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Audit Fees and Book-Tax Differences

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Abstract

This paper examines whether book-tax differences help explain audit fees. By attesting to the fair representation of financial information, auditors are an important intermediary in financial statement users' trust and understanding of financial information. Our evidence that large book-tax differences are associated with higher audit fees implies that such book-tax differences represent an observable proxy for earnings quality that affects auditor decisions. Our paper contributes to existing capital market research that examines audit fees and the research that examines market participants' use of the information in book-tax differences.

Audit Fees and Book-Tax Differences

1. Introduction

This paper examines whether book-tax differences help explain audit fees. Prior research has examined the information contained in book-tax differences for investors (e.g., Lev and Nissim, 2004; Hanlon, 2005), analysts (Weber, 2008), and credit rating agencies (Ayers et al., 2009). However, the issue of whether book-tax differences impact auditor's decisions is largely unexplored. To shed more light on the information contained in, and the usefulness of, book-tax differences for various market participants, we investigate the extent to which book-tax differences explain audit fees incremental to other variables known from prior research to be significant determinants of audit fees. By attesting to the fair representation of financial information, auditors are an important intermediary in financial statement users' trust and understanding of financial information. Our evidence that large book-tax differences explain higher audit fees implies that such differences indicate greater audit risk, complementing existing capital market and tax research.¹

A number of studies link lower earnings quality or the risk of earnings management with higher audit risk and higher audit fees (Bell et al. 2001; Seetharaman et al. 2002; and Gul et al. 2003). Krishnan and Visvanathan (2008) argue that the risk of earnings management is of particular concern for the auditor for two reasons. It increases the risk of misstatements or restatements and thus, the inherent risk and the overall audit risk are higher. Further, the risk of lawsuits against the auditor and the preaudit engagement risk increase with the risk of earnings management (Henninger 2001 and Manry et al. 2007). Thus, audit fees are expected to be higher

¹ Ettredge et al. (2008) find that deferred tax expense has explanatory power beyond discretionary accruals in detecting fraud. Badertscher et al. (2009) report that book-tax differences are useful in predicting restatements. These findings suggest that inherent risk may increase with the level of book-tax differences.

to compensate for the higher effort and the higher expected losses due to the risk of litigation or/and the loss of reputation. The evidence in the papers mentioned above suggests that large differences between book and taxable incomes are another indication that earnings quality is low. Thus, we predict that large book-tax differences are associated with higher audit fees.

Book-tax differences, broadly defined, can potentially contain different types of information. Even as summary measures of earnings quality, the information in book-tax differences arises via multiple channels. For example, temporary differences, which are differences in the timing of accrual recognition between book and taxable income (e.g., warranty reserve, bad debt reserve, depreciation, etc.), are differences between *pre-tax* book income and taxable income. Thus, the information about earnings quality contained in temporary book-tax differences is about earnings quality of pre-tax non-tax accounting accruals and earnings (e.g., bad debt reserve, etc.). The temporary differences combine the choices the firm makes in terms of accruals for financial accounting and the choices the firms makes (and what is allowed) for tax purposes. The assertion that temporary differences contain information about pre-tax earnings quality has a long history in financial statement analysis textbooks (see a more detailed discussion in Hanlon, 2005 and Hanlon and Heitzman, 2009).

There are also other book-tax differences. For example, permanent book-tax differences, such as municipal bond interest, are differences between pre-tax book and taxable income that never reverse. Permanent book-tax differences are not often suspected to be indicators of earnings quality in terms of accruals manipulation.

There are also items that affect the firm's after-tax income but are not included in the computation of taxable income (or in the computation of pre-tax accounting income). These are the tax accruals such as the contingency reserve (and accrual for uncertain tax positions) and the

valuation allowance (contra-asset to deferred tax assets). Prior research provides evidence suggesting that these accounts are managed to meet analyst forecasts. These are accounts in which the earnings management, if any, is directly in the tax accrual and the entire tax accrual is a (after-tax) book-tax difference. This is markedly different from the temporary difference situation above where the book-tax difference indicates the extent to which the firm recorded a pre-tax accrual (e.g., bad debt expense) differently for book than tax purposes.

Finally, because the common measure of total book-tax differences uses the difference between pretax book income and grossed-up current tax expense, some items that directly lower tax expense affect the computed “total book-tax differences” even if the items are not true differences between book and taxable incomes. These items are usually included in the computation of total book-tax differences due to data limitations. For example, research and development credits and the extent to which the firm has earnings designated as permanently reinvested in foreign jurisdictions with rates lower than the U.S. statutory rate both decrease tax expense and thus increase the proxy for book-tax differences. Desai and Dharmapala (2005) argue that complex tax avoidance structures permit managerial diversion of wealth. Thus, it is possible that tax avoidance could also increase audit risk (Donohoe and Knechel (2009)). Furthermore, as suggested in Hanlon and Slemrod (2009) in applying the Desai and Dharmapala (2005) theory, sophisticated tax avoidance may make market participants wary that the firm is not only cheating the IRS but cheating in other facets as well, such as financial reporting.

Thus, as a summary measure, the evidence suggests that book-tax differences capture earnings quality and earnings management, in both pre-tax accounts (temporary differences) and the tax accounts themselves, as well as potential complexity or managerial risk arising from tax avoidance. In our tests, we employ both total book-tax differences and then separately temporary

book-tax differences alone. However, we note that depending on how market participants utilize the information (i.e., whether they look at current tax expense to estimate overall taxable income or whether they look at the deferred tax accounts), either measure may be appropriate when testing market participants' use of the information contained in book-tax differences.

We introduce both our measures of book-tax differences into established models of audit fees (Ashbaugh et al. 2003, Larcker and Richardson 2004, Francis et al. 2005). We initially measure book-tax differences as the absolute value of total book-tax differences. We also evaluate the effect of the signed differences. In addition, we consider the association between audit fees and the absolute value of temporary differences. Because book-tax differences are sometimes positioned as an alternative or incremental proxy for accruals, we estimate our models with accruals as a control variable and discuss untabulated results for models without accruals.²

Our evidence is consistent with larger absolute or signed total book-tax differences being associated with higher audit fees. Further, audit fees are associated with absolute temporary book-tax differences alone. We interpret this evidence as indicating that book-tax differences contain and reflect information that represents lower earnings quality. The average dollar effect of larger absolute book-tax differences (BTDs) on audit fees is modest, in part because the size of the firm explains so much of the total variation in fees. Specifically, a ten percent increase in the absolute book-tax difference represented by the mean of the log of absolute book-tax differences increases audit fees by about \$4,600, which is about 1.4 percent of our untabulated median audit fee of \$337,000.³ In the largest partitions of BTDs, changes in book-tax differences explain a more substantial change in fees. In the top quintile of BTD, a 10% increase in absolute BTD increases audit fees by about \$29,000. However, our purpose is not solely to improve the fit

³ Details available from the authors. The full-sample mean of the log of absolute value of BTD is 2.993, which is equivalent to an absolute BTD of \$19,945,429. Thus, a 10 percent increase is approximately \$2 million.

of prior models of auditor fees. Rather, the statistically significant, robust relation between book-tax differences and auditor fees contributes to the research on the information contained in book-tax differences and various market participants' use of such information.

To further examine the source of the relation, we divide our sample of firms into those more likely to be tax avoiders and those less likely to be tax avoiders, adapting the recent innovations in the literature by Ayers et al. (2009) and Blaylock et al. (2009). We identify firms as being long-run tax avoiders as those in the lowest quintile of the sample's distribution of long-run cash effective tax rates (Ayers et al. 2009). The association between audit fees and book-tax difference is significantly less positive for tax avoiders than other firms, suggesting that earnings quality concerns contribute more to the audit fees than does tax complexity and fears that tax avoiders are also earnings managers.

A caveat of the paper is that the positive association between audit fees and book-tax differences could mean that larger book-tax differences indicate that the company is more complex, for example, more multinational, requiring more audit effort and thus more fees. We control for as many factors as we can in our regression analysis to eliminate the concern that the association is being driven by complexity of the firm. In addition, we estimate our regression after excluding all observations with any foreign source income and find similar results. However, to the extent some factors indicating complexity are still uncontrolled for, our results could be affected.

In addition, we conduct a wide array of sensitivity analyses including various controls, different methods of measuring control variables, using a changes specification for the audit fee test, and testing the relation of audit fees and lagged book-tax differences. We discuss all of these throughout the text, in footnotes, and in section 5 below. Overall, our results are consistent

throughout all these tests –book-tax differences are positively associated with audit fees indicating additional audit effort and audit risk for firms with large book-tax differences.

The paper proceeds as follows. Section 2 develops our hypothesis. Section 3 describes book-tax differences, variable measurement, and empirical tests. Section 4 discusses the sample and results, Section 5 describes our sensitivity analyses, and Section 6 concludes.

2. Hypothesis Development

Audit risk influences audit fees

Auditing standards indicate that auditors should respond to engagement risks by altering the nature, timing, and extent of audit procedures (e.g., SAS No. 47, AICPA 1983; SAS No. 82, AICPA 1997).⁴ Prior research is generally consistent with auditors responding to risks, although it is somewhat mixed. For example, using a small sample and private data, Bedard and Johnstone (2004) report that auditors plan increased effort and billing rates for clients with earnings manipulation risk (measured using engagement partner assessments of existing clients). Using data from one audit firm over two years, Johnstone and Bedard (2001) provide evidence that risk has little effect on *planned* personnel hours but does affect *actual* fees. They find that the audit firm responds to fraud and error risk factors by applying engagement-planning strategies such as assigning more high-risk specialist personnel, assigning more industry expert personnel, applying more intensive testing, and/or performing additional review. In addition, Bell, Landsman, and Shackelford (2001) find that high business risk increases the number of audit hours, implying that audit firms can assess firm-level differences in business risk and then

⁴ Recent standards such as SAS 99 *Consideration of Fraud in a Financial Statement Audit* and The Sarbanes-Oxley Act (SOX) of 2002 impose additional duties on auditors with respect to audit procedures and audit documentation regarding earnings quality and management fraud. These standards would apply to four years of our sample period.

obtain compensation through billing additional hours.⁵

Book-tax differences proxy for audit risk

Our tests jointly investigate whether book-tax differences are a proxy for low earnings quality and whether variation in observable audit fees implies that auditors respond with additional effort or expertise in conducting audits of corporations with lower implied earnings quality. The prior literature on book-tax differences provides evidence consistent with large book-tax differences indicating lower ‘earnings quality.’ The underlying maintained hypothesis is that when a firm has large book-tax differences (i.e., where book and taxable incomes are very different) the company is manipulating one or both of the income measures opportunistically. Much recent literature examines the information in book-tax differences about financial accounting earnings management.

One line of research associates book-tax differences with patterns in earnings and other earnings management incentives. For example, Phillips et al. (2003) document that firms that report small positive earnings have a larger deferred tax expense consistent with these firms managing financial reporting income upward to meet the target but not reporting the additional income for tax purposes. Mills and Newberry (2001) report evidence consistent with the magnitude of book-tax differences being positively associated with financial reporting incentives such as prior earnings patterns, financial distress, and bonus thresholds.

Other research studies the implications of book-tax differences for market values and earnings persistence. Joos, Pratt and Young (2000) conclude that firms’ earnings response coefficients are smaller in the presence of large book-tax differences. Hanlon (2005) reports that firms with large book-tax differences have less persistent one-year-ahead earnings than firms

⁵ For other examples see also Davis et al. 1993; Mock and Turner 2001; Messier and Plumlee 1987; Maletta and Kida 1993). In addition, for studies that find that increased risks do not alter auditors’ planning or audit pricing see Bedard 1989; Mock and Wright, 1993; O’Keefe et al. 1994.

with small book-tax differences and that investors interpret book income far in excess of taxable income as a ‘red flag’ about earnings quality. Lev and Nissim (2004) show that the ratio of taxable income to book income predicts subsequent five-year earnings changes. Weber (2008) finds that sell-side analysts generally misprice the information in total book-tax differences but seem to have lower forecast errors with respect to deferred tax expense. Finally, Ayers, Jiang and Laplante (2009) find that the relative and incremental information content of estimated taxable income to book income (a variation of a book-tax difference measure) is higher for firms with low earnings quality.⁶

Book-tax differences also appear to affect credit risk. Ayers, Laplante and McGuire (2008) find that large positive changes in book-tax differences are associated with worsening bond ratings. Further, Crabtree and Maher (2008) find that bond ratings for initial debt issuances are higher when book-tax differences are large.

Other research uses book-tax differences to measure tax aggressiveness generally (Mills 1998, Mills and Sansing 2000) or to identify participation in tax shelters specifically (Manzon and Plesko 2002, Desai and Dharmapala 2005, Wilson 2009). We suggest that even the portion of book-tax difference due to tax aggressiveness could increase audit risk.⁷ Desai and Dharmapala (2005) argue that complex structures necessary for tax shelters also provide opportunities for managers to manipulate earnings or otherwise succeed in “rent-stripping.” Such tax aggressiveness thus plausibly increases audit risk, because the auditor must assess contingent

⁶ They define low earnings quality as firms in the highest quintile of modified Jones model abnormal accruals by industry and year. They also find that the information content of the tax-to-book ratio is lower for high tax planning firms, based on long-run current ETRs. Tax expense can also represent a source of audit risk, either as a source of internal control weakness (Gleason, Rego and Pincus 2008) or due to challenges in estimating tax reserves and related earnings management (Dhaliwal, Gleason and Mills 2004, Gleason and Mills 2002). In supplemental tests, we find that long-run tax avoidance does not drive our results.

⁷ In addition, in conversations with audit partners from the Big 5 firms, one partner told us that if a firm is very tax aggressive this could indicate management’s mindset of compliance with rules and regulations – that is if they are willing to cheat on their taxes they might just be cheaters all around.

tax liabilities (under the SFAS 5 regime) or uncertain tax benefits (under FIN 48). These sources of uncertainty are frequently material. For example, the top 100 firms had approximately \$80 billion of unrecognized tax benefits at January 1, 2007 (Blouin, Gleason, Mills and Sikes 2007).

Finally, many book-tax differences need not indicate the presence of either financial or tax aggressiveness because they arise from somewhat mechanical differences between accounting principles and tax laws (Mills and Plesko 2003). Examples include nontaxable municipal bond interest and the dividends' received deduction. Whether other differences in method are mechanical is subject to debate. For example, many companies use straight-line depreciation for financial reporting and the Modified Accelerated Cost Recovery System for tax reporting. However, even depreciation methods require judgment regarding asset lives and classes. For example, the Securities and Exchange Commission accused Waste Management of fraud for its overstated salvage values and capitalizing and depreciating operating expenses.⁸ Changes in financial accounting methods also affect book-tax differences (Seidman 2009), although many of the provisions, such as accounting for goodwill impairment, require management judgment. Thus, although including accruals largely controls for 'mechanical' book-tax differences (Desai and Dharmapala 2005), we believe that even some of the "mechanical" differences are not as mechanical as they might seem and can at times be informative about managers' discretion in financial and tax reporting.

If larger book-tax differences proxy for lower earnings quality or greater complexity, then auditors should need to exert more effort (more hours or including more specialists) on firms with large differences, which would increase the level of audit fees for these firms relative to firms with smaller book-tax differences, all else constant. We predict that large book-tax differences in either direction can indicate earnings quality problems (i.e., earnings management-

⁸ <http://www.sec.gov/news/headlines/wastemgmt6.htm>

-either upward or downward) based on reasoning and results in Joos et al. (2000) and Hanlon (2005) where large book-tax differences in both directions are associated with lower earnings response coefficients and less persistent earnings. Thus, we hypothesize that large book-tax differences are associated with audit risk in operational terms as follows:

Hypothesis: There is a positive association between large book-tax differences and audit fees.

When we posit a relation between book-tax differences and auditor fees, we are implicitly assuming that the accounting information is not completely changed by the audit (i.e., not every item investigated by the auditor is changed before issuance of the final report). However, we recognize that auditors can change the reporting of accounts that pose an audit risk and that the data we see in the reported financial statements are the adjusted amounts. For example, suppose a client proposes to capitalize and depreciate an expenditure that it deducts in full for tax purposes. If, as a result of additional procedures (i.e. higher fees), the auditor requires the client to similarly expense the item for book purposes, then there would be no book-tax difference to associate with the higher audit fee. Unfortunately, we have no data on adjustments required by the auditor. However, any audit adjustments that reduce book-tax differences (i.e., remove aggressive book or tax positions) should make it more difficult to find our predicted relation because audit fees might increase, but reported book-tax differences will not reveal the higher level of book-tax differences that were eliminated during the additional audit work.

3. Book-Tax Differences, Variables, and Empirical Tests

3.1 Book-Tax Differences

Our main independent variable of interest is the measure of book-tax differences, or the difference between what the firm reports as taxable income and what the firm reports as financial accounting income. We employ two measures in our tests – total book-tax differences and

temporary book-tax differences as discussed above. We estimate the firm's *total* book-tax differences by subtracting the estimated taxable income from the firm's reported income before taxes (data item #170). Following the methodology in Hanlon, Laplante and Shevlin (2005), we estimate taxable income by grossing up the firm's current tax expense by the statutory tax rate and then subtracting the change in the firm's net operating loss. We use the absolute value of the book-tax differences because both large positive (book income in excess of taxable income) and large negative (book income less than taxable income) book-tax differences provide indications about lower earnings quality (Hanlon 2005 and Joos et al. 2000). We also report results for the signed book-tax differences.

In our setting the use of financial statement data to estimate book-tax differences is appropriate because these salient data are available to the auditors at the time of the audit and to financial statement users when they read the annual report. Other company-specific data related to the tax return is not generally available to researchers or financial statement users. We acknowledge that there are well known problems with using financial statement information to infer taxable income or total (especially permanent) book-tax differences (e.g., see Hanlon 2003).⁹ For example, tax credits are essentially converted into a book-tax difference in this calculation which could affect our results because firms with foreign tax credits or more research and development credits could just be more complex firms requiring more time on the audit and thus more audit fees. Our results are robust to eliminating firms with foreign source income and research and development expense, suggesting that underlying complexity associated with tax

⁹ In addition, we need to estimate the book-tax differences on world-wide income for the same entities included in the calculation of book income. Because the consolidation rules are different for financial accounting relative to tax purposes, even if we had tax return data it would not be the perfect solution. For example, consolidation for financial accounting is required when ownership is 50% or greater but for tax return purposes consolidation is an election only when an entity is owned 80% or more by another entity (for more details see Hanlon 2003). While this issue creates no measurement error when using financial data to infer information about taxable income for the entities included in the financial statement consolidation, it does pose serious problems when trying to link tax return data to financial statement data (Hanlon 2003, Plesko 2002, and Mills and Plesko 2003).

credits does not drive our results.

As mentioned in the introduction, our measure of total book-tax differences also captures amounts recorded for financial accounting that affect the tax expense line but are not really differences between pre-tax book and taxable incomes.¹⁰ For example, under Statement of Financial Accounting Standard 109 *Accounting for Income Tax* firms are required to record a reserve (valuation allowance) against a deferred tax asset if they are more likely than not to not realize the benefits of the deferred tax asset in the future. Another example is the tax contingency reserve (i.e., the tax cushion) recorded when firms have taken an aggressive tax position and need to record a reserve for the potential future costs associated with the position being overturned.¹¹ Management can manipulate earnings through these accounts (Gleason and Mills 2002; Miller and Skinner 1998; Schrand and Wong 2004; and Dhaliwal, Gleason, and Mills 2004). Thus, the use of total book-tax differences as measured from financial statements will incorporate earnings management using these methods, earnings management in pre-tax earnings, and tax aggressiveness. Using our measure of total book-tax differences allows us to examine all such elements of earnings quality in a summary measure.

We separately test a measure of temporary book-tax differences, which is not subject to most of these concerns regarding accruals in the tax accounts, to examine whether our audit fee results are solely attributable to the earnings management through the tax expense line or attributable in part to the information in temporary book-tax differences between pre-tax book income and taxable income.¹² Again, this helps us to decipher whether the information in the

¹⁰ These are, however, book-tax differences because they are items reported for financial accounting purposes but not taxable income purposes. They are accruals and reserves that affect the tax expense line itself rather than pre-tax earnings.

¹¹ Effective for years beginning after December 15, 2006, Financial Interpretation No. 48, *Accounting for Uncertainty in Income Taxes*, now requires a benefit approach to recognize uncertain tax benefits.

¹² For much of our sample period, neither book income nor taxable income will include an expense (deduction) for stock option compensation. Thus, although there are tax benefits to stock option compensation and these create a

book-tax differences is about pre-tax accruals (e.g., warranty reserve) or solely about earnings management through the tax accounts. We use the logged absolute value of the firm's reported deferred tax expense as our estimate of the firm's temporary book-tax differences (similar to Hanlon 2005, Phillips et al. 2003, and others).

3.2 Empirical Model and Variable Definitions

To test our prediction that book-tax differences are associated with audit fees, we include our measure of book-tax differences in the following model based on Simunic (1980) and Larcker and Richardson (2004):

$$\begin{aligned}
 Ln(AUDIT\ FEE) = & \alpha + \beta_1 Ln(ABS\ BTD)_t + \beta_2 Ln(ABS\ ACC)_t + \beta_3 BIG5_t + \beta_4 Ln(ASSET)_t \\
 & + \beta_5 Ln(BUS\ SEG)_t + \beta_6 FGN_t + \beta_7 INV_t + \beta_8 REC_t + \beta_9 DEBT_t \\
 & + \beta_{10} INCOME_t + \beta_{11} LOSS_t + \beta_{12} AUD\ OPIN_t + \beta_{13-24} IND_t \\
 & + \beta_{25-30} YEAR + e
 \end{aligned} \tag{1}$$

We define the variables as follows:

$Ln(AUDIT\ FEE)_t$	=	Log of audit fee (obtained directly from Standard and Poor's as disclosed by the firms in proxy statements);
$Ln(ABS\ BTD)_t$	=	Log of the absolute value of the spread between pre-tax book income and taxable income (data #170 – ((data #16-data #50)/.35 – Δ data #52). Or, alternatively, the log of the absolute value of the firm's deferred tax expense for the year (data #50);
$Ln(ABS\ ACC)_t$	=	Log of the absolute value of total accruals measured as the difference between earnings and cash flow from operations (data #18 – data #308);
$BIG5_t$	=	An indicator variable set equal to 1 for client-observations audited by a Big 5 auditor (or Big 4 auditor after the demise of Arthur Andersen), and 0 otherwise (item #149);
$Ln(ASSET)_t$	=	Log of total assets (item #6);
$Ln(BUS\ SEG)_t$	=	Log of the number of business segments (Compustat SEGNUM) owned by the client;

book-tax difference we do not include this difference in our tests. We believe this is appropriate in this case because we are not interested in testing audit fees in relation to stock option compensation and the accounting that is associated with stock option compensation. Rather, we are interested in a firm's level of reporting differently for tax and book for reasons other than stock option compensation. In the year 2006, however, our measure of book-tax differences will include some portion of the stock option expense. We estimate our regressions by year and find no difference between 2006 and the other years indicating that this expense does not drive our results.

FGN_t	=	Ratio of foreign pre-tax income (item #273) to total pre-tax income (item #170);
INV_t	=	Inventory (item #3) to average total assets;
REC_t	=	Receivables (item #2) to average total assets;
$DEBT_t$	=	Sum of short-term debt and long-term debt (item #34 + item #9) to average total assets;
$INCOME_t$	=	The ratio of operating income after depreciation (item #178) to average total assets;
$LOSS_t$	=	An indicator variable set equal to 1 if income before extraordinary items and discontinued operations (item #18) is negative in the current or two previous years, and 0 otherwise;
$AUDOPIN_t$	=	An indicator variable set equal to 1 if the firm receives a modified audit opinion (item #149), and 0 otherwise. A modified opinion is defined as anything other than a standard unqualified audit opinion coded as 1 by Compustat;
IND_t	=	Industry indicator variables based on the two digit SIC codes.
$YEAR$	=	Year of the observation included when we estimate the regression over the pooled sample.

Audit Fee is the fee disclosed in the proxy statement related to the financial statement fiscal year. Thus, if large book-tax differences are a valid proxy for lower earnings quality and the auditor requires additional procedures to form an opinion, the additional audit work for that financial statement would be associated with that fiscal year even if performed in year-end procedures in the months after year-end. Even if fees are negotiated at the beginning of the audit there will be an opportunity for the auditor to increase the fee based on more than expected work done at the end.

We use two measures of book-tax differences as described above (total and temporary). In our tabulated tests, we first use the log of the absolute value to capture large book-tax differences ($Ln(ABS\text{BTD})$). We then consider signed differences, either by using an interaction term or separate partitions of signed differences, as well as lagged book-tax differences.

We also include a measure of the firm's total accruals, which we similarly specify as the natural log of the absolute value of accruals ($Ln(ABS\text{ACC})$). We include the firm's total accruals as a control variable that proxies for firm complexity and the increased risk associated with a

firm reporting high (or low) accrual levels. Thus, our coefficient on the book-tax differences of the firm is the incremental effect of the book-tax differences beyond the effect of the risk associated with the firm's accrual levels.¹³ In our sensitivity tests of signed BTDs, we likewise use signed accruals.

Our other control variables build on Simunic (1980). He chose these variables based on discussions with auditors from Big8 accounting firms and with representatives from firms that underwrote professional liability insurance coverage for accountants. These discussions produced five determinants of auditors' loss exposure: 1) the size of the auditee, 2) the complexity of the auditee's operations, 3) auditing problems associated with certain financial statement components, especially inventories and receivables, 4) the industry of the auditee, and 5) whether the auditee is a publicly or closely-held company.

We include several variables that measure size or complexity. First, we include an indicator variable if the firm is audited by a Big Five (or Four after the demise of Arthur Andersen) accounting firm in the current year (*BIG5*). Like Simunic, we also include *Ln(ASSETS)* to control directly for size. We include log of the number of business segments *Ln(BUSSEG)* as a proxy for the complexity of the firm.¹⁴ We also include the percentage of total pre-tax book income that is from foreign sources.¹⁵

Like Simunic, we include a ratio of the firm's inventory to assets (*INV*) and receivables to assets (*REC*) to control for the loss exposure from the auditing difficulties in these areas, and we

¹³ There is some debate in the literature regarding whether the accruals measure should be signed or unsigned (see Larcker and Richardson (2004)). In supplemental tests, we include the variable measured in each of the various ways to ensure our results on the book-tax difference variable are robust to the various measures of accruals.

¹⁴ Whisenant et al. (2003), Larcker and Richardson (2005), Raghunandan and Rama (2006), Francis et al. (2005) and Choi et al. (2008) all use the log of segments as a proxy for client complexity. Both the log and square root transformations capture economies of scale in audit services as a corporation goes from being a single-segment firm to a conglomerate.

¹⁵ Simunic (1980) used survey data and included the percentage of foreign assets held by the firm. Compustat does not provide data on foreign versus domestic assets, thus we include the relative percentage of foreign sourced income as our proxy.

include industry indicator variables to control for the industry in which the firm operates. All of our companies are public companies so we do not control for ownership.

Following Simunic (1980) we include three proxies for financial distress: 1) the ratio of operating income to assets (*INCOME*) as a proxy for profitability, 2) an indicator variable set equal to one if income before extraordinary items and discontinued items is negative in the current or two prior fiscal years (*LOSS*), and 3) an indicator variable set equal to one if the firm received anything other than a clean, unqualified opinion in the current year (*AUDOPIN*). We also include a measure of the firm's debt levels as an additional proxy for financial distress (*DEBT*), following Ashbaugh et al. (2003).

4. Sample, Descriptive Statistics, and Empirical Results

4.1 Sample and Descriptive Statistics

Table 1, Panel A, describes our sample selection process. We start with all observations available on the 2007 Compustat database with nonmissing asset data for the years 2000-2006 (N=62,979). We lose 29,228 observations because they lack audit fee data. We lose another 8,109 observations due to missing segment data. We exclude firms that are in the financial services or utilities industry because of the regulatory rules surrounding those firms for both tax and financial reporting and a data limitation -- deferred tax data are not available on Compustat for financial services firms. We also exclude firms that are foreign-owned. Finally, we lose 4,569 because of missing data to compute book-tax differences or other variables in our audit fee regression. This leaves us with a final sample of 17,613 firm-years.

Table 1, Panel B presents the industry composition of our sample firms as well as the industry composition of all Compustat firms during our sample period. Relative to the Compustat population we have an overrepresentation of machinery and miscellaneous

manufacturing (SIC 35-39) but representation in the other industry classifications is fairly similar. We include industry fixed effects in our regressions to control for any potential effect of industry on audit fees.¹⁶

Table 2 presents descriptive statistics (Panel A) and correlations (Panel B) for our sample. We show the logged variables that we include in the regression analyses. However, to get a better sense of the data, our median unscaled, unlogged audit fee for our sample of firm-years is about \$337,000. Frankel, Johnson and Nelson (2002) report a median audit fee amount of \$191,000 for their sample based only on 2001 SEC filings. Thus, our audit fee amount appears reasonable. The median unlogged absolute value of total book-tax differences for our sample is 7.7% of average total assets and the median absolute value of temporary differences scaled by average total assets is 0.24% of average total assets. Our book-tax difference measure is not identical to our accruals measure indicating that the difference between book and taxable incomes is not exactly the same as the difference between financial accounting income and cash flows (similar to Hanlon 2005). Our firms have a mean (median) value for size (log of assets) of 5.438 (5.411) similar to the overall Compustat population mean of 5.224 (5.452).

Panel B shows that the $Ln(ABSACC)$ and $Ln(ABSSTD)$ are strongly correlated ($\rho = 0.543$), consistent with many accruals resulting in temporary book-tax differences. In untabulated tests, signed accruals and signed book-tax differences are correlated at 0.181. We include both accruals and book-tax differences in our regression model. Including both permits us to evaluate the extent to which book-tax differences provide a unique and incremental signal of earnings quality that affects audit fees.

¹⁶ We also conduct sensitivity tests using an industry-adjusted measure of book-tax differences.

Many of the correlations reflect a size relationship. For example, large firms have larger absolute accruals and book-tax differences, are more likely to use a Big5 firm, and are more likely to have more segments and a higher proportion of foreign income.

Inventory and receivables are negatively correlated with absolute book-tax differences, probably because industries with high proportions of inventory and receivables (like wholesale and retail firms) have fewer opportunities to generate book-tax differences.

4.2 *The Association between Audit Fees and Book-Tax Differences*

Effect of absolute book-tax differences on audit fees

Table 3 presents the results of estimating model (1) to test our hypothesis. As predicted, larger book-tax differences are positively associated with higher audit fees ($\beta_1 = 0.067$ significant at less than 0.01, one-tailed in the pooled model). Evaluating the regression at the mean value for each variable (ignoring year and industry), a 10 percent increase in $Ln(ABS\text{BTD})$ explains about \$4,600 increase in audit fees.¹⁷ The coefficient is positive and significant in every year, suggesting that $Ln(ABS\text{BTD})$ is a useful summary measure to explain audit effort even if certain accounting method changes affect the measurement of book income and hence book-tax differences (Seidman 2009). We interpret this as evidence consistent with larger book-tax differences reflecting information that represents a higher risk of earnings management, causing auditors to spend more time on the audit.

Examining the pooled model for simplicity, all of the control variables are significant in the predicted direction, consistent with prior literature (e.g., Simunic, 1980). For example, the

¹⁷ We first multiply the coefficients for the pooled model (excluding year and industry) from Table 3 with the mean values of the corresponding variables reported in panel A of Table 2. The sum of these numbers equals $Ln(AUDIT\text{FEE})$ of -0.326. Converting this to unlogged audit fee = $e^{(-0.326)} = \$0.722$ million. Next, we recalculate the sum by multiplying the coefficient on $Ln(ABS\text{BTD})$ by 3.008, which represents a 10 percent increase of about \$2,000,000, computed as $(Ln((EXP(2.993, \text{the mean of } LnAbs\text{BTD})) * 1.1)))$ and keeping the same mean values for other variables. Thus, the revised sum equals -0.320 and the revised unlogged audit fee = \$0.726 million or an increase of \$0.0046 million or \$4,624. We hold accruals constant even when BTDs change. To the extent accruals also increase when BTDs increase, our model would predict a greater increase in fees.

coefficients on accruals ($Ln(ABSACC)$), the indicator variable for whether the firm is a Big Five (or Four) audit client ($BIG5$), size ($Ln(ASSET)$), the log of the number of business segments ($Ln(BUSSEG)$), and the percentage of income that is foreign (FGN), are all significant and positive indicating that larger, more complex firms will pay larger audit fees.¹⁸ Larger inventory (INV) and receivables (REC) accounts are also positively associated with larger audit fees consistent with these accounts requiring more time to audit and with prior literature (Simunic 1980). In untabulated tests, dropping accruals has very little effect on the coefficient or the adjusted R^2 . The $Ln(ABSBDT)$ coefficient for the pooled model is 0.068 and significant at the 0.0001.

The coefficients on the proxies for the level of distress also are significant in the predicted directions; higher debt levels ($DEBT$) are associated with higher audit fees (although the variable is not significant in every year), higher income levels ($INCOME$) are associated with lower audit fees, loss firms ($LOSS$) have generally higher audit fees as do firms with a modified audit opinion ($AUDOPIN$).

In untabulated sensitivity tests, we substitute an industry-adjusted measure of book-tax differences. We calculate an industry-adjusted BTD variable by subtracting from BTD the median value of BTD, measured at the two-digit SIC level and taking the log of the absolute value of the difference from the industry median. When we estimate model (1) with the industry-adjusted BTD, we find that the coefficient on $Ln(ABSBDT)$ is 0.048 and significant at the 0.0001 level. Thus, our inferences are unchanged.

Further analysis of the effect of size of book-tax difference on audit fees

¹⁸ In our main tests we do not scale audit fees or book-tax differences by a sizescaler but instead include in the model independent control variables -- size, $BIG5$, and others -- that should control for the effect of size to be consistent with prior literature (Simunic 1980). To ensure that scaling does not alter our results we also estimate equation (1) after scaling audit fees, absolute book-tax differences, and absolute accruals by average total assets (the numerator is not logged) and find (in untabulated results) that the book-tax difference variable continues to be positive and significant (coefficient is 0.002 with a t-statistic of 12.90). In this specification the scaled absolute value of accruals variable is insignificant.

Table 4 presents the estimation of equation (1) over the sample partitioned based on the level of the book-tax differences. This partitioning permits us to examine whether large positive book-tax differences (where book income is in excess of taxable income) or large negative book-tax differences (where book income is less than taxable income) are driving the results presented in Table 3. We find in all groups, consistent with Table 3, that larger book-tax differences (in absolute value) are positively associated with larger audit fees.

The coefficient on $\ln(ABS\text{BTD})$ for the top quintile (observations with the largest positive book-tax differences (i.e., taxable income < book income)) in Table 4 is 0.139, indicating that a 10 percent increase in the underlying book-tax differences represented by mean $\ln(Abs\text{BTD})$ of 5.426 increases audit fees by about 1.39 percent. Evaluating this regression at the mean of all variables (ignoring year and industry) within the top quintile of book-tax differences suggests that this 10 percent increase explains an approximate \$29,000 increase in fees.

In untabulated tests, we partition observations into quintiles based on the *industry-adjusted* book-tax differences, because it is possible that observations where the book-tax differences significantly vary from industry norms are subject to a higher level of earnings management risk. We re-estimate model (1) for the top quintile of observations with the highest above-industry median $\ln(ABS\text{BTD})$ values. The coefficient on $\ln(ABS\text{BTD})$ for this specification is 0.077 and significant at the 0.0001 level. In the top quintile of industry-adjusted absolute book-tax differences, a 10 percent increase in the BTD represented by the mean $\ln(ABS\text{BTD})$ increases audit fees by about \$17,000. Thus, the largest industry-adjusted book-tax differences similarly reveal an economically significant association with audit fees.

Finally, to further investigate whether the results are driven by only one direction of book-tax differences we create indicator variables for whether BTDs or accruals are negative,

NBTD and *NACC*. We then interact these indicators with $\ln(ABS\text{BTD})$ and $\ln(\text{Accrual})$. The interaction terms capture whether the coefficients on $\ln(ABS\text{BTD})$ and $\ln(\text{Accrual})$ are incrementally smaller or larger when BTDs or accruals are negative.

Insert Table 5 here.

Table 5 reports our results. The results are consistent with those reported earlier in Table 4 for the quintiles of firms—audit fees increase as positive book-tax differences grow more positive and audit fees increase as negative book-tax differences become more negative. Thus, the larger in absolute value the book-tax differences the higher the audit fees. The negative interaction term on $\ln(ABS\text{BTD}) * NBTD$ (coeff = -0.021, p-value = 0.0001) combined with the positive total coefficient on $\ln(ABS\text{BTD})$ (sum coeff = 0.075 – 0.021 = 0.054) indicates that negative book-tax differences increase audit fees, but not as much as do positive book-tax differences. Negative book-tax differences arise in settings such as impairments, discontinued operations, or net operating losses, where book losses exceed tax-deductible losses. Although such negative differences likely proxy for the audit risk of measuring contingent losses correctly, the BTD does not in this case capture the typical setting of auditors worrying that book income is overstated relative to a benchmark like taxable income. In the annual regressions, the interaction of $\ln(ABS\text{BTD}) * NBTD$ is significantly negative in four of seven years. Overall, our signed results for book-tax differences are consistent with audit literature (St. Pierre and Anderson 1984; Heninger 2001; and Abbott et al. 2006) that argues that the risk of litigation is greater when earnings are overstated than understated.

Further, we already control for the direct effect of accruals in the regression. We also see that negative accruals increase the audit fee ($\ln(ABS\text{ACC}) * NACC$ coeff = 0.009) beyond the positive relation for positive accruals, although the interaction term is only significant in two of

the seven years and the pooled effect is only marginally significant (pvalue = 0.10).

Insert Table 6 here.

Temporary book-tax differences.

In Table 6 we present the results of estimating equation (1) but rather than total book-tax differences, we include the variable for temporary book-tax differences only—the log of the absolute value of the deferred tax expense. Similar to the results for total book-tax differences, the data reveal that in the pooled sample (column 1) the larger the temporary book-tax differences the larger the firm's audit fee (t -stat of 5.93 significant at 0.01, one-tailed). Again, the relation holds for both positive temporary differences (indicating book income is higher than taxable income (column 2)) and negative temporary differences (indicating book income is less than taxable income (column 3)). All of the control variables are also again significant in the predicted direction.¹⁹ Thus, overall our results are consistent with predictions for our hypothesis that book-tax differences are positively associated with audit fees and these results for temporary differences show the relation is not solely caused by permanent differences or accounting tax accruals.

5. Sensitivity Analyses

We perform several sensitivity tests (all of which are untabulated) in addition to those described above to further examine the relation between audit fees and book-tax differences.

Tax versus Financial Aggressiveness

As discussed earlier, the positive association between audit fees and book-tax differences is consistent both with auditors' concern for client's financial reporting aggressiveness (poor

¹⁹ We drop 2,560 observations that have a zero deferred tax expense for which we cannot compute $\text{Ln}(\text{ABSEXP})$. To test the effect of these observations as well as testing the sensitivity of the results to scaling, we estimate the regression using scaled audit fees and scaled deferred tax expense (where the scaler is beginning total assets and the numerator is not logged) and find (in untabulated results) that the coefficient on the scaled deferred tax expense is 0.030 (t -statistic of 12.01).

earnings quality or potential for fraud) and aggressive tax reporting. We conduct two tests to tease out these two competing explanations. Our first test examines whether the association between book-tax differences and audit fees is higher for clients that engage in long-term tax avoidance. In other words, if our results are primarily driven by auditors' concern over tax aggressiveness rather than financial reporting aggressiveness, then the association between book-tax differences and audit fees should be greater for clients engaging in tax avoidance relative to other clients. Following Dyreng et al. (2008), we estimate cash effective tax rate (CETR), measured over a five-year period as a measure of tax avoidance. We have 9,038 observations for which CETR variable is available. We partition our sample into quintiles of CETR by year and 2-digit SIC industry, following Ayers et al. (2009) and create an indicator variable *HTP* that equals one for high-tax planners (high likelihood of tax avoidance) and zero for other observations. We label the lowest CETR quintile as high-tax planners ($HTP = 1$) and *HTP* is coded zero for the remaining quintiles.

We re-estimate model (1) by adding $Ln(ABS\text{BTD}) \times HTP$. Untabulated results indicate that the coefficients on $Ln(ABS\text{BTD})$ and $Ln(ABS\text{BTD}) \times HTP$ are, respectively, 0.062 and -0.019 (both are significant at the 0.01 level). We obtain the same qualitative result whether we partition the observations into quartiles, deciles or two groups. That is, the positive association between audit fees and book-tax differences is lower, not higher, when the firms are long-term tax avoiders. We conclude that our main results reported in Table 3 do not appear to be driven by tax aggressiveness.

Next, we classify observations into quintiles of scaled total accruals and create an indicator variable *HAC* that equals for high-accrual observations (high likelihood of earnings management) representing observations in the top quintile by year and 2-digit SIC, and zero for

other observations.²⁰ When we re-estimate model (1) by adding $\ln(ABS\text{BTD}) \times HAC$ we find that the coefficients on $\ln(ABS\text{BTD})$ and $\ln(ABS\text{BTD}) \times HAC$ are, respectively, 0.065 (significance 0.01) and 0.008 (significant at 0.10 level for a one-tailed test). There is modest support that the association between book-tax differences and audit fees are higher for observations with the highest level of accruals relative to other observations. Overall, these tests do not support the notion that tax aggressiveness is driving the results.

Controlling for measurement error in book-tax differences

Because tax credits can cause problems with the measurement of total book-tax differences, we estimate our audit fee regression by excluding firms with a positive research and development expense in the Compustat database (data item #46) as these firms likely utilize the research and development tax credit. The results are consistent with our main results presented in Table 3 of the paper -- $\ln(ABS\text{BTD})$ is positively associated with audit fees (coefficient is 0.058 and the t statistic is 8.98). We also estimate the regression separately for firms above and below the median level of research and development expense in our sample and find similar results for both sub-samples—the coefficient on total book-tax differences is positive and significant at less than 0.05 level.

We also drop firms with non-zero foreign source income to exclude firms that may have a book-tax difference measure affected by the foreign tax credit. Excluding these firms also provides an additional test of whether the complexity of the firm (proxied by the extent of multinational operations) is driving our results. Again we find results that are consistent with our main results—the coefficient on $\ln(ABS\text{BTD})$ is positive and significant (t -stat of 13.32). Thus, it does not appear that our results are driven by measurement error due to tax credits in the

²⁰ We use total accruals rather than abnormal accruals (Ayers et al. 2009), because total accruals are more readily available to auditors and Jones et al. (2008) show that total accruals are as effective in predicting fraud.

calculation of book-tax differences, nor to multinational complexity.

Complexity and audit fees

To control further for the complexity of the firm and especially the tax complexity of the firm (Mills, Erickson and Maydew 1998 and Omer, Bedard, and Falsetta 2005) we include the tax fees paid to the auditor as a control variable in our audit fee regression. In untabulated results, we find that the coefficient on the tax fee variable is positive and significant at 0.01 consistent with tax fees proxying for complexity of the firm and complex firms requiring more time and effort spent on the audit. The coefficient on our main variable of interest, $Ln(ABS\text{BTD})$, remains positive and significant with a coefficient of 0.05 (t -stat 8.26). We note that the sample size is reduced significantly by requiring this variable in our sample ($N=4,418$). Further, tax fees paid to the auditor do not include all tax fees paid by the firm (Maydew and Shackelford 2007, Slemrod and Blumenthal 1996), so audit-provided tax services are not a reliable measure of total tax planning. For these reasons we do not include this variable in our main analysis.

We also estimate our audit fee regression after adding controls for the presence of special items and merger and acquisition activity. These two items often generate book-tax differences and may also proxy for firm complexity or simply indicate a one time event for the firm. Thus, we estimate equation (1) after including 1) an indicator variable set equal to one for firm-years with non-zero, non-missing special items (data #17) and zero otherwise, and 2) an indicator variable set equal to 1 when the firm has non-zero, non-missing cash flows from mergers and acquisitions and zero otherwise.²¹ After including these variables, the coefficient on $Ln(ABS\text{BTD})$ continues to be positive and significant (coefficient of 0.055, t -stat of 12.84). The

²¹ Our results are unchanged if we use data item #249 (sales attributable to mergers and acquisitions) to construct our indicator variable for M&A.

special item indicator variable is also positive and significant at the 0.01 level but the merger and acquisition indicator variable is insignificant. Thus, although the presence of special items appears to increase audit fees the presence of special items is not driving our results for the book-tax differences.

In our main tests, we use contemporaneous book-tax differences and audit fees under the assumption that although audit fees are generally set prior to the start of the audit, the audit firm can bill the additional time and effort expended based on current year facts and circumstances. We also re-estimate our audit fee regression (equation (1)) using lagged book-tax differences rather than current book-tax differences in order to examine the relation under the scenario where auditors set their fees for the next year based on book-tax differences in the current year. We find that lagged $\ln(ABS\text{BTD})$ is positively associated with current audit fees ($p < 0.01$) consistent with lagged book-tax differences influencing current audit fees as well.

Changes model

We also investigate whether changes in book-tax differences are associated with changes in audit fees. Although to our knowledge prior literature has not implemented the use of a changes model with respect to audit fees, we examine this relation to provide further support for our conjecture that book-tax differences provide information about a firm's earnings quality that should be useful to auditors. We alter our main equation (1) by regressing the log of the change in audit fees from the prior year to the current year on the log of the absolute value of the change in book-tax differences. We also convert many of the control variables (except BIG5, LOSS, and OPINION) to a change specification to be consistent with the dependent variable. We find untabulated results consistent with a change in the absolute value of book-tax differences being positively associated with a change in audit fees (coefficient = 0.091, t -stat = 4.71).

We also look at client observations where the book-tax difference or the deferred tax expense has increased by 10 percent or more compared to the prior year and code an indicator variable that equals 1 for these cases and 0 otherwise. We interact this indicator variable with $\ln(ABS\text{BTD})$ or $\ln(ABS\text{DEXP})$ (the log of the absolute value of temporary differences (deferred tax expense)) and the results indicate that the coefficient on $\ln(ABS\text{BTD})$ is 0.060 and the coefficient on the interaction term is 0.016 (both are significant at the 0.0001 level). For deferred tax expense the coefficient on $\ln(ABS\text{DEXP})$ is 0.024 and the coefficient on the interaction term is 0.027 (both are significant at the 0.0001 level). It appears that large increases in total book-tax differences and temporary book-tax differences represent higher audit risk.

In alternative tests, we also include auditor changes in the model. Although auditor change is positive and significant at the 0.01 level, our inferences are unchanged. Because Arthur Andersen was indicted and subsequently lost its license to practice, many companies changed auditors in the year 2002 from Arthur Andersen to another audit firm. If these firms also had large book-tax differences then our results could be affected (and if they did not have large book-tax differences these firms would add noise to our tests). If we exclude observations audited by Arthur Andersen, the coefficient on $\ln(ABS\text{BTD})$ is 0.067 and still significant at the 0.01 level. Alternatively, we exclude all observations in the year 2002, the year the clients switched, and re-estimate the model. Our results are qualitatively unchanged.

Litigation risk

Barron et al. (2001) and Abbott et al. (2006) argue that audit fees are likely to be higher for clients with higher litigation risk. Abbott et al. find that audit fees are higher for clients with higher P/E ratios, consistent with the notion that these clients have incentives to inflate earnings to meet earnings growth expectations. Skinner and Sloan (2002) argue that high-growth firms

face a “stock market torpedo” effect, i.e., their stock prices decline significantly for failure to meet earnings benchmarks.

If book-tax differences are informative for discerning earnings quality then book-tax differences could have a greater impact on audit fees for client-observations with high price-earnings (P/E) ratios than for observations with low P/E ratios. We partition observations into quintiles based on P/E ratios, drop the middle quintile, and code an indicator variable that equals one for the top two quintiles and zero for the bottom two quintiles. We interact this indicator variable with $\ln(ABS\text{BTD})$. We conjecture that the coefficient on the interaction variable will be positive if book-tax differences are more informative about earnings quality for high P/E ratio observations than low P/E ratio observations. As expected, the interaction variable is positive and significant at the 0.05 level.

Effects of earnings targets

Finally, we consider whether book-tax differences represent more audit risk when clients face more incentives to manage earnings. A number of studies compare firms whose scaled earnings fall in the 0.00 to 0.005 band to those in the -0.005 to 0.0 band, suggesting that just achieving a profit is evidence of earnings management (Phillips et al. 2003 and other studies). We create an indicator variable that equals one for small scaled earnings (net income over beginning market value of equity) (0 – 0.005) and zero for scaled earnings between -0.005 and 0. Observations reporting small positive scaled earnings are consistent with earnings management. In untabulated univariate tests, we find that audit fees, book-tax differences, and deferred tax expense are significantly ($p < 0.01$) higher for observations reporting small positive earnings relative to observations with small negative earnings. This indicates that observations where the risk of earnings management is higher have report higher audit fees, and consistent with prior

research (Mills and Newberry 2001; Phillips, Pincus and Rego 2003), report greater book-tax differences and deferred tax expense.

We then re-estimate model (1) for the subsample of firms with scaled earnings between -0.005 and +0.005. We also limit the sample to firms that have positive book-tax differences, so that we can consider the setting where book-tax differences should represent the greatest audit risk for target-beating earnings increases. We include our indicator variable for small positive scaled earnings, alone and interacted with $Ln(ABS\text{BTD})$. Although larger book-tax differences continue to explain higher audit fees, neither the indicator variable nor the interaction term is significant. Thus, we have no consistent evidence that auditors increase fees to conduct additional audit procedures when corporations just barely earn a profit, compared to when they just report a loss, regardless of the size of book-tax differences.

6. Conclusions

This paper investigates whether book-tax differences are associated with higher audit fees. We measure book-tax differences as both total book-tax differences (temporary plus permanent) and temporary book-tax differences alone. We also consider both absolute and signed book-tax differences. This paper contributes to the literature that investigates the information reflected in book-tax differences and the relevance of book-tax differences on the audit process.

The data are consistent with larger book-tax differences in absolute value being associated with higher audit fees. We interpret this evidence as indicating that the book-tax differences reflect information that represents a higher risk of earnings management which increases auditor's efforts and time spent on the audit. Further, we find that audit fees are higher as book-tax differences are large and negative, but not as much as when book-tax differences are

large and positive. Because the positive differences could include both potential earnings management and potential tax aggressiveness, we attempt to distinguish the two sources via separating the sample into long-run tax avoiders and firms that do not appear to be avoiding taxes. These additional tests reveal that the positive association between audit fees and book-tax differences is smaller for firms that display the most long-run tax avoidance. Thus, we interpret the results as suggesting that concerns about earnings management – unrelated to tax avoidance – are more responsible for the fee and effort increase. Our results are robust to alternative definitions of book-tax differences (temporary and total) providing evidence that the results are not simply driven by the auditors testing for earnings management of the tax provision accounts (i.e., the valuation allowance and the tax contingency reserve), but that the book-tax differences reflect information about pre-tax earnings quality as well. Our results are also robust to several controls for firm complexity, attempts to control for measurement error in the calculation of book-tax differences, and a control for the accrual level of the firm. Overall, we interpret the sum of the evidence as being consistent with the book-tax differences reflecting information about audit risk.

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TABLE 1: Sample Selection and Industry Distribution**Panel A: Sample Selection**

	Firm-Year Observations
Observations available with nonmissing asset data on 2007 Compustat for the years 2000-2006	62,979
Observations for which S&P audit fee are available on Audit Analytics	33,751
Observations for which segment data are available (business unit)	25,642
Observations after excluding financial services, utilities, and foreign entities	22,182
Final set of observations for which the book-tax difference and other variables in the fee model can be estimated	17,613

Panel B: Industry Distribution

2-digit SIC code	Industry	Sample Number of Firm-Year Observations	%	Compustat Number of Firm-Year Observations	%
1-14	Agriculture and mining	889	5.05	8,764	7.53
15-17	Construction and plumbing	225	1.27	1,666	1.43
20-21	Food and kindred products and cigarettes	397	2.26	2,807	2.41
22-23	Textile mill products and apparel	274	1.55	1,939	1.66
24-27	Lumber , furniture, paper, and printing	638	3.62	4,004	3.44
28-32	Chemicals, petroleum, rubber, leather and stone	2,597	14.74	12,530	10.77
33-34	Metal	549	3.12	3,311	2.85
35-39	Machinery, electrical and computer equip., scientific instruments, miscellaneous manufacturing	4,994	28.35	27,433	23.58
40-48	Railroads, motor freight, transportation, communications	1,163	6.60	9,716	8.35
50-52	Wholesale goods, building material, hardware retail	788	4.47	5,761	4.95
53-59	Stores merchandise, auto dealers, apparel, home furniture stores, eating and drinking, misc. retail	1,385	7.86	8,239	7.08
70-79	Lodging services, business services, other services	2,652	15.06	21,805	18.74
80-99	Other	1,062	6.03	8,358	7.18
	Total	17,613	100%	116,333	100%

Data are for the years 2000 through 2006. Total number of firm-year observations equals 1,462, 2,337, 2,706, and 2,793, 2,942, 3,067, and 2,306 respectively, for years 2000 through 2006.

TABLE 2: Descriptive Statistics and Correlations*Panel A: Descriptive Statistics for Audit Fee Regression Variables*

Variable	Mean	Standard Deviation	Minimum	25%	Median	75%	Maximum
<i>Ln(AUDITFEE)</i>	-1.023	1.388	-4.452	-2.008	-1.088	-0.090	4.493
<i>Ln(ABSBTD)</i>	2.993	2.143	-2.588	1.601	3.048	4.493	7.809
<i>Ln(ABSACC)</i>	2.634	2.094	-2.538	1.218	2.620	4.076	7.568
<i>Ln(ABSDEXP)</i>	-0.361	2.985	-4.269	-4.269	0.086	1.959	6.146
<i>BIG5</i>	0.790	0.407	0.000	1.000	1.000	1.000	1.000
<i>Ln(ASSET)</i>	5.438	2.033	-0.890	4.000	5.411	6.812	10.318
<i>Ln(BUSSEG)</i>	1.305	0.770	0.000	1.095	1.100	1.908	3.497
<i>FOREIGN</i>	0.100	0.350	-1.027	0.000	0.000	0.024	1.797
<i>INV</i>	0.117	0.138	0.000	0.004	0.073	0.181	0.645
<i>REC</i>	0.148	0.124	0.000	0.053	0.125	0.207	0.997
<i>DEBT</i>	0.204	0.221	0.000	0.007	0.150	0.321	1.081
<i>ROA</i>	-0.024	0.295	-1.615	-0.040	0.059	0.116	0.365
<i>LOSS</i>	0.836	0.371	0.000	1.000	1.000	1.000	1.000
<i>AUDOPIN</i>	0.389	0.488	0.000	0.000	0.000	1.000	1.000

Panel B: Correlations for Audit Fee Regression Variables

	<i>Ln</i> (<i>ABSACC</i>)	<i>BIG5</i>	<i>Ln</i> (<i>ASSET</i>)	<i>Ln</i> (<i>BUSSEG</i>)	<i>FGN</i>	<i>INV</i>	<i>REC</i>	<i>DEBT</i>	<i>INCOME</i>	<i>LOSS</i>	<i>AUD</i> <i>OPIN</i>
<i>Ln(ABSBDT)</i>	0.543	0.296	0.541	0.082	0.083	-0.189	-0.178	0.164	-0.027	0.027	0.171
<i>Ln(ABSACC)</i>	1.000	0.413	0.834	0.220	0.128	-0.074	-0.127	0.232	0.255	-0.036	0.191
<i>BIG5</i>		1.000	0.479	0.150	0.067	-0.044	-0.105	0.037	0.169	-0.011	0.109
<i>Ln(ASSET)</i>			1.000	0.271	0.186	-0.008	-0.086	0.198	0.472	-0.098	0.178
<i>Ln(BUSSEG)</i>				1.000	0.075	0.053	0.115	0.131	0.164	-0.047	0.022
<i>FGN</i>					1.000	0.024	0.084	0.007	0.098	-0.043	0.050
<i>INV</i>						1.000	0.140	0.002	0.186	-0.048	-0.036
<i>REC</i>							1.000	-0.042	0.203	-0.073	-0.040
<i>DEBT</i>								1.000	-0.008	0.039	0.135
<i>INCOME</i>									1.000	-0.202	-0.030
<i>LOSS</i>										1.000	0.007
<i>AUDOPIN</i>											1.000

Correlations between *Ln(ASSET)* and *INV*, *DEBT* and *FGN*, *DEBT* and *INV*, *DEBT* and *INCOME*, and *LOSS* and *AUDOPIN* are not significant. The remaining correlations are significant at the 0.01 level.

Data are for the years 2000 through 2006. Total number of firm-year observations for Panel A equals 1,462, 2,337, 2,706, and 2,793, 2,942, 3,067, and 2,306 respectively, for years 2000 through 2006. Total number of observations equals 17,613 for Panel A. We winsorize *Ln(AUDITFEE)*, *Ln(ABSBDT)*, *Ln(ABSACC)*, *Ln(ASSET)*, *FGN*, *INV*, *DEBT*, and *INCOME* at the 1% and 99% of the distributions.

Variables are defined as follows:

- Ln(AUDIT FEE)* = Log of audit fee;
- Ln(ABSBDT)* = Log of absolute value the total book-tax differences (i.e., spread between pre-tax book income and taxable) income (data #170 – ((data #16 – data #50)/.35 – Δdata#52);
- Ln(ABSACC)* = Log of absolute value of total accruals measured as the difference between earnings and cash flow from operations (data #18 – data #308);
- Ln(ABSDEXP)* = Log of the absolute value of deferred tax expense (data item #50);

<i>BIG5</i>	=	An indicator variable set equal to 1 for client-observations audited by a Big 5 (or Big 4) auditor, and 0 otherwise (item # 149);
<i>Ln(ASSET)</i>	=	Log of total assets (item # 6);
<i>Ln(BUSSEG)</i>	=	Log of the number of business segments owned by the client;
<i>FGN</i>	=	Ratio of foreign sourced pre-tax book income to total pre-tax book income (item # 273/# 170);
<i>INV</i>	=	Inventory to average total assets (item # 3/item #6);
<i>REC</i>	=	Receivables to average total assets (item # 3/item #6);
<i>DEBT</i>	=	Sum of short-term debt and long-term debt to average total assets ((item #34 + item#9)/item # 6);
<i>INCOME</i>	=	The ratio of operating income after depreciation to average total assets (item #178/item #6);
<i>LOSS</i>	=	An indicator variable set equal to 1 if income before extraordinary items and discontinued operations is negative in the current or prior year, and 0 otherwise (item #18);
<i>AUDOPIN</i>	=	An indicator variable set equal to 1 if the firm receives a modified audit opinion, and 0 otherwise (item # 149);

TABLE 3: Regression of Log of Audit Fees on the Log of Book-Tax Differences and Controls

$$\ln(AUDIT\ FEE) = \alpha + \beta_1 \ln(ABS\ BT D)_i + \beta_2 \ln(ABS\ ACC)_i + \beta_3 \ln(BIG\ 5)_i + \beta_4 \ln(ASSET)_i + \beta_5 \ln(BUSSE\ G)_i + \beta_6 \ln(FGN)_i + \beta_7 \ln(INV)_i + \beta_8 \ln(REC)_i + \beta_9 \ln(DEBT)_i + \beta_{10} \ln(INCOME)_i + \beta_{11} \ln(LOSS)_i + \beta_{12} \ln(AUDOPIN)_i + \beta_{13-24} \ln(IND)_i + \beta_{25-30} \ln(YEAR) + e \quad (1)$$

Independent Variables (Expected Sign)	Coefficients (<i>t</i> -statistics)							
	2000	2001	2002	2003	2004	2005	2006	Pooled Model
Intercept (?)	-4.826 (-45.13) ^a	-4.686 (-57.45) ^a	-4.982 (-47.79) ^a	-4.442 (-54.99) ^a	-4.327 (-48.70) ^a	-4.112 (-49.04) ^a	-4.034 (-42.61) ^a	-3.872 (-101.85) ^a
<i>Ln</i> (ABS <i>BT</i> D) (+)	0.047 (4.55) ^a	0.052 (7.08) ^a	0.088 (9.14) ^a	0.061 (8.19) ^a	0.072 (8.98) ^a	0.063 (8.04) ^a	0.058 (6.69) ^a	0.067 (20.56) ^a
<i>Ln</i> (ABS <i>ACC</i>) (+)	0.017 (1.17)	0.027 (2.54) ^a	0.036 (2.39) ^a	0.052 (4.33) ^a	0.000 (0.02)	0.020 (1.73) ^b	0.000 (0.05)	0.021 (4.34) ^a
<i>BIG</i> 5 (+)	0.057 (1.04) ^c	0.108 (2.74) ^a	0.060 (1.22)	0.283 (7.78) ^a	0.505 (13.34) ^a	0.494 (14.39) ^a	0.502 (12.97) ^a	0.376 (24.50) ^a
<i>Ln</i> (ASSET) (+)	0.441 (24.38) ^a	0.417 (30.29) ^a	0.401 (22.00) ^a	0.405 (27.44) ^a	0.478 (29.54) ^a	0.484 (31.88) ^a	0.476 (28.05) ^a	0.438 (70.39) ^a
<i>Ln</i> (BUSSE <i>G</i>) (+)	0.202 (8.10) ^a	0.172 (9.04) ^a	0.146 (5.72) ^a	0.160 (7.94) ^a	0.147 (6.70) ^a	0.110 (5.41) ^a	0.123 (5.24) ^a	0.156 (18.19) ^a
<i>FGN</i> (+)	0.256 (4.89) ^a	0.181 (5.23) ^a	0.164 (3.60) ^a	0.212 (6.03) ^a	0.235 (6.01) ^a	0.221 (5.84) ^a	0.261 (6.34) ^a	0.223 (14.34) ^a
<i>INV</i> (+)	0.251 (1.75) ^b	0.395 (3.83) ^a	0.238 (1.73) ^b	0.056 (0.50)	0.028 (0.23)	-0.073 (-0.62)	0.091 (0.67)	0.155 (3.21) ^a
<i>REC</i> (+)	1.342 (9.71) ^a	1.190 (10.86) ^a	1.151 (8.19) ^a	0.875 (7.93) ^a	0.708 (5.66) ^a	0.685 (5.77) ^a	0.802 (6.19) ^a	0.941 (19.49) ^a
<i>DEBT</i> (+)	0.169 (2.28) ^b	0.185 (3.20) ^a	0.151 (2.03) ^b	0.087 (1.47) ^c	0.028 (0.44)	-0.067 (-1.07)	-0.041 (-0.59)	0.084 (3.30) ^a
<i>INCOME</i> (-)	-0.428 (-5.95) ^a	-0.428 (-8.18) ^a	-0.216 (-3.20) ^a	-0.357 (-6.27) ^a	-0.314 (-5.02) ^a	-0.365 (-5.91) ^a	-0.300 (-4.37) ^a	-0.326 (-13.43) ^a
<i>LOSS</i> (+)	0.010 (0.24)	0.026 (0.76)	0.472 (11.23) ^a	0.146 (4.28) ^a	0.222 (6.18) ^a	0.207 (5.80) ^a	0.109 (2.69) ^a	0.196 (13.40) ^a
<i>AUDOPIN</i> (+)	0.112 (2.57) ^a	0.103 (3.50) ^a	0.130 (3.98) ^a	0.141 (5.32) ^a	0.143 (4.55) ^a	0.144 (4.30) ^a	0.159 (4.75) ^a	0.128 (10.42) ^a
Adjusted R ²	0.745	0.753	0.621	0.750	0.739	0.737	0.746	0.747
N	1,462	2,337	2,706	2,793	2,942	3,067	2,306	17,613

a, b, c indicates one-tailed significance at the 0.01, 0.05, 0.10 levels, respectively.

See Table 2 for variable definitions. *t*-statistics are in parentheses. Both the yearly and the pooled models include twelve industry-dummy variables to represent the following two-digit SIC categories, respectively (similar to Ashbaugh et al., 2003): SIC 01-14, SIC 15-19, SIC 20-21, SIC 22-23, SIC 24-27, SIC 28-32, SIC 33-34, SIC 35-39, SIC 40-48, SIC 50-52, SIC 53-59, SIC 70-79. The pooled model also includes six year-dummy variables to represent years 2000 through 2006.

TABLE 4: Regression of Log of Audit Fees on Log of Book-Tax Differences and Control Variables: Observations Partitioned by Signed Magnitude of the Book-Tax Differences

$$\begin{aligned} \ln(AUDIT\ FEE) = & \alpha + \beta_1 \ln(ABS\ BT D)_t + \beta_2 \ln(ABS\ ACC)_t + \beta_3 \text{BIG}5_t + \beta_4 \ln(ASSET)_t + \\ & \beta_5 \ln(BUSSEG)_t + \beta_6 \text{FGN}_t + \beta_7 \text{INV}_t + \beta_8 \text{REC}_t + \beta_9 \text{DEBT}_t + \beta_{10} \text{INCOME}_t + \\ & \beta_{11} \text{LOSS}_t + \beta_{12} \text{AUDOPIN}_t + \beta_{13-24} \text{IND}_t + \beta_{25-30} \text{YEAR} + e \quad (1) \end{aligned}$$

Independent Variables (Expected Sign)	Coefficient (<i>t</i> -statistics)				
	Book<<Tax				Book>>Tax
	Group 1	Group 2	Group 3	Group 4	Group 5
Intercept (?)	-3.957 (-40.66) ^a	-3.936 (-40.81) ^a	-3.623 (-43.19) ^a	-3.654 (-36.44) ^a	-4.000 (-40.49) ^a
<i>Ln</i> (ABS <i>BT</i> D) (+)	0.033 (3.28) ^a	0.057 (3.99) ^a	0.048 (5.42) ^a	0.098 (5.00) ^a	0.139 (10.46) ^a
<i>Ln</i> (ABS <i>ACC</i>) (+)	0.039 (3.61) ^a	0.025 (2.06) ^b	0.027 (2.42) ^a	-0.015 (-1.47)	0.038 (3.83) ^a
<i>BIG</i> 5 (+)	0.371 (9.30) ^a	0.506 (15.20) ^a	0.450 (14.86) ^a	0.336 (9.89) ^a	0.145 (3.27) ^a
<i>Ln</i> (ASSET) (+)	0.447 (32.82) ^a	0.407 (25.00) ^a	0.406 (28.33) ^a	0.443 (33.23) ^a	0.428 (33.78) ^a
<i>Ln</i> (BUSSE <i>G</i>) (+)	0.193 (9.75) ^a	0.105 (4.80) ^a	0.052 (2.67) ^a	0.098 (5.43) ^a	0.247 (15.15) ^a
<i>FGN</i> (+)	0.225 (6.90) ^a	0.166 (4.03) ^a	0.250 (6.52) ^a	0.219 (6.33) ^a	0.182 (6.67) ^a
<i>INV</i> (+)	0.022 (0.18)	-0.137 (-1.35)	0.367 (3.88) ^a	0.324 (2.98) ^a	0.261 (1.96) ^b
<i>REC</i> (+)	1.126 (9.85) ^a	0.834 (7.62) ^a	0.518 (5.43) ^a	0.782 (7.53) ^a	1.880 (15.38) ^a
<i>DEBT</i> (+)	0.037 (0.68)	0.115 (1.83) ^c	0.103 (1.64)	0.074 (1.33)	0.008 (0.16)
<i>INCOME</i> (-)	-0.345 (-6.62) ^a	-0.289 (-5.22) ^a	-0.290 (-5.12) ^a	-0.210 (-3.74) ^a	-0.468 (-8.04) ^a
<i>LOSS</i> (+)	0.128 (3.55) ^a	0.266 (6.99) ^a	0.287 (9.81) ^a	0.181 (5.97) ^a	0.052 (1.80) ^b
<i>AUDOPIN</i> (+)	0.157 (5.73) ^a	0.149 (4.99) ^a	0.097 (3.32) ^a	0.068 (2.67) ^a	0.116 (4.92) ^a
Adjusted R ²	0.715	0.591	0.626	0.668	0.781
N	3,522	3,523	3,523	3,523	3,522

a, b, c indicates one-tailed significance at the 0.01, 0.05, 0.10 levels, respectively.

See Table 2 for variable definitions. Observations are partitioned into quintiles based on the book-tax difference variable (pre-tax book income less taxable income). Quintile 1 (5) represents observations with the highest negative (positive) book-tax differences. As in Table 3, six year-dummy variables and twelve industry-dummy variables are included as controls.

TABLE 5: Regression of Log of Audit Fees on the Log of Book-Tax Differences and the Signed Log of Book-tax Differences and Controls

$$\ln(AUDIT\ FEE) = \alpha + \beta_1 \ln(ABS\ BTD)_t + \beta_2 \ln(ABS\ BTD)_t \times NBTD + \beta_3 \ln(ABS\ ACC)_t + \beta_4 \ln(ABS\ ACC)_t \times NACC + \beta_5 BIG5_t + \beta_6 \ln(ASSET)_t + \beta_7 \ln(BUSSEG)_t + \beta_8 FGN_t + \beta_9 INV_t + \beta_{10} REC_t + \beta_{11} DEBT_t + \beta_{12} INCOME_t + \beta_{13} LOSS_t + \beta_{14} AUDOPIN_t + \beta_{15-26} IND_t + \beta_{27-32} YEAR + e$$

Independent Variables (Expected Sign)	Coefficients (t-statistics)							
	2000	2001	2002	2003	2004	2005	2006	Pooled Model
Intercept (?)	-4.875 (-44.93) ^a	-4.739 (-57.25) ^a	-4.997 (-47.24) ^a	-4.499 (-54.63) ^a	-4.386 (-48.43) ^a	-4.190 (-48.73) ^a	-4.171 (-43.38) ^a	-3.960 (-104.24) ^a
$\ln(ABS\ BTD)$ (+)	0.054 (4.85) ^a	0.058 (7.00) ^a	0.106 (10.18) ^a	0.064 (8.18) ^a	0.074 (8.71) ^a	0.071 (8.70) ^a	0.063 (7.12) ^a	0.075 (21.76) ^a
$\ln(ABS\ BTD) \times NBTD$ (-)	-0.016 (-1.77) ^c	-0.011 (-1.55)	-0.039 (-4.30) ^c	-0.012 (-1.61)	-0.005 (-0.56)	-0.025 (-3.34) ^a	-0.019 (-2.58) ^a	-0.021 (-6.90) ^a
$\ln(ABS\ ACC)$ (+)	0.013 (0.70)	0.024 (1.43)	-0.009 (-0.40)	0.079 (4.69) ^a	-0.016 (-0.99)	0.021 (1.32)	-0.001 (-0.06)	0.016 (2.40) ^b
$\ln(ABS\ ACC) \times NACC$ (-)	0.008 (0.62)	0.007 (0.52)	0.056 (2.84) ^a	-0.029 (-2.11) ^b	0.021 (1.60)	0.003 (0.25)	0.006 (0.53)	0.009 (1.81) ^c
$BIG5$ (+)	0.066 (1.21)	0.110 (2.82) ^a	0.066 (1.35)	0.288 (7.92) ^a	0.511 (13.49) ^a	0.496 (14.50) ^a	0.506 (13.10) ^a	0.381 (24.89) ^a
$\ln(ASSET)$ (+)	0.432 (23.70) ^a	0.410 (29.59) ^a	0.390 (21.36) ^a	0.401 (27.02) ^a	0.472 (29.01) ^a	0.477 (31.32) ^a	0.469 (27.52) ^a	0.431 (68.97) ^a
$\ln(BUSSEG)$ (+)	0.171 (8.49) ^a	0.152 (9.79) ^a	0.123 (5.97) ^a	0.142 (8.66) ^a	0.133 (7.23) ^a	0.125 (5.96) ^a	0.171 (5.48) ^a	0.145 (19.08) ^a
FGN (+)	0.255 (4.87) ^a	0.181 (5.24) ^a	0.159 (3.51) ^a	0.211 (6.02) ^a	0.232 (5.92) ^a	0.214 (5.66) ^a	0.256 (6.22) ^a	0.218 (14.06) ^a
INV (+)	0.265 (1.85) ^c	0.407 (3.93) ^a	0.314 (2.27) ^b	0.033 (0.29)	0.073 (0.58)	-0.050 (-0.42)	0.111 (0.80)	0.183 (3.76) ^a
REC (+)	1.328 (9.58) ^a	1.172 (10.70) ^a	1.126 (8.05) ^a	0.847 (7.69) ^a	0.712 (5.67) ^a	0.680 (5.72) ^a	0.802 (6.16) ^a	0.937 (19.39) ^a
$DEBT$ (+)	0.158 (2.13) ^b	0.178 (3.07) ^a	0.132 (1.78) ^c	0.076 (1.28)	0.021 (0.33)	-0.072 (-1.15)	-0.044 (-0.63)	0.072 (2.85) ^a
$INCOME$ (-)	-0.418 (-5.80) ^a	-0.421 (-8.08) ^a	-0.218 (-3.24) ^a	-0.359 (-6.31) ^a	-0.305 (-4.89) ^a	-0.367 (-5.95) ^a	-0.298 (-4.36) ^a	-0.325 (-13.39) ^a
$LOSS$ (+)	0.012 (0.29)	0.029 (0.82)	0.480 (11.49) ^a	0.148 (4.37) ^a	0.219 (6.10) ^a	0.202 (5.67) ^a	0.104 (2.57) ^b	0.196 (13.47) ^a
$AUDOPIN$ (+)	0.113 (2.60) ^a	0.100 (3.39) ^a	0.122 (3.75) ^a	0.138 (5.24) ^a	0.137 (4.35) ^a	0.142 (4.24) ^a	0.159 (4.75) ^a	0.123 (10.01) ^a
Adjusted R ²	0.747	0.754	0.626	0.752	0.740	0.739	0.747	0.749
N	1,462	2,337	2,706	2,793	2,942	3,067	2,306	17,613

^{a, b, c} indicates one-tailed significance at the 0.01, 0.05, 0.10 levels, respectively.

NBTD is an indicator variable that equals 1 if *BTD* is negative and 0 otherwise. *NACC* is an indicator variable that equals 1 if accruals are negative and 0 otherwise. See Table 2 for definitions of other variables. *t*-statistics are in parentheses. Both the yearly and the pooled models include twelve industry-dummy variables to represent the following two-digit SIC categories, respectively (similar to Ashbaugh et al., 2003): SIC 01-14, SIC 15-19, SIC 20-21, SIC 22-23, SIC 24-27, SIC 28-32, SIC 33-34, SIC 35-39, SIC 40-48, SIC 50-52, SIC 53-59, SIC 70-79. The pooled model also includes six year-dummy variables to represent years 2000 through 2006.

TABLE 6: Regression of Log of Audit Fees on Control Variables and Log of Absolute Deferred Tax Expense

$$\begin{aligned} \ln(AUDIT\ FEE) = & \alpha + \beta_1 \ln(ABSDEXP)_t + \beta_2 \ln(ABSACC)_t + \beta_3 BIG5_t + \\ & \beta_4 \ln(ASSET)_t + \beta_5 \ln(BUSSEG)_t + \beta_6 FGN_t + \beta_7 INV_t + \beta_8 REC_t + \beta_9 DEBT_t + \\ & \beta_{10} INCOME_t + \beta_{11} LOSS_t + \beta_{12} AUDOPIN_t + \beta_{13-24} IND_t + \beta_{25-30} YEAR + e \quad (1) \end{aligned}$$

Independent Variables (Expected Sign)	Coefficient (t-statistics)		
	Absolute Deferred Tax Expense (1)	Positive Deferred Tax Expense (2)	Negative Deferred Tax Expense (3)
Intercept (?)	-3.900 (-82.36) ^a	-3.894 (-62.03) ^a	-3.911 (-53.50) ^a
<i>Ln(ABSDEXP)</i> (+)	0.027 (5.93) ^a	0.021 (3.43) ^a	0.036 (5.28) ^a
<i>Ln(ABSACC)</i> (+)	0.021 (3.72) ^a	0.021 (2.74) ^a	0.020 (2.35) ^a
<i>BIG5</i> (+)	0.353 (18.56) ^a	0.313 (12.22) ^a	0.392 (13.82) ^a
<i>Ln(ASSET)</i> (+)	0.486 (63.93) ^a	0.496 (48.71) ^a	0.475 (41.37) ^a
<i>Ln(BUSSEG)</i> (+)	0.136 (14.33) ^a	0.140 (11.32) ^a	0.129 (8.75) ^a
<i>FGN</i> (+)	0.229 (13.84) ^a	0.245 (9.86) ^a	0.213 (9.49) ^a
<i>INV</i> (+)	0.042 (0.75)	0.163 (2.15) ^b	-0.082 (-1.01)
<i>REC</i> (+)	0.889 (15.73) ^a	0.933 (12.60) ^a	0.846 (9.63) ^a
<i>DEBT</i> (+)	0.084 (2.56) ^b	0.123 (2.86) ^a	0.046 (0.89)
<i>INCOME</i> (-)	-0.464 (-8.83) ^a	-0.619 (-8.02) ^a	-0.288 (-3.91) ^a
<i>LOSS</i> (+)	0.206 (13.41) ^a	0.213 (10.90) ^a	0.192 (7.72) ^a
<i>AUD OPIN</i> (+)	0.124 (8.59) ^a	0.120 (6.43) ^a	0.129 (5.73) ^a
Adjusted R ²	0.746	0.754	0.737
N	12,953	7,326	5,627

^{a, b, c} indicates one-tailed significance at the 0.01, 0.05, 0.10 levels, respectively.

See Table 2 for definitions of other variables. As in Table 3, six year-dummy variables and twelve industry-dummy variables are included as controls.