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Small Audit Firms and Earnings Manipulations

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Abstract

This paper examines the monitoring role of small audit firms (i.e., those with 100 or fewer clients who are subject to different levels of oversight by the PCAOB) on earnings management. Specifically, I examine the relationship between earnings manipulations and the use of small audit firms. I find that small audit firms are less able to constrain managers' opportunistic use of discretionary accruals. However I find no evidence that small audit firms are associated with real activities manipulation. By investigating a specific group of audit firms that are the smallest in the audit market, this study extends our understanding of the role of audit firm size in audit quality.

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by

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Chapter 1 Introduction

This study investigates why small audit firms are chosen by clients and whether they are effective monitors of earnings management. This study is motivated by the recent attention the Public Company Accounting Oversight Board (PCAOB) has given to small audit firms as well as by a growing stream of academic research into the implications of the use of small audit firms (e.g. Hermanson, Houston, and Rice 2007; DeFond and Lennox, 2011). Despite a large amount of research on the impact of larger audit firms (e.g., DeAngelo 1981; Dye 1993; Palmrose 1988; Becker et al. 1998; Francis and Krishnan 1999; DeFond 1992; Farber 2005) there is little extant research on smaller audit firms.

The PCAOB was established with the passage of the Sarbanes-Oxley Act of 2002 in response to the cascade of audit failures in the preceding decade. PCAOB inspections accompanied by other strains on the resources of audit firms (e.g., the shortened 8-K filing deadline, SOX section 404, etc.) have dramatically changed the audit market.[1] Small audit firms are particularly

[1] One of the greatest controversies surrounding the establishment of the PCAOB is the shift from self-regulation to government regulation in the U.S. audit market. The Sarbanes-Oxley Act authorizes the PCAOB to inspect registered audit firms either annually or triennially, depending upon whether the audit firm provides audit reports for more than 100 issuers (annual inspection) or 100 or fewer issuers (triennial inspection). This rule has replaced the peer review system promulgated by the American Institute of Certified Public Accountants (AICPA). The debate has thus arisen regarding whether the PCAOB inspections are more effective than the pre-SOX AICPA peer review system.

impacted by resource constraints and the increasing regulation of audit firms has increased their compliance costs. Consistent with these increased costs, DeFond and Lennox (2011) find that over six hundred small audit firms (i.e., those with 100 or fewer clients) exited the public client market after the adoption of SOX in 2002. DeFond and Lennox (2011) document that exiting small audit firms are of lower quality when compared with non-exiting small audit firms. However, it is an open question whether small audit firms provide lower quality audits than other audit firms in general.

Existing research has focused on differences in the quality of Big 4 and non-Big 4 auditors.[2] It is generally assumed that larger audit firms provide higher quality audits (e.g., DeAngelo 1981; Teoh and Wong 1993; Becker, Defond, Jiambalvo, and Subramanyam 1998; Francis and Krishnan 1999; Francis, Maydew, and Sparks 1999).[3] However, recent studies such as Boone, Khurana, and Raman (2010), do not find significant differences in audit quality between Big 4 and second-tier audit firms (using abnormal accruals as a proxy for audit quality).[4]

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[2] Throughout the paper, I use the term "Big 4" or "Big N" to refer to the current Big 4 audit firms, and the former Big 5, Big 6, or Big 8 audit firms if the period covers previous years when each of these classifications were appropriate.

[3] DeAngelo (1981) argues that auditors may have incentives of providing lower audit quality to retain their clients due to future client-specific quasi rents. In this viewpoint, large audit firms provide higher quality because they have more to lose from larger client bases. Literature generally views Big 4 auditors as a surrogate for higher audit quality based on DeAngelo (1981)'s argument.

[4] There is evidence that smaller audit firms provide greater value in certain circumstances. Louis (2005) finds that acquirers audited by non-Big 4 auditors have significantly higher abnormal returns around M&A announcements

It is common in the literature to view non-Big 4 auditors as a homogeneous group, even though they exhibit clear differences in various firm attributes, such as size. In this paper, I examine the monitoring role of the small audit firms, that is, those with 100 or fewer clients who are subject to different levels of oversight by the PCAOB. Specifically, I examine the relationship between the small audit firms and earnings manipulation using discretionary accruals and real earnings management as earnings manipulation proxies.

Earlier findings of differences in audit quality are increasingly attributed to the attributes of the clients who select the auditors. Lawrence, Minutti-Meza, and Zang (2011) find that the differences in proxies for audit quality between Big 4 and non-Big 4 auditors are more likely attributable to client characteristics, especially client size. To control for client characteristics and potential endogeneity, I employ a propensity-score matched sample to examine the association between earnings management and the use of small audit firms. I estimate the propensity score using an auditor choice model that employs variables identified in prior literature that may affect the selection of auditors (Ashbaugh, LaFond, and Mayhew 2003; Chaney, Jeter, and Shivakumar 2004). I then examine the relationship between earnings manipulation measures and an indicator variable for small audit firms. In further analysis, I also use another earnings manipulation measure, real earnings manipulations based on

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than do acquirers audited by Big 4 audit firms. Louis interprets this finding to mean that smaller audit firms have a comparative advantage in local markets when assisting their clients in merger transactions.

Roychowdhury (2006), to examine whether the likelihood of hiring small audit firms is associated with real earnings manipulations.

In descriptive analysis, I find that firms with higher asset turnover, a lower current asset component of total assets, a higher quick ratio, or lower industry litigation risk are more likely to hire smaller audit firms while client size (measured by log of assets) is significantly negatively associated with the likelihood of hiring smaller audit firms. I further find that firms using small audit firms are more likely to engage in higher levels of earnings manipulation, as measured by discretionary accruals (but not by real activities manipulations). The result holds when I use different thresholds to define smaller audit firms (e.g., audit firms with fewer than 30 clients or 50 clients). Finally, when I exclude exiting auditors from my sample, I find that there is still a positive association between the use of small audit firms and accrual-based earnings management.

These findings supplement the previous literature on small audit firms. The previous literature focuses on Big 4 auditors and treats non-Big 4 auditors as a homogeneous group to compare against. Nonetheless, there are differences among non-Big 4 auditors on characteristics such as client size, number of audit partners, resources and operations. Additionally, some non-Big 4 audit firms have national operations while others have only regional or local operations. These differences among non-Big 4 audit firms are actually quite sizeable and should be of interest to researchers. Further, although previous studies indicate that small audit firms have

more audit deficiencies or quality control defects (Hermanson et al. 2007; Hermanson and Houston 2008), there is little evidence of why firms choose small audit firms and the incentives behind that choice.

As mentioned previously, DeFond and Lennox (2011) show small audit firms exiting the audit market for publicly listed firms have lower audit quality than non-exiting small audit firms (measured by the propensity to issue going-concern opinions). In contrast to DeFond and Lennox's (2011) study, I examine whether earnings management associated with small audit firms differs from that associated with non-small audit firms. I focus on earnings management through the use of accruals since reported discretionary accruals are the joint product of managers and auditors and thus represent an important aspect of financial reporting quality. Besides accruals management, managers may conduct earnings manipulation through real activities (Graham, Harvey, and Rajgopal 2005; Roychowdhury 2006; Cohen, Dey, and Lys 2008; Gunny 2010). Chi, Lisic, and Pevzner (2011) found that firms engage in higher levels of real earnings management in the presence of Big 4 auditors because the opportunity for accruals management is limited. By also investigating the effect of small audit firms on real earnings management, this paper contributes to our knowledge of the role of small audit firms in constraining managers' opportunistic behavior through multiple channels.

The remainder of this dissertation is organized as follows. Chapter 2 reviews related literature and develops the hypotheses. Chapter 3 presents the research design and the data.

Chapter 4 reports empirical results. Chapter 5 concludes and discusses the limitations of this study.

Chapter 2 Literature Review and Hypotheses Development

In this section, I summarize related literature and develop the hypotheses. I first discuss the demand for auditing in Section 2.1 and then review the literature on audit firm size and audit quality in Section 2.2. Hypotheses are developed in Section 2.3.

2.1 Demand for Auditing

Wallace (1987) indicates that the demand for auditing services can be explained by agency, information, and insurance dimensions. Agency theory suggests that auditing services serve as a monitoring mechanism to reduce agency costs that arise from the conflict of interest between principals and agents. In addition, agency theory explains that an agent himself has incentives to demand a monitoring mechanism to protect his level of wages, because without monitoring, the principals may adjust prices when they expect that self-interested agents may not act in the best interests of principals. From this perspective, auditing services can be viewed as a type of monitoring mechanism and companies demand services to provide evidence that they produce reliable financial statements to financial statements users (e.g., investors, creditors, etc.).

The information hypothesis suggests that audited financial statements help investors with their decision making by reducing information risks. Specifically, audited data provides investors with a better estimate of risks and expected returns when making their investment portfolio

selections. Finally, the insurance hypothesis suggests that investors and creditors view auditors as having "deep pockets" and that they will be able to recover potential financial losses in bankruptcy from the auditors. Auditors will not only care about potential monetary losses, but they will also be concerned with protecting their reputation. This illuminates the reasons auditors are look for insurance.

To date, evidence generally supports the above arguments. For example, Chow (1982) finds that agency costs, measured by greater firm size and higher debt leverage, have positive association with voluntary demand for auditing. In the private market setting, Abdel-Khalik (1993) shows that greater firm size is a significant determinant of voluntary demand for auditing. In the initial public offering (IPO) market setting, Balvers et al. (1988) and Beatty (1989) document that hiring Big 6 auditors reduces IPO underpricing, which is consistent with the information role of auditing.[5] Menon and Williams (1994) finds that the disclosure of Laventhol & Horwath bankruptcy had an adverse effect on the market price of L&H clients, which supports that market price incorporates the expected insurance coverage from auditors.

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[5] For auditor choice in the IPO setting, Hogan (1997) finds that the decision is associated not only with the benefits of underpricing reduction but also with the costs of auditor compensation that they can afford.

2.2 Supply of Audit Quality

Supply-side research investigates the factors that affect an auditor's ability to supply better quality audits. DeAngelo (1981) defines audit quality as the joint probability of an auditor's ability to discover and report a breach. Reporting a breach requires auditor independence, and discovery of the fraud involves characteristics of the auditor's ability such as expertise, experience, and knowledge. Of these factors, a large body of studies takes Big N auditors to be high quality auditors. My study focuses on smaller audit firms and revisits the audit firm size issue. Therefore, I review the relevant literature regarding the relationship between auditor size and audit quality in this section. In addition, I summarize the related literature on the recent trend of changes in audit quality with regard to audit firm size.

Audit Firm Size

It is commonly acknowledged in academic research that Big N auditors are regarded as higher quality auditors. DeAngelo (1981) argues that auditors earn client-specific quasi rents and they have reputation concerns with respect to their clients. Therefore, auditors with a greater number of clients have lower incentives to cheat when a breach is discovered. Large audit firms may thus provide better quality audits, because they have "more to lose" compared to small audit firms (i.e., they can bear higher potential reputational loss).

To test this argument, most studies use a Big N and non-Big N dichotomous variable and the evidence generally supports that Big N auditors provide superior audit quality. For example, Researchers find that Big N auditors are associated with smaller abnormal accruals (e.g., Becker, DeFond, Jiambalvo, & Subramanyam, 1998; Francis & Krishnan, 1999). Big 4 auditors are sued less often (Palmrose, 1988), and they provide more informative reports. Geiger and Rama (2006) find that Big 4 auditors exhibit higher reporting quality when they issue going-concern audit reports (i.e., lower type I and lower type II error rates). Weber & Willenborg (2003) find that going-concern audit reports by Big 4 auditors have more predictive power as to their clients' bankruptcy in an IPO setting. Behn, Choi, and Kang (2008) show that clients audited by Big N auditors have higher analysts' earnings forecast accuracy and smaller forecast dispersion. In term of information asymmetry, the use of Big N auditors provides information and reduces the cost of equity or the cost of debt (Khurana and Raman 2004; Fortin and Pittman 2004). Investors also perceive audit quality as higher when it is supplied by Big N auditors (Teoh and Wong 1993, Krishnan 2003).

In addition to studies where auditor reputation is represented by the use of Big 4 auditors, studies also investigate other auditor characteristics that may affect audit quality by constraining managers' deliberately discretionary behavior such as expertise, tenure, and independence (Craswell, Francis, and Taylor 1995; Krishnan 2003; Myers, Myers, and Omer 2003; Lennox and Pittman 2008; Gul, Sami, and Zhou 2009; Reichelt and Wang 2010; etc.).

Recent Trends and Second-Tier Audit Firms

Beyond the Big and Non-Big N differentiation, recent studies have turned to examine within Big 4 auditor variations. For instance, studies investigate auditor industry expertise, office size, and cross-country evidence within Big N auditors. Craswell et al. (1995) find that Big N industry experts outperform Big N non-experts. Reichelt and Wang (2010) show that audit quality, as measured by abnormal accruals, the likelihood of meeting or beating analyst forecasts, or the propensity to issue a going-concern audit opinion, is higher when the auditor is both a national and city specific industry specialist. Francis and Yu (2009) find that larger offices of Big 4 auditors provide higher quality when they use client restatements as the measure of audit quality. Using 42 countries as their sample, Francis, Michas, and Seavey (2011) document that concentration within the Big 4 group appears to be detrimental to audit quality.

Another line of research examines the emergence of "second-tier" auditors. After Sarbanes-Oxley Act was put into effect, Big 4 auditors face higher resource constraints as to their engagements, which may reduce their audit quality. As recommended by the PCAOB, Big 4 auditors are more costly due to the increasing regulatory costs and the use of some larger non-Big 4 auditors may be a viable alternative to Big 4 auditors in the post-SOX period (Grant Thornton LLP. 2006). In fact, more clients have been observed switching from Big 4 auditors to smaller audit firms as a result of increased audit fees.

In response to this trend, some argue that differences between Big N and non-Big N auditors has declined due to a series of accounting scandals in the early 2000s for Big N audit firms. In addition, Choi, Kim, Liu, and Simunic (2008) argue that the audit quality of Big N and non-Big N auditors is expected to converge as the legal and regulatory regime becomes more onerous. Some recent evidence suggests that second-tier auditors may provide similar quality relative to Big N auditors. For example, Boone et al. (2010) find no difference in audit quality between Big 4 auditors and second-tier auditors during 2003-2006 when they use abnormal accruals as the quality measure. Using the ex ante cost of equity capital as the proxy for financial reporting credibility, Cassell, Giroux, Myers, and Omer (2011) find that the financial reporting credibility of second-tier clients is indistinguishable from that of Big 4 clients. Jenkins and Velury (2011) find no significant difference in accounting conservatism between clients of Big N and second-tier auditors in either the pre- or post-SOX periods, and they also find a greater discrepancy in the variation in conservatism between clients of Big N and other non-Big N smaller auditors relative to the variation in conservatism between clients of second-tier auditors and other non-Big N smaller auditors.

Nonetheless, Hogan and Martin (2009) find that the frequency of auditor switches from Big N auditors to smaller audit firms has increased, which leads to an increased exposure to more business risks for second-tier auditors as they accept larger clients coming from Big 4 predecessor auditors. This may increase the litigation risks for second-tier auditors.

2.3 Hypotheses

Earnings management is defined by Healy and Wahlen (1999) as "earnings management occurs when management uses judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers." Among the various monitoring mechanisms that constrain managers' incentives to manipulate reported earnings, the use of external auditors is regarded as one of the most effective ways to improve the credibility of financial reporting. As indicated by Dechow, Ge, and Schrand (2010), the selection of auditor is a way to control for managers' accounting choices.

Previous literature indicates that the demand for hiring Big 4 auditors is increasing in agency costs (Francis and Wilson 1988, DeFond 1992) consistent with the common perception in academic research that large accounting firms provide higher quality audits (e.g., DeAngelo 1981; Dye 1993; Palmrose 1988; Becker et al. 1998; Francis and Krishnan 1999; DeFond 1992; Farber 2005). In a theoretical framework, DeAngelo (1981) illustrates that auditors may compromise their independence due to the economic dependence on their clients, mainly the relative economic importance of the client to the auditor's client portfolio. Large audit firms are more likely to resist the threat because they have "more to lose" compared with small audit firms (i.e., they can bear higher reputation loss), and hence large audit firms may provide better audit

quality. In addition to reputational concerns, the literature also indicates that large audit firms have greater wealth at risk from litigation so the audit quality of large audit firms is higher due to their "deeper pockets" (Dye 1993). In archival studies, researchers commonly use a dichotomous variable (Big 4/non-Big 4) as a surrogate for audit firm size to test its relation to audit quality. For example, Becker et al. (1998) and Francis et al. (1999) document that Big 6 auditors are associated with lower levels of discretionary accruals. Lennox (1999) finds that the propensity of large audit firms to issue a going-concern opinion is higher for a sample of financially distressed companies in the UK. Teoh and Wong (1993) show that market values are higher for companies with Big 4 auditors (higher audit quality is presumed to be reflected in a higher earnings response coefficient). In addition, other studies suggest that large audit firms supply higher quality audits as evidenced by the higher audit fees they receive (e.g., Simunic and Stein 1987; Beatty 1989).

The audit market has dramatically changed after the demise of Arthur Andersen and the adoption of the Sarbanes-Oxley Act. In response to increased demand, the cost of hiring Big 4 auditors has increased, which in turn, has led an increasing number of companies to switch to smaller audit firms.[6] This raises the issue of whether smaller audit firms provide similar audit

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[6] According an article released on 10/18/2005, second-tier accounting firms such as Crowe Chizek, Grant Thornton, BDO Siedman, and RSM McGladrey have picked up 417 ex-Big 4 clients since 2003 (Reference: http://www.accountingweb.com/item/101381). This may be caused by resource constraint of the Big 4 in the post-SOX era.

quality to Big 4 auditors. Some studies investigate smaller audit firms (usually second-tier firms) and treat all non-Big 4 auditors as a heterogeneous group (Boone et al. 2010; Chang, Cheng, and Reichelt 2010; Hogan and Martin 2009). However, the properties of small audit firms are largely unknown. DeFond and Lennox (2011) indicate that half of small audit firms exit the market in the post-SOX era (possibly driven by the increasing compliance costs imposed on small audit firms). In addition, they find that exiting auditors are lower quality auditors when compared to the successor auditors. I do not know, however, whether all small audit firms provide lower quality audits.

It is unclear why firms choose smaller audit firms. Compared with Big 4 audit firms, small audit firms charge lower audit fees and (hopefully) provide cost-effective audits to their clients. Hogan (1997) demonstrates that some initial public offering firms may select non-Big 4 auditors because of cost and benefit considerations. Another conjecture is that if small audit firms do not have sufficient ability to detect earnings management, firms with incentives to manipulate reported earnings may choose small audit firms. There is also some controversy in the previous literature on smaller audit firms' quality in various settings. Some claim that small audit firms have better knowledge of local markets and have close connections with their local business communities. For example, Louis (2005) reports that clients of non-Big 4 audit firms have higher abnormal returns around M&A announcements, which implies that smaller audit firms provide higher quality audits for firms involved in M&A events. In contrast, there is also evidence showing that small audit firms (those with fewer than 100 public clients and are triennially

inspected by PCAOB) are more likely to have audit deficiencies and quality defects (Hermanson et al. 2007; Hermanson and Houston 2008). I thus examine whether firms using small audit firms engage in a higher level of earnings manipulation, as measured by discretionary accruals or real earnings manipulations. Specifically, I examine the following hypothesis (stated in the null form):

HYPOTHESIS 1**.** *Firms using the small audit firms do not engage in a higher level of earnings manipulation, measured by discretionary accruals or real earnings management.*

If hypothesis 1 is supported, we may observe a change in earnings management when clients of small audit firms switch to larger audit firms. I therefore investigate whether switches to larger auditors decrease the level of earnings management.[7] If larger audit firms have higher ability to constrain earnings management than small auditors do, we expect to observe a decrease in earnings manipulation when clients of the small audit firms switch their auditors to larger auditors. If large and small auditors do not provide different levels of monitoring for the purpose of detecting earnings management, we would not expect to find any changes in earnings manipulations. Specifically, I test the hypothesis below (described in the null form):

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[7] With regard to downward switches, some studies identified the reasons and client characteristics. Blouin, Grein, and Rountree (2007) find that agency costs and switching costs can explain the choice of switches for former Arthur Andersen clients. Landsman, Nelson, and Rountree (2009) investigate auditor switches to and from the Big N auditors and find that client misalignment and risk are determinants for downward switches.

HYPOTHESIS 2**.** *Firms switching from the small audit firms to larger audit firms do not subsequently engage in a lower level of earnings manipulation, as measured by discretionary accruals or real earnings management*.

Chapter 3 Research Design and Data

I discuss my research design in section 3.1. Prior research on the relationship between audit quality and the choice of audit firms suffers from self-selection bias because the choice of audit firms may be endogenous. In other words, auditors are not randomly assigned to the companies. The characteristics of companies may affect their choices of auditors, but audit quality does not determine auditor choices. To avoid this issue, prior studies use Heckman (1979) two stage methodology to mitigate the self-selection bias (Hogan 1997; Weber and Willenborg 2003; Chaney, Jeter, and Shivakumar 2004; Khurana and Raman 2004; Mansi, Maxwell, and Miller 2004; Louis 2005; Fortin and Pittman 2007; Choi, Kim, Liu, and Simunic 2008; Li 2009).

However, large and small audit firms have quite different clienteles at the extremes of the distribution (the smallest clients tend to have non-Big 4 while the largest clients use the Big 4). As discussed in Lennox, Francis, and Wang (2012), self-selection bias will not be solved using Heckman's (1979) two-stage procedure if the exclusion restrictions are not satisfied; that is, the independent variables from the first stage choice model should be validly excluded from the second stage regression. To avoid this issue, I use a propensity score matching procedure to identify a treatment and control sample. I describe how to estimate propensity scores in section 3.1. I then describe my sample selection procedures and descriptive statistics for my sample in section 3.2.

3.1 Research Design

To estimate propensity scores and identify a matched sample for the small audit firms, I use the following logit model to estimate the probability of selecting a small audit firm:

$$SMALL_t = \beta_0 + \beta_1 SIZE_t + \beta_2 LEV_t + \beta_3 ROA_t + \beta_4 ATURN_t + \beta_5 CURR_t + \beta_6 QUICK_t + \beta_7 RISKIND_t + Year\ Fixed\ Effect + Industry\ Fixed\ Effect + u_t, \quad (1)$$

where

$SMALL_t$ = a dummy variable equal to one if the firm's auditor has fewer than 100 clients and zero otherwise;

$SIZE_t$ = logarithm of total assets;

LEV_t = total debt divided by total assets;

ROA_t = income before extraordinary items divided by the beginning-of-year assets;

$ATURN_t$ = asset turnover, calculated as sales divided by total assets;

$CURR_t$ = current assets divided by total assets;

$QUICK_t$ = current assets minus inventory divided by current liabilities;

$RISKIND_t$ = a dummy variable equal to one if the firm operates within a high-litigation industry and zero otherwise, where high-litigation industries are industries with SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7370–7374.

The reasoning behind choosing these variables for the model follows. Based on prior literature (Francis 1984, Chaney et al. 2004, Lawrence et al. 2011), I posit that audit client size affects the choice of the audit firm. Auditors exert more effort on larger firms and thus I include the logarithm of total assets and asset turnover to control for audit client size. I include *ROA* to measure profitability since profit-making firms and loss-making firms may have different levels of demand for small audit firms. To measure audit risk, I use the quick ratio and leverage to represent the short-term and long-term financial structure of the client. I also include the ratio of current assets to total assets because accounts receivable and inventory are viewed as high-risk assets and require more audit effort and more extensive audit procedures. To measure audit risk among different industries, I include a dummy variable that equals one when the industry is regarded as a high-risk industry (industries with SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7370–7374) based on previous research (Ashbaugh et al. 2003; Gul et al. 2009). I also include year and industry fixed effects, where industries are identified using the Fama and French 48 industries classification.

I use accrual-based earnings management to proxy for managers' opportunistic behavior. Abnormal accruals are estimated as the residuals from the cross-sectional modified Jones (1991) model described below:

$$\frac{\mathrm{TAC_{i,t}}}{\mathrm{TA_{i,t-1}}} = \alpha_{0t}\frac{1}{\mathrm{TA_{i,t-1}}} + \alpha_{1t}\frac{\Delta\mathrm{SALES_{i,t}}-\Delta\mathrm{AR_{i,t}}}{\mathrm{TA_{i,t-1}}} + \alpha_{2t}\frac{\mathrm{PPE_{i,t}}}{\mathrm{TA_{i,t-1}}} + \epsilon_t\,, \qquad (2)$$

where TAC_t is total accruals, calculated as net income less cash flows from operations, $\Delta SALES_t$ is the change in sales between year t and year t-1, ΔAR_t is the change in accounts receivable between year t and year t-1, PPE_t is the gross amount of property, plant and equipment at the end of year t, and TA_{t-1} is total assets at the end of year t-1. I estimate equation (2) in the cross section in each year for each industry classification with at least fifteen observations. The residuals from equation (2) are the measures of abnormal accruals (DA_t). I also compute the performance-adjusted discretionary accrual (PDA_t) similar to Cahan and Zhang (2006). I assign firms in each industry into deciles based on the prior year return on assets (ROA) and then obtain the performance-adjusted discretionary accrual by taking the DA_t for firm i from equation (2) and then subtracting the median unadjusted DA_t for the corresponding industry ROA decile.

I then examine the effect of small audit firms on earnings manipulation using accruals management as a proxy for managers' opportunistic behavior, as follows:

$$DA_t\ (PDA_t) = \gamma_0 + \gamma_1\ SMALL_t + \gamma_2\ MVE_{t-1} + \gamma_3\ ROA_t + \gamma_4\ MTB_{t-1}$$
$$+ \textit{Year Fixed Effect} + \textit{Industry Fixed Effect} + v_t \qquad (3)$$

where

DA = Modified Jones model discretionary accruals estimated from equation (2), measured in absolute values (*ABSDA*), positive values (*PosDA*), and negative values (*NegDA*);

PDA = Modified Jones model discretionary accruals estimated from equation (2) and adjusted for prior year performance, measured in absolute values (ABSPDA), positive values (PosPDA), and negative values (NegPDA);

MVE_{t-1} = the market value of equity at the beginning of the year t;

ROA_t = return on assets;

MTB_{t-1} = market-to-book ratio in year t-1; and

v_t = the error term.

The coefficient of interest is γ_1. I expect γ_1 to be significantly negative if small audit firms do not have the ability to constrain managers' opportunistic behavior either because they do not have sufficient expertise or because they have compromised their independence. Following Roychowdury (2006) and Cohen et al. (2008), I use the market-to-book ratio (MTB_{t-1}) and the market value of equity (MVE_{t-1}) to control for size and growth opportunities. Further, I include ROA to control for the effect of performance. Finally, I winsorize all of the variables at the 1st and 99th percentiles of their respective distributions in order to mitigate the effect of potential outliers.

3.2 Sample Selection and Descriptive Statistics

To identify a sample of small audit firms, I choose audit firms with fewer than 100 public clients for the following reasons. First, the frequency of Public Company Accounting Oversight Board (PCAOB) inspections differs for audit firms with more than 100 clients (annual inspections) and audit firms with fewer than 100 clients (triennial inspections). Second, studies investigating small audit firms use this criterion to select their sample (e.g. Hermanson et al. 2007; DeFond and Lennox 2011). Thus, to make the results comparable with previous literature, I use the same criterion to select the sample.

Auditor information is obtained from the Audit Analytics Database and financial information is collected from CRSP and the Compustat annual industry and research files. In the sample period from 2001 to 2009, I obtain 41,305 observations from Audit Analytics. I exclude Arthur Andersen clients in 2002 to avoid any potential confounding effects from the Enron event. I then exclude firms in the financial industry (SIC codes 6000–6999) and regulated industries (SIC codes 4400-5000). I also require at least 15 observations in each two-digit SIC grouping per year to estimate the various earnings management proxies. I further delete observations without available data to calculate various earnings management measures. This yields 26,428 firm-year observations, of which 4,267 observations (16.15%) are clients of small audit firms.

I then calculate propensity scores using equation (1) based on these observations. Similar to Lawrence et al. (2011), I impose a caliper distance of 3 percent on equation (1) to calculate the

propensity scores and obtain a propensity score matched sample of 3,048 firm-year observations, of which 1,524 are clients of small audit firms and 1,524 are clients of larger audit firms. I further exclude observations missing data for the additional control variables (e.g., *SIZE*, *LEV*, *ROA*, *ATURN*, *CURR*, and *QUICK*) used in equation (3) and obtain 2,917 observations in the final sample.

Table 1 presents the descriptive statistics for the propensity matched sample. I match small audit firms with other auditors based on client size, asset turnover, leverage, current ratio, quick ratio, ROA, and high-litigation industry because prior studies document that those factors are associated with the selection of Big 4 auditors (Ashbaugh et al. 2003; Chaney et al. 2004). The mean log of total assets (*SIZE*) is 4.062 for the full sample. Assets turnover (*ATURN*) is an average of 1.271 times per year and leverage (*LEV*) has a mean value of 0.214. Current assets represent 59.9 percent of total assets (*CURR*) and the average quick ratio (*QUICK*) is 2.645. The average return on assets (*ROA*) is −22 percent and 41.9 percent of the firms in the sample are in high-litigation risk industries (*RISKIND*). I further present each of these variables for the small auditors and for the control group. The tests on the differences in means for the various variables show that there is no significant difference in firm characteristics (used in the selection model) between clients of the small audit firms and larger audit firms in the propensity-score matched sample. However, I find that small audit firms have significantly larger absolute value of abnormal accruals (*ABSDA* or *ABSPDA*) than other audit firms do in the matched sample.

TABLE 1

Descriptive Statistics: Propensity-score Matched Samples

	All Obs. Mean Std. Dev. (n=2,917)	Small Audit firms Mean Std. Dev. (n=1,466)	Other Audit firms Mean Std. Dev. (n=1,451)	Difference in Means (*t*-statistic)
$ABSDA_t$	0.144	0.158	0.129	0.029***
	(0.185)	(0.203)	(0.164)	(4.239)
$ABSPDA_t$	0.137	0.150	0.125	0.025***
	(0.201)	(0.223)	(0.175)	(3.405)
$SIZE_t$	4.062	4.055	4.069	−0.014
	(1.302)	(1.249)	(1.354)	(−0.287)
$ATURN_t$	1.271	1.267	1.275	−0.008
	(1.016)	(1.037)	(0.995)	(−0.218)
LEV_t	0.214	0.223	0.205	0.018
	(0.338)	(0.308)	(0.366)	(1.437)
$CURR_t$	0.599	0.600	0.599	0.001
	(0.246)	(0.249)	(0.243)	(0.116)
$QUICK_t$	2.645	2.668	2.622	0.046
	(3.085)	(3.193)	(2.973)	(0.401)
ROA_t	-0.220	-0.274	-0.164	0.110
	(2.677)	(3.715)	(0.678)	(1.107)
$RISKIND_t$	0.419	0.431	0.407	0.024
	(0.493)	(0.495)	(0.491)	(1.340)
MVE_{t-1}	1.572	1.214	1.934	−0.720
	(3.377)	(1.941)	(4.344)	(−5.787)***
ROA_t	-0.220	-0.274	-0.164	−0.110
	(2.677)	(3.715)	(0.678)	(−1.107)
MTB_{t-1}	2.732	2.621	2.843	−0.221
	(5.959)	(6.182)	(5.725)	(−1.003)

*, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively.

Variable Definitions:
$ABSDA_t$ = absolute values of discretionary accruals estimated from equation (2);
$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year

performance;
$SIZE_t$ = logarithm of total assets;
$ATURN_t$ = asset turnover, calculated as sales divided by total sales;
LEV_t = total debt divided by total assets;
$CURR_t$ = current assets divided by total assets;
$QUICK_t$ = current assets minus inventory divided by current liabilities;
ROA_t = income before extraordinary items divided by beginning-of-year assets;
$RISKIND_t$ = a dummy variable equal to one if the firm operates within a high-litigation industry and 0 otherwise, where high-litigation industries are industries with SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7370–7374.
MVE_{t-1} = the market value of equity at the beginning of year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio at the beginning of year t;

I report the correlation between all variables in Table 2 (values at the 1 percent significance level are in bold). *Big4* is negatively correlated with *ABSDA*, which suggests large accounting firms have higher ability to constrain managers' opportunistic behavior. In contrast, the univariate results show that the small audit firms indicator, *SMALL*, is positively correlated with *ABSDA* (*ABSPDA*). This suggests that firms hiring small audit firms are more likely to engage in accrual-based earnings management. The correlation between *Big4* and *SMALL* is less than one since not all non-Big 4 auditors are small. *ABSDA* is also significantly positively correlated with leverage (*LEV*), and the high-litigation industry dummy variable (*RISKIND*). *ABSDA* is significantly negatively correlated with firm size (*SIZE*), *ROA*, the quick ratio, and the market value of equity (*MVE*). The correlation between *ABSDA* and the ratio of current assets to total assets (*CURR*) and the market-to-book ratio (*MTB*) is positive, but is not significant. Finally, *SMALL* is negatively correlated with the market value of equity at the beginning of the year. The

rest of the correlations are insignificantly correlated with *SMALL* (with the exception of *ABSDA*, which was mentioned above).

Table 3 reports the result from the audit choice model described in equation (1). As expected, the coefficient on *SIZE* is significantly negative (−0.649, *P*-value < 1%), which suggests that smaller companies tend to choose small audit firms. In addition, I find that firms with higher asset turnover, lower current ratios, or higher quick ratios are more likely to hire the small audit firms. However, leverage (*LEV*) and firm performance (*ROA*) are not significantly correlated with the probability of hiring small audit firms. Finally, the probability of choosing a small audit firm is significantly lower for firms in riskier industries.

TABLE 2

Correlation Matrix

		1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1.	$ABSDA_t$	1											
2.	$ABSPDA_t$	**0.904**	1										
3.	$SMALL_t$	**0.078**	**0.063**	1									
4.	$Big4_t$	**−0.087**	**−0.069**	**−0.744**	1								
5.	$SIZE_t$	**−0.250**	**−0.242**	−0.005	**0.086**	1							
6.	$ATURN_t$	0.036	0.032	−0.004	−0.041	0.026	1						
7.	LEV_t	**0.215**	**0.183**	0.027	**−0.071**	**−0.128**	−0.002	1					
8.	$CURR_t$	0.027	0.034	0.002	0.007	**−0.291**	**0.145**	**−0.215**	1				
9.	$QUICK_t$	**−0.095**	**−0.070**	0.007	0.028	0.002	**−0.290**	**−0.292**	**0.354**	1			
10.	ROA_t	**−0.256**	**−0.277**	−0.021	0.016	0.097	0.033	−0.045	−0.005	0.022	1		
11.	$RISKIND_t$	**0.081**	**0.096**	0.025	−0.023	**−0.210**	**−0.130**	−0.045	**0.185**	**0.125**	**−0.064**	1	
12.	MVE_{t-1}	**−0.090**	**−0.092**	**−0.107**	**0.155**	**0.491**	**−0.059**	**−0.064**	**−0.103**	**0.055**	0.029	**−0.054**	1
13.	MTB_{t-1}	−0.020	−0.020	−0.019	0.001	−0.017	−0.038	**−0.114**	**0.058**	**0.113**	0.019	0.025	**0.125**

The statistics reported in this Table are based on Pearson correlations. Values displayed in bold are significant at the 0.01 significance level. All variables are winsorized at 1st and 99th percentiles of their distributions. Variable definitions are in Table 1.

TABLE 3

Auditor Choice of Small Audit Firms

	$SMALL_t$
Intercept	2.503***
	(22.08)
$SIZE_t$	−0.649***
	(−64.71)
$ATURN_t$	0.120***
	(8.32)
LEV_t	−0.035
	(−0.98)
$CURR_t$	−0.951***
	(−13.40)
$QUICK_t$	0.011**
	(2.06)
ROA_t	−0.001
	(−0.22)
$RISKIND_t$	−0.204***
	(−4.63)
Year Dummies	Included
Industry Dummies	Included
N	26,428
Pseudo R^2	0.420

The table presents the results of a probit regression of the determinants of small auditor choice based on the pooled sample from 2001−2009. *SIZE, ATURN, LEV, CURR, QUICK,* and *ROA* are winsorized at the top and bottom 1st and 99th percentiles of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. The *z*-values are shown in parentheses.

Variable definitions:

$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;

$SIZE_t$ = logarithm of total assets;

$ATURN_t$ = asset turnover, calculated as sales divided by total sales;

LEV_t = total debt divided by total assets;

$CURR_t$ = current assets divided by total assets;
$QUICK_t$ = current assets minus inventory divided by current liabilities;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
$RISKIND_t$ = a dummy variable equal to one if the firm operates within a high-litigation industry and 0 otherwise, where high-litigation industries are industries with SIC codes of 2833–2836, 3570–3577, 3600–3674, 5200–5961, 7370–7374.

Chapter 4 Empirical Results

I report the empirical findings in this Charter. Section 4.1 reports the result of tests of the first hypothesis. Section 4.2 describes the result of tests of the second hypothesis. I further report some robustness check regarding auditor competition, the definition of small audit firms, exiting auditors, the use of different audit quality measure, different matching procedures, and economic dependence in section 4.3 – 4.8.

4.1 Earnings Management and Small Audit Firms

For the first hypothesis, I use discretionary accruals and real earnings manipulations as the proxies for earnings management.

Discretionary Accruals

Table 4 reports the result of tests using the propensity-score matched sample. In the univariate result, the coefficient on *SMALL* is significantly positive (*P*-value < 1%) when the absolute value of discretionary accruals is the dependent variable, which suggests that firms hiring small audit firms engage in a higher level of accruals management. When I partition the sample into positive and negative discretionary accruals separately, the coefficient on *SMALL* is

TABLE 4

The Association between Small Audit Firms and Discretionary Accruals: Propensity-score Matched Sample

	$ABSDA_t$	Pos_DA_t	Neg_DA_t	$ABSDA_t$	$PosDA_t$	$NegDA_t$	$ABSPDA_t$	$PosPDA_t$	$NegPDA_t$
Intercept	0.073***	0.087***	−0.054**	0.080***	0.091***	−0.073***	0.085***	0.116***	−0.056***
	(4.96)	(3.63)	(−2.43)	(6.24)	(3.79)	(−3.71)	(7.27)	(3.50)	(−3.18)
$SMALL_t$	0.028***	0.025***	−0.034***	0.023***	0.020**	−0.023***	0.019***	0.014*	−0.023***
	(7.38)	(3.32)	(−4.73)	(5.61)	(2.20)	(−3.78)	(3.54)	(1.75)	(−3.36)
MVE_{t-1}				−0.004***	−0.003***	0.009***	−0.005***	−0.007***	0.005**
				(−3.02)	(−2.70)	(5.74)	(−2.81)	(−4.89)	(2.18)
ROA_t				−0.017*	0.053	0.017*	−0.020**	0.035	0.020**
				(−1.89)	(0.97)	(1.82)	(−2.15)	(0.62)	(2.03)
MTB_{t-1}				−0.000	0.000	0.001	−0.000	−0.000	−0.000
				(−0.39)	(0.10)	(0.48)	(−0.48)	(−0.33)	(−0.18)
Year fixed effect	Included	Included	Included	Included	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included	Included	Included	Included	Included
N	2,917	1,503	1,414	2,917	1,503	1,414	2,917	1,484	1,433
Adj. R^2	0.047	0.048	0.069	0.114	0.075	0.157	0.118	0.055	0.167

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1st and 99th percentiles of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. Reported *t*-statistics in the parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

$ABSDA_t$ = absolute values of discretionary accruals estimated from equation (2);
$PosDA_t$ = positive values of discretionary accruals estimated from equation (2);
$NegDA_t$ = negative values of discretionary accruals estimated from equation (2);
$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year performance;
$PosPDA_t$ = positive values of discretionary accruals adjusted for prior year performance;
$NegPDA_t$ = negative values of discretionary accruals adjusted for prior year performance;
$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;
MVE_{t-1} = the market value of equity at the beginning of year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio at the beginning of year t;

still significant for either the positive accruals or the negative accruals. In the multivariate analysis, the result is qualitatively the same. The coefficient on *SMALL* is significantly positive (*P*-value < 1%) when the absolute value of modified Jones model discretionary accruals or performance-matched discretionary accruals is the dependent variable. The coefficient on *SMALL* is still significant on positive or negative accruals when I partition the sample into positive vs. negative accruals, either for modified Jones model discretionary accruals or for performance-matched discretionary accruals. Overall, the results suggest that small audit firms are less likely to constrain managers' ability to engage in accruals management.

For the control variables, I find that the coefficient on MVE_{t-1} is significantly negative when the dependent variable is the absolute value of modified Jones model abnormal accruals (performance-adjusted abnormal accruals). When the results are broken down for positive and

negative discretionary accruals, I find that the coefficient on MVE_{t-1} is significantly negatively (positively) associated with positive (negative) discretionary accruals. All of these results are consistent with firms having lower levels of discretionary accruals as firm size increases (consistent with prior research, e.g., Cohen et al. 2008). I also find that ROA_t is significantly and negatively associated with the absolute value of abnormal accruals (either $ABSDA_t$ or $ABSPDA_t$). This result appears to be driven by significantly positive coefficients on ROA_t when the dependent variable is negative abnormal accruals (either $ABSDA_t$ or $ABSPDA_t$). Finally, the market-to-book ratio is not significant in the results.[8]

Real Earnings Manipulations

Managers may take real economic actions to affect reported earnings if the sacrifices are not too large (Bruns and Merchant 1990; Graham et al. 2005). Such real earnings management, however, is potentially more costly to shareholders in the long run. Roychowdhury (2006) indicates that managers cannot rely on accrual management alone if the gap between the actual unmanaged earnings and targeted reported earnings is too large. In addition, the manipulation of accruals is more likely to draw scrutiny by auditors and regulators than real actions such as

[8] In a sensitivity analysis, I include cash flows from operation as a control variable because cash flows are negatively associated with accruals. I find that the results are qualitatively the same except for the negative accruals.

changes in pricing and production. Therefore, managers may conduct earnings management in the form of real activities manipulation in order to lower the probability of being detected. Consistent with this view, Zang (2012) documents managers engage in real activities manipulation before accrual-based earnings management, and that these two types of earnings management are substitutes.

Firms may also switch from accrual-based earnings management to real earnings management when opportunities to manage accruals are constrained. Ewert and Wagenhofer (2005) analytically demonstrate that the level of real earnings management increases with tightening accounting standards. Cohen et al. (2008) present evidence that managers switch from accrual management to real earnings management after the passage of the Sarbanes-Oxley Act, suggesting that managers tend to engage in real earnings management when the legal environment becomes increasingly strict. Chi et al. (2011) document that firms resort to higher levels of real earnings management when they have strong incentives to manage earnings in the presence of higher quality auditors, where audit quality is measured by city level auditor industry expertise or the use of Big 4 auditors.

In this section, I analyze whether the level of real earnings management is associated with the use of small audit firms. Following prior literature on real earnings management (Roychowdhury 2006, Cohen et al. 2008, Gunny 2010), I compute three types of real earnings management: sales manipulation, overproduction, and a reduction of discretionary expenditures. Sales manipulation

refers to managers' attempts to increase sales volumes temporarily by offering increased price discounts or more lenient credit terms. This type of manipulation can boost current period earnings, but it produces lower current period cash flows. Overproduction occurs when managers produce more goods than necessary in order to meet expected demand. Producing more units decreases fixed overhead costs per unit, and hence reduces the cost of goods sold as long as the marginal cost per unit does not exceed the reduction in fixed costs per unit. Therefore, this type of manipulation leads to higher operating margins. Finally, the reduction of discretionary expenditures includes advertising, R&D, and SG&A expenses. This type of manipulation can boost earnings in the current period.

Based on Roychowdhury (2006), I use the abnormal levels of cash flow from operations (CFO), production costs, and discretionary expenses as proxies for real earnings management. To estimate abnormal levels of CFO, production costs, and discretionary expenses, I first estimate their normal levels using the model developed by Dechow et al. (1998), as implemented by Roychowdhury (2006). Specifically, I run the following three regressions for each industry and year:[9]

$$\frac{CFO_{it}}{TA_{i,t-1}} = a_{1t}\frac{1}{TA_{i,t-1}} + a_{2t}\frac{Sales_{i,t}}{TA_{i,t-1}} + a_{3t}\frac{\Delta Sales_{i,t}}{TA_{i,t-1}} + \varepsilon_{it}, \qquad (4)$$

[9] Industry-years with fewer than 15 observations are eliminated from the sample. All variables are winsorized at the top and bottom 1st and 99th percentiles of their respective distributions before the estimation to mitigate the influence of outlying observations.

$$\frac{PROD_{it}}{TA_{i,t-1}} = b_{1t}\frac{1}{TA_{i,t-1}} + b_{2t}\frac{Sales_{i,t}}{TA_{i,t-1}} + b_{3t}\frac{\Delta Sales_{i,t}}{TA_{i,t-1}} + b_{4t}\frac{\Delta Sales_{i,t-1}}{TA_{i,t-1}} + e_{it}, \quad (5)$$

$$\frac{\mathrm{DISX_{it}}}{\mathrm{TA_{i,t-1}}} = \mathrm{c_{1t}}\frac{1}{\mathrm{TA_{i,t-1}}} + \mathrm{c_{2t}}\frac{\mathrm{Sales_{i,t-1}}}{\mathrm{TA_{i,t-1}}} + \mathrm{v_{it}}, \quad (6)$$

where *CFO* is cash flows from operating activities, *PROD* is sum of the cost of goods sold and the change in inventory in year t, and *DISX* is the sum of advertising expenses, R&D expenses, and SG&A expenses. Then I calculate the abnormal level of CFO (*ABN_CFO*) as the residuals from regression (4), the abnormal level of production costs (*ABN_PROD*) as the residuals from regression (5), and the abnormal level of discretionary expenses (*ABN_DISX*) as the residuals from regression (6). I then create a comprehensive measure of real earnings management by combining the three individual measures based on Cohen et al. (2008)'s methodology. Specifically, I compute *RM* as the sum of the three standardized individual components, that is, – standardized *ABN_CFO* + standardized *ABN_PROD* – standardized *ABN_DISX*. Higher levels of *RM* indicate higher levels of overall real earnings management.

Table 5 presents the results of the effect of small audit firms on real earnings management. The coefficients on *SMALL* are insignificantly different from zero for the matched sample both with and without additional controls in the model, which suggests that firms hiring small audit firms do not engage in a higher level of real earnings management. Taken together, these findings suggest either that real earnings management is not related to the use of small audit

TABLE 5

The Association between the Small Audit Firms and Real Earnings Management

	RM_t	RM_t
Intercept	−0.167	−0.094
	(−1.00)	(−0.53)
$SMALL_t$	0.170	0.138
	(1.35)	(1.05)
MVE_{t-1}		−0.006
		(−0.51)
ROA_t		−0.311***
		(−2.70)
MTB_{t-1}		−0.015*
		(−1.71)
Year fixed effect	Included	Included
Industry fixed effect	Included	Included
N	2,168	2,083
Adj. R^2	0.084	0.109

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1st and 99th percentiles to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. Reported *t*-statistics in parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;

REM = real earnings management measures based on Roychowdury (2006) and Cohen et al. (2008), which includes *ABN_CFO*, *ABN_PROD*, *ABN_DISX*, and *RM* defined below;

ABN_CFO_t = abnormal cash flows (negative measure of real earnings management);

ABN_PROD_t = abnormal inventory over-production (positive measure of real earnings management);

ABN_DISX_t = abnormal discretionary expenses (negative measure of real earnings management);

RM_t = – standardized *ABN_CFO* + standardized *ABN_PROD* – standardized *ABN_DISX* (positive composite score of real earnings management).

Standardized measure for each variable = [variable – mean(variable)] / standard deviation(variable);
MVE_{t-1} = the market value of equity at the beginning of year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio at the beginning of year t.

firms or that the clients of small audit firms prefer to engage in accrual-based accruals management (which is presumably less costly).

The main finding in this section is that the use of small audit firms is significantly associated with accruals management but not real earnings management. One explanation is that managers tend to do more accruals management, compared with real earnings management, when they are not restricted from doing so because accruals management and real earnings management can be substitutes. Previous studies suggest that the presence of more stringent litigation and regulatory regime may drive firms to real earnings management (Cohen et al. 2008; Zang 2012; Chi et al. 2012). Therefore, when managers have more room to engage in accruals management, there is no need for them to engage in other types of earnings management such as real earnings manipulations. The other explanation is that auditors have limited impact on opportunistic real earnings manipulations behavior because these manipulations usually involve operational adjustments based on optimal business decisions, and firms are not violating existing GAAP when they use real earnings manipulations. Therefore, it is difficult for auditors to identify real earnings manipulations.

4.2 Auditor Switches

To test H2, I select a sample of firms switching from small audit firms to larger audit firms. Since there are not many firm-year observations, I report the univariate results in Table 6.

For firms that switch from small auditors to larger auditors (Big 4 auditors or other non-Big 4 auditors), I examine the effect on the mean change in the absolute value of abnormal accruals, the mean change in the absolute value of performance-matched discretionary accruals, and the mean change in real earnings management. The results are reported in Table 6. Since there are few instances where firms in my sample switch up from the small audit firms, I report the results for tests using only 56 observations in Table 6, which means that the tests reported in Table 6 lack power. Even with the small number of observations, I find that the mean difference for $ABSDA_t$ is significantly negative (−0.040, *P*-value = 0.0342) when firms switch from the small auditors to larger auditors using a one-sided test. In addition, the mean difference for $ABSPDA_t$ is negative (−0.032, *P*-value = 0.1188) and the mean difference for RM_t is also negative (−0.373, *P*-value = 0.0547). Although the mean differences for $ABSPDA_t$ and RM_t are not significant at conventional levels, they are near the cut-offs for significance.

Overall, the results reported in Table 6 suggest that switches from the small audit firms to larger audit firms are associated with reductions in earnings management (although these tests lack power due to the small number of upward switches). These results are consistent with larger auditors having a stronger monitoring effect on earnings management, and thus, the switch

TABLE 6

Mean Differences for Firms Switching Auditors from Small to Larger Auditors

Change in mean values from −1 to +1 (*t*-value)	Switches up (n=56)
$ABSDA_t$	−0.040*
	(−1.86)
$ABSPDA_t$	−0.032
	(−1.19)
RM_t	−0.373
	(−1.63)

t-statistics for the differences in means are from one-tailed *t*-tests of the null hypothesis that the mean difference equals zero. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (one-sided), respectively.

Variable Definitions:

$ABSDA_t$ = absolute values of discretionary accruals estimated from equation (2);

$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year performance;

REM_t = real earnings management measures based on Roychowdury (2006) and Cohen et al. (2008), which includes *ABN_CFO*, *ABN_PROD*, *ABN_DISX*, and *RM* defined below;

ABN_CFO_t = abnormal cash flows (negative measure of real earnings management);

ABN_PROD_t = abnormal inventory over-production (positive measure of real earnings management);

ABN_DISX_t = abnormal discretionary expenses (negative measure of real earnings management); and

RM_t = – standardized *ABN_CFO* + standardized *ABN_PROD* – standardized *ABN_DISX* (positive composite score of real earnings management). Standardized measure for each variable = [variable – mean(variable)] / standard deviation(variable).

causing a decrease in accrual-based and real earnings management. The strongest impact of moving up to a larger auditor appears to be when earnings management is accomplished through discretionary accruals, but I do find evidence of reduction in real earnings management as well (although it is weaker).

4.3 Auditor Competition

Auditor competition in different industries across small audit firms may affect their ability to constrain managers' earnings management behavior. Therefore, I examine whether the finding of worse quality supplied by small audit firms is driven by auditor competition in this section.

Auditor Competition among Industries

To measure auditor competition in different industries, I calculate a Herfindahl index as the sum of the squares of the ratios of each audit firm's size to the total size of the audit market for each industry-year, where industries are defined by 2-digit SIC codes. In other words, the Herfindahl index $H = \sum_{i=1}^{N}(s_i / S)^2$, where N is the total number of audit firms in the industry, s_i is the size of audit firm *i*, and S is the total size of the audit market in the industry. The size of each audit firm is defined as the total audit fees earned from audit clients listed in the *Audit*

Analytics database. If there are four audit firms in the audit market with equal market shares in one industry-year, the Herfindahl index will have a value of 0.25. If there is only one audit firm in the industry-year, the Herfindahl index will have a value of one. The value of the Herfindahl index falls between zero and one, where a value of zero indicates a completely competitive market and a value of one represents an oligopoly market. The audit market is more competitive when the value of the Herfindahl index is lower.

I then split the propensity score matched sample by the median of the Herfindahl indexes for each industry-year in my propensity-score matched sample and report the result in Table 7. Column (1) of Table 7 shows the relationship between discretionary accruals (*ABSDA* or *ABSPDA*) and the use of small audit firms for firm-year observations below median Herfindahl indexes. The coefficient on *SMALL* is significantly positive when the dependent variable is either *ABSDA* or *ABSPDA*, which means that a higher level of earnings management is positively associated with the use of small audit firms in more competitive industries. Column (2) of Table 7 presents the result for firm-year observations above median Herfindahl indexes. The coefficient on *SMALL* is still significantly positive when the dependent variable is either *ABSDA* or *ABSPDA*, which suggests that the positive association between accruals earnings management and the use of small audit firms still exists in less competitive industries. Taken together, firms using small audit firms have higher level of accruals management, no matter how competitive the industries they are in.

TABLE 7

Industry Competition and the Association between Small Audit firms and Discretionary Accruals

Herfindahl index	**Below median**		**Above median**	
	$ABSDA_t$	$ABSPDA_t$	$ABSDA_t$	$ABSPDA_t$
Intercept	0.085***	0.090***	0.075***	0.078***
	(7.10)	(4.40)	(3.25)	(8.25)
$SMALL_t$	0.015**	0.020**	0.029***	0.014*
	(2.31)	(2.37)	(4.39)	(1.85)
MVE_{t-1}	-0.004**	-0.005***	-0.004***	-0.004**
	(-2.29)	(-3.60)	(-3.25)	(-2.16)
ROA_t	-0.012***	-0.097***	-0.088***	-0.015***
	(-2.76)	(-8.40)	(-8.63)	(-3.31)
MTB_{t-1}	0.000	0.001	0.000	-0.001
	(-0.17)	(0.53)	(-0.20)	(-0.79)
Year fixed effect	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included
N	1,563	1,563	1,354	1,354
Adj. R^2	0.276	0.257	0.137	0.159

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1% of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.05, 0.01, and 0.001 levels (two-sided), respectively. Reported *t*-statistics in parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

ABSDAt = absolute values of discretionary accruals estimated from equation (2);
ABSPDAt = absolute values of discretionary accruals adjusted for prior year performance;
$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;
MVE_{t-1} = the market value of equity at the beginning of the year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio in year t-1.

Auditor Competition and Clientele Effect

The GAO's (2008) report indicates that the small public company audit market is much less concentrated than for larger companies. Especially, the auditor choices of most large public companies are limited to three or four audit firms. In other words, small public companies have more choices regarding the selection of their auditors, while large public companies have limited auditor selection choices. This suggests that the audit market for small public company may be more competitive, when compared with the audit market for large public firms.

I examine this issue by partitioning my propensity score matched sample into small public clients and large public clients for each industry-year grouping. For firm-year observations with less sales revenue than the median sales revenue in one industry-year group, they are classified as small clients. The result is reported in Table 8. In the first column of Table 8, the result shows that the association between *ABSDA* (*ABSPDA*) and *SMALL* is significantly positive (p-value <0.01), which means that small audit firms are associated with a higher level of accruals management of their clients when their clients are small public clients. This suggests that auditor competition is higher in the small public clients audit market, which leads to the lower ability of small audit firms to constrain accruals management behavior by their clients.

The second column of Table 8 presents the result for large public clients of my propensity score matched sample. The coefficient on SMALL is still significantly positive when the dependent variable is *ABSDA* (p-value <0.05); yet it is not significant when the dependent

TABLE 8

Audit Market for Small Public Clients and Large Public Clients

Client Size	Small Public Clients		Large Public Clients	
	$ABSDA_t$	$ABSPDA_t$	$ABSDA_t$	$ABSPDA_t$
Intercept	0.085***	0.091***	0.068***	0.070***
	(4.16)	(4.42)	(5.22)	(3.46)
$SMALL_t$	0.034***	0.030***	0.019**	0.014
	(4.75)	(3.34)	(2.53)	(1.51)
MVE_{t-1}	-0.013***	-0.015***	-0.003***	-0.003***
	(-3.64)	(-3.98)	(-2.75)	(-2.66)
ROA_t	-0.015*	-0.018**	-0.051***	-0.064***
	(-1.95)	(-2.27)	(-3.90)	(-3.97)
MTB_{t-1}	-0.001	-0.001	0.002***	0.001
	(-0.99)	(-0.83)	(3.66)	(1.64)
Year fixed effect	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included
N	1,475	1,475	1,442	1,442
Adj. R^2	0.149	0.153	0.099	0.108

Client size is based on sales revenue of the client. The full sample is the Propensity-Score Matched Sample defined in Table 1. *MVE*, *ROA*, *MTB*, and all dependent variables are winsorized at the top and bottom 1% of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.05, 0.01, and 0.001 levels (two-sided), respectively. Reported *t*-statistics in parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

ABSDAt = absolute values of discretionary accruals estimated from equation (2);
ABSPDAt = absolute values of discretionary accruals adjusted for prior year performance;
$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;
MVE_{t-1} = the market value of equity at the beginning of the year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio in year t-1.

variable is *ABSPDA*. This implies that the positive association between accruals management and the use of small audit firms still holds for large clients to some extent, although it is not as significant as in the small client audit market.

4.4 Size of small audit firms

Definition of small audit firms: Different Thresholds

To ensure these results are not affected by the definition of smaller audit firms, I use different thresholds to define smaller audit firms: that is, audit firms with fewer than 30 clients or 50 clients. I first identify these audit firms and then perform the propensity-score matching procedure to collect their respective control firms. The result is reported in Table 9. In Panel A, the coefficients for *SMALL* for both absolute abnormal accruals and absolute performance-adjusted accruals are significantly positive, which suggests that the positive association between accruals management and using smaller audit firms holds for audit firms with fewer than 30 clients. When I split the sample into positive accruals and negative accruals, only the coefficient of *SMALL* for negative performance-adjusted accruals is insignificant (*SMALL* remains significant for positive and negative abnormal accruals and for positive performance-adjusted accruals). In Panel B, the coefficients for *SMALL* for absolute accruals, using either the modified Jones model abnormal accruals or performance-adjusted abnormal accruals, are all significantly positive. This shows that clients of smaller audit firms with fewer than 50 clients engage in a

TABLE 9

Different Thresholds of Small Audit Firms

Panel A: Small = audit firms with fewer than 30 clients

	$ABSDA_t$	$PosDA_t$	$NegDA_t$	$ABSPDA_t$	$PosPDA_t$	$NegPDA_t$
Intercept	0.069***	0.068***	−0.071***	0.074***	0.052***	−0.097***
	(6.30)	(5.67)	(−4.31)	(7.15)	(3.87)	(−3.57)
$SMALL_t$	0.023***	0.024***	−0.017**	0.016**	0.017**	−0.009
	(4.23)	(3.17)	(−2.28)	(2.27)	(2.18)	(−1.01)
MVE_{t-1}	−0.002**	−0.003**	0.002	−0.002**	−0.003**	0.001
	(−2.50)	(−2.03)	(1.33)	(−2.43)	(−2.21)	(0.98)
ROA_t	−0.082***	−0.012	0.109***	−0.092***	−0.034**	0.120***
	(−5.09)	(−0.77)	(4.24)	(−5.68)	(−2.23)	(4.97)
MTB_{t-1}	−0.000	0.001**	0.002	−0.001	0.000	0.002
	(−0.18)	(2.39)	(1.44)	(−1.21)	(0.21)	(1.34)
Year fixed effect	Included	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included	Included
N	2,048	1,052	996	2,048	1,051	997
Adj. R^2	0.201	0.080	0.321	0.206	0.089	0.326

Panel B: Small = audit firms with fewer than 50 clients

	$ABSDA_t$	$PosDA_t$	$NegDA_t$	$ABSPDA_t$	$PosPDA_t$	$NegPDA_t$
Intercept	0.071***	0.062***	−0.075***	0.068***	0.065***	−0.068***
	(5.33)	(21.41)	(−2.61)	(5.17)	(9.43)	(−3.45)
$SMALL_t$	0.032***	0.029***	−0.033***	0.029***	0.025***	−0.031***
	(4.29)	(3.21)	(−3.56)	(3.04)	(2.67)	(−2.88)
MVE_{t-1}	−0.004***	−0.004**	0.005***	−0.004***	−0.004**	0.004***
	(−3.63)	(−2.45)	(3.75)	(−3.14)	(−2.13)	(2.87)
ROA_t	−0.072***	0.014	0.089***	−0.082***	0.005	0.105***
	(−4.83)	(0.83)	(5.75)	(−4.90)	(0.36)	(5.85)
MTB_{t-1}	−0.001**	−0.001**	0.002	−0.002***	−0.003***	0.001
	(−2.04)	(−2.24)	(1.35)	(−2.59)	(−4.64)	(0.73)

Year fixed effect	Included	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included	Included
N	2,800	1,399	1,401	2,800	1,415	1,385
Adj. R^2	0.229	0.076	0.355	0.232	0.067	0.390

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1st and 99th percentiles of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. Reported *t*-statistics in the parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

$ABSDA_t$ = absolute values of discretionary accruals estimated from equation (2);
$PosDA_t$ = positive values of discretionary accruals estimated from equation (2);
$NegDA_t$ = negative values of discretionary accruals estimated from equation (2);
$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year performance;
$PosPDA_t$ = positive values of discretionary accruals adjusted for prior year performance;
$NegPDA_t$ = negative values of discretionary accruals adjusted for prior year performance;
$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;
MVE_{t-1} = the market value of equity at the beginning of year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio at the beginning of year t;

higher level of earnings management than the control group. In addition, the results are not sensitive to the direction of accruals management when I decompose the sample into income-increasing and income-decreasing accruals. Specifically, the coefficients for *SMALL* are significant in the expected direction in both cases.

Number of Clients

Prior studies indicates that Non-Big N auditors have more experience when they have a larger client base (Krishnan & Schauer 2000; Albring, Elder, and Zhou 2007).[10] Therefore, I examine whether the size of the client base would mitigate the positive association with earnings management and the use of small audit firms. Specifically, I test whether a negative association can be found between the size of audit firms client base (AUDSIZE, the number of clients an auditor has) and accruals management for a sample of small audit firms. I use both the full sample and the propensity-score matched sample to examine this issue. The result is reported in Table 10.

As reported in Table 10, the coefficient on AUDSIZE is significantly negative when the dependent variable is either performance adjusted discretionary accruals or modified Jones discretionary accruals using the full sample. When I use the propensity-score matched sample to examine the relationship, the result is qualitatively the same. This suggests that small audit firms gain more experience when they have a larger client base and this may enhance their ability to constrain accruals management behavior. These results are also consistent with small audit firms (as defined previously) being associated with earnings management.

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[10] It is not possible to measure the specialists for small audit firms in the traditional way since they usually have relatively small market share in an industry.

TABLE 10

Sensitivity based on Audit Firm Size

	Full Sample (Small=1)		Propensity Score Matched Sample (Small=1)	
	(1)	(2)	(3)	(4)
	$ABSDA_t$	$ABSPDA_t$	$ABSDA_t$	$ABSPDA_t$
Intercept	0.111***	0.113***	0.093***	0.096***
	(5.88)	(6.82)	(5.27)	(6.05)
$AUDSIZE_t$	-0.001**	-0.001*	-0.001**	-0.001*
	(-2.03)	(-1.71)	(-2.05)	(-1.78)
MVE_{t-1}	-0.023***	-0.027***	-0.012***	-0.013***
	(-6.40)	(-6.25)	(-4.55)	(-4.70)
ROA_t	-0.010**	-0.012**	-0.014**	-0.016**
	(-2.19)	(-2.29)	(-2.14)	(-2.46)
MTB_{t-1}	-0.001	-0.001	0.001	0.001
	(-1.13)	(-1.15)	(1.02)	(1.10)
Year Fixed Effect	Included	Included	Included	Included
Industry Fixed Effect	Included	Included	Included	Included
N	4,413	4,413	1,466	1,466
Adj. R^2	0.121	0.121	0.155	0.161

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1% of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. Reported *t*-statistics in the parentheses are based on robust standard errors clustered by firm. All firm-year observations are clients of small audit firms.

Variable Definitions:

$ABSDA_t$ = absolute values of discretionary accruals estimated from equation (2);
$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year performance;
$AUDSIZE_t$ = the number of clients of an audit firm;
MVE_{t-1} = the market value of equity at the beginning of the year t;
ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio in year t;

4.5 Exiting Auditors

DeFond and Lennox (2011) document that compared to non-exiting auditors, auditors who exited the market following SOX are lower quality auditors. To examine whether these results are driven by exiting small auditors, I exclude all exiting auditors and re-run the tests. I define exiting small auditors as those who were not registered with PCAOB in 2010 and I use the PCAOB's list of audit firm name changes as a supplement in case that an audit firm is classified as an exiting auditor if it has changed its name only. In the final sample of small audit firms (1,524 firm-year observations), there are 254 small audit firms (1,158 firm-year observations) and 92 of them are exiting auditors as defined above (366 firm-year observations). I examine the relation between the use of small audit firms and earnings management after including a dummy variable for these 92 exiting audit firms and report the result in Table 11.

In Table 11, the coefficients on *SMALL* are all significantly different from zero across the different earnings management measures (absolute or raw values of accruals and real earnings management measure), which suggests that firms using the small audit firms engage in a higher level of accruals or real earnings management. The coefficients on the dummy variable for exiting auditors are not significant. In addition, the significance of the coefficients on the control

TABLE 11

The Association between Small Audit Firms and Earnings Management: Controlling for Exiting Auditors

	$ABSDA_t$	$PosDA_t$	$NegDA_t$	$ABSPDA_t$	$PosPDA_t$	$NegPDA_t$	RM
Intercept	0.079***	0.092***	−0.071***	0.084***	0.116***	−0.053***	0.262**
	(6.40)	(3.84)	(−3.38)	(7.57)	(3.48)	(−2.84)	(2.08)
$SMALL_t$	0.021***	0.020**	−0.018***	0.017***	0.015*	−0.018**	0.192*
	(4.52)	(2.30)	(−2.74)	(2.69)	(1.93)	(−2.08)	(1.78)
$EXITAUD_t$	0.018	−0.006	−0.032	0.011	−0.012	−0.030	-0.161
	(1.12)	(−0.42)	(−1.61)	(0.50)	(−0.98)	(−0.89)	(-1.15)
MVE_{t-1}	−0.004***	−0.003***	0.009***	−0.005***	−0.007***	0.005**	-0.050***
	(−3.04)	(−2.74)	(5.82)	(−2.82)	(−4.87)	(2.20)	(-3.84)
ROA_t	−0.017*	0.053	0.016*	−0.020**	0.035	0.020**	-0.066**
	(−1.87)	(0.97)	(1.79)	(−2.14)	(0.62)	(2.01)	(-2.02)
MTB_{t-1}	−0.000	0.000	0.001	−0.000	−0.000	−0.000	-0.007
	(−0.36)	(0.08)	(0.47)	(−0.46)	(−0.35)	(−0.20)	(-0.58)
Year fixed effect	Included	Included	Included	Included	Included	Included	Included
Industry fixed effect	Included	Included	Included	Included	Included	Included	Included
N	2,917	1,503	1,414	2,917	1,484	1,433	2,850
Adj. R^2	0.114	0.075	0.158	0.118	0.056	0.168	0.068

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1st and 99th percentiles of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. Reported *t*-statistics in the parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

$ABSDA_t$	=	absolute values of discretionary accruals estimated from equation (2);
Pos_DA_t	=	positive values of discretionary accruals estimated from equation (2);
Neg_DA_t	=	negative values of discretionary accruals estimated from equation (2);
$ABSPDA_t$	=	absolute values of discretionary accruals adjusted for prior year performance;
$PosPDA_t$	=	positive values of discretionary accruals adjusted for prior year performance;
$NegPDA_t$	=	negative values of discretionary accruals adjusted for prior year performance;
$SMALL_t$	=	a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;
$EXITAUD_t$	=	a dummy variable equal to one if the audit firm's name does not appear on the PCAOB's list of registered audit firms in 2010;
MVE_{t-1}	=	the market value of equity at the beginning of year t;
ROA_t	=	income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1}	=	market-to-book ratio at the beginning of year t.

variables is consistent with that observed in prior tests. All in all, the result shows that the conclusion of a higher level of earnings management with the use of small audit firms is not sensitive to firms that exited the market following SOX.

4.6 Different Audit Quality Measure

In this section, I use different measure of audit quality to examine the relationship between audit quality and the use of small audit firms – the accruals quality measure developed by Dechow and Dichev (2002) as implemented by Francis et al. (2005). Specifically, I calculate the accruals quality measure using the following equation for each of Fama and French's (1997) 48 industry groups (for ease of exposition, firm subscripts are suppressed):

$$TCA_t = \beta_0 + \beta_1 CFO_{t-1} + \beta 2\ CFO_t + \beta 3\ CFO_{t+1} + \beta 4\ \Delta REV_t + \beta 5\ PPE_t + u_t, \quad (7)$$

where TCA_t is a firm's total accruals in year *t*, CFO_t is a firm's cash flow from operations in year *t*, ΔREV_t is a firm's total accruals in year *t*, and PPE_t is a firm's gross value of property, plant, and equipment in year *t*. Total accruals is calculated as $TCA_t = \Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STDEBT_t - DEPN_t$. ΔCA_t is a firm's change in current assets between year $t-1$ and year *t*, ΔCL_t is a firm's change in current liabilities between year $t-1$ and year *t*, $\Delta Cash_t$ is a firm's change in current liabilities between year $t-1$ and year *t*, $\Delta STDEBT_t$ is a firm's change in debt in current liabilities between year $t-1$ and year *t*, and $DEPN_t$ is a firm's depreciation and amortization expense in year *t*. CFO_t is defined as the difference between a firm's net income before extraordinary items and total accruals (TCA) in year *t*. Finally, accruals quality $AQ_t = \sigma(u_t)$, which is equal to the standard deviation of a firm's residuals u_t from equation (7). A higher AQ_t (larger standard deviations of residuals) represents poorer accruals quality.

Similar to Francis et al (2005), I use the following variables as control variables: (1) size, measured as log of total assets (denote as *Size*); (2) cash flow volatility, calculated as the standard deviation of a firms cash flows over the past 10 years (denote as *CVOL*); (3) sales volatility, calculated as the standard deviation of a firms sales revenue over the past 10 years (denote as *SVOL*); (4) operating cycle, calculated as log of the sum of days accounts receivable and days inventory (denote as *LogOC*); and (5) negative earnings, which is a dummy variable equal to one if income before extraordinary items is negative (denote as *NegEarn*). The results are reported in Table 12.

TABLE 12

The Association between Accrual Quality and Small Audit Firms

AQ_t	Including exiting auditors		Excluding exiting auditors	
Intercept	0.054***	0.045***	0.063***	0.064***
	(7.67)	(3.55)	(7.82)	(4.66)
$SMALL_t$	0.011***	0.006*	0.010***	0.005
	(3.46)	(1.77)	(2.92)	(1.56)
$SIZE_t$		-0.008***		-0.009***
		(-5.44)		(-5.47)
$CVOL_t$		0.115***		0.118***
		(5.56)		(5.23)
$SVOL_t$		0.036***		0.036***
		(4.02)		(3.90)
$LogOC_t$		0.000		0.000
		(0.16)		(0.03)
$NEGEARN_t$		0.019***		0.013*
		(2.77)		(1.84)
Year Dummies	Included	Included	Included	Included
Industry Dummies	Included	Included	Included	Included
N	2,201	1,690	2,031	1,564
Pseudo R^2	0.115	0.319	0.117	0.319

The table presents the results of a probit regression of the determinants of small auditor choice based on the pooled sample from 2001-2009. *SIZE, CVOL, SVOL, LogOC,* and *NEGEARN* are winsorized at the top and bottom 1% of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels (two-sided), respectively. The *z*-values are shown in parentheses.

Variable definitions:

AQ_t = standard deviation of firm *j*'s residuals, from years *t*–4 to *t* from annual cross-sectional estimations of the Francis et al. (2005) model;

$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;

$SIZE_t$ = log of assets at the end of the year *t*;

$CVOL_t$ = the standard deviation of a firms cash flows over the past 10 years in year *t*;

$SVOL_t$ = calculated as the standard deviation of a firms sales revenue over the past 10

years in year *t*;
$LogOC_t$ = log of the sum of days accounts receivable and days inventory, which is equal to (360/(Sales/Average AR) + 360/(Cost of Goods Sold)/(Average Inventory)); and
$NEGEARN_t$ = a dummy variable equal to one if income before extraordinary items is less than zero.

I report the result when including exiting auditors and excluding them separately. I found a significantly positive coefficient on *SMALL* when I include exiting auditors, either with or without control variables, which suggests that the use of small audit firms is associated with a higher level of *AQ* (poor accruals quality). When I exclude exiting auditors, I find a significantly positive coefficient on *SMALL* without adding control variables (*p*-value < 1%). Although the coefficient on *SMALL* is not significant based on a two-tailed test when adding control variables, it is significantly positive based on a one-tailed test (*p*-value = 0.059). Overall, I find some evidence that that the use of small audit firms is associated with a higher level of *AQ* (poor accruals quality).

4.7 Different Matching Procedure

Lawrence et al. (2011) find that the audit quality supplied by Big 4 auditors is not significantly different from that of non-Big 4 auditors when they use a propensity score matched sample to control for client characteristics. They treat non-Big 4 auditors as a homogenous group. Instead, this study treats non-Big 4 auditors as a heterogeneous group and shows that small audit

firms provide lower audit quality than Big 4 auditors. To reconcile my results with Lawrence et al. (2011), I use an approach similar to Lawrence et al.'s (2011) procedure to select a propensity score matched sample (Lawrence et al. (2011) matched clients that chose Big 4 auditors, the earlier results in this study are based on a match of clients that use small audit firms). Specifically, I use the following Big 4 auditor choice model to estimate propensity scores and identify a matched sample for Big 4 audit firms:

$$Big4_t = \beta_0 + \beta_1 SIZE_t + \beta_2 LEV_t + \beta_3 ROA_t + \beta_4 ATURN_t + \beta_5 CURR_t + \beta_6 QUICK_t + \beta_7 RISKIND_t + Year\ Fixed\ Effect + Industry\ Fixed\ Effect + u_t, \quad (8)$$

where *Big4* is a variable equal to one if the firm's auditor is a Big 4 auditor and zero otherwise; all other variables are defined in equation (1). I identify 1,254 firm-year observations with the Big 4 auditors and 1,254 firm-year observations with non-Big 4 auditors using this procedure. Of the 1,254 firm-year observations with non-Big 4 auditors, 744 observations use small audit firms and 544 observations use other non-Big 4 auditors (mid-tier auditors). I use absolute values of performance-adjusted discretionary accruals as dependent variable and report the result in Table 13.

In column (1) of Table 13, I compare Big 4 auditors with non-Big 4 auditors to see if the finding in my sample is consistent with Lawrence et al. (2011)'s finding. I find that the coefficient on the Big 4 dummy variable is insignificantly different from zero, which is consistent with Lawrence et al.'s (2011) finding. I then decompose non-Big 4 auditors into mid-

TABLE 13

Different Matching Procedures: Propensity-Score Matched Sample

Dependent Variable: $ABSPDA_t$			
	(1)	(2)	(3)
	Big4 vs. Non-Big4	*Big4 vs. Mid-Tier*	*Big4 vs. Small*
Intercept	0.088***	0.078***	0.095***
	(4.98)	(4.31)	(5.26)
$Big4_t$	-0.015	0.011	-0.031**
	(-1.36)	(0.86)	(-2.42)
MVE_{t-1}	-0.010***	-0.005**	-0.012***
	(-4.07)	(-2.36)	(-3.94)
ROA_t	-0.083***	-0.137***	-0.079***
	(-7.20)	(-6.60)	(-7.24)
MTB_{t-1}	0.001	0.001	0.000
	(0.80)	(0.93)	(0.26)
Year fixed effect	Included	Included	Included
Industry fixed effect	Included	Included	Included
N	2,392	1,676	1,903
Adj. R^2	0.224	0.275	0.228

The sample size is 1,254 firm-year observations with Big 4 auditors and 1,254 firm-year observations with non-Big 4 auditors before adding control variables. Of the 1,254 firm-year observations with non-Big 4 auditors, 744 observations are with small audit firms and 544 observations are with other non-Big 4 auditors (mid-tier auditors). Including control variables in the regression model causes the sample size for each column drop a bit.

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1% of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.10, 0.05, and 0.01 levels (two-sided), respectively. Reported *t*-statistics in the parentheses are based on robust standard errors clustered by firm.

Variable Definitions:

$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year performance;
$Big4_t$ = a dummy variable equal to one if the audit firm is a Big4 auditor and zero otherwise;
MVE_{t-1} = the market value of equity at the beginning of the year t;

ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio in year t;

tier audit firms and small audit firms and report the results in column (2) and column (3) respectively. In column (2) of Table 13, the coefficient on Big4 is insignificantly different from zero, which suggests that there is no difference in absolute values of discretionary accruals between Big 4 auditors and mid-tier auditors. However, column (3) of Table 13 shows that the coefficient on Big4 is significantly negative (−0.031, p-value < 0.05), which means that Big 4 auditors have higher ability to constrain managers' earnings management behavior proxied by absolute values of performance-adjusted discretionary accruals. This implies that the difference in accruals earnings management between Big 4 auditors and non-Big 4 auditors is driven by small audit firms.

4.8 Economic Dependence

DeAngelo (1981) indicates that an auditor's incentive to compromise his independence with respect to a client depends on the relative economic importance of a client in the auditor's client portfolio. The economic importance is measured by the ratio of quasi rents specific to that client divided by the sum of all other quasi rents. In this section I examine whether the economic dependence of the auditors on their clients would have an impact on the relationship between the use of small audit firms and earnings management. If the economic importance of one client

affects the auditor's incentives to compromise his independence, we may observe a higher level of earnings management when the client is economically important in the auditor's portfolio.

Since the quasi rents ratio is unobservable empirically, prior literature uses the ratio of fees from a client divided by the audit firm's total revenues (Lys and Watts 1994; Chung and Kallapur 2003). Thus I use this ratio and the following model to test whether the relationship between the use of small audit firms and earnings management is affected by client importance:

$$ABSPDA_t\ (PosPDA, NegPDA) = \gamma_0 + \gamma_1 SMALL_t + \gamma_2 IMP + \gamma_3 SMALL*IMP + \gamma_4 MVE_{t-1}$$

$$+ \gamma_5 ROA_t + \gamma_6 MTB_{t-1} + Year\ Fixed\ Effect + Industry\ Fixed\ Effect + v_t, \qquad (9)$$

where *IMP* is the ratio of client fees (audit fees and non-audit fees) to the total U.S. revenues of the audit firm, and all other variables were defined previously. The coefficient of interest is γ_3 because it shows how client importance would affect the association between earnings management and the use of small audit firms.

The result is reported in Table 14. Although the coefficients on *SMALL* are all significantly positive, the coefficients on the interaction term of *SMALL* and *IMP* are all insignificantly different from zero, either when I use signed abnormal accruals or unsigned abnormal accruals. Consequently, client importance does not have impact on the level of earnings management for clients of small audit firms. This is consistent with Chung and Kallapur's (2003) finding that client importance is not significantly associated with auditor's ability to constrain earnings management behavior.

TABLE 14

Economic Dependence of Auditors on Their Clients

	$ABSPDA_t$	$PosPDA_t$	$NegPDA_t$
Intercept	0.076***	0.123***	-0.027**
	(3.90)	(3.17)	(-2.18)
$SMALL_t$	0.025***	0.018**	-0.020**
	(4.39)	(2.15)	(-2.39)
IMP_t	1.643	-1.481	-3.416
	(0.69)	(-0.48)	(-1.36)
$SMALL_t*IMP_t$	-1.678	1.452	3.460
	(-0.71)	(0.47)	(1.38)
MVE_{t-1}	-0.003***	-0.006***	0.002**
	(-2.61)	(-4.15)	(2.23)
ROA_t	-0.104***	0.029	0.121***
	(-9.39)	(0.48)	(6.75)
MTB_{t-1}	0.000	-0.001	-0.002
	(-0.26)	(-0.46)	(-1.14)
Year Dummies	Included	Included	Included
Industry Dummies	Included	Included	Included
N	2,609	1,346	1,263
Pseudo R^2	0.259	0.051	0.427

MVE, ROA, MTB, and all dependent variables are winsorized at the top and bottom 1% of their distributions to mitigate the influence of outlying observations. *, ** and *** indicate statistical significance at the 0.05, 0.01, and 0.001 levels (two-sided), respectively. Reported *t*-statistics in parentheses are based on robust standard errors clustered by firm. Exiting auditors are excluded from the sample and analysis.

Variable definitions:

$ABSPDA_t$ = absolute values of discretionary accruals adjusted for prior year performance;

$PosPDA_t$ = positive values of discretionary accruals adjusted for prior year performance;
$NegPDA_t$ = negative values of discretionary accruals adjusted for prior year performance;
$SMALL_t$ = a dummy variable equal to one if the audit firm has fewer than 100 clients and zero otherwise;
IMP_t = the ratio of client fees (audit fees and non-audit fees) to the total U.S. revenues of the audit firm;
MVE_{t-1} = the market value of equity at the beginning of the year t;

ROA_t = income before extraordinary items divided by beginning-of-year assets; and
MTB_{t-1} = market-to-book ratio in year t-1.

Chapter 5 Conclusion

Smaller audit firms have attracted limited attention both in practice and in academic research since PCAOB inspections were implemented. This paper investigates the role of small audit firms on earnings management. Specifically, this paper examines what types of clients choose small audit firms, and whether small audit firms have less ability to constrain managers' opportunistic behavior. I find that the choice of small audit firms is associated with a higher level of earnings manipulation, when measured by accruals management. However, I find no evidence that the use of small audit firms is associated with a higher level of real activities manipulations.

DeAngelo (1981) argues that larger audit firms have "more to lose" if they fail to report a breach. Since DeAngelo (1981) provides theoretical support for audit firm size as a proxy for auditor quality, a large body of research uses larger audit firm size as a surrogate for better audit quality (e.g., Teoh and Wong 1993, Becker et al. 1998; Francis et al. 1999; Francis and Krishnan 1999; Weber and Willenborg 2003; Lennox and Pittman 2010). Nonetheless, some recent studies show that there is no *actual* difference in audit quality between Big 4 auditors and non-Big 4 auditors. Specifically, Lawrence et al. (2011) show that the differences in proxies for audit quality between Big 4 and non-Big 4 auditors are more likely attributable to client characteristics. Further, Boone et al. (2010) show that little evidence exists of a difference in audit quality between Big 4 and second-tier audit firms (using abnormal accruals as a proxy for audit quality).

By investigating a specific group of auditors that are small audit firms, this study extends our understanding of the role of audit firm size in audit quality. I acknowledge that the conclusions may be sensitive to different measures of earnings management. Moreover, I do not know whether this phenomenon is driven by auditor independence issues or a lack of expertise among small audit firms. In addition, I do not know whether the pairing of auditors and clients is initiated by auditors or their clients. Prior auditor change research has been unable to examine auditor resignation and client dismissal separately and, therefore, has focused on the issue as a joint decision (e.g., Nichols and Smith 1983; Francis and Wilson 1988; Shu 2000). Nevertheless, the use of small audit firms deserves more attention given the changes currently reshaping the auditing profession.

References:

Abdel-Khalik, A. R. 1993. Why do private companies demand auditing? A case for organizational loss of control. *Journal of Accounting, Auditing and Finance* 8 (1): 31–52.

Albring S., R. Elder, and J. Zhou. 2007. IPO underpricing and audit quality differentiation within non-Big 5 firms, *International Journal of Auditing* 11 (2): 115–131.

Ashbaugh, H., R. LaFond, and B. Mayhew. 2003. Do non-audit services compromise auditor independence? Further evidence. *The Accounting Review* 78 (3): 611–639.

Balvers, R. J., B. McDonald, and R. E. Miller. 1988. Underpricing of new issues and the choice of auditor as a signal of investment banker reputation. *The Accounting Review* 63 (3): 605–622.

Beatty, R. 1989. Auditor reputation and the pricing of initial public offerings. *The Accounting Review* 64 (October): 693-709.

Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15 (1): 1–24.Behn B. K., J-H Choi, and T. Kang. 2008. Audit quality and properties of analyst earnings forecasts. *The Accounting Review* 83 (2): 327–349.

Blouin, J., B. Grein, and B. Rountree. 2007. An Analysis of Forced Auditor Change: The Case of Former Arthur Andersen Clients. *The Accounting Review* 82 (3): 621–650.

Boone, J. P., I. K. Khurana, and K. K. Raman. 2010. Do the Big 4 and the second-tier firms provide audits of similar quality? *Journal of Accounting and Public Policy* 29 (4): 330–352.

Bruns, W. and K. Merchant. 1990. The dangerous morality of managing earnings. *Management Accounting* 72: 22–25.

Cahan, S. F. and W. Zhang. 2006. After Enron: Auditor conservatism and ex-Andersen clients. *The Accounting Review* 81 (1): 49–82.

Chaney, P., D. Jeter, and L. Shivakumar. 2004. Self-selection of auditors and audit pricing in private firms. *The Accounting Review* 79: 51–72.

Chow, C. W. 1982. The demand for external auditing: Size, debt and ownership influences. *The Accounting Review* 57 (2): 272–291.

Chang, H., C. S. A. Cheng, and K. Reichelt. 2010. Market reaction to auditor switching from Big 4 to third-tier small accounting firms. *Auditing: A Journal of Practice & Theory* 29 (2): 83–114.

Chung, H. and S. Kallapur. 2003. Client importance, nonaudit services, and abnormal accruals. *The Accounting Review* 78 (4): 931–55.

Chi, W., L. Lisic, and M. Pevzner. 2011. Is enhanced audit quality associated with greater real earnings management? *Accounting Horizons* 25 (2): 315–335.

Choi, J-H., J-B. Kim, X. Liu, and D. A. Simunic. 2008. Audit pricing, legal liability regimes, and Big 4 premiums: Theory and cross-country evidence. *Contemporary Accounting Research* 25 (1): 55–99.

Cohen, D., A. Dey, and T. Lys. 2008. Real and accrual-based earnings management in the pre- and post-Sarbanes Oxley periods. *The Accounting Review* 83 (3): 757–787.

Craswell, A., J. Francis, and S. Taylor. 1995. Auditor brand name reputations and industry specializations. *Journal of Accounting and Economics* 20 (3), 297–322.

Cassell, C., G. Giroux, L. Myers, and T. Omer. 2011. The emergence of second-tier auditors: evidence from investor perceptions of financial reporting credibility. Unpublished working paper.

DeAngelo, L. 1981. Auditor size and audit quality. *Journal of Accounting and Economics* 3: 189–199.

Dechow, P. M., S. P. Kothari, and R. L. Watts. 1998. The relation between earnings and cash flows. *Journal of Accounting and Economics* 25 (2): 133–68.

Dechow, P. and I. Dichev 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77(Supplement): 35–59.

Dechow P., Ge W., Schrand C. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics* 50 (2-3): 344–401.

DeFond, M. 1992. The association between changes in client firm agency costs and auditor switching. *Auditing: A Journal of Practice and Theory* 11: 16–31.

DeFond, M. L., and C. S. Lennox. 2011. The effect of SOX on small auditor exists and audit quality. *Journal of Accounting and Economics* 52: 21–40.

Dye, R.A. 1993. Auditing standards, legal liability and auditor wealth. *Journal of Political Economy* 101, 887–914.

Ewert, R., and A. Wagenhofer. 2005. Economic effects of tightening accounting standards to restrict earnings management. *The Accounting Review* 80, 1101–1124.

Fama, E. F. and K. R. French. 1997. Industry costs of equity. *Journal of Financial Economics* 43: 153–193.Farber, D. 2005. Restoring trust after fraud: does corporate governance matter? *The Accounting Review* 80, 539-561.

Fortin S. and J.A. Pittman. 2004. The impact of auditor's reputation on the cost of financing. *Journal of Accounting and Economics* 37: 113–136.

Francis, J. 1984. The effect of audit firm size on audit prices: A study of the Australian market. *Journal of Accounting and Economics* 6, 133–151.

Francis, J. R. and J. Krishnam. 1999. Accounting accruals and auditor reporting conservatism. *Contemporary Accounting Research* 16: 135–165.

Francis, J., E. L. Maydew, and H. C. Sparks. 1999. The role of Big 6 auditors in the credible reporting of accruals. *Auditing: A Journal of Practice and Theory*18: 17–34.

Francis, J., and M. Yu. 2009. The Effect of Big Four Office Size on Audit Quality. *The Accounting Review* 84 (5): 1521–1552.Francis, J. R. and E.R. Wilson. 1988 Auditor changes: a joint test of theories relating to agency costs and auditor differentiation. *The Accounting Review* 63 (4): 663–682.

Francis, J., P. Michas, and S. Seavey. Does market concentration harm the quality of audited earnings: Evidence from audit markets in 42 countries. *Contemporary Accounting Research* (forthcoming).

Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. The market pricing of accruals quality. *Journal of Accounting and Economics* 39 (2): 295–327.Geiger, M., and K. Raghunandan. 2002. Auditor tenure and audit reporting failures. *Auditing: A Journal of Practice and* Theory 21 (1): 67–78.

Graham, J.R., C.R. Harvey, S. Rajgopal. 2005. The economic implications of corporate financial reporting. *Journal of Accounting & Economics* 40: 3–73.

Grant Thornton LLP. (2006). After decades of consolidation, the onset of Sarbanes-Oxley and the fall of Andersen, the audit environment is changing. http://www.GrantThornton.com (May 30).

Gul, F. A., H. Sami and H. Zhou. 2009. Auditor disaffiliation program in China and auditor independence. *Auditing: A Journal of Practice & Theory* 28(1): 29–51.

Gunny, K. A. 2010. The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research* 27: 855–888.

Healy, P. M. and J. M. Wahlen. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 13: 365–383.

Heckman, J. 1979. Sample selection bias as a specification error. *Econometrica* 47 (1): 153–161.

Hermanson, D.R., R.W. Houston, and J. Rice. 2007. PCAOB inspections of smaller CPA firms: Initial evidence from inspection reports. *Accounting Horizons* 21 (2):137–152.

Hermanson, D.R., and R.W. Houston. 2008. Quality control defects revealed in smaller firms' PCAOB inspection reports. *CPA Journal* 78.12: 36–39.

Hogan, C. 1997. Costs and benefits of audit quality in the IPO market: A self-selection analysis. *The Accounting Review* 72: 67–86.Hogan, C.E. and R.D. Martin. 2009. Risk Shifts in the

market for audits: An examination of changes in risk for "second-tier" audit firms. *Auditing: A Journal of Practice and Theory* 28 (November): 93–118.

Jenkins, D. S. and U. Velury. 2011. The emergence of second-tier auditors in the post-SOX era: An analysis of accounting conservatism. *Research in Accounting Regulation* 23 (2): 172 – 176.

Jones, J. 1991. Earnings management during import relief investigations. *Journal of Accounting Research* 29 (2): 193–228.

Khurana, I., and K.K. Raman. 2004. Litigation risk and the financial reporting credibility of Big 4 vs. non-Big 4 audits: Evidence from Anglo-American countries. *The Accounting Review* 79 (2): 473–495.

Krishnan, G. V. 2003. Does big 6 auditor industry expertise constrain earnings management? *Accounting* Horizons 17 (Supplement): 1–16.

Krishnan, J. and P. C. Schauer. 2000. The differentiation of quality among auditors: Evidence from the not-for-profit sector. *Auditing: A Journal of Practice and Theory* 19 (2): 9–26.

Landsman, W. R., K. K. Nelson, and B. R. Rountree. 2009. Auditor Switches in the Pre- and Post-Enron Eras: Risk or Realignment? *The Accounting Review* 84: 531–558.Lawrence, A., K. Minutti-Meza, and P. Zang. 2011. Can Big 4 versus Non-Big 4 differences in audit-quality proxies be attributed to client characteristics? *Accounting Review* 86 (1),

259–286.

Lennox, C. 1999. Are large auditors more accurate than small auditors? *Accounting and Business Research* 29(3): 217–228.

Lennox, C. S., J. R. Francis, and Z. Wang 2012. Selection Models in Accounting Research. *The Accounting Review* 87 (2): 589–616.

Lennox, C. and J. Pittman. 2010. Big five audits and accounting fraud. *Contemporary Accounting Research* 27, 209–247.

Li, C. 2009. Does client importance affect auditor independence at the office level? Empirical evidence from going concern opinions. *Contemporary Accounting Research* 26 (1): 201–230.

Louis, H. 2005. Acquirers' abnormal returns and the non-Big 4 auditor clientele effect. *Journal of Accounting and Economics* 40 (1–3): 75–99.

Lys, T. and R. Watts. 1994. Lawsuits against Auditors. *Journal of Accounting Research* 32 (Supplement): 65–93.

Mansi, S. A., W. Maxwell, and D. P. Miller. 2004. Does auditor quality and tenure matter to investors? Evidence from the bond market. *Journal of Accounting Research* 42 (4): 755–793.

Menon, K., and D. Williams. 1994. The Insurance Hypothesis and Market Prices." *The Accounting Review* 69: 327–342.

Myers, J., L. Myers, and T. Omer. 2003. Exploring the term of auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation? *The Accounting Review* 78 (3): 779–99.

Nichols, D. R. and D. B. Smith. 1983. Auditor credibility and auditor changes. *Journal of Accounting Research* 21 (2): 534–544.

Palmrose, Z-V. 1988. An analysis of auditor litigation and audit service quality. *The Accounting Review* 63 (January): 55–73.

Reichelt, K. J. and D. Wang. 2010. National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48(3): 647-686.

Roychowdhury, S. 2006. Earnings management through real activities manipulation. *Journal of Accounting and Economics* 42 (3): 335–370.

Simunic, D. A., and M. T. Stein. 1987. *Product Differentiation in Auditing: Auditor Choice in the Marketfor Unseasoned New Issues*. The Canadian Certified General Accountants' Research Foundation Research Monograph Number 13. British Columbia, Canada: The Canadian Certified General Accountants' Research Foundation.

Shu, S. Z. 2000. Auditor resignations: Clientele effects and legal liability. *Journal of Accounting and Economics* 29 (2): 173–205.

Teoh, S. H., and T. J. Wong. 1993. Perceived auditor quality and the earnings response coefficient. *Accounting Review* 68 (2): 346–66.

Wallace, W. A. 1987. The economic role of the audit in free and regulated markets: A review. *Research in Accounting Regulation* 1: 7–34.

Weber J. and M. Willenborg. 2003. Do expert informational intermediaries add value? Evidence from auditors in Microcap IPOs, *Journal of Accounting Research,* 41(4), 681–720.

Zang, A. 2012. Evidence on the tradeoff between real manipulation and accrual manipulation. *The Accounting Review* 87 (2): 675–703.

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