p = 0.000$) and clients of other non-Big N audit firms ($p = 0.000$). Second-Tier clients report discretionary accruals that are smaller in magnitude than those reported by clients of other non-Big N audit firms ($p = 0.000$). In Table 3 Panel C, I present descriptive statistics for the full sample by audit firm type

and time period. In Panel C, the descriptive statistics indicate that these relationships hold in both periods (pre- and post-Andersen). Statistics in Panel C also indicate that the magnitude of discretionary accruals (ABS_DA) increased pre- to post-Andersen for Big N clients ($p = 0.000$) and for other non-Big N clients ($p = 0.000$) but not for Second-Tier clients.

With respect to signed discretionary accrual estimates (SIGN_DA), descriptive statistics in Panel A indicate no significant difference in the signed discretionary accruals reported by Big N and Second-Tier clients ($p = 0.738$). Other non-Big N audit firm clients report signed discretionary accruals that are significantly more negative (income decreasing) than Big N clients ($p = 0.000$) and Second-Tier clients ($p =0.009$). In Panel C, the descriptive results indicate that these relationships hold only in the pre-Andersen period. Post-Andersen, the results indicate no significant difference in the signed discretionary accruals reported by Big N, Second-Tier, or other non-Big N audit firm clients. Results in Panel C also indicate that signed discretionary accruals are more negative pre- to post-Andersen for Big N clients ($p = 0.000$) and Second-Tier clients ($p = 0.038$).

Descriptive statistics for the restricted sample are presented in Table 4 and are consistent with those reported for the full sample in Table 3 with one exception. Specifically, the results in Table 4 Panel C indicate that the absolute value of discretionary accruals (ABS_DA) increased pre- to post-Andersen for Second-Tier clients ($p = 0.003$), a result which was insignificant in Table 3 Panel C. Overall, the descriptive results for ABS_DA and SIGN_DA indicate that pre-to post-Andersen

increases in the magnitude of discretionary accruals appear to be associated with signed discretionary accruals which are more negative (income decreasing) in the post-Andersen period. As such, the results suggest a pre- to post-Andersen increase in reporting conservatism, particularly for Big N and Second-Tier audit firm clients.

Descriptive statistics for the control variables in Model 2 are presented in Table 5 (for the full sample) and Table 6 (for the restricted sample). In both tables, descriptive results for Big N, Second-Tier, and other non-Big N audit firm clients, are presented in Panels A, B, and C respectively. In Panel D, I compare the control variable means across audit firm types in each period (pre- and post-Andersen). The results in these two tables are similar so I focus my discussion on the results from the full sample (Table 5) and highlight any differences in the results from the restricted sample (Table 6). With respect to firm size (lnASSETS), Big N clients are significantly larger than Second-Tier clients and Second-Tier clients are significantly larger than other non-Big N clients. These results hold in the pre- and post-Andersen period and the results indicate a significant pre- to post-Andersen increase in client size for each audit firm type. Cash flow from operations (CFO) is significantly higher for Big N clients than for Second-Tier clients and CFO is significantly higher for Second-Tier clients than for other non-Big N clients in both periods (pre- and post-Andersen). CFO increased for Big N and Second-Tier clients (the latter result is insignificant in Table 6) while CFO decreased other non-Big N clients. In both periods (pre- and post-Andersen), Big N clients reported total accruals which were smaller in magnitude (ABS_TA) than Second-Tier clients who reported ABS_TA which was smaller than other non-Big N clients. With respect to leverage

(LEV), the results in Tables 5 and 6 indicate that Big N and Second-Tier clients generally have higher LEV than other non-Big N clients. Also, Big N clients are generally older (AGE) and have longer auditor tenure (TENURE) than Second-Tier and other non-Big N clients.

Multivariate Results

As previously discussed, I estimate Model 2 using two discretionary accrual estimates (ABS_DA and SIGN_DA). Because the sample includes multiple observations for a given firm (client), all regressions estimate standard errors based on clustering at the firm (client) level. All test statistics are based on Roger's standard errors (White corrected) which adjust for possible correlation of residuals within firm clusters (Petersen 2008).

For the regressions with ABS_DA as the dependent variable, results are presented in Table 7 (for the full sample) and Table 8 (for the restricted sample). For the regressions with SIGN_DA as the dependent variable, I use a maximum likelihood truncated regression approach to estimate Model 2. Specifically, the truncated regression approach employed uses a tobit regression with a lower (upper) bound of zero for the positive (negative) discretionary accruals dataset.[16] Results for the positive discretionary accrual sample are presented in Table 9 (for the full sample) and Table 10 (for the restricted sample). Results for the negative discretionary accrual sample are presented in Table 11 (for the full sample) and Table 12 (for the restricted sample). In Tables 7

[16] The truncated regression approach is preferred because ordinary least squares (OLS) estimates are generally biased towards zero when OLS is used to estimate a model on a truncated sample (Greene 2003).

through 12, Panel A (Panel B) presents results of the estimation of Model 2 without (with) the inverse Mills ratio (INVMILLS) control for selection bias.

Absolute Value Discretionary Accruals

Results from estimates of Model 2 with ABS_DA as the dependent variable (full sample) are presented in Table 7. In Panel A, the negative and significant coefficient on BIGN indicates that Big N clients have lower ABS_DA than clients of other non-Big N auditors in the pre-Andersen period ($p = 0.000$). The insignificant coefficient on SEC_TIER indicates that ABS_DA is comparable for Second-Tier and other non-Big N clients in the pre-Andersen period. A joint test (BIGN = SEC_TIER) confirms that the pre-Andersen BIGN coefficient is significantly more negative than the pre-Andersen SEC_TIER coefficient ($p = 0.000$).

The interactions between the post-Andersen indicator variable (POST) and auditor type (BIGN and SEC_TIER) are both negative and significant ($p = 0.000$). Moreover, the joint tests for the post-Andersen effects (BIG N + POST*BIGN and SEC_TIER + POST*SEC_TIER) are both negative and significant ($p = 0.000$). These results indicate that ABS_DA is lower for both Big N and Second-Tier clients than for other non-Big N clients in the post-Andersen period. Finally, a joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is insignificant ($p = 0.398$) indicating that there is no difference in the post-Andersen BIGN and SEC_TIER coefficient estimates.

Results in Panel B are consistent with those in Panel A. In both Panel A and Panel B, the results indicate a negative association between ABS_DA and CFO and AGE and a positive association between ABS_DA and ABS_TA and σ^{REV}. In Panel B, the results also indicate a positive association between ABS_DA and TENURE.

The results for the restricted sample, presented in Table 8, are generally consistent with those presented in Table 7 with a few exceptions. First, the results in Table 8 Panel A and Panel B indicate that the interactions between POST and SEC_TIER are not significant (p = 0.184 and 0.220 respectively). The joint test (SEC_TIER + POST*SEC_TIER) is negative and significant (p = 0.072) in Panel A but insignificant in Panel B. Finally, a joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is significant (p = 0.094) in Panel A indicating that the post-Andersen effect of auditor affiliation on ABS_DA is more negative for Big N clients than for Second-Tier clients .

Overall, the results in Tables 7 and 8 suggest a pre- to post-Andersen improvement in Second-Tier client earnings quality, relative to the client earnings quality of the other audit firm types (Big N and other non-Big N). A summary of the pre- to post-Anderson changes in the audit firm client earnings quality hierarchy is presented in Table 13.

Positive Discretionary Accruals

Results from estimates of Model 2 with SIGN_DA as the dependent variable (full sample), positive discretionary accruals sample, are presented in Table 9. In Panel

A, the negative and significant coefficient on BIGN indicates that Big N clients have lower positive discretionary accruals than other non-Big N clients in the pre-Andersen period ($p = 0.001$). The insignificant coefficient on SEC_TIER indicates that Second-Tier clients have positive discretionary accruals that are comparable to those for other non-Big N clients in the pre-Andersen period. A joint test (BIGN = SEC_TIER) confirms that the pre-Andersen BIGN coefficient is significantly more negative than the pre-Andersen SEC_TIER coefficient ($p = 0.000$). The interactions between the post-Andersen indicator variable (POST) and audit firm type (BIGN and SEC_TIER) are both negative and significant ($p = 0.002$ and 0.003 respectively). Moreover, the joint tests for the post-Andersen effects (BIG N + POST*BIGN and SEC_TIER + POST*SEC_TIER) are both negative and significant ($p = 0.000$ and 0.006 respectively). These results indicate that positive discretionary accruals are lower for both Big N and Second-Tier clients than for other non-Big N clients in the post-Andersen period. Finally, a joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is insignificant ($p = 0.195$) indicating that the post-Andersen effect for Big N clients is not significantly different from that for clients of Second-Tier audit firms.

Results in Panel B are consistent with those in Panel A with one exception. Specifically, the joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is significant ($p = 0.080$) indicating that the post-Andersen

effect for Big N clients is significantly more negative than that for clients of Second-Tier audit firms. In both Panel A and Panel B, the results indicate a negative association between positive discretionary accruals and CFO and a positive association between positive discretionary accruals and lnASSETS and ABS_TA and σ^{REV}. In Panel B, the results also indicate a negative association between positive discretionary accruals and TENURE.

The results for the restricted sample, presented in Table 10, are consistent with those presented in Table 9 with one exception. Specifically, in Panel B, the joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is insignificant indicating that the post-Andersen effect for Big N clients is not significantly different from that for clients of Second-Tier audit firms. Overall, the results in Tables 9 and 10 suggest a pre- to post-Andersen improvement in Second-Tier client earnings quality, relative to the client earnings quality of the other audit firm types (Big N and other non-Big N). A summary of the pre- to post-Anderson changes in the audit firm client earnings quality hierarchy is presented in Table 13.

Negative Discretionary Accruals

Results from estimates of Model 2 with SIGN_DA as the dependent variable (full sample), negative discretionary accruals sample, are presented in Table 11. In Panel A, the positive and significant coefficients on BIGN ($p = 0.000$) and SEC_TIER ($p = 0.082$) indicate that both Big N and Second-Tier clients have lower negative discretionary accruals than other non-Big N clients in the pre-Andersen period. A joint

test (BIGN = SEC_TIER) indicates that the pre-Andersen BIGN coefficient is significantly more positive than the pre-Andersen SEC_TIER coefficient (p = 0.010). The interactions between the post-Andersen indicator variable (POST) and audit firm type (BIGN and SEC_TIER) are both positive and significant (p = 0.000 and 0.001 respectively). Moreover, the joint tests for the post-Andersen effects (BIG N + POST*BIGN and SEC_TIER + POST*SEC_TIER) are both positive and significant (p = 0.000). These results indicate that negative discretionary accruals are lower for both Big N and Second-Tier clients than for other non-Big N clients in the post-Andersen period. Finally, a joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is insignificant (p = 0.841) indicating that there is no difference in the post-Andersen BIGN and SEC_TIER coefficient estimates.

Results in Panel B are consistent with those in Panel A with two exceptions. Specifically, the coefficients on SEC_TIER and the interaction between the post-Andersen indicator variable (POST) and BIGN are insignificant. However, the joint test (SEC_TIER + POST*SEC_TIER) remains positive and significant (p=0.000). As such, the exceptions described above do not alter the tenor of the results which suggest an improvement in Second-Tier client earnings quality, relative to the other auditor types.

In both Panel A and Panel B, the results indicate a negative association between negative discretionary accruals and ABS_TA and TENURE and a positive association between negative discretionary accruals and AGE. The results for lnASSETS are mixed across the two panels.

The results for the restricted sample, presented in Table 12, are generally inconsistent with those presented in Table 11. In both Panel A and Panel B, the interactions between POST and SEC_TIER are not significant (p = 0.543 and 0.674 respectively). Moreover, the joint tests (SEC_TIER + POST*SEC_TIER) indicate that the post-Andersen effect for SEC_TIER is insignificant (p = 0.268 and 0.477 respectively). Finally, the joint tests contrasting the effects of Big N audit firm affiliation with that of Second-Tier audit firm affiliation are insignificant pre-Andersen (BIGN = SEC_TIER, p = 0.197 and 0.415 respectively) and significant post-Andersen in Panel A (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER, p = 0.087). In sum, the results in Table 12 are inconsistent with those derived from Tables 7-11 and do not indicate a pre- to post-Andersen improvement in Second-Tier client earnings quality, relative to the client earnings quality of the other audit firm types (Big N and other non-Big N).

The results in Table 11, but not Table 12, suggest a pre- to post-Andersen improvement in Second-Tier client earnings quality, relative to the client earnings quality of the other audit firm types (Big N and non-Big N). A summary of the pre- to post-Anderson changes in the audit firm client earnings quality hierarchy is presented in Table 13.

Summary

A summary of the results from Tables 7 – 12 is presented in Table 13. With the exception of the results presented in Table 12, the results portray a consistent pattern which suggests a general improvement in Second-Tier client earnings quality, relative to

the client earnings quality of the other audit firm types (Big N and other non-Big N). Specifically, a comparison of the pre-Andersen coefficient estimates in Tables 7-11 (Panels A and B) indicates that Second-Tier client earnings quality was not distinct from that of other non-Big N clients in nine of ten tests. That is, the pre-Andersen Second-Tier coefficient estimate was significant in only one of the ten regressions presented in Tables 7-11 (Panels A and B). However, a comparison of the post-Andersen coefficient estimates indicates that Second-Tier client earnings quality was distinct from that of other non-Big N clients in nine of ten tests. That is, the post-Andersen Second-Tier coefficient estimate was significant in nine of the ten regressions presented in Tables 7-11 (Panels A and B).

A comparison of the pre-Andersen joint tests contrasting the BIGN and SEC_TIER coefficient estimates (BIGN = SEC_TIER) indicates that Big N client earnings quality exceeded that of Second-Tier clients in each of the ten tests. However, for the post-Andersen joint tests (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER), the results indicate that Second-Tier client earnings quality was comparable to that of Big N clients in eight of ten tests. In sum, the results provide evidence suggesting that Second-Tier audit firms have improved their position within the audit firm client earnings quality hierarchy and have distinguished themselves from other non-Big N audit firms. Moreover, the post-Andersen results provide partial evidence suggesting that there is no difference in the quality of Second-Tier and Big N client earnings.

Sensitivity Analyses

I perform a number of sensitivity analyses to assess the robustness of the results presented in the preceding section. First, I perform tests to assess the robustness of my results to alternative Second-Tier audit firm definitions. I construct two additional Second-Tier audit firm definitions (specifically, a three firm Second-Tier and a five firm Second-Tier) where membership is based on the number of client-year observations available in my sample for a given audit firm. The three-firm Second-Tier includes all of the audit firms in the primary Second-Tier group with the exception of the Crowe Group (which has the fewest observations among the audit firms in the primary Second-Tier group). The five-firm Second-Tier includes all of the audit firms in the primary Second-Tier group along with the Eisner LLP (which has the most observations among the audit firms not included in the primary Second-Tier group). The results using these alternative Second-Tier audit firm definitions are presented in Tables 14-16 (three firm Second-Tier) and Tables 17-19 (five firm Second-Tier) and the tenor of the results is consistent with those reported in Tables 7-12 with one exception. Specifically, results in Table 17 Panel B (with control for selection bias) indicate no improvement in Second-Tier client earnings quality, relative to the client earnings quality of the other audit firm types (Big N and other non-Big N).

Second, I winzorize, rather than delete, outliers based on the cash flow from operations (CFO) and signed discretionary accruals (SIGN_DA) variables. The results of tests using this alternative sample are presented in Tables 20-22 and the tenor of the results is consistent with those presented in Tables 7-12.

The third set of sensitivity analyses was performed to alleviate potential concerns relating to the composition of the firms included in the Second-Tier over time. Specifically, if audit firms were ranked according to various aspects of audit firm size (e.g., total revenue, number of clients, etc.) in each year since 1988, the four firms that I include in my primary definition of the Second-Tier would not be ranked 5th through 8th throughout the entire sample period (1988-2006). A consistent ranking of the three firms in the 5th through 7th positions is not established until 1995. Although there has been some movement within the 5th through 7th positions since 1995, the composition of firms included in these positions has not changed. To address this issue, I examine the sensitivity of my results to the exclusion of the years preceding the establishment of a clear-cut three-firm Second-Tier.

Results from tests using data from 1995 forward (three-firm Second-Tier) are presented in Tables 23-25 and the tenor of the results is consistent with those presented in Tables 7-12 with two exceptions. First, the results in Table 23 Panel B indicate a deterioration in Second-Tier client earnings quality, relative to the client earnings quality of the other audit firm types (Big N and other non-Big N). Second, the results in Table 25 Panel A indicate no change in Second-Tier earnings quality, relative to the client earnings quality of the other audit firm types. Nevertheless, the results do indicate that Second-Tier client earnings quality was distinct from that of other non-Big N clients and comparable to Big N clients in both the pre- and post-Andersen periods.

Finally, I perform tests to assess the robustness of my results to the exclusion of the operating volatility control variables suggested by Hribar and Nichols (2007) in the

positive and negative discretionary accruals regressions. As discussed above, Hribar and Nichols (2007) suggest including measures of performance volatility (σ^{REV}, σ^{CFO}) because these measures are highly correlated with absolute value discretionary accruals estimates. However, Hribar and Nichols (2007) suggest that these measures are not correlated with signed discretionary accruals estimates. Accordingly, I re-estimate the regressions with SIGN_DA as the dependent variable after excluding the σ^{REV} and σ^{CFO} control variables. The results of these tests, presented in Tables 26-27, are consistent with those presented in Tables 9-12.

Accruals Quality

Data

All data used in this section are collected from COMPUSTAT. For reasons described above, the sample period begins in 1988 and I perform tests on two samples (i.e., the full sample and the restricted sample) comprised of observations from 1988 through 2006. The pre-Andersen period is comprised of fiscal years 1988 through 2000 and the post-Andersen period is comprised of fiscal years 2001-2006. For both samples, I delete firms incorporated in a foreign country, firms in regulated and financial industries (i.e., with SIC codes 4000 through 4999 and 6000 through 6999), firms with total assets less than $1 million (COMPUSTAT data item # 6), firms with missing COMPUSTAT data needed to estimate the Dechow and Dichev (2002) model (Model 3), firms with missing auditor information (COMPUSTAT data item #149), and firms with missing COMPUSTAT data items needed to construct the variables included in Model 4. For each year, I determine which observations are in the top or bottom 1

percent of the distribution of the signed residual generated by estimating Model 3 and delete these observations to limit the influence of outliers on my results. These procedures yield the full sample which consists of 64,952 company-year observations (53,162 Big N audited observations, 4,097 Second-Tier audited observations, and 7,693 other non-Big N audited observations).

As described in the preceding section, I also perform tests on a restricted sample to address the potential selection bias associated with audit firm and/or client selection. I delete all observations for any company that switched audit firm types (e.g., from Big N to Second-Tier, from Second-Tier to other non-Big N, etc.) during the sample period. This procedure eliminates 16,573 company-year observations and yields a restricted sample comprised of 48,379 company-year observations (43,437 Big N audited observations, 1,101 Second-Tier audited observations, and 3,841 other non-Big N audited observations). Table 28 summarizes the derivation of the full and restricted samples.

Descriptive Statistics

Descriptive statistics for the dependent variable (ABS_DD) are presented in Table 29 (for the full sample) and Table 30 (for the restricted sample). In Table 29 Panel A, I present descriptive statistics for the full sample by audit firm type, pooled over the entire sample period (1988-2006). In Table 29 Panel C, I present descriptive statistics for the full sample by audit firm type and time period. The results in Panel A indicate that Big N client accruals are of higher quality than Second-Tier client accruals ($p = 0.000$) and other non-Big N client accruals ($p = 0.000$). Second-Tier client accruals are of

higher quality than other non-Big N client accruals (p = 0.000). In Panel C, the results indicate that these relationships hold in both periods (pre- and post-Andersen). Results in Panel C also indicate that both Big N and Second-Tier client accruals quality improved pre- to post-Andersen (p = 0.000 and 0.021 respectively) while the other non-Big N client accruals quality deteriorated (p = 0.000). Descriptive results for the restricted sample are presented in Table 30 and are consistent with those reported for the full sample in Table 29.

Descriptive statistics for the control variables in Model 4 are presented in Table 31 (for the full sample) and Table 32 (for the restricted sample). In both tables, descriptive results for Big N, Second-Tier, and other non-Big N audit firm clients, are presented in Panels A, B, and C respectively. In Panel D, I compare the control variable means across audit firm types in each period (pre- and post-Andersen). The results in these two tables are similar so I focus my discussion on the results from the full sample (Table 31) and highlight any differences in the results from the restricted sample (Table 32). With respect to firm size (lnASSETS), Big N clients are significantly larger than Second-Tier clients and Second-Tier clients are significantly larger than other non-Big N clients. These results hold in the pre- and post-Andersen period and the results indicate a significant pre- to post-Andersen increase in client size for each audit firm type. The length of the operating cycle (lnOPCYCLE) is significantly shorter and operating volatility (σ^{REV}, σ^{CFO}) is lower for Big N clients than for both Second-Tier and other non-Big N clients in both periods. Finally, the propensity of losses increased pre- to

post-Andersen for clients of each auditor type with Big N clients reporting significantly fewer losses than the other auditor types in each period.

Multivariate Results

As discussed in the preceding section, the sample includes multiple observations for a given firm (client). To adjust for possible correlation of residuals within firm clusters, all regressions reported in this section employ survey regression techniques with observations clustered at the firm (client) level generating test statistics which are based on Roger's standard errors (White corrected). Results from estimations of Model 4 are presented in Table 33 (for the full sample) and Table 34 (for the restricted sample). In Tables 33 and 34, Panel A (Panel B) presents results of the estimation of Model 4 without (with) the inverse Mills ratio (INVMILLS) control for selection bias..

Results from estimates of Model 4 (full sample) are presented in Table 33. In Panel A, the negative and significant coefficient on BIGN indicates that Big N clients have lower ABS_DD than other non-Big N clients in the pre-Andersen period ($p = 0.005$). The insignificant coefficient on SEC_TIER indicates that there is no difference in ABS_DD for Second-Tier and other non-Big N clients in the pre-Andersen period. A joint test (BIGN = SEC_TIER) confirms that the pre-Andersen BIGN coefficient is significantly more negative than the pre-Andersen SEC_TIER coefficient ($p = 0.009$).

The interactions between the post-Andersen indicator variable (POST) and auditor type (BIGN and SEC_TIER) are both negative and significant ($p = 0.000$ and 0.001 respectively) indicating a pre- to post-Andersen reduction in the magnitude of ABS_DD for Big N and Second-Tier clients, relative to other non-Big N clients.

Moreover, the joint tests for the post-Andersen effects (BIG N + POST*BIGN and SEC_TIER + POST*SEC_TIER) are both negative and significant (p = 0.000). These results indicate that ABS_DD is lower for both Big N and Second-Tier clients than for other non-Big N clients in the post-Andersen period. Finally, the joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is significant (p = 0.065) indicating that ABS_DD is lower Big N clients than for Second-Tier clients in the post-Andersen period.

Results in Panel B are consistent with those reported in Panel A with two exceptions. Specifically, the coefficient on BIGN and the joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation are both insignificant. These differences do not alter the tenor of the results which suggest an improvement in Second-Tier client accruals quality, relative to the client accruals quality of the other audit firm types. In both Panel A and Panel B, the results indicate a negative association between ABS_DD and lnASSETS and a positive association between ABS_DD and lnOPCYCLE, σ^{REV}, σ^{CFO}, and LOSS.

The results for the restricted sample, presented in Table 34, are generally consistent with those presented in Table 33 with two exceptions. First, in Panel A, the joint test (BIGN + POST*BIGN = SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen effect of Big N audit firm affiliation with that of Second-Tier audit firm affiliation is insignificant. Second, in Panel B, the joint test (BIGN + POST*BIGN =

SEC_TIER + POST*SEC_TIER) contrasting the post-Andersen BIGN and SEC_TIER coefficient estimates is significant (p = 0.036) and suggests that Second-Tier client accruals quality is better than that for Big N clients..

Overall, the results in Tables 33 and 34 suggest a pre- to post-Andersen improvement in Second-Tier client accruals quality, relative to the client accruals quality of the other audit firm types (Big N and other non-Big N). A summary of the pre- to post-Anderson changes in the audit firm client accruals quality hierarchy is presented in Table 35.

Summary

A summary of the results from Tables 33 and 34 is presented in Table 35. The results portray a consistent pattern which suggests a general improvement in Second-Tier client accruals quality, relative to the client accruals quality of the other audit firm types (Big N and other non-Big N). Specifically, a comparison of the pre-Andersen coefficient estimates in Tables 33 and 34 (Panels A and B) indicates that Second-Tier client accruals quality was not distinct from that of other non-Big N clients in each of the four tests. That is, the pre-Andersen Second-Tier coefficient estimate was insignificant in each of the regressions presented in Tables 33 and 34 (Panels A and B). However, a comparison of the post-Andersen coefficient estimates indicates that Second-Tier client accruals quality was distinct from that of other non-Big N clients in each of the four tests. That is, the post-Andersen Second-Tier coefficient estimate was significant in each of the regressions presented in Tables 33 and 34 (Panels A and B).

A comparison of the pre-Andersen joint tests (BIGN = SEC_TIER) contrasting the BIGN and SEC_TIER coefficient estimates indicates that Big N client accruals quality exceeded that of Second-Tier clients in three of the four tests. However, post-Andersen, the results indicate that Second-Tier client accruals quality was comparable to that of Big N clients in two of four tests and exceeded that of Big N clients in one test. In sum, the results provide evidence suggesting that Second-Tier audit firms have improved their position within the audit firm client accruals quality hierarchy and have distinguished themselves from other non-Big N audit firms. Moreover, the post-Andersen results provide partial evidence suggesting that there is no difference in Second-Tier and Big N client accruals quality.

Sensitivity Analyses

I perform a number of sensitivity analyses to assess the robustness of the results presented in the preceding section. First, I perform tests to assess the robustness of my results to alternative Second-Tier audit firm definitions. As discussed above, I construct two additional Second-Tier audit firm definitions (specifically, a three-firm Second-Tier, and a five-firm Second-Tier) where membership is based on the number of client-year observations available in my sample for a given audit firm. The results using these alternative Second-Tier audit firm definitions are presented in Table 36 (three-firm Second-Tier) and Table 37 (five-firm Second-Tier) and the tenor of the results is consistent with those reported in Tables 33 and 34.

Second, I winzorize, rather than delete, outliers based on the distribution of the signed residual generated by estimating Model 3. The results of tests using this

alternative sample are presented in Table 38 and the tenor of the results is consistent with those presented in Tables 33 and 34.

The third set of sensitivity analyses was performed to alleviate potential concerns relating to the composition of the firms included in the Second-Tier over time. As discussed above, I examine the sensitivity of my results to the exclusion of the years preceding the establishment of a clear-cut three-firm Second-Tier. Results from these tests, using data from 1995 forward, are presented in Table 39 and the results are generally consistent with those presented in Tables 33 and 34.

Finally, I perform tests to assess the robustness of my results to the method used to construct the firm-specific accruals quality estimate. As discussed previously, the primary accruals quality measure proposed by Dechow and Dichev (2002) is based on the standard deviation of firm-specific residuals (from Model 3) calculated over a rolling five year period. My primary tests employ an alternative accruals quality measure suggested by Dechow and Dichev (2002), calculated as the absolute value of the firm-year specific residual estimated using Model 3 (ABS_DD).

The results of tests using an aggregated (five-year) accruals quality measure are presented in Table 40. To ensure that auditor changes do not contaminate the accruals quality measure, I first exclude all firms which experienced an auditor change during the sample period. I then construct the aggregated accruals quality measure (σ^{DD}) and corresponding control variables for the remaining firms over the final five years in the pre-Andersen period (1996-2000) and the first five years in the post-Andersen period

(2001-2005). The final data set then includes one observation for each non-switching firm in each period.

Results in Table 40 suggest that accruals quality was higher for Second-Tier clients than for other non-Big N clients in both periods. Moreover, the results indicate no difference in Big N and Second-Tier client accruals quality in either period. Consequently, the results are inconsistent with the results in Tables 33 and 34 in that they do not suggest a pre- to post-Andersen improvement in Second-Tier client accruals quality, relative to the client accruals quality of the other auditor types. However, the results do indicate that Second-Tier auditors outperform other non-Big N auditors and are comparable to Big N auditors in terms of client accruals quality in both periods.

Likelihood of Manipulation

Data

All data used in this section are collected from COMPUSTAT. For reasons described above, the sample period begins in 1988 and I perform tests on two samples (i.e., the full sample and the restricted sample) comprised of observations from 1988 through 2006. The pre-Andersen period is comprised of fiscal years 1988 through 2000 and the post-Andersen period is comprised of fiscal years 2001-2006. For both samples, I delete firms incorporated in a foreign country, firms in regulated and financial industries (i.e., with SIC codes 4000 through 4999 and 6000 through 6999), firms with total assets less than $1 million (COMPUSTAT data item # 6), firms with missing COMPUSTAT data needed to estimate the Dechow et al. (2008) F-Score (Model 5), and firms with missing auditor information (COMPUSTAT data item #149). For each year, I

determine which observations are in the top or bottom 1 percent of the distribution of the F-Score and delete these observations to limit the influence of outliers on my results.[17] These procedures yield the full sample which consists of 74,832 company-year observations (59,056 Big N audited observations, 5,006 Second-Tier audited observations, and 10,770 other non-Big N audited observations).

As described previously, I also perform tests on a restricted sample to address the potential selection bias associated with audit firm and/or client selection. I delete all observations for any company that switched audit firm types (e.g., from Big N to Second-Tier, from Second-Tier to other non-Big N, etc.) during the sample period. This procedure eliminates 23,107 company-year observations and yields a restricted sample comprised of 51,725 company-year observations (45,692 Big N audited observations, 1,074 Second-Tier audited observations, and 4,959 other non-Big N audited observations). Table 41 summarizes the derivation of the full and restricted samples.

Descriptive Statistics

Descriptive statistics for the F-Score are presented in Table 42 (for the full sample) and Table 43 (for the restricted sample). In Table 42 Panel A, I present descriptive statistics for the full sample by audit firm type, pooled over the entire sample period (1988-2006). In Table 42 Panel C, I present descriptive statistics for the full

[17] Dechow et al. (2008) report a high frequency of manipulating firms in the Computers (20.5%), Retail (12.9%), and Services (12.5%) industries. To ensure that the F-Scores generated for the firms in my sample are reasonable, I compared Dechow et al.'s (2008) reported distribution of manipulating firms (by industry) to the distribution of firms (by industry) in my sample with F-Scores in the top quartile of the distribution. Results of this analysis indicate that the generated F-Scores appear reasonable. Specifically, I find the following industry percentages of high F-Score firms: Computers (23%), Retail (15%), Services (13%). My results do indicate a higher proportion of firms in the Pharmaceuticals industry (14%) than that reported by Dechow et al. (2008) (2.9%).

sample by audit firm type and time period. Higher F-Scores are indicative of a higher probability of managerial manipulation. The results in Panel A indicate that Big N and Second-Tier client F-Scores are not significantly different while other non-Big N client F-Scores are significantly lower than both Big N and Second-Tier client F-Scores ($p = 0.000$). In Panel C, the results indicate a pre- to post-Andersen reduction in Big N and Second-Tier client F-Scores ($p = 0.000$) and an increase in other non-Big N client F-Scores ($p = 0.000$). Pre-Andersen, other non-Big N client F-Scores are significantly lower than both Big N and Second-Tier client F-Scores ($p = 0.000$). However, post-Andersen, the results indicate that Big N clients have F-Scores which are lower than other non-Big N client F-Scores and that there is no difference in Second-Tier and other non-Big N client F-Scores.

Results in Table 43 are consistent with those in Table 42 with two exceptions. First, results in Table 43 Panel C indicate that the pre- to post-Andersen change in Second-Tier client F-Scores is insignificant ($p = 0.694$), a result which was significant in Table 42. Second, results in Table 43 Panel C indicate that Big N client F-Scores were significantly lower than Second-Tier client F-Scores in the post-Andersen period, a result which was insignificant in Table 42. Figure 3 provides a graphical display of the univariate results presented in Tables 42 and 43.

Portfolio Results

As discussed in Chapter II, I also perform tests to compare pre- to post-Andersen changes in the composition of Second-Tier client portfolios to the changes observed in the client portfolios of the other auditor types. Specifically, I construct annual F-Score

deciles and compute the percentage of Big N, Second-Tier, and other non-Big N clients which fall into the two highest deciles (firms that are most likely to have a financial statement manipulation) in each of the pre- and post-Andersen periods. Results of this analysis are presented in Figure 4 Panel A for the full sample and Figure 4 Panel B for the restricted sample.

In Panel A, the results indicate that both Big N and Second-Tier auditors reduced the proportion of risky firms in their client portfolios post-Andersen. The proportion of risky firms in the other non-Big N client portfolio increased post Andersen. The results in Panel B are consistent with those in Panel A except that results indicate that Second-Tier auditors increased the proportion of risky firms in their client portfolio post-Andersen.

Summary

Overall, the results of tests using the Dechow et al. (2008) F-Score as the earnings quality proxy yield mixed results. Results of tests using the full sample (Table 42 and Figure 4 Panel A) support the tenor of the results described for the two other earnings quality proxies in that they suggest a pre- to post-Andersen improvement in Second-Tier client earnings quality, relative to the other auditor types. However, the results of tests using the restricted sample provide little support for the overall findings in the paper.

CHAPTER V

CONCLUSION

I examine the association between earnings quality and audit firm affiliation using a three-tiered audit firm classification scheme which allows for an explicit examination of Second-Tier client earnings quality. My tests are motivated by the lack of competition in the market for audit services, theoretical arguments which suggest a positive association between audit firm size and audit quality, evidence pointing to the rapid post-Andersen growth in Second-Tier audit practices, and the lack of empirical research that fully differentiates audit firm type. Government agencies (i.e., United States Government Accountability Office, United States Department of the Treasury, Public Company Accounting Oversight Board) have expressed concern over the lack of competition in the market for audit services and have promoted the use of Second-Tier audit firms as an alternative to a Big N audit. My study aims to provide evidence about a group of audit firms which appear to be best situated to alleviate concerns about the state of competition in the market for audit services.

Despite the rapid growth of Second-Tier audit practices, relatively little research has been performed to examine the characteristics of audits performed by Second-Tier firms. To date, most research examining the association between various proxies for real and/or perceived audit quality and audit firm size uses a dichotomous classification scheme for the variable of interest (i.e., Big N versus non-Big N) so that Second-Tier audit firms are classified together with other non-Big N auditors. My study helps to fill

the void in the literature by examining the association between earnings quality and audit firm type using an audit firm classification scheme which differentiates between Second-Tier and other non-Big N audit firms. Specifically, I examine the association between earnings quality and audit firm type using three earnings quality proxies which have been used in the prior literature to capture the magnitude and/or direction of opportunistic managerial manipulation of financial statements. I use a pre- versus post-Andersen design, where the pre-Andersen period is comprised of fiscal years 1988 through 2000, and the post-Andersen period is comprised of fiscal years 2001 through 2006.

My results on the association between earnings quality and audit firm type indicate that the post-Andersen growth of Second-Tier audit firms coincides with an improvement in Second-Tier audit quality, relative to the other audit firm types (Big N and other non-Big N). Specifically, the results indicate that Second-Tier client earnings quality was generally not distinct from that of other non-Big N clients in the pre-Andersen period. However, in the post-Andersen period, the results indicate that Second-Tier client earnings quality was higher than that of other non-Big N clients. Moreover, the post-Andersen results provide partial evidence suggesting that there is no difference in Second-Tier and Big N client earnings quality, and thus, lend some credence to the notion of a new era for the Big 8.

These results should convey important information to market participants (e.g., investors, underwriters, analysts, etc.) who wish to assess the extent to which financial statements are likely to be free from opportunistic managerial manipulation, to clients

that are contemplating switching to a Second-Tier audit firm, to government agencies who have expressed concern over the state of competition in the market for audit services, and to those who have promoted the use of Second-Tier audit firms in the wake of SOX-related resource constraints.

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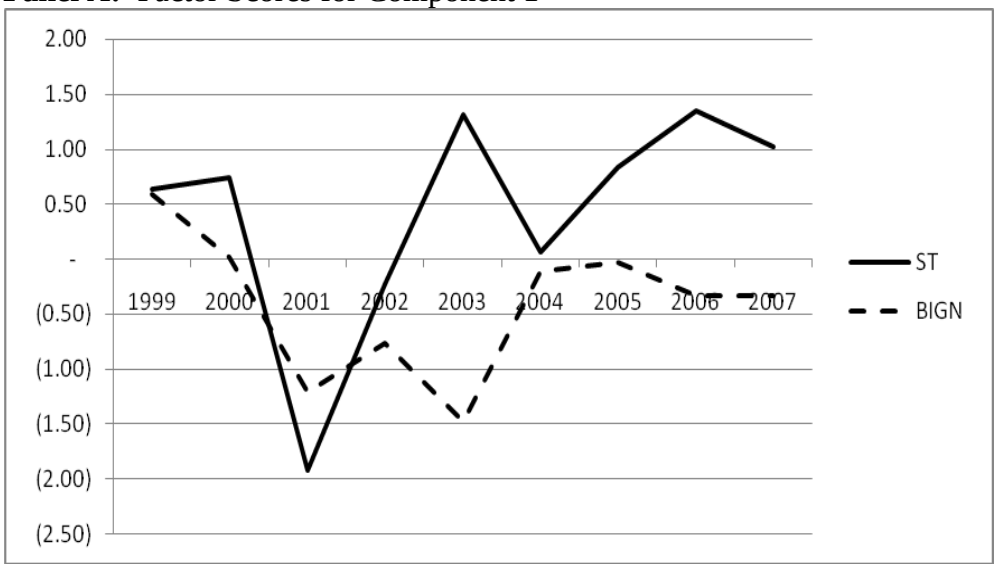
APPENDIX A

FIGURES

FIGURE 1
Second-Tier Audit Firm Growth 1999-2007:
Summary Factor Scores

Panel A: Factor Scores for Component 1



Panel B: Factor Scores for Component 2

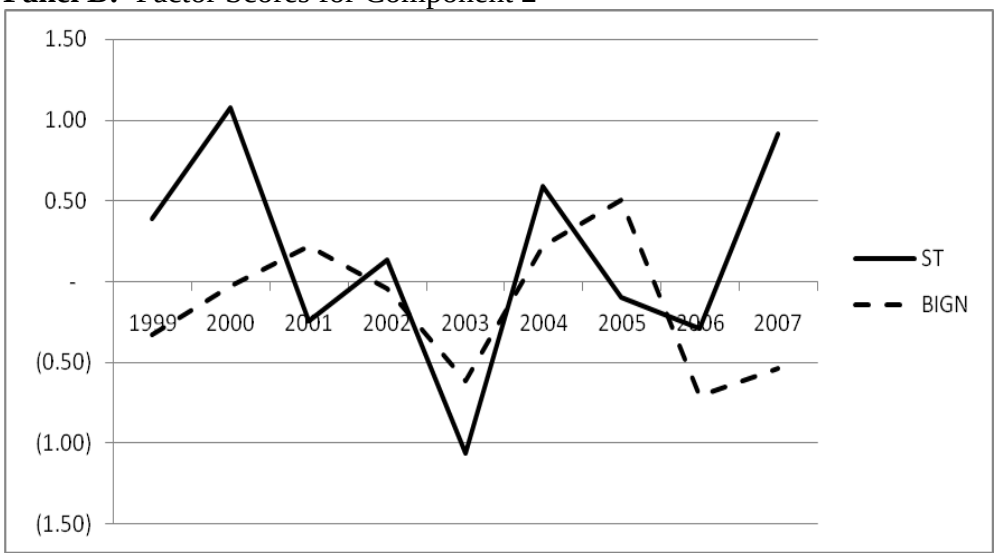
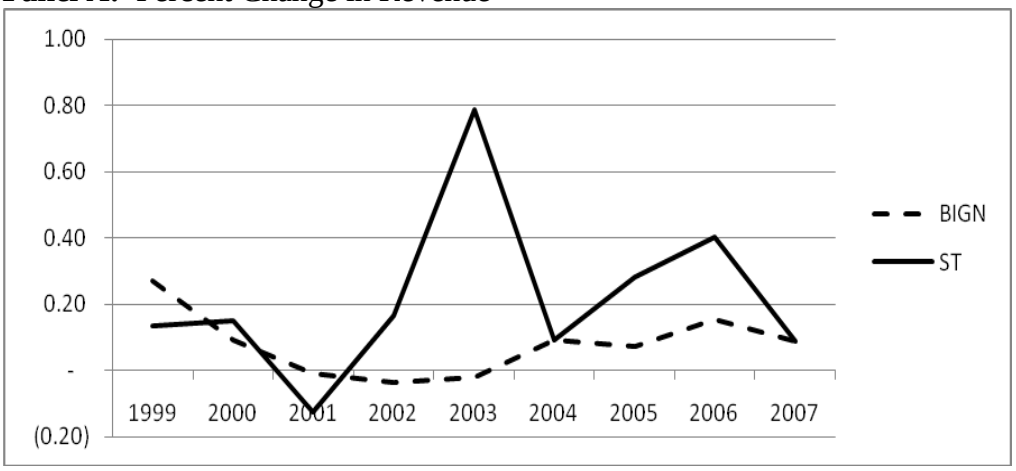


FIGURE 2
Second-Tier Audit Firm Growth 1999-2007: Factor Components

Panel A: Percent Change in Revenue



Panel B: Percent Change in Number of Professionals

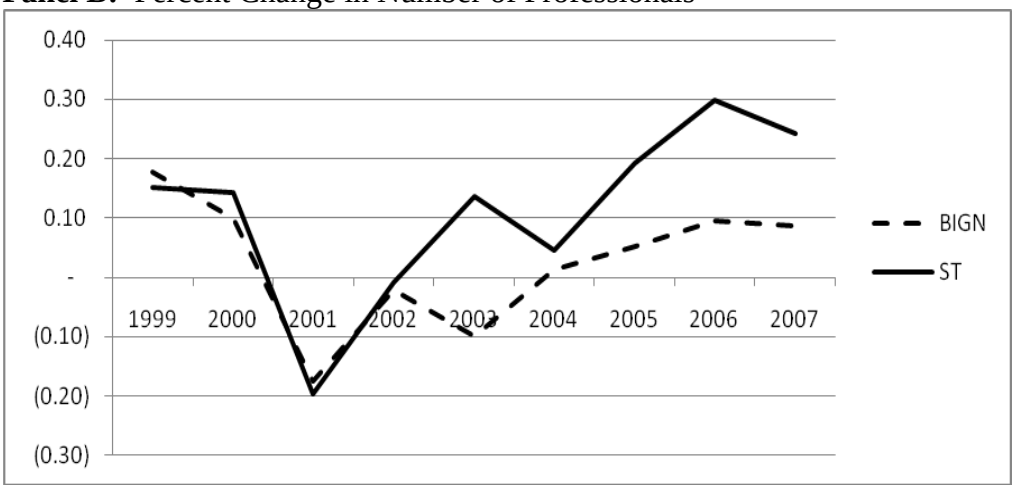


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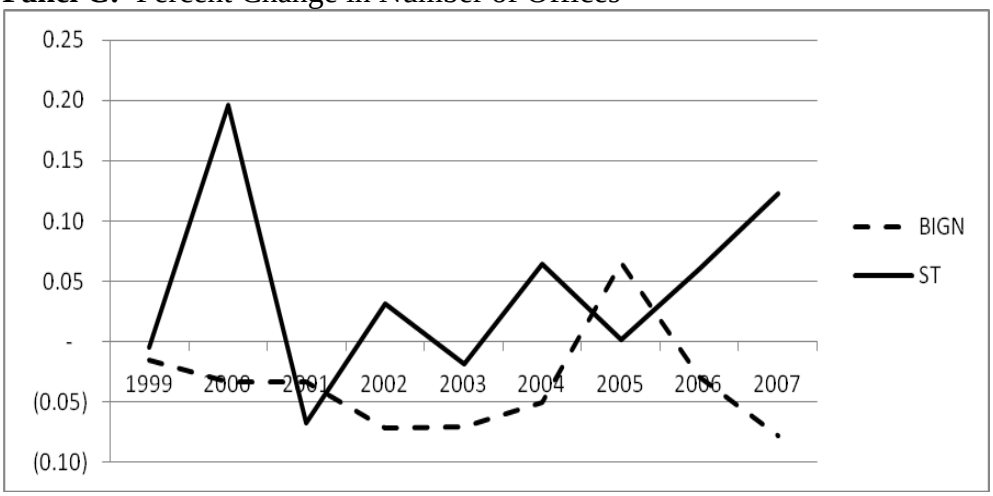
FIGURE 2 (continued)

Panel C: Percent Change in Number of Offices



Panel D: Percent Change in Number of SEC Clients

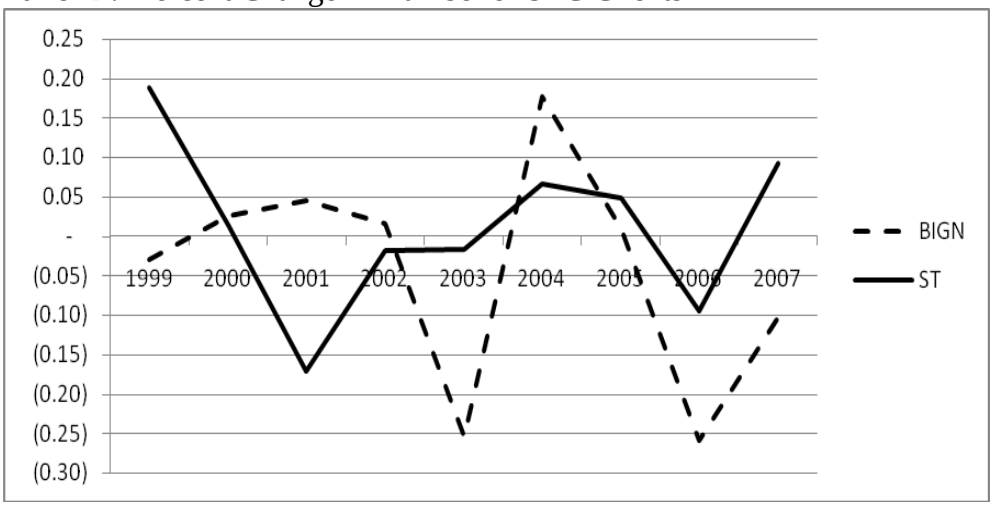
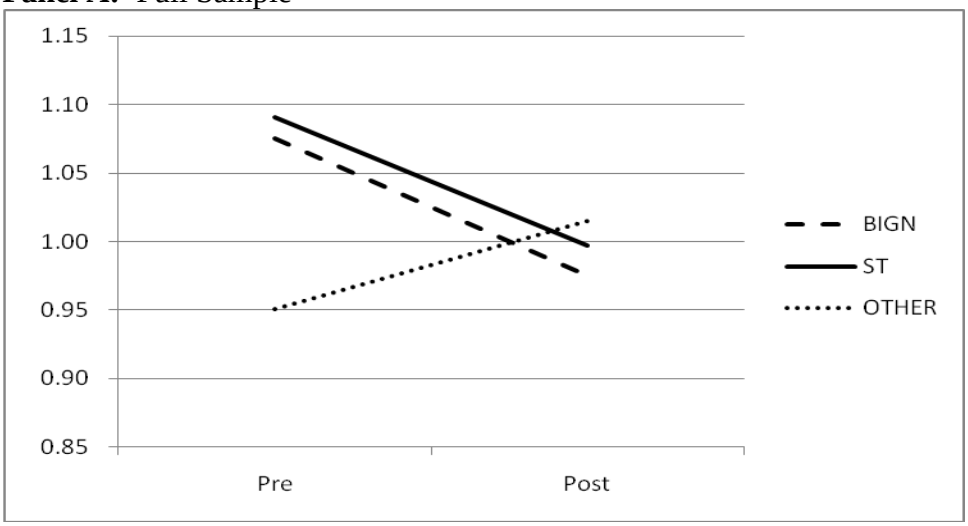


FIGURE 3
Dechow et al. (2008) F-Score Means By Auditor Type and Period

Panel A: Full Sample



Panel B: Restricted Sample

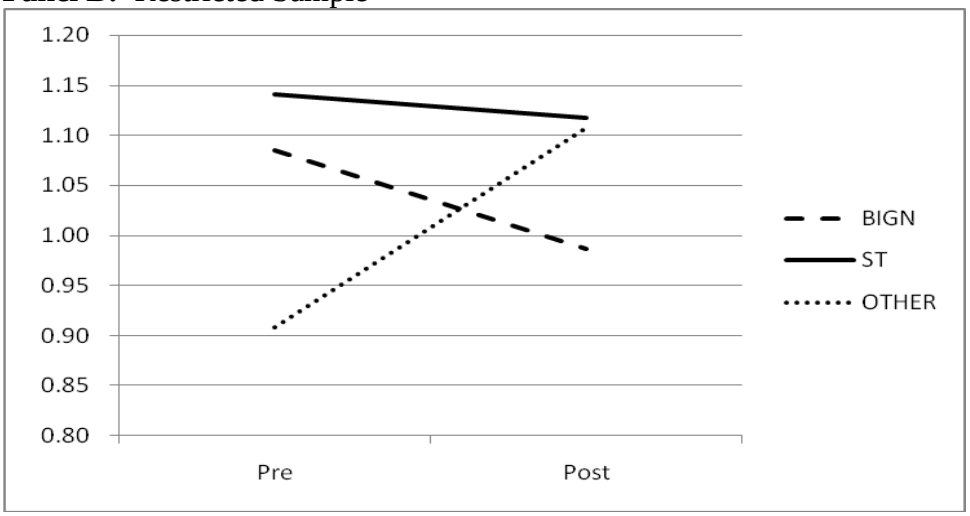
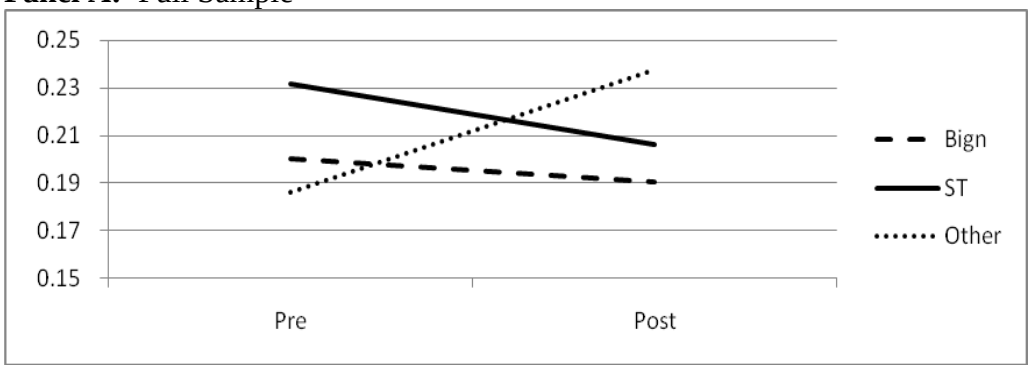
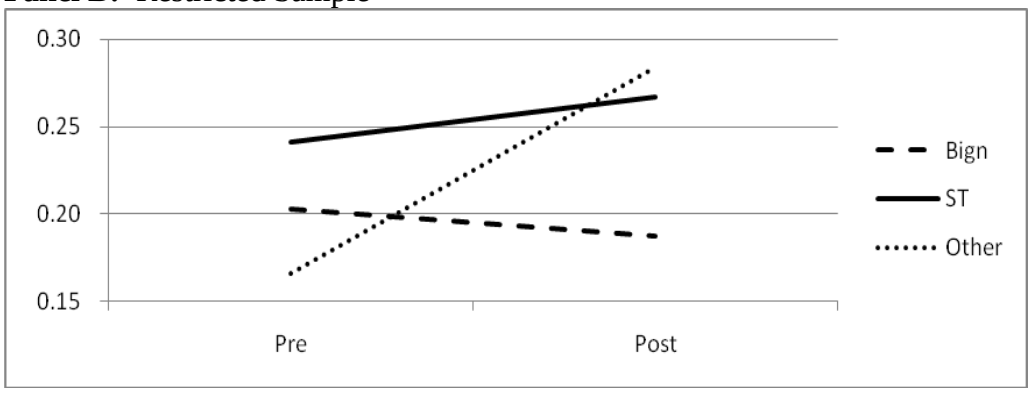


FIGURE 4
Percentage of Audit Clients With F-Scores in the Two Highest F-Score Deciles, By Auditor Type and Period

Panel A: Full Sample



Panel B: Restricted Sample



APPENDIX B

TABLES

TABLE 1
Variable Definitions

SIGN_DA = Signed firm-specific discretionary accrual estimate, estimated using the following performance-adjusted modified Jones (1991) model:

$$TA_t/ASSETS_{t-1} = \alpha + \beta_1\, 1/ASSETS_{t-1} + \beta_2\, (\Delta SALES_t - \Delta AR_t)/ASSETS_{t-1} + \beta_3\, PPE_t/ASSETS_{t-1} + \beta_4\, ROA_t + e_t$$

Where:
TA = Total accruals (COMPUSTAT # 18 – COMPUSTAT # 308)
ASSETS = Total assets (COMPUSTAT # 6)
SALES = Total sales (COMPUSTAT # 12)
AR = Accounts receivable (COMPUSTAT # 2)
PPE = Property, plant, and equipment (COMPUSTAT # 7)
ROA = Return on assets (COMPUSTAT # 18 / COMPUSTAT # 6 prior year)
e_t = Discretionary accruals

ABS_DA = Absolute value firm-specific discretionary accrual estimate, equal to the absolute value of SIGN_DA

ABS_DD = Absolute value firm-specific accruals quality estimate, estimated using the following modified Dechow and Dichev (2002) model:

$$TCA_t = \alpha + \beta_1 OCF_{t-1} + \beta_2 OCF_t + \beta_3 OCF_{t+1} + \beta_4 \Delta REV_t + \beta_5 PPE_t + e_t$$

Where:
TCA = Total current accruals (ΔCOMPUSTAT # 4 – ΔCOMPUSTAT # 1 - (ΔCOMPUSTAT # 5 – ΔCOMPUSTAT # 34)), scaled by average total assets (COMPUSTAT # 6)
OCF = Operating cash flow (COMPUSTAT # 308), scaled by average total assets (COMPUSTAT # 6)
ΔREV = Change in revenues (COMPUSTAT #12), scaled by average total assets (COMPUSTAT # 6)
PPE = Property, plant, and equipment (COMPUSTAT # 7), scaled by average total assets (COMPUSTAT # 6)
e_t = Accruals quality

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TABLE 1 (continued)

σ^{DD} = Alternative accruals quality measure calculated as the standard deviation of firm-specific residuals from the modified Dechow and Dichev (2002) model over the current and previous four years.

F-Score = Firm-specific manipulation score estimate, calculated based on the following Model 1 coefficient estimates in Table 7 Panel A of Dechow et al. (2008):

$$\text{Logit}_{\text{F-Score}} = -6.789 + 0.817(\text{RSST}) + 3.230(\Delta\text{AR}) + 2.436(\Delta\text{INV}) + 0.122(\Delta\text{CASH\_SALE}) - 0.992(\Delta\text{EARNINGS}) + 0.972(\text{ISSUE})$$

Where:
RSST = Richardson et al. (2006) accruals measure (ΔWC + ΔNCO + ΔFIN)/average total assets; WC = (COMPUSTAT # 4 – COMPUSTAT #1) – (COMPUSTAT # 5 – COMPUSTAT # 34); NCO = (COMPUSTAT # 6 – COMPUSTAT # 4 – COMPUSTAT # 32) – (COMPUSTAT # 181 – COMPUSTAT # 5 – COMPUSTAT # 9); FIN = (COMPUSTAT # 193 + COMPUSTAT # 32) – (COMPUSTAT # 9 + COMPUSTAT # 34 + COMPUSTAT # 130)
ΔAR = Change in accounts receivable (COMPUSTAT # 2), scaled by average total assets
ΔINV = Change in inventory (COMPUSTAT # 3), scaled by average total assets
ΔCASH_SALE = Percentage change in CASH_SALE; CASH_SALE = COMPUSTAT # 12 - ΔAR (unscaled)
ΔEARNINGS = Change in EARNINGS; EARNINGS = COMPUSTAT # 18, scaled by average total assets
ISSUE = An indicator variable coded 1 if the firm issued securities during the year; ISSUE = 1 if COMPUSTAT # 108 > 0 or COMPUSTAT # 111 > 0
F-Score = $[\exp(\text{Logit}_{\text{F-Score}})]/[1 + \exp(\text{Logit}_{\text{F-Score}})]$, scaled by the unconditional probability of manipulation 0.00345.

POST = A dummy variable coded 1 if the observation is from 2001-2006, 0 otherwise

BIGN = A dummy variable coded 1 if the client engages a Big N audit firm, 0 otherwise

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TABLE 1 (continued)

SEC_TIER = A dummy variable coded 1 if the client engages a Second-Tier audit firm where the Second-Tier definition is based on the primary set of 4 firms, 0 otherwise

SEC_TIER3 = A dummy variable coded 1 if the client engages a Second-Tier audit firm where the Second-Tier definition is based on the alternative set of 3 firms, 0 otherwise

SEC_TIER5 = A dummy variable coded 1 if the client engages a Second-Tier audit firm where the Second-Tier definition is based on the alternative set of 5 firms, 0 otherwise

lnASSETS = The natural log of total assets (COMPUSTAT # 6) measured as of fiscal year-end

lnAVG_ASSETS = The natural log of average assets (COMPUSTAT # 6), calculated over the current and previous four years

CFO = Cash flow from operations (COMPUSTAT # 308) scaled by lagged total assets

ABS_TA = The absolute value of total accruals (COMPUSTAT # 18 – COMPUSTAT # 308) scaled by lagged total assets

LEV = Ratio of total debt to total assets (COMPUSTAT # 9 / COMPUSTAT # 6)

AGE = The total number of years for which total assets was reported in COMPUSTAT

TENURE = The number of consecutive years that the firm has retained their current auditor

σ^{REV} = The standard deviation of sales (COMPUSTAT # 12) deflated by total assets over the current and prior four years

σ^{CFO} = The standard deviation of cash flow from operations (COMPUSTAT # 308) deflated by total assets over the current and prior four years

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TABLE 1 (continued)

lnOPCYCLE = The natural log of OPCYCLE; OPCYCLE = (360 / (sales / average accounts receivable)) + (360 / (cost of goods sold / average inventory)); for firms in the business services industry, OPCYCLE = (360 / (sales / average accounts receivable)); sales = COMPUSTAT # 12; accounts receivable = COMPUSTAT # 2; cost of goods sold = COMPUSTAT # 41; inventory = COMPUSTAT # 3

lnAVG_OPCYCLE = The natural log of average OPCYCLE, calculated over the current and previous four years

LOSS = A dummy variable coded 1 if net income (COMPUSTAT # 172) is less than zero, 0 otherwise

LOSS_PROP = The propensity of losses, calculated as the average of LOSS over the current and previous four years

TABLE 2
Sample Construction – Discretionary Accruals

	Company-year observations
Total unique company (client)-year observations available from COMPUSTAT for the years 1988 through 2006 with non-missing and non-negative assets (COMPUSTAT data item #6).	172,347
Less: foreign firm observations	(17,767)
Less: observations in regulated and financial industries (SIC codes in the 4,000 and 6,000 series)	(44,209)
Less: observations with total assets (COMPUSTAT data item #6) less than $1 million.	(5,292)
Less: observations with missing COMPUSTAT data items needed to estimate the discretionary accruals model.	(11,102)
Less: observations with missing or invalid auditor information (COMPUSTAT data item #149).	(416)
Less: observations with missing COMPUSTAT data items needed to construct the variables included in the multivariate model.	(3,549)
Less: outliers	(2,855)
Full sample	87,157
Less switching firms	(26,085)
Restricted sample	61,072

TABLE 3
Descriptive Statistics for the Dependent Variables (ABS_DA and SIGN_DA), Full Sample

Panel A: Descriptive Statistics for ABS_DA and SIGN_DA by Audit Firm Type, Pooled Across Both Periods

	n	Mean	Q1	Median	Q3	Std. Dev.
ABS_DA						
Big N	69,890	0.115	0.028	0.063	0.132	0.176
Second-Tier	5,347	0.143	0.037	0.083	0.179	0.200
Other	11,920	0.173	0.041	0.098	0.208	0.250
SIGN_DA						
Big N	69,890	0.006	-0.067	-0.003	0.059	0.210
Second-Tier	5,347	0.007	-0.086	0.001	0.081	0.246
Other	11,920	-0.004	-0.107	-0.004	0.090	0.304

Panel B: Univariate Tests

	ABS_DA		SIGN_DA	
	T-Stat	P-Value	T-Stat	P-Value
Big N v. Second-Tier	-11.19	0.000	-0.33	0.738
Big N v. Other	-31.22	0.000	5.07	0.000
Second-Tier v. Other	-7.75	0.000	2.61	0.009

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TABLE 3 (continued)

Panel C: Mean ABS_DA and SIGN_DA by Audit Firm Type and Period

	Pre-Andersen	Post-Andersen	Change	T-Stat	P-Value
ABS_DA					
Big N	0.111	0.127	0.015	9.94	0.000
Second-Tier	0.141	0.146	0.005	0.89	0.373
Other	0.148	0.223	0.075	15.67	0.000
SIGN_DA					
Big N	0.011	-0.008	-0.020	-10.67	0.000
Second-Tier	0.013	-0.001	-0.014	-2.08	0.038
Other	-0.003	-0.008	-0.005	-0.79	0.431

Panel D: Univariate Tests

	ABS_DA		SIGN_DA	
	T-Stat	P-Value	T-Stat	P-Value
Pre-Andersen				
Big N v. Second-Tier	-10.45	0.000	-0.48	0.634
Big N v. Other	-18.77	0.000	6.09	0.000
Second-Tier v. Other	-1.76	0.079	3.36	0.001
Pre-Andersen				
Big N v. Second-Tier	-3.86	0.000	-1.16	0.247
Big N v. Other	-22.44	0.000	-0.06	0.955
Second-Tier v. Other	-9.26	0.000	0.67	0.506

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 4
Descriptive Statistics for the Dependent Variables (ABS_DA and SIGN_DA), Restricted Sample

Panel A: Descriptive Statistics for ABS_DA and SIGN_DA by Audit Firm Type, Pooled Across Both Periods

	n	Mean	Q1	Median	Q3	Std. Dev.
ABS_DA						
Big N	54,245	0.112	0.026	0.060	0.126	0.178
Second-Tier	1,218	0.137	0.036	0.079	0.162	0.197
Other	5,609	0.181	0.042	0.101	0.224	0.258
SIGN_DA						
Big N	54,245	0.005	-0.065	-0.004	0.056	0.210
Second-Tier	1,218	0.013	-0.071	0.011	0.088	0.240
Other	5,609	-0.010	-0.115	-0.007	0.088	0.315

Panel B: Univariate Tests

	ABS_DA		SIGN_DA	
	T-Stat	P-Value	T-Stat	P-Value
Big N v. Second-Tier	-4.91	0.000	-1.34	0.181
Big N v. Other	-26.21	0.000	4.86	0.000
Second-Tier v. Other	-5.53	0.000	2.44	0.015

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TABLE 4 (continued)

Panel C: Mean ABS_DA and SIGN_DA by Audit Firm Type and Period

	Pre-Andersen	Post-Andersen	Change	T-Stat	P-Value
ABS_DA					
Big N	0.107	0.125	0.018	10.50	0.000
Second-Tier	0.127	0.166	0.038	2.99	0.003
Other	0.150	0.245	0.095	13.11	0.000
SIGN_DA					
Big N	0.011	-0.010	-0.021	-10.29	0.000
Second-Tier	0.021	-0.009	-0.030	-1.94	0.053
Other	-0.009	-0.012	-0.003	-0.36	0.716

Panel D: Univariate Tests

	ABS_DA		SIGN_DA	
	T-Stat	P-Value	T-Stat	P-Value
Pre-Andersen				
Big N v. Second-Tier	-3.80	0.000	-1.64	0.101
Big N v. Other	-15.70	0.000	5.93	0.000
Second-Tier v. Other	-3.41	0.001	3.53	0.000
Pre-Andersen				
Big N v. Second-Tier	-3.14	0.002	-0.09	0.927
Big N v. Other	-19.72	0.000	0.26	0.797
Second-Tier v. Other	-3.75	0.000	0.12	0.902

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 5
Descriptive Statistics for Explanatory Variables by Audit Firm Type and Period, Full Sample

Panel A: Big N (N = 69,890)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	4.697	4.590	1.986	5.656	5.631	1.913	55.67	0.000
CFO	0.010	0.065	0.288	0.030	0.072	0.233	8.46	0.000
ABS_TA	0.126	0.074	0.367	0.118	0.076	0.192	-2.81	0.005
LEV	0.194	0.121	0.259	0.196	0.104	0.286	0.70	0.481
AGE	14.088	9.000	12.355	16.668	11.000	13.874	23.13	0.000
TENURE	5.713	5.000	3.606	7.708	6.000	5.557	54.57	0.000
σ^{REV}	0.269	0.169	0.779	0.231	0.151	0.354	-6.18	0.000
σ^{CFO}	0.105	0.056	0.414	0.112	0.059	0.289	2.12	0.034

Panel B: Second-Tier (N = 5,347)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	3.065	2.906	1.484	3.738	3.683	1.586	15.72	0.000
CFO	-0.055	0.019	0.347	-0.021	0.038	0.297	3.72	0.000
ABS_TA	0.160	0.096	0.247	0.159	0.090	0.297	-0.06	0.953
LEV	0.196	0.082	1.092	0.177	0.051	0.338	-0.78	0.438
AGE	11.613	9.000	8.916	15.750	13.000	10.263	15.57	0.000
TENURE	3.875	3.000	2.686	3.932	3.000	3.623	0.65	0.513
σ^{REV}	0.356	0.240	0.417	0.319	0.207	0.436	-3.10	0.002
σ^{CFO}	0.150	0.085	0.624	0.161	0.088	0.342	0.69	0.493

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TABLE 5 (continued)

Panel C: Other (N = 11,920)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	2.295	2.052	1.443	2.369	2.245	1.344	2.70	0.007
CFO	-0.079	0.001	0.337	-0.155	-0.024	0.472	-10.11	0.000
ABS_TA	0.178	0.097	0.358	0.315	0.124	0.787	13.09	0.000
LEV	0.160	0.066	0.259	0.175	0.031	0.382	2.47	0.013
AGE	11.164	9.000	8.406	13.451	11.000	9.780	13.27	0.000
TENURE	4.686	4.000	3.343	5.208	3.000	4.764	6.95	0.000
σ^{REV}	0.382	0.220	1.691	0.469	0.228	1.234	2.93	0.003
σ^{CFO}	0.171	0.081	0.684	0.583	0.125	4.252	8.40	0.000

Panel D: Univariate Tests

	Pre-Andersen			Post-Andersen		
Variable	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**
lnASSETS	***	***	***	***	***	***
CFO	***	***	***	***	***	***
ABS_TA	***	***	***	***	***	***
LEV		***	***	***	***	
AGE	***	***	**	***	***	***
TENURE	***	***	***	***	***	***
σ^{REV}	***	***		***	***	***
σ^{CFO}	***	***		***	***	***

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 6
Descriptive Statistics for Explanatory Variables by Audit Firm Type and Period, Restricted Sample

Panel A: Big N (N = 54,245)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	5.069	4.978	1.919	5.924	5.892	1.823	46.25	0.000
CFO	0.022	0.073	0.283	0.037	0.077	0.230	5.72	0.000
ABS_TA	0.122	0.071	0.405	0.113	0.074	0.176	-2.71	0.007
LEV	0.203	0.133	0.269	0.203	0.116	0.294	0.05	0.957
AGE	14.276	9.000	12.951	16.492	11.000	14.285	17.06	0.000
TENURE	5.958	5.000	3.649	7.858	6.000	5.647	45.67	0.000
σ^{REV}	0.255	0.158	0.859	0.222	0.144	0.361	-4.48	0.000
σ^{CFO}	0.096	0.051	0.383	0.105	0.056	0.288	2.56	0.010

Panel B: Second-Tier (N = 1,218)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	3.413	3.287	1.597	4.366	4.270	1.993	8.55	0.000
CFO	-0.051	0.029	0.377	-0.056	0.040	0.348	-0.19	0.848
ABS_TA	0.149	0.085	0.231	0.148	0.084	0.224	-0.05	0.957
LEV	0.289	0.126	2.045	0.183	0.095	0.246	-0.92	0.358
AGE	10.881	7.000	10.099	10.981	8.000	9.711	0.15	0.878
TENURE	4.780	4.000	2.967	8.107	8.000	4.872	14.31	0.000
σ^{REV}	0.343	0.221	0.420	0.300	0.188	0.470	-1.51	0.131
σ^{CFO}	0.125	0.073	0.189	0.194	0.081	0.194	2.86	0.004

(continued on next page)

TABLE 6 (continued)

Panel C: Other (N = 5,609)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	2.035	1.851	1.243	2.167	2.041	1.307	3.65	0.000
CFO	-0.092	-0.006	0.352	-0.210	-0.042	0.545	-9.69	0.000
ABS_TA	0.185	0.101	0.360	0.396	0.150	0.839	13.12	0.000
LEV	0.149	0.054	0.228	0.161	0.020	0.332	1.67	0.094
AGE	10.571	8.000	8.233	9.618	6.000	8.657	-3.99	0.000
TENURE	5.776	5.000	3.619	7.168	5.000	5.492	11.31	0.000
σ^{REV}	0.389	0.210	1.314	0.527	0.206	1.706	3.32	0.001
σ^{CFO}	0.160	0.084	0.446	0.719	0.133	4.429	7.71	0.000

Panel D: Univariate Tests

	Pre-Andersen			Post-Andersen		
Variable	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**
lnASSETS	***	***	***	***	***	***
CFO	***	***	***	***	***	***
ABS_TA	**	***	***	***	***	***
LEV	***	***	***		***	
AGE	***	***		***	***	**
TENURE	***	***	***		***	***
σ^{REV}	***	***		***	***	**
σ^{CFO}	**	***	**	***	***	**

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 7
The Association Between Earnings Quality and Audit Firm Affiliation: Absolute Value Discretionary Accruals (ABS_DA), Full Sample

$$ABS\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A		Panel B	
Variable	**Exp. Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	0.162	0.000	0.132	0.000
POST	?	0.041	0.000	0.031	0.000
BIGN	-	-0.014	0.000	-0.011	0.000
POST*BIGN	?	-0.026	0.000	-0.021	0.000
SEC_TIER	?	0.000	0.915	0.002	0.618
POST*SEC_TIER	-	-0.036	0.000	-0.033	0.000
lnASSETS	?	-0.001	0.012	0.003	0.003
CFO	?	-0.163	0.000	-0.163	0.000
ABS_TA	?	0.072	0.000	0.070	0.000
LEV	?	-0.005	0.217	-0.006	0.113
AGE	?	-0.000	0.000	-0.001	0.000
TENURE	?	0.000	0.335	0.001	0.003
σ^{REV}	?	0.005	0.066	0.005	0.066
σ^{CFO}	?	0.004	0.158	0.003	0.212
INVMILLS	?			0.028	0.000
$\beta2 + \beta3 = 0$	-		0.000		0.000
$\beta4 + \beta5 = 0$	-		0.000		0.000
$\beta2 = \beta4$	-		0.000		0.000
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.398		0.816
N		87,157		87,157	
R^2		0.214		0.214	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 13.

TABLE 8
The Association Between Earnings Quality and Audit Firm Affiliation: Absolute Value Discretionary Accruals (ABS_DA), Restricted Sample

$$ABS\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A		Panel B	
Variable	**Exp. Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	0.146	0.000	0.128	0.000
POST	?	0.046	0.000	0.040	0.000
BIGN	-	-0.019	0.000	-0.016	0.000
POST*BIGN	?	-0.030	0.001	-0.027	0.002
SEC_TIER	?	-0.008	0.200	-0.007	0.316
POST*SEC_TIER	-	-0.016	0.184	-0.014	0.220
lnASSETS	?	0.000	0.884	0.002	0.027
CFO	?	-0.172	0.000	-0.173	0.000
ABS_TA	?	0.059	0.002	0.058	0.003
LEV	?	-0.003	0.458	-0.004	0.350
AGE	?	-0.001	0.000	-0.001	0.000
TENURE	?	0.000	0.369	0.000	0.064
σ^{REV}	?	0.005	0.139	0.005	0.140
σ^{CFO}	?	0.003	0.432	0.002	0.486
INVMILLS	?			0.018	0.025
$\beta2 + \beta3 = 0$	-		0.000		0.000
$\beta4 + \beta5 = 0$	-		0.072		0.112
$\beta2 = \beta4$	-		0.032		0.045
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.094		0.118
N		61,072		61,072	
R^2		0.217		0.217	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 13.

TABLE 9
The Association Between Earnings Quality and Audit Firm Affiliation: Positive Discretionary Accruals (SIGN_DA), Full Sample

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A		Panel B	
Variable	**Exp. Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	0.100	0.000	0.133	0.000
POST	?	0.027	0.000	0.039	0.000
BIGN	-	-0.010	0.001	-0.012	0.000
POST*BIGN	?	-0.024	0.002	-0.029	0.000
SEC_TIER	?	0.006	0.191	0.005	0.323
POST*SEC_TIER	-	-0.030	0.003	-0.033	0.001
lnASSETS	?	0.007	0.000	0.003	0.035
CFO	?	-0.260	0.000	-0.260	0.000
ABS_TA	?	0.061	0.060	0.062	0.056
LEV	?	-0.003	0.486	-0.001	0.735
AGE	?	-0.000	0.001	-0.000	0.388
TENURE	?	-0.000	0.278	-0.001	0.009
σ^{REV}	?	0.007	0.047	0.007	0.049
σ^{CFO}	?	0.002	0.543	0.002	0.452
INVMILLS	?			-0.032	0.000
$\beta2 + \beta3 = 0$	-		0.000		0.000
$\beta4 + \beta5 = 0$	-		0.006		0.002
$\beta2 = \beta4$	-		0.000		0.000
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.195		0.080
N		42,587		42,587	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 13.

TABLE 10
The Association Between Earnings Quality and Audit Firm Affiliation: Positive Discretionary Accruals (SIGN_DA), Restricted Sample

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A		Panel B	
Variable	**Exp. Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	0.087	0.000	0.132	0.000
POST	?	0.029	0.007	0.044	0.000
BIGN	-	-0.012	0.003	-0.018	0.000
POST*BIGN	?	-0.024	0.034	-0.031	0.006
SEC_TIER	?	0.004	0.570	0.000	0.952
POST*SEC_TIER	-	-0.032	0.051	-0.037	0.029
lnASSETS	?	0.008	0.000	0.003	0.063
CFO	?	-0.268	0.000	-0.268	0.000
ABS_TA	?	0.049	0.151	0.051	0.141
LEV	?	-0.002	0.686	0.000	0.941
AGE	?	-0.000	0.000	-0.000	0.205
TENURE	?	-0.000	0.638	-0.001	0.038
σ^{REV}	?	0.010	0.010	0.011	0.009
σ^{CFO}	?	0.005	0.464	0.006	0.382
INVMILLS	?			-0.046	0.000
$\beta2 + \beta3 = 0$	-		0.000		0.000
$\beta4 + \beta5 = 0$	-		0.069		0.024
$\beta2 = \beta4$	-		0.009		0.005
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.568		0.414
N		29,426		29,426	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 13.

TABLE 11
The Association Between Earnings Quality and Audit Firm Affiliation: Negative Discretionary Accruals (SIGN_DA), Full Sample

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A		Panel B	
Variable	**Exp. Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	-0.200	0.000	-0.117	0.000
POST	?	-0.057	0.000	-0.028	0.001
BIGN	+	0.019	0.000	0.011	0.000
POST*BIGN	?	0.028	0.000	0.014	0.110
SEC_TIER	?	0.009	0.082	0.004	0.394
POST*SEC_TIER	+	0.037	0.001	0.029	0.005
lnASSETS	?	0.009	0.000	-0.002	0.059
CFO	?	-0.002	0.886	-0.001	0.922
ABS_TA	?	-0.084	0.000	-0.080	0.001
LEV	?	0.001	0.723	0.004	0.275
AGE	?	0.000	0.000	0.001	0.000
TENURE	?	-0.001	0.006	-0.002	0.000
σ^{REV}	?	-0.003	0.378	-0.003	0.398
σ^{CFO}	?	-0.004	0.326	-0.003	0.472
INVMILLS	?			-0.077	0.000
$\beta2 + \beta3 = 0$	+		0.000		0.000
$\beta4 + \beta5 = 0$	+		0.000		0.000
$\beta2 = \beta4$	+		0.010		0.040
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.841		0.271
N		44,570		44,570	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 13.

TABLE 12
The Association Between Earnings Quality and Audit Firm Affiliation: Negative Discretionary Accruals (SIGN_DA), Restricted Sample

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A		Panel B	
Variable	**Exp. Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	-0.182	0.000	-0.110	0.000
POST	?	-0.067	0.000	-0.044	0.001
BIGN	+	0.029	0.000	0.017	0.000
POST*BIGN	?	0.038	0.004	0.026	0.052
SEC_TIER	?	0.022	0.008	0.015	0.066
POST*SEC_TIER	+	-0.003	0.543	-0.013	0.674
lnASSETS	?	0.007	0.000	-0.001	0.327
CFO	?	-0.002	0.894	-0.003	0.888
ABS_TA	?	-0.074	0.004	-0.070	0.006
LEV	?	-0.001	0.861	0.001	0.871
AGE	?	0.001	0.000	0.001	0.000
TENURE	?	-0.001	0.033	-0.001	0.000
σ^{REV}	?	-0.002	0.340	-0.002	0.350
σ^{CFO}	?	-0.002	0.457	-0.001	0.694
INVMILLS	?			-0.069	0.000
$\beta2 + \beta3 = 0$	+		0.000		0.000
$\beta4 + \beta5 = 0$	+		0.268		0.477
$\beta2 = \beta4$	+		0.197		0.415
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.087		0.142
N		31,646		31,646	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 13.

TABLE 13
Summary of Findings in Tables 7 - 12

Panel A: Full Sample

	ABS_DA Table 7		SIGN_DA (Pos) Table 9		SIGN_DA (Neg) Table 11	
	Panel A	**Panel B**	**Panel A**	**Panel B**	**Panel A**	**Panel B**
Second-Tier Firms Distinct From Other non-Big N Firms?						
Pre-Andersen	No	No	No	No	Yes	No
Post-Andersen	Yes	Yes	Yes	Yes	Yes	Yes
Second-Tier Firms Comparable to Big N Firms?						
Pre-Andersen	No	No	No	No	No	No
Post-Andersen	Yes	Yes	Yes	No	Yes	Yes
Improvement in Second-Tier Position Pre to Post-Andersen?	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Restricted Sample

	ABS_DA Table 8		SIGN_DA (Pos) Table 10		SIGN_DA (Neg) Table 12	
	Panel A	**Panel B**	**Panel A**	**Panel B**	**Panel A**	**Panel B**
Second-Tier Firms Distinct From Other non-Big N Firms?						
Pre-Andersen	No	No	No	No	Yes	Yes
Post-Andersen	Yes	No	Yes	Yes	No	No
Second-Tier Firms Comparable to Big N Firms?						
Pre-Andersen	No	No	No	No	Yes	Yes
Post-Andersen	No	Yes	Yes	Yes	No	Yes
Improvement in Second-Tier Position Pre to Post-Andersen?	Yes	Yes	Yes	Yes	No	No

TABLE 14
The Association Between Earnings Quality and Audit Firm Affiliation: Absolute Value Discretionary Accruals (ABS_DA), Three-Firm Second-Tier

$$ABS\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER3 + \beta_5 POST*SEC\_TIER3 + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.014	***	-0.011	***	-0.019	***	-0.016	***
POST*BIGN	?	-0.026	***	-0.021	***	-0.030	***	-0.027	***
SEC_TIER3	?	0.001		0.002		-0.008		-0.007	
POST*SEC_TIER3	-	-0.035	***	-0.033	***	-0.016		-0.014	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		*			
$\beta2 = \beta4$	-	***		***		**		*	
$\beta2 + \beta3 = \beta4 + \beta5$	?					*			
N		87,157		87,157		61,072		61,072	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 15
The Association Between Earnings Quality and Audit Firm Affiliation: Positive Discretionary Accruals (SIGN_DA), Three-Firm Second-Tier

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER3 + \beta_5 POST*SEC\_TIER3 + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.010	***	-0.012	***	-0.012	***	-0.018	***
POST*BIGN	?	-0.024	***	-0.029	***	-0.024	**	-0.031	***
SEC_TIER3	?	0.006		0.005		0.004		0.000	
POST*SEC_TIER3	-	-0.030	***	-0.033	***	-0.032	*	-0.037	**
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		*		**	
$\beta2 = \beta4$	-	***		***		***		***	
$\beta2 + \beta3 = \beta4 + \beta5$	?			*					
N		42,587		42,587		29,426		29,426	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 16
The Association Between Earnings Quality and Audit Firm Affiliation: Negative Discretionary Accruals (SIGN_DA), Three-Firm Second-Tier

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER3 + \beta_5 POST*SEC\_TIER3 + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	+	0.019	***	0.011	***	0.028	***	0.017	***
POST*BIGN	?	0.028	***	0.013		0.038	***	0.025	*
SEC_TIER3	?	0.008	*	0.004		0.022	***	0.015	*
POST*SEC_TIER3	+	0.036	***	0.027	***	-0.006		-0.016	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	+	***		***		***		***	
$\beta4 + \beta5 = 0$	+	***		***					
$\beta2 = \beta4$	+	***		**					
$\beta2 + \beta3 = \beta4 + \beta5$	?					*			
N		44,570		44,570		31,646		31,646	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 17
The Association Between Earnings Quality and Audit Firm Affiliation: Absolute Value Discretionary Accruals (ABS_DA), Five-Firm Second-Tier

$$ABS\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER5 + \beta_5 POST*SEC\_TIER5 + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.014	***	-0.012	***	-0.019	***	-0.016	***
POST*BIGN	?	-0.026	***	-0.021	***	-0.030	***	-0.027	***
SEC_TIER5	?	-0.002		-0.000		-0.007		-0.006	
POST*SEC_TIER5	-	-0.033	***	-0.031	***	-0.016		-0.013	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		*			
$\beta2 = \beta4$	-	***		***		**		**	
$\beta2 + \beta3 = \beta4 + \beta5$	?					*		*	
N		87,157		87,157		61,072		61,072	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 18
The Association Between Earnings Quality and Audit Firm Affiliation:
Positive Discretionary Accruals (SIGN_DA), Five-Firm Second-Tier

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER5 + \beta_5 POST*SEC\_TIER5 + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.011	***	-0.013	***	-0.012	***	-0.017	***
POST*BIGN	?	-0.023	***	-0.029	***	-0.025	**	-0.032	***
SEC_TIER5	?	0.004		0.002		0.006		0.003	
POST*SEC_TIER5	-	-0.027	***	-0.030	***	-0.033	**	-0.038	**
INVMILLS	?	No		Yes		No		Yes	
β2 + β3 = 0	-	***		***		***		***	
β4 + β5 = 0	-	***		***		*		**	
β2 = β4	-	***		***		***		***	
β2 + β3 = β4 + β5	?			*					
N		42,587		42,587		29,426		29,426	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 19
The Association Between Earnings Quality and Audit Firm Affiliation: Negative Discretionary Accruals (SIGN_DA), Five-Firm Second-Tier

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER5 + \beta_5 POST*SEC\_TIER5 + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	+	0.019	***	0.012	***	0.029	***	0.017	***
POST*BIGN	?	0.028	***	0.013		0.037	***	0.025	*
SEC_TIER5	?	0.010	**	0.006		0.022	***	0.015	*
POST*SEC_TIER5	+	0.034	***	0.026	***	-0.005		-0.014	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	+	***		***		***		***	
$\beta4 + \beta5 = 0$	+	***		***					
$\beta2 = \beta4$	+	**		*					
$\beta2 + \beta3 = \beta4 + \beta5$	?					*		*	
N		44,570		44,570		31,646		31,646	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 20
The Association Between Earnings Quality and Audit Firm Affiliation:
Absolute Value Discretionary Accruals (ABS_DA), Winzorize Outliers

$$ABS\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.020	***	-0.016	***	-0.026	***	-0.020	***
POST*BIGN	?	-0.054	***	-0.044	***	-0.066	***	-0.058	***
SEC_TIER	?	-0.006		-0.003		-0.016	**	-0.012	
POST*SEC_TIER	-	-0.056	***	-0.051	***	-0.060	***	-0.054	***
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		***		***	
$\beta2 = \beta4$	-	***		***		*			
$\beta2 + \beta3 = \beta4 + \beta5$	?								
N		90,012		90,012		62,502		62,502	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 21
The Association Between Earnings Quality and Audit Firm Affiliation: Positive Discretionary Accruals (SIGN_DA), Winzorize Outliers

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.015	***	-0.017	***	-0.021	***	-0.026	***
POST*BIGN	?	-0.032	***	-0.038	***	-0.029	*	-0.037	**
SEC_TIER	?	0.005		0.004		-0.001		-0.005	
POST*SEC_TIER	-	-0.035	**	-0.037	***	-0.072	***	-0.077	***
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	**		***		***		***	
$\beta2 = \beta4$	-	***		***		***		***	
$\beta2 + \beta3 = \beta4 + \beta5$	?			*					
N		43,832		43,832		29,996		29,996	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 22
The Association Between Earnings Quality and Audit Firm Affiliation: Negative Discretionary Accruals (SIGN_DA), Winzorize Outliers

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	+	0.024	***	0.014	***	0.032	***	0.016	***
POST*BIGN	?	0.076	***	0.055	***	0.108	***	0.089	***
SEC_TIER	?	0.016	**	0.010		0.027	**	0.016	
POST*SEC_TIER	+	0.076	***	0.064	***	0.048	*	0.033	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	+	***		***		***		***	
$\beta4 + \beta5 = 0$	+	***		***		**		*	
$\beta2 = \beta4$	+	*							
$\beta2 + \beta3 = \beta4 + \beta5$	?					**		*	
N		46,180		46,180		32,506		32,506	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 23
The Association Between Earnings Quality and Audit Firm Affiliation: Absolute Value Discretionary Accruals (ABS_DA), Post-1994

$$ABS\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.024	***	-0.022	***	-0.032	***	-0.030	***
POST*BIGN	?	-0.016	***	-0.010		-0.023	**	-0.019	**
SEC_TIER	?	-0.012	**	-0.011	*	-0.023	**	-0.022	**
POST*SEC_TIER	-	-0.025	***	-0.022	***	-0.001		0.002	
INVMILLS	?	No		Yes		No		Yes	
$\beta 2 + \beta 3 = 0$	-	***		***		***		***	
$\beta 4 + \beta 5 = 0$	-	***		***		*			
$\beta 2 = \beta 4$	-	***		***					
$\beta 2 + \beta 3 = \beta 4 + \beta 5$	?					**		**	
N		57,170		57,170		39,975		39,975	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 24
The Association Between Earnings Quality and Audit Firm Affiliation: Positive Discretionary Accruals (SIGN_DA), Post-1994

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.021	***	-0.022	***	-0.022	***	-0.026	***
POST*BIGN	?	-0.018	**	-0.023	***	-0.026	**	-0.035	***
SEC_TIER	?	-0.003		-0.003		-0.002		-0.005	
POST*SEC_TIER	-	-0.026	**	-0.028	**	-0.029	*	-0.035	*
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		**		**	
$\beta2 = \beta4$	-	***		***		**		**	
$\beta2 + \beta3 = \beta4 + \beta5$	?								
N		27,826		27,826		19,104		19,104	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 25
The Association Between Earnings Quality and Audit Firm Affiliation:
Negative Discretionary Accruals (SIGN_DA), Post-1994

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	+	0.033	***	0.025	***	0.048	***	0.036	***
POST*BIGN	?	0.012		-0.006		0.020		0.002	
SEC_TIER	?	0.026	***	0.021	***	0.051	***	0.042	***
POST*SEC_TIER	+	0.019	*	0.008		-0.038		-0.050	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	+	***		**		***		***	
$\beta4 + \beta5 = 0$	+	***		***					
$\beta2 = \beta4$	+								
$\beta2 + \beta3 = \beta4 + \beta5$	?					**		*	
N		29,344		29,344		20,871		20,871	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 26
The Association Between Earnings Quality and Audit Firm Affiliation: Positive Discretionary Accruals (SIGN_DA), Exclude Hribar and Nichols (2007) Control Variables

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.011	***	-0.013	***	-0.013	***	-0.018	***
POST*BIGN	?	-0.025	***	-0.030	***	-0.027	**	-0.034	***
SEC_TIER	?	0.006		0.005		0.004		0.000	
POST*SEC_TIER	-	-0.031	***	-0.034	***	-0.034	**	-0.039	**
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		*		**	
$\beta2 = \beta4$	-	***		***		***		***	
$\beta2 + \beta3 = \beta4 + \beta5$	?			*					
N		42,587		42,587		29,426		29,426	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 27
The Association Between Earnings Quality and Audit Firm Affiliation: Negative Discretionary Accruals (SIGN_DA), Exclude Hribar and Nichols (2007) Control Variables

$$SIGN\_DA = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 CFO + \beta_8 ABS\_TA + \beta_9 LEV + \beta_{10} AGE + \beta_{11} TENURE + \beta_{12} \sigma^{REV} + \beta_{13} \sigma^{CFO} + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	+	0.018	***	0.011	***	0.028	***	0.016	***
POST*BIGN	?	0.030	***	0.014	*	0.039	***	0.026	**
SEC_TIER	?	0.009	*	0.004		0.022	***	0.015	*
POST*SEC_TIER	+	0.039	***	0.030	***	-0.002		-0.013	
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	+	***		***		***		***	
$\beta4 + \beta5 = 0$	+	***		***					
$\beta2 = \beta4$	+	**		*					
$\beta2 + \beta3 = \beta4 + \beta5$	?					*			
N		44,570		44,570		31,646		31,646	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 28
Sample Construction – Dechow and Dichev (2002) Accruals

	Company-year observations
Total unique company (client)-year observations available from COMPUSTAT for the years 1988 through 2006 with non-missing and non-negative assets (COMPUSTAT data item #6).	172,347
Less: foreign firm observations	(17,767)
Less: observations in regulated and financial industries (SIC codes in the 4,000 and 6,000 series)	(44,209)
Less: observations with total assets (COMPUSTAT data item #6) less than $1 million.	(5,292)
Less: observations with missing COMPUSTAT data items needed to estimate the Dechow and Dichev (2002) accruals model.	(30,286)
Less: observations with missing or invalid auditor information (COMPUSTAT data item #149).	(184)
Less: observations with missing COMPUSTAT data items needed to construct the variables included in the multivariate model.	(8,351)
Less: outliers	(1,306)
Full sample	64,952
Less switching firms	(16,573)
Restricted sample	48,379

TABLE 29
Descriptive Statistics for the Dependent Variable (ABS_DD), Full Sample

Panel A: Descriptive Statistics for ABS_DD by Audit Firm Type, Pooled Across Both Periods

	n	Mean	Q1	Median	Q3	Std. Dev.
Big N	53,162	0.059	0.017	0.037	0.076	0.065
Second-Tier	4,097	0.080	0.023	0.054	0.106	0.081
Other	7,693	0.093	0.027	0.062	0.125	0.093

Panel B: Univariate Tests

	T-Stat	P-Value
Big N v. Second-Tier	-19.13	0.000
Big N v. Other	-40.07	0.000
Second-Tier v. Other	-7.71	0.000

(continued on next page)

TABLE 29 (continued)

Panel C: Mean ABS_DD by Audit Firm Type and Period

	Pre-Andersen	Post-Andersen	Change	T-Stat	P-Value
Big N	0.061	0.052	-0.009	-14.05	0.000
Second-Tier	0.082	0.076	-0.006	-2.30	0.021
Other	0.089	0.101	0.012	5.28	0.000

Panel D: Univariate Tests

	T-Stat	P-Value
Pre-Andersen		
Big N v. Second-Tier	-14.98	0.000
Big N v. Other	-26.69	0.000
Second-Tier v. Other	-3.40	0.001
Pre-Andersen		
Big N v. Second-Tier	-13.94	0.000
Big N v. Other	-33.02	0.000
Second-Tier v. Other	-8.13	0.000

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 30
Descriptive Statistics for the Dependent Variable (ABS_DD), Restricted Sample

Panel A: Descriptive Statistics for ABS_DD by Audit Firm Type, Pooled Across Both Periods

	n	Mean	Q1	Median	Q3	Std. Dev.
Big N	43,437	0.055	0.016	0.035	0.071	0.062
Second-Tier	1,101	0.074	0.022	0.052	0.099	0.073
Other	3,841	0.093	0.027	0.061	0.123	0.092

Panel B: Univariate Tests

	T-Stat	P-Value
Big N v. Second-Tier	-9.76	0.000
Big N v. Other	-34.27	0.000
Second-Tier v. Other	-6.24	0.000

(continued on next page)

TABLE 30 (continued)

Panel C: Mean ABS_DD by Audit Firm Type and Period

	Pre-Andersen	Post-Andersen	Change	T-Stat	P-Value
Big N	0.057	0.049	-0.008	-11.97	0.000
Second-Tier	0.077	0.062	-0.015	-2.91	0.004
Other	0.087	0.105	0.018	5.71	0.000

Panel D: Univariate Tests

	T-Stat	P-Value
Pre-Andersen		
Big N v. Second-Tier	-9.00	0.000
Big N v. Other	-22.23	0.000
Second-Tier v. Other	-2.83	0.005
Pre-Andersen		
Big N v. Second-Tier	-3.63	0.000
Big N v. Other	-29.33	0.000
Second-Tier v. Other	-6.49	0.000

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 31
Descriptive Statistics for Explanatory Variables by Audit Firm Type and Period, Full Sample

Panel A: Big N (N = 53,162)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	4.767	4.644	1.946	5.747	5.719	1.885	50.61	0.000
lnOPCYCLE	4.699	4.771	0.776	4.601	4.680	0.796	-12.51	0.000
σ^{REV}	0.336	0.236	0.712	0.315	0.228	0.364	-3.32	0.001
σ^{CFO}	0.113	0.064	0.384	0.137	0.070	0.620	5.16	0.000
LOSS	0.333	0.000	0.471	0.391	0.000	0.488	12.11	0.000

Panel B: Second-Tier (N = 4,097)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	3.125	3.000	1.484	3.711	3.642	1.556	12.00	0.000
lnOPCYCLE	4.784	4.890	0.810	4.707	4.770	0.841	-2.93	0.003
σ^{REV}	0.438	0.313	0.438	0.435	0.298	0.470	-0.23	0.820
σ^{CFO}	0.170	0.096	0.717	0.228	0.111	0.949	2.20	0.028
LOSS	0.420	0.000	0.494	0.518	1.000	0.500	6.09	0.000

(continued on next page)

TABLE 31 (continued)

Panel C: Other (N = 7,693)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	2.310	2.100	1.360	2.487	2.370	1.346	5.42	0.000
lnOPCYCLE	4.817	4.870	0.987	4.782	4.787	1.036	-1.44	0.149
σ^{REV}	0.473	0.316	1.160	0.616	0.349	1.825	4.17	0.000
σ^{CFO}	0.213	0.102	0.786	0.675	0.142	5.229	6.16	0.000
LOSS	0.474	0.000	0.499	0.563	1.000	0.496	7.41	0.000

Panel D: Univariate Tests

	Pre-Andersen			Post-Andersen		
Variable	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**
lnASSETS	***	***	***	***	***	***
lnOPCYCLE	***	***		***	***	**
σ^{REV}	***	***		***	***	***
σ^{CFO}	***	***	**	***	***	***
LOSS	***	***	***	***	***	***

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 32
Descriptive Statistics for Explanatory Variables by Audit Firm Type and Period, Restricted Sample

Panel A: Big N (N = 43,437)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	5.099	5.001	1.878	6.017	5.970	1.783	45.17	0.000
lnOPCYCLE	4.681	4.757	0.763	4.586	4.660	0.794	-11.24	0.000
σ^{REV}	0.318	0.219	0.763	0.303	0.219	0.369	-2.10	0.036
σ^{CFO}	0.105	0.059	0.408	0.120	0.065	0.384	3.43	0.001
LOSS	0.306	0.000	0.461	0.366	0.000	0.482	11.56	0.000

Panel B: Second-Tier (N = 1,101)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	3.396	3.228	1.557	4.233	3.990	1.960	7.12	0.000
lnOPCYCLE	4.776	4.860	0.789	4.780	4.800	0.852	0.07	0.943
σ^{REV}	0.438	0.310	0.434	0.376	0.260	0.344	-2.13	0.033
σ^{CFO}	0.135	0.085	0.156	0.253	0.105	0.863	3.77	0.000
LOSS	0.389	0.000	0.488	0.511	1.000	0.501	3.54	0.000

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TABLE 32 (continued)

Panel C: Other (N = 3,841)

	Pre-Andersen			Post-Andersen			Change	
Variable	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**T-Stat**	**P-Value**
lnASSETS	2.180	2.010	1.297	2.356	2.219	1.383	3.83	0.000
lnOPCYCLE	4.797	4.870	1.068	4.784	4.787	1.103	-0.33	0.740
σ^{REV}	0.492	0.305	1.555	0.629	0.306	1.390	2.63	0.009
σ^{CFO}	0.186	0.100	0.486	1.062	0.149	7.551	5.91	0.000
LOSS	0.481	0.000	0.500	0.560	1.000	0.497	4.55	0.000

Panel D: Univariate Tests

	Pre-Andersen			Post-Andersen		
Variable	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**	**Big N v. Second-Tier**	**Big N v. Other**	**Second-Tier v. Other**
lnASSETS	***	***	***	***	***	***
lnOPCYCLE	***	***		***	***	
σ^{REV}	***	***		***	***	***
σ^{CFO}	**	***	***	***	***	*
LOSS	***	***	***	***	***	

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

TABLE 33
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Full Sample

$$ABS\_DD = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 lnOPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS + \epsilon$$

		Panel A		Panel B	
Variable	**Exp Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	0.080	0.000	0.054	0.000
POST	?	0.010	0.000	-0.001	0.725
BIGN	-	-0.004	0.005	-0.002	0.178
POST*BIGN	?	-0.012	0.000	-0.007	0.008
SEC_TIER	?	0.000	0.939	0.002	0.308
POST*SEC_TIER	-	-0.013	0.001	-0.010	0.006
lnASSETS	?	-0.008	0.000	-0.004	0.000
lnOPCYCLE	?	0.007	0.000	0.006	0.000
σ^{REV}	?	0.006	0.019	0.005	0.030
σ^{CFO}	?	0.001	0.001	0.001	0.010
LOSS	?	0.014	0.000	0.015	0.000
INVMILLS	?			0.029	0.000
$\beta2 + \beta3 = 0$	-		0.000		0.000
$\beta4 + \beta5 = 0$	-		0.000		0.012
$\beta2 = \beta4$	-		0.009		0.021
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.065		0.594
N		64,952		64,952	
R^2		0.135		0.138	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 35.

TABLE 34
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Restricted Sample

$$ABS\_DD = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 lnOPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS + \epsilon$$

		Panel A		Panel B	
Variable	**Exp Sign**	**Estimate**	**P-Value**	**Estimate**	**P-Value**
Intercept	?	0.082	0.000	0.055	0.000
POST	?	0.016	0.000	0.004	0.326
BIGN	-	-0.004	0.042	0.002	0.789
POST*BIGN	?	-0.018	0.000	-0.011	0.003
SEC_TIER	?	0.001	0.815	0.005	0.207
POST*SEC_TIER	-	-0.026	0.000	-0.022	0.000
lnASSETS	?	-0.007	0.000	-0.004	0.000
lnOPCYCLE	?	0.007	0.000	0.006	0.000
σ^{REV}	?	0.006	0.038	0.006	0.051
σ^{CFO}	?	0.001	0.005	0.001	0.126
LOSS	?	0.014	0.000	0.015	0.000
INVMILLS	?			0.032	0.000
$\beta2 + \beta3 = 0$	-		0.000		0.006
$\beta4 + \beta5 = 0$	-		0.000		0.000
$\beta2 = \beta4$	-		0.081		0.176
$\beta2 + \beta3 = \beta4 + \beta5$	?		0.379		0.036
N		48,379		48,379	
R^2		0.134		0.138	

All variables are as defined in Table 1. P-values are based on one (two)-tailed tests when a prediction is (is not) made. A summary of the results in this table is presented in Table 35.

TABLE 35
Summary of Findings in Tables 33-34

	Full Sample Table 33		Restricted Sample Table 34	
	Panel A	**Panel B**	**Panel A**	**Panel B**
Second-Tier Firms Distinct From Other non-Big N Firms?				
Pre-Andersen	No	No	No	No
Post-Andersen	Yes	Yes	Yes	Yes
Second-Tier Firms Comparable to Big N Firms?				
Pre-Andersen	No	No	No	Yes
Post-Andersen	No	Yes	Yes	Better
Improvement in Second-Tier Position Pre to Post-Andersen?	Yes	Yes	Yes	Yes

TABLE 36
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Three-Firm Second-Tier

$$ABS\_DD = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER3 + \beta_5 POST*SEC\_TIER3 + \beta_6 lnASSETS + \beta_7 lnOPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.004	***	-0.001		-0.004	**	0.002	
POST*BIGN	?	-0.012	***	-0.007	***	-0.018	***	-0.011	***
SEC_TIER3	?	0.000		0.003		0.001		0.005	
POST*SEC_TIER3	-	-0.012	***	-0.009	***	-0.026	***	-0.022	***
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		**		***		***	
$\beta2 = \beta4$	-	***		**		*			
$\beta2 + \beta3 = \beta4 + \beta5$	?	*						**	
N		64,952		64,952		48,379		48,379	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 37
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Five-Firm Second-Tier

$$ABS\_DD = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER5 + \beta_5 POST*SEC\_TIER5 + \beta_6 lnASSETS + \beta_7 lnOPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.004	***	-0.001		-0.003	*	0.002	
POST*BIGN	?	-0.013	***	-0.008	***	-0.019	***	-0.012	***
SEC_TIER5	?	0.002		0.004	*	0.002		0.006	
POST*SEC_TIER5	-	-0.015	***	-0.012	***	-0.028	***	-0.024	***
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		***		***		***	
$\beta2 = \beta4$	-	***		***		**			
$\beta2 + \beta3 = \beta4 + \beta5$	?	*						**	
N		64,952		64,952		48,379		48,379	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 38
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Winzorize Outliers

$$ABS\_DD = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 lnOPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.007	***	-0.002		-0.006	***	0.002	
POST*BIGN	?	-0.017	***	-0.009	***	-0.024	***	-0.013	***
SEC_TIER	?	-0.002		0.001		-0.003		0.003	
POST*SEC_TIER	-	-0.015	***	-0.010	**	-0.030	***	-0.024	***
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		***		***		***	
$\beta4 + \beta5 = 0$	-	***		**		***		***	
$\beta2 = \beta4$	-	**		*					
$\beta2 + \beta3 = \beta4 + \beta5$	?	**							
N		66,257		66,257		49,256		49,256	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 39
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Post-1994

$$ABS\_DD = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnASSETS + \beta_7 lnOPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS + \epsilon$$

		Panel A: Full Sample				Panel B: Restricted Sample			
Variable	**Exp. Sign**	**Estimate**		**Estimate**		**Estimate**		**Estimate**	
BIGN	-	-0.006	***	-0.003		-0.003		0.003	
POST*BIGN	?	-0.009	***	-0.002		-0.017	***	-0.008	**
SEC_TIER	?	-0.002		0.001		-0.001		0.003	
POST*SEC_TIER	-	-0.009	**	-0.005	*	-0.023	***	-0.018	***
INVMILLS	?	No		Yes		No		Yes	
$\beta2 + \beta3 = 0$	-	***		**		***		*	
$\beta4 + \beta5 = 0$	-	***		*		***		***	
$\beta2 = \beta4$	-	**		*					
$\beta2 + \beta3 = \beta4 + \beta5$	?							**	
N		43,766		43,766		32,202		32,202	

Selected coefficient estimates are presented. All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 40
The Association Between Accruals Quality and Audit Firm Affiliation: Modified Dechow and Dichev 2002 Model of Accrual Quality, Five-Year Aggregated Accruals Quality Estimates

$$\sigma^{DD} = \alpha + \beta_1 POST + \beta_2 BIGN + \beta_3 POST*BIGN + \beta_4 SEC\_TIER + \beta_5 POST*SEC\_TIER + \beta_6 lnAVG\_ASSETS + \beta_7 lnAVG\_OPCYCLE + \beta_8 \sigma^{REV} + \beta_9 \sigma^{CFO} + \beta_{10} LOSS\_PROP + \epsilon$$

Variable	Exp. Sign	Estimate	
Intercept	?	0.055	***
POST	?	0.004	
BIGN	-	-0.010	***
POST*BIGN	?	-0.009	*
SEC_TIER	?	-0.012	*
POST*SEC_TIER	-	-0.002	
lnAVG_ASSETS	?	-0.002	***
lnAVG_OPCYCLE	?	0.004	***
σ^{REV}	?	0.020	***
σ^{CFO}	?	0.135	***
LOSS_PROP	?	0.011	***
$\beta2 + \beta3 = 0$	-		***
$\beta4 + \beta5 = 0$	-		**
$\beta2 = \beta4$	-		
$\beta2 + \beta3 = \beta4 + \beta5$	?		
N		4,609	
R^2		0.252	

Notes: All variables are as defined in Table 1. ***, **, and * indicate significance at the 1, 5, and 10 percent levels respectively. P-values are based on one (two)-tailed tests when a prediction is (is not) made.

TABLE 41
Sample Construction – Dechow et al. (2008) F-Score

	Company-year observations
Total unique company (client)-year observations available from COMPUSTAT for the years 1988 through 2006 with non-missing and non-negative assets (COMPUSTAT data item #6).	172,347
Less: foreign firm observations	(17,767)
Less: observations in regulated and financial industries (SIC codes in the 4,000 and 6,000 series)	(44,209)
Less: observations with total assets (COMPUSTAT data item #6) less than $1 million.	(5,292)
Less: observations with missing COMPUSTAT data items needed to estimate the Dechow et al. (2008) F-Score.	(28,313)
Less: observations with missing or invalid auditor information (COMPUSTAT data item #149).	(408)
Less: outliers	(1,526)
Full sample	74,832
Less switching firms	(23,107)
Restricted sample	51,725

Table 42
Descriptive Statistics for the Dechow et al. (2008) F-Score, Full Sample

Panel A: Descriptive Statistics for F-Score by Audit Firm Type, Pooled Across Both Periods

	n	Mean	Q1	Median	Q3	Std. Dev.
Big N	59,056	1.046	0.725	0.927	1.169	0.727
Second-Tier	5,006	1.049	0.578	0.891	1.200	0.854
Other	10,770	0.976	0.396	0.816	1.152	0.891

Panel B: Univariate Tests

	T-Stat	P-Value
Big N v. Second-Tier	-0.24	0.813
Big N v. Other	8.94	0.000
Second-Tier v. Other	4.87	0.000

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TABLE 42 (continued)

Panel C: Mean F-Score by Audit Firm Type and Period

	Pre-Andersen	Post-Andersen	Change	T-Stat	P-Value
Big N	1.075	0.975	-0.100	-15.16	0.000
Second-Tier	1.091	0.997	-0.094	-3.86	0.000
Other	0.951	1.015	0.064	3.62	0.000

Panel D: Univariate Tests

	T-Stat	P-Value
Pre-Andersen	-0.99	0.322
Big N v. Second-Tier	11.89	0.000
Big N v. Other	7.07	0.000
Second-Tier v. Other		
Pre-Andersen		
Big N v. Second-Tier	-1.57	0.116
Big N v. Other	-3.42	0.001
Second-Tier v. Other	-0.77	0.441

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

Table 43
Descriptive Statistics for the Dechow et al. (2008) F-Score, Restricted Sample

Panel A: Descriptive Statistics for F-Score by Audit Firm Type, Pooled Across Both Periods

	n	Mean	Q1	Median	Q3	Std. Dev.
Big N	45,692	1.055	0.760	0.936	1.170	0.700
Second-Tier	1,074	1.132	0.637	0.934	1.299	0.960
Other	4,959	0.980	0.383	0.799	1.150	0.921

Panel B: Univariate Tests

	T-Stat	P-Value
Big N v. Second-Tier	-3.54	0.000
Big N v. Other	6.94	0.000
Second-Tier v. Other	4.88	0.000

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TABLE 43 (continued)

Panel C: Mean F-Score by Audit Firm Type and Period

	Pre-Andersen	Post-Andersen	Change	T-Stat	P-Value
Big N	1.085	0.986	-0.099	-14.00	0.000
Second-Tier	1.141	1.117	-0.024	-0.39	0.694
Other	0.908	1.107	0.198	7.32	0.000

Panel D: Univariate Tests

	T-Stat	P-Value
Pre-Andersen		
Big N v. Second-Tier	-1.90	0.057
Big N v. Other	12.52	0.000
Second-Tier v. Other	6.38	0.000
Pre-Andersen		
Big N v. Second-Tier	-4.43	0.000
Big N v. Other	-7.56	0.000
Second-Tier v. Other	0.18	0.859

All variables are as defined in Table 1. All tests are based on a comparison of the sample means and p-values are based on two-tailed tests.

VITA

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