BOOK-TAX DIFFERENCES AND AUDIT RISK: EVIDENCE FROM THE UNITED STATES

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Abstract

Empirical research suggests that book-tax differences (BTDs) are related to greater earnings management. Separately, there is evidence that auditors consider earnings management in their risk-assessment process. Together, these studies suggest that BTDs may be associated with audit risk; this assertion is tested herein by conducting a survey of U.S. auditors. We find that auditors, on average, perceive large BTDs to be related to an increase in audit risk. Auditors perceive large positive BTDs to have a greater impact on audit risk than large negative BTDs, while auditors do not perceive large permanent BTDs to have a different impact on audit risk, vis-à-vis large temporary BTDs. Approximately one-third of surveyed auditors use BTDs to assess audit risk, and an auditor's perception of the relationship between BTDs and audit risk is a significant determinant of an auditor's decision to use BTDs to assess audit risk.

1. INTRODUCTION

In recent years the differences between financial statement income (book income) and taxable income, or book-tax differences (BTDs), have garnered a great deal of attention from academic researchers. Academics have provided empirical evidence that BTDs reflect information concerning earnings quality. Specifically, empirical evidence suggests a positive relationship between BTDs and earnings management (Phillips et al., 2003). Studies have additionally linked BTDs to extreme cases of earnings management: Badertscher et al. (2009) and Ettredge et al. (2008) find relationships between BTDs and financial statement restatements and accounting fraud, respectively. Further, Hanlon et al. (2012) find that larger absolute BTDs are associated with higher audit fees, more modified audit opinions and a greater incidence of auditor turnover.

Policy-makers in the United States (U.S.) have also brought BTDs into the limelight. As noted in Gleckman et al. (2002), it is not uncommon for U.S. corporations to report large profits to the Securities and Exchange Commission (SEC), and at the same time report little to no income to the Internal Revenue Service (IRS). Such discrepancies have caused U.S. regulators to consider the use of BTDs in detecting accounting fraud. On 8 August 2002, Senator Grassley, ranking member of the United States Finance Committee, wrote a letter to the Department of Treasury and the SEC questioning whether increased disclosure of taxable income, to use as a benchmark against book income, would help 'police corporate governance' (Grassley, 2002a). In a follow-up letter to President Bush dated 8 October 2002, Senator Grassley discusses the belief that information regarding taxable income 'will provide investors with important insights into a company's overall financial condition' (Grassley, 2002b).

In a separate vein of accounting research regarding audit risk, it is documented that auditors consider earnings management

in their risk-assessment process. Bedard and Johnstone (2004) find that auditors respond to earnings management risk with ex-ante increases in planned audit hours and billing rates. Winograd, et al., (2000) and Bell et al. (2002) examine specifics of Big Four risk assessment programs, and find that anticipated earnings management is considered in the risk assessment process. Further, Manry et al. (2007) document a positive relationship between engagement risk and post-audit income-increasing discretionary accruals.

Drawing upon the two distinct lines of research outlined above, we investigate whether U.S. auditors use BTDs in their risk assessment process. We find that auditors perceive a positive relationship between large BTDs and audit risk. Large positive BTDs are perceived to have a stronger relationship with audit risk, vis-à-vis large negative BTDs. Approximately one third of surveyed auditors use BTDs in some fashion to assess audit risk. Variation in use of BTDs across sign (positive or negative) or nature (temporary or permanent) is not found. We also examine the determinants of the decision to use BTDs to assess audit risk, and find that an auditor's perception of the relationship between BTDs and audit risk is a significant component of such decision. According to the subsample of auditors who use BTDs to assess audit risk, BTDs are indeed useful in the risk assessment process. Finally, the vast majority of auditors who do not use BTDs to assess audit risk would consider using BTDs to assess audit risk, if they were made aware of the research linking BTDs to earnings management.

The remainder of the paper is outlined as follows. Section 2 discusses the background of the study. Section 3 develops the hypotheses. Section 4 presents the sample. Section 5 discusses the results. Section 6 concludes.

2. BACKGROUND

2.1. BTDs and Earnings Management

Empirical research documents various associations between BTDs and earnings management. Phillips *et al*. (2003) find that deferred tax expense is incrementally useful, beyond total accruals and abnormal accruals, in detecting earnings management. Specifically, Phillips *et al*. find that increases in deferred tax expense increase the probability of managing earnings to avoid reporting an earnings decline and a loss. Mills and Newberry (2001) find that BTDs are positively related to certain financial reporting incentives, including financial distress. Hanlon (2005) finds that large temporary BTDs indicate book income and accruals are less persistent in one-year ahead earnings, relative to small BTDs. Badertscher *et al*. (2009) and Ettredge *et al*. (2008) expand up the notion that BTDs are related to managed earnings by focusing on extreme earnings management cases. Badertscher *et al*. find that total BTDs are useful in predicting restatements, while Ettredge *et al*. find that deferred tax expense variables are useful in detecting accounting fraud.

In another study, most closely related to this study, Hanlon *et al*. (2012) find that BTDs are positively related to audit fees, more modified audit opinions, and a great incidence of auditor turnover. While Hanlon *et al*. do not provide direct evidence of a relationship between BTDs and audit risk, it does reinforce the existing literature regarding the relationship between BTDs and earnings management. By directly testing auditors' (1) perceptions of BTDs, in relationship to audit risk, (2) use of BTDs in the risk assessment process and (3) perceived usefulness of BTDs in assessing audit risk, this paper contributes to the stream of literature outlined above. More specifically, this study aims to bridge the gap between academic findings regarding the BTDs/earnings management relationship and practitioner practices regarding the BTD/earnings management relationship.

2.2. Audit Risk and Earnings Management

Prior research finds a positive relationship between audit risk and earning management. The link between audit risk and earnings management is rooted in the concept that increased earnings management results in greater exposure to litigation and reputation declines (St. Pierre and Anderson, 1984 and Heninger, 2001). As noted by Krishnan and Visvanathan (2008): 'earnings management increases the risk of misstatements or restatements and, therefore, the inherent risk and the overall audit risk, *ceteris paribus*.' Bedard and Johnstone (2004) extend these notions by studying whether there is a relationship between the risk of earnings management and auditor's planning and pricing decisions. The authors find that auditors respond to earnings management risk with ex-ante increases in planned audit hours and billing rates. Gul *et al*. (2003) and Abbott *et al*. (2006) reveal a positive relationship between earnings management and audit fees, further supporting the notion of a positive relationship between earnings management and the risk assessment process.

Studies of practitioner risk-assessment tools support the archival studies mentioned above. Winograd, *et al*., (2000) and Bell *et al*. (2002) study the risk-assessment tools used by PwC and KPMG, respectively. Both studies find that earnings management is taken into consideration when assessing audit risk. We hope to extend these findings by providing a new setting to test the relationship between audit risk and earnings management.

2.3. Current Regulation Relating to BTDs and the Audit Process

Generally Accepted Auditing Standards (GAAS) require U.S. auditors to understand their clients' incentives and to search for differences between actual and expected performance that may indicate misstatements. GAAS provides the 10 general foundations for auditing; more specific auditing standards are sanctioned through the many Statements of Auditing Standards (SAS), International Auditing Standards (IAS) and more recently,

in the wake of the Sarbanes-Oxley Act of 2002, the Public Companies Oversight Board (PCOB). Despite the depth and breadth of auditing standards, specific guidance regarding BTDs is not provided.

While auditing standards are silent in regards to BTDs, there are certain U.S. financial reporting requirements per Generally Accepted Accounting Principles (GAAP) which relate to taxes; auditors must address these issues in their audits of financial statements. Such requirements are stated in Financial Accounting Standards No. 109 *Accounting for Income Taxes* (SFAS 109) and *FASB Interpretation No. 48* (FIN 48), and are discussed below.
SFAS 109 (1992) requires firms to recognize the amount of taxes payable or refundable for the current year and deferred tax liabilities and assets for future tax consequences. Specifically, SFAS 109 requires an asset and liability approach to financial accounting and reporting for income taxes.

Deferred income tax assets and liabilities are computed annually for differences between the financial statement and tax bases of assets and liabilities that will result in taxable or deductible amounts in the future based on enacted tax laws and rates applicable to the periods in which the differences are expected to affect taxable income. Valuation allowances are established when necessary to reduce deferred tax assets to the amount expected to be realized. Many of the concepts used to audit accounting estimates, in general, are applied in auditing valuation allowances: despite the specific guidelines outlined in SFAS No. 109, the auditor must use professional judgment in determining the reasonableness of valuation allowances.

FIN 48 (2006) specifies the accounting and reporting requirements for uncertain tax positions. FIN 48 involves a two-step process. The first step involves applying a recognition threshold to determine whether an uncertain tax position should be recognized in the company's financial statements. If the threshold is met, the second step involves a measurement process to determine the amount of the uncertain tax position to be reported

in the financial statements. More specifically, if it is determined that a tax position is uncertain, the firm must recognize a liability for the potential tax to be paid, including potential interest and penalties. The auditor must consider issues in regards to identifying and evaluating possible tax uncertainties, audit documentation and materiality in line with auditing standards while auditing companies with possible FIN 48 considerations (Alltizer *et al*., 2008).

Thus, while the U.S. auditing standards are silent in regards to BTDs, auditors must understand the many elements regarding taxable income per GAAP.[1] Because the decision to use BTDs to assess audit risk is not universally determined, the decision to use BTDs in the risk assessment process may be subject to an auditor's unique knowledge, judgment and perception, and is examined herein.

3. HYPOTHESES DEVELOPMENT AND TESTING METHODOLOGY

3.1. Auditors' Perceptions of BTDs

As outlined above, it has been documented that BTDs and earnings management are positively related. Further, researchers have established a positive relationship between audit risk and earnings management. Together, these two lines of research suggest that BTDs are positively related to audit risk. As such, our first hypothesis questions whether auditors perceive BTDs to have a positive relationship with audit risk:

[1] The International Financial Reporting Standards (IFRS) addresses both SFAS 109 and FIN 48 issues. Specifically, IFRS calls for recognition of deferred taxes, similar to SFAS 109 (see IAS 12). Further, IFRS calls for the reporting of uncertain tax positions; however, the valuation of such liabilities may differ across reporting regimes.

H1a: Auditors perceive BTDs, in general, to have a positive relationship with audit risk.

We test H1a by compiling the average perceptions of the surveyed population.[2] The scale of perception ranges from -4.0 (perceived decrease in audit risk) to 4.0 (perceived increase in audit risk) with zero being the middle value (perceived no impact on audit risk). In order to ascertain whether auditors perceive BTDs, in general, to have a positive relationship with audit risk, we test whether the mean perception is statistically greater than zero.

Past research separately examines the relationship between large positive and large negative BTDs and earnings quality (*e.g.* Hanlon, 2005). A large positive BTD results when book income is much greater than taxable income, while a large negative BTD results when taxable income is much greater than book income. Recent research regarding BTDs and earnings management has focused on large positive BTDs (e.g., Blaylock *et al*., 2011), due to the preponderance of pressures on management to increase earnings, such as meeting or beating income thresholds (Burgstaher and Eames, 2006) and avoiding losses or earnings declines (Burgstahler and Dichev, 1997; and Beatty, Ke and Petroni, 2002). Consequently, research suggests that managers are more likely to attempt earnings management that increases current income (Nelson, Elliot and Tarpley, 2002) and auditors are more likely to adjust these attempts through a critical assessment of audit evidence (Kinney and Martin, 1994**).**[3] Additionally, in a

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[2] The surveyed population is described in detail in Section 4.

[3] One proposed reason for this asymmetry is the threat of litigation. St. Pierre and Anderson (1984) find that litigation does not ensue from income decreasing accruals, while Heninger (2001) finds that the probability of auditor litigation increases as clients report more positive (income-increasing) accruals. Barron *et al*., 2000, find that when potential errors overstate financial performance,

study of auditors' sensitivities to earnings management incentives, Hirst (1994) finds that auditors are increasingly concerned about income-increasing accruals. Further, Abbott *et al*. (2006) find that audit fees increase with a client's risk of income increasing earnings management, and decrease with a client's risk of income decreasing earnings management risk. As such, it is hypothesized that large positive BTDs are perceived to be more closely related to audit risk than large negative BTDs:[4]

H1b: Large positive BTDs are perceived to be more closely related to audit risk than large negative BTDs.

While overall BTDs may be partitioned by signs, as above, they may also be partitioned by "nature." Specifically, all BTDs, regardless of their sign, are comprised of temporary and permanent components. Temporary BTDs are caused by reversible timing differences, such as differences in deprecation rates across GAAP and the Internal Revenue Code (IRC), while permanent BTDs are caused by non-reversible differences in earnings recognition, such as the recognition of municipal bond interest for book purposes but not tax purposes.

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auditors' assessment of litigation risk and planed audit investments are higher than when those errors understate financial performance.

[4] An alternative argument may be made that large negative BTDs are perceived to be more closely related to audit risk than large positive BTDs; such argument warrants discussion and is presented herein. Negative, temporary BTDs give rise to deferred tax assets. As discussed in Section 2.3, the realizability of deferred tax assets must be determined per SFAS 109, such process potentially involves establishing a valuation allowance against the deferred tax asset. Such determination requires managerial discretion and may expose the auditor to greater risk. However, because this issue relates only to temporary BTDs, and because of the preponderance of literature explaining the strong relationship between audit risk and income increasing accruals (as well as the litigation/reputational impacts of overstating earnings) we have chosen to state H1b in its given form.

Certain studies linking BTDs and earnings quality focus exclusively on the relationship between temporary BTDs and earnings quality (e.g., Phillips *et al*., 2003; and Hanlon, 2005). This is done, in general, because of the assumption that there is greater managerial discretion in the determination of book income relative to taxable income. As such, managers prefer to increase book income via discretionary financial statement accruals (increasing revenue or deferring expenses), resulting in temporary differences between book income and taxable income. Further, Ettredge *et al*. (2008) find that deferred tax expense variables are useful in detecting fraud, while overall BTDs generally lack explanatory power. Based upon these pivotal studies, it is hypothesized that large temporary BTDs are perceived to be more closely related to audit risk than large permanent BTDs:

H1c: Large temporary BTDs are perceived to be more closely related to audit risk than large permanent BTDs.

We test H1b and H1c by conducting tests of differences of means across subsamples. Because these hypotheses are signed, the tests are one-tailed in nature.

3.2. Auditors' Use of BTDs

The next set of hypotheses goes beyond auditors' perceptions of the BTD/audit risk relationship, and involves the actual use of BTDs in the risk assessment process. Due to the extant literature linking BTDs to increased earnings management and increased audit fees, coupled with the documented positive relationships between earnings management and audit risk, we next posit that auditors use BTDs to assess audit risk:

H2a: A significant percent of auditors use BTDs to assess audit risk.

We assess whether a significant percent of auditors use BTDs to assess audit risk by determining the percent of the surveyed population which uses BTDs to assess audit risk. We then test whether this proportion is statistically greater than zero.
Similar to Section 3.1 above, we separately examine whether the use of BTDs to assess audit risk varies across signs and/or nature with the next two hypotheses:

H2b: It is more common for auditors to use large positive BTDs to assess audit risk than large negative BTDs.

H2c: It is more common for auditors to use large temporary BTDs to assess audit risk than large permanent BTDs.

We test H2b and H2c by conducting tests of differences of proportions across subsamples. Because these hypotheses are signed, the tests are one-tailed in nature.
We proceed by studying the determinants of auditors' decisions to use BTDs to assess audit risk. Because the use of BTDs to assess audit risk is not explicitly suggested by current auditing standards, it is hypothesized that the decision to use BTDs to assess audit risk is driven by auditors' unique perceptions of the relationship between BTDs and audit risk:

H2d: *Ceteris paribus*, the decision to use BTDs to assess audit risk is positively determined by auditors' perceptions of BTDs and audit risk.

We test H2d by use of the following probit[5] model:

$$BTDUSE_{i,t} = \alpha_0 + \alpha_1 PERCEPTION_{i,t} + \alpha_2 BIGFOUR_i + \alpha_3 EXPERIENCE_i + \alpha_4 SEC_i + \alpha_5 INDUSTRY_i \quad (1)$$

The dependent variable, $BTDUSE_{i,t}$ is a binary variable equal to one if the auditor (i) uses the specific type of BTD (t); zero otherwise.[6] The independent variable of importance is the auditor's perception of the specific type of BTD ($PERCEPTION_{i,t}$). Demographic variables which may impact the decision to use BTDs in the risk assessment process are included as control variables. Specifically, we control for Big Four auditors ($BIGFOUR_i$), a dummy variable equal to one if the auditor is employed at a Big Four firm and zero otherwise; the auditor's experience ($EXPERIENCE_i$), proxied by the auditor's current position at his/her firm; the percent of the auditor's clients who are registered issuers with the Securities and Exchange Commission (SEC_i), and the auditor's industry specialty ($INDUSTRY_i$).

The control variables listed above are included for the following reasons. In regards to $BIGFOUR_i$, Krishnan (2003) notes that Big Four audit firms have larger client bases, and therefore have greater incentives to protect themselves from potential litigation and reputational injury. Indeed, prior research has used Big Four firms to proxy for audit quality (DeAngelo, 1981 and Becker *et al*., 1998). Further, Baderscher *et al*. (2009) find that firms having a Big Four auditor rely less on nonconforming

[5] We use a probit model because our sample size is large enough to assume a normal underlying distribution (n = 316). For the sake of completeness we re-estimate equation (1) using a logit model (instead of probit). The two different binary models yield nearly identical results.

[6] The types of BTDs investigated herein are (1) large positive, temporary BTDs; (2) large negative, temporary BTDs; (3) large positive, permanent BTDs; and (4) large negative, permanent BTDs.

earnings management strategies.[7] Due to this difference in detecting and implementing earnings management strategies, $BIGFOUR_i$ may impact the BTDs/audit risk relationship. $EXPERIENCE_i$ may impact the overall risk assessment process of an audit, as audit partners are responsible for assuring that the audit is performed in accordance with applicable professional standards. The partner has the ultimate responsibility for adequate planning, supervision and execution of an audit, as well as the ultimate responsibility for the audit opinion. Thus, experience may alter perceptions and uses of the BTD/audit risk relationship. SEC registration may also impact the BTDs/audit risk relationship as auditors of companies registered with the SEC may have more intimate knowledge of SFAS 109/FIN 48, which in turn may impact their perception and/or use of BTDs in the risk assessment process. Finally, due to variation of BTD computation across industries (i.e. industries which rely heavily on plant assets will be subject to greater temporary BTDs due to variation in depreciation methods), industry specialization is included to control for the effects of industry on the BTD/risk assessment relationship.

3.3. Usefulness of BTDs in Assessing Audit Risk

This section explores whether BTDs are indeed useful in detecting audit risk. As such, tests in this section focus on the subsample of auditors who use BTDs to assess audit risk. Because academic research has established positive links between (a) BTDs and earnings management, and (b) audit risk and earnings management, it is hypothesized that BTDs are indeed useful in the assessment of audit risk:

> **H3a: BTDs, in general, are useful in assessing audit risk.**

[7] Earnings management strategies may be either conforming or nonconforming. A conforming strategy will result in the same impact for both book and taxable income, while a nonconforming strategy will impact only one set of books.

Based upon discussions above, it is predicted that the usefulness of BTDs in the risk assessment process varies with the sign and nature of BTDs as follows:

H3b: Large positive BTDs are more useful in assessing audit risk than large negative BTDs.

H3c: Large temporary BTDs are more useful in assessing audit risk than large permanent BTDs.

Testing methods for this third set of hypotheses are similar to those in the first set of hypotheses. In regards to H3a, we test whether BTDs, in general, are useful in assessing audit risk by compiling the average usefulness of BTDs per the surveyed population who use BTDs to assess audit risk. The scale of usefulness ranges from 1.0 (not useful) to 9.0 (extremely useful) with 5.0 being the middle value (average usefulness). We then test whether the mean usefulness is statistically greater than 1.0 (not useful).[8] H3b and H3c are tested by conducting tests of differences of means across subsamples. Because these hypotheses are signed, the tests are one-tailed in nature.

3.4. Willingness of Auditors to Use BTDs to Assess Audit Risk

Our final set of hypotheses relates to the subsample of auditors who do not currently use BTDs of any kind to assess audit risk. In particular, we examine whether these auditors would consider using BTDs to assess audit risk if they were made aware of findings linking BTDs to earnings management. In H2d we hypothesize that, *ceteris paribus*, the decision to use BTDs to assess audit risk is determined by auditors' perceptions of BTDs.

[8] We additionally examine whether the mean usefulness of BTDs in assessing audit risk is statistically different from 5.0 (average usefulness). As explained in Section 5.2, the mean usefulness of BTDs in assessing audit risk is not statistically different from 5.0, implying average usefulness.

As such, it is believed that, given the lack of official guidance regarding BTDs and audit risk, the decision to use BTDs to assess audit risk is driven by the unique personal perceptions of auditors. In this section we examine whether increased knowledge of the relationship between BTDs and earnings management will impact auditors' use of BTDs, and whether such potential use is increasing in severity of the earnings management component of BTDs. As such, our fourth set of hypotheses is the following:

> **H4a: Auditors are willing to use BTDs to assess audit risk if they are made aware of the relationships between BTDs and earnings management.**
>
> **H4b: The willingness of auditors to use BTDs to assess audit risk is increasing in severity of BTD/earnings management relationship.**

Because this set of hypotheses addresses the willingness to use BTDs in the risk assessment process, the sample population for these tests involves only those auditors who currently do not use BTDs to assess audit risk. We test H4a by determining the proportion of such subsample that would be willing to use BTDs in the risk assessment process, if they were made aware of research linking BTDs to earnings management, and separately, extreme cases of earnings management: earnings restatements and accounting fraud.[9] We test 4hb by examining differences of the proportions across subsamples. Similar to preceding sections, because the differences are signed, the tests are one-tailed in nature

[9] Survey participants have three response options: yes, maybe and no.

4. SAMPLE

In order to gather data for our study, surveys were mailed to 3,061[10] auditors registered with the American Institute of Certified Public Accountants (AICPA) who work for audit firms with 500 or more employees.[11] Completed surveys totaling 337 were received, resulting in a response rate of 11.12%.[12] However, 21 surveys were not answered appropriately (the survey was mailed to a non-auditor, someone who does not actively participate in audits, or incomplete). As such, the final sample consists of 316 surveys. The surveyed population and responses may be found in Table 1.

In hopes of receiving the most honest responses, surveys were not tracked in any manner. As such, two weeks after the initial mailing, the entire surveyed population received a follow-up of the same survey. Those who had already completed and returned the survey were thanked, and those who had not yet done so were asked to please participate.[13]

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[10] The maximum number of contacts we were able to purchase.

[11] The cutoff of 500 or more employees was chosen to increase the probability that the auditor's clients would be registered with the SEC, a control variable used in the probit model to test H2d.

[12] The response rate is higher than the 9% response rate achieved by Graham and Harvey (2001) in a mailed survey to senior financial managers in regards to capital issues, although slightly lower than the 16% response rate achieved by Nelson *et al*. (2003) in a mail survey to audit managers and partners regarding earnings management. However, the lower response is consistent with Nelson *et al*.'s suggestion that the lack of experience in areas relevant to the survey may cause a low response rate. For example, financial statement auditors with significant not-for-profit experience may not have responded because they believed their experience was not relevant to a study of the BTDs and audit risk.

[13] Because responses were not tracked, it is not possibly to directly test non-response bias via a "wave technique" (Kanuk and Berenson, 1975 and Hawkins, 1975) which treats first and second mailings as separate "waves" of responses. In lei of a employing the wave technique, results from the first 50% of

Summary statistics regarding the sample may be found in Table 2. The sample is weighted towards more experienced practitioners, as 62.34% of the sample consists of audit partners. Partners have the ultimate responsibility for adequate audit planning, supervision and execution. Partners are also responsible for the audit opinion. As such, audit partners have increased knowledge of audit risk evaluation, and thus it is believed partners make the ideal subjects for the study. In terms of industry specialty, the sample is diverse.[14] While no one industry dominates the study, the sample is heavily represented by auditors specializing in manufacturing, finance and services.

These are industries which are heavily presented in the general economy, and thus it is believed our results contain general applicability. The next demographic variable is firm size, based upon national revenues. One half of the sample works at Big Four audit firms. As the size of the firm decreases, so too does its representation in the sample. The final demographic variable is the percent of clients registered with the SEC. Approximately 38% of the sample has no clients registered with the SEC, while the other percentages are all well represented. Overall, it is believed that the sample is well diversified across all demographics, allowing for both meaningful independent variables and generalizabilty of findings.

5. RESULTS

5.1. Auditors' Perceptions of BTDs

The first set of hypotheses examines auditors' perceptions of BTDs. Specifically, H1a questions whether auditors perceive BTDs, in general, to be related to increased audit risk; H1b and

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respondents are compared to those from the last 50% of respondents. No significant differences are found.

[14] Approximately 46% our sample specialize in more than one industry; therefore, the percents in Industry Specialization in Table 2 add up to over 100%.

H1c question whether auditors' perceptions of the BTD/audit risk relationship vary with the sign and nature of the BTD, respectively. Results regarding this first set of hypotheses may be found in Table 3. The values in Panel A of Table 3 represent auditors' average perceptions of BTDs, measured on a scale of -4.0 (perceived decrease in audit risk) to 4.0 (perceived increase in audit risk), with zero being the middle (neutral) value. Overall, support is found for H1a, as auditors perceive large BTDs as leading to a slight increase in audit risk: the overall average perception is 0.99, which is statistically greater than zero. Further, the average response in each cell, column and row in Panel A is positive and significantly greater than zero.

In Panel B, H1b and H1c are tested by examining differences in perceptions across subsamples of BTDs. Support is found for H1b, as positive BTDs are perceived to have a greater impact on audit risk than negative BTDs. This finding holds regardless of the nature of BTDs. The frequency graphs in Panel C provide more insight into this difference: few auditors perceive positive BTDs to be related to a decrease in audit risk, while a significant number of auditors perceive negative BTDs to be related to a decrease in audit risk.[15] Support is not found for H1c, as there is no statistically significant difference in perception across temporary and permanent BTDs. Thus, it appears as if auditors' perceptions of BTDs are driven by signs, rather than the nature of BTDs.

5.2. Auditors' Use of BTDs

Our second set of hypotheses extends beyond auditor's perceptions of the BTD/audit risk relationship, and examines auditors' use of BTDs to assess audit risk. Specifically, H2a posits whether a significant percentage of auditors use BTDs to assess

[15] Just under 2% of the surveyed population perceive both large positive temporary and large positive permanent BTDs to be related to decreased audit risk, while 10.5% (8.9%) of the surveyed population perceive large negative temporary (permanent) BTDs to be related to increased audit risk.

audit risk, while H2b and H2c question whether auditors' use of BTDs to assess audit risk vary with the sign and nature of the BTD, respectively. Additionally, H2d examines whether, *ceteris paribus*, the decision to use BTDs to assess audit risk is determined by auditors' perceptions of BTDs.

Results regarding H2a may be found in Panel A of Table 4. The values in Panel A of Table 4 represent the percent of auditors who use the various subgroups of BTDs to assess audit risk.[16] The results in Panel A provide support for H2a, as they suggest that approximately one-third of auditors use some type of BTD to assess audit risk, while approximately one quarter of auditors use each of the various types of BTDs to assess audit risk; these percentages are all significantly greater than zero.[17]

Because the proportions within each cell (one-quarter) differ from and the overall population (one-third), we further examine the number of auditors who use each of the different types of BTDs in Panels B and C. In Panel B we show that the majority of auditors who use BTDs to assess audit risk use all types of BTDs to assess audit risk. In Panel C we show that (excluding "Other" which is discussed below) there are strong correlations among uses of the various BTDs types; however, in no case is the correlation 100%. The strongest correlation is between positive permanent and negative permanent BTDs (90%),

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[16] Unlike Panel A of Tables 3 and 6, which relay perceptions based upon scales of -4.0 to 4.0 and 1.0 to 9.0, respectively, Panel A of Table 4 deals with population proportions. As such, we do not take averages across all subsamples, but instead determine if an auditor uses any type of the relevant BTD. Consequently, the sample size remains static across cells, columns and rows. For example, the proportion of surveyed auditors who use large temporary BTDs to assess audit risk in the first column, 28.16%, represents the percent of auditors who use ***either*** positive or negative large temporary BTDs to assess audit risk.

[17] We additionally test whether the proportions in each cell are significantly different from 25%; they are not. We further test whether the total proportion is statistically different from 33$^{1}/_{3}$%; it is not.

suggesting that auditors who use permanent BTDs to assess audit risk do so regardless of sign. The lowest correlation is between negative temporary and positive permanent BTDs, possibly because these types of BTDs have no overlapping characteristics.

We included an option of "Other" uses of BTDs in our survey, and asked for an explanation regarding this choice. The majority of these auditors wrote about SFAS 109 and FIN 48 (see Section 2.3), and about auditing the valuation allowance in particular.[18] Because there were only 9 auditors who exclusively use "Other" BTDs to assess audit risk, this answer choice has minimal impact on our findings.[19]

In Panel D, H2b and H2c are tested by examining differences in use of BTDs to assess audit risk across subsamples. While the signs of all the differences are as predicted by the hypotheses, none of the differences are statistically significant. Thus, while perceptions of the BTD/audit risk relationship vary across signs, use of BTDs in the risk assessment process is not driven by signs or nature, and remains constant at approximately 25% per subsample.

Results regarding H2d may be found in Table 5. Because of the lack of explicit auditing standard guidance regarding BTDs, H2d tests whether, *ceteris paribus*, the decision to use BTDs to assess audit risk is determined by auditors' unique perceptions of BTDs. As discussed in Section 3.2, we test H2d by conducting

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[18] As such, it appears as if most "Other" uses of BTDs to assess audit risk relate to large negative, temporary BTDs.

[19] The impact of "Other" responses on our findings is minimal: we eliminate the nine auditors who only chose "Other" and re-estimate the total proportion of our sample which use BTDs to estimate audit risk. The re-estimated proportion is 31.92% (rather than 33.86%), which is statistically greater than zero, and statistically indistinguishable from 33 1/3%). Thus, the inclusion of "Other" uses of BTDs has no impact on our conclusions regarding H2a. Additionally, the "Other" responses have no impact on H2b or H2c or H2d.

four separate probit regressions: the decision to use each type of BTD is the binary dependent variable, the auditor's perception of each type of BTD is the independent variable of interest. We additionally control for demographic data which may influence an auditor's decision to use BTDs to assess audit risk.

Before conducting the multivariable probit regression, we examine the relationships between the independent variables in Panel A of Table 5.[20] Because of the significant correlations between the control variables, the impact of these control variables is examined separately in Section 5.5, to make certain our results are not impacted by collinearity.

Results from the probit regressions may be found in Panel B of Table 5. Support for H2d is provided categorically, as the coefficients on $PERCEPTION_{i,t}$ are positive and significant across all four probit models. Thus, it appears as if an auditor's perception of the relationship between BTDs and audit risk is a significant determinant of his/her decision to use BTDs to assess audit risk. As predicted by H2d, the greater the perceived impact of BTDs on audit risk, the more likely it is that the auditor will use BTDs in the risk assessment process.

In regards to the control variables, neither *BIGFOUR* nor *SEC* appear to contribute to the decision to use BTDs to assess audit risk, while *EXPERIENCE* appears to be marginally related to the decision to use BTDs to assess audit risk. Additionally, industry specialization does not appear to have a significant impact on the decision to use BTDs to assess audit risk.[21]

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[20] For purposes of simplicity, *PERCEPTION* in the Panel A of Table 5 relates to auditors' perceptions of positive, temporary BTDs and audit risk. When the correlation between auditors' perceptions of other types of BTDs and the various control variables are examined, *PERCEPTION* is positively related to control variables. As such, the impact of all independent variables is examined separately in Section 5.5.

[21] We examine the sensitivity of our findings to our control variables in Section 5.5.

To gain a deeper understanding of auditors' decisions to use/not use BTDs in the risk assessment process, we asked the surveyed population to provide written explanations. In regards to auditors who do not use BTDs to assess audit risk, four main reasons emerged: (1) the respondent does not audit for-profit entities (or other relevant entities); (2) firm policy disagrees with the use of BTDs to assess audit risk;[22] (3) a perception that BTDs do not relate to earnings management, but instead relate to mechanical differences between GAAP and the IRC;[23] and (4) it is perceived that the audit risk associated with BTDs is correlated with other risk assessment variables.

In regards to why auditors use BTDs to assess audit, the respondents noted: (1) general earnings management incentives reflected in BTDs;[24] (2) realizability of deferred tax assets and related determination of valuation allowances per SFAS 109; (3) reserves for uncertain tax positions per FIN 48; and (4) the benefit of permanent differences in assessing the reasonableness of the effective tax rate.[25] These written responses additionally brought to

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[22] For example, a Senior Manager at a top ten (but not Big Four) audit firm responded to the question 'Please explain why you do not use BTDs to assess audit risk' with the following: 'Firm policy, although I vehemently disagree. Many crisis situations of a few years ago would have been discovered if GAAS required assessing book-tax differences for audit risk.'

[23] This notion is consistent with Seidman (2010) who finds that approximately 50% of the variation in BTDs is explained by regulatory changes unrelated to earnings management.

[24] Such responses ranged from general (i.e., 'These are areas that can be altered by management') to more pointed answers ('Managements pressure to increase book income can result in decisions to improperly increase income.')

[25] As a Big Four Senior Manager states: 'Permanent book-tax differences are considered a key risk. The greater the absolute value of permanent book-tax differences, the greater the perceived risk and the more detailed testing is performed. The expectation is that the effective tax rate will be within a normal range, 37-42% for most US based companies. Large permanent book-

light the importance of understanding the underlying causes of BTDs as well as the usefulness of seeking guidance from experts. In sum, approximately one-third of the sampled population use BTDs, in some manner, to assess audit risk. When this statistic is broken-down into subsamples of BTDs, approximately one quarter of the sampled population use each subsample of BTDs to assess audit risk; this percentage does not statistically vary across subsamples. It is further found that auditors' perceptions of BTDs are a driving factor in the decision to use BTDs to assess audit risk. Finally, the written answers provide additional explanations as to why BTDs are used/not used in the risk assessment process.

5.3. Usefulness of BTDs in Assessing Audit Risk

Our third set of hypotheses examines the usefulness of BTDs in assessing audit risk. Specifically, H3a posits that BTDs are indeed useful in assessing audit risk, while H3b and h3c question whether the usefulness of BTDs in the risk assessment process vary with the sign and nature of the BTD, respectively.

Results regarding these hypotheses may be found in Table 6. The values in Panel A of Table 6 represent the average usefulness of BTDs in assessing audit risk, measured on a scale of 1.0 (not useful) to 9.0 (extremely), with 5.0 being the middle value. Support is provided for H3a, as the overall mean usefulness of BTDs in the risk assessment process is 4.95, which is statistically greater than 1.0. Further, the mean usefulness in each cell, row and column in Panel A is positive and significantly greater than 1.0. Further, none of the mean values in Panel A of Table 6 are statistically different from 5.0, suggesting that BTDs, in general, have an average usefulness.[26]

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differences will cause a company to be outside that range and will have to be explained in the footnote. Have to ensure the cause is accurate and correct.'

[26] We have excluding the usefulness of "Other" BTDs from Panel A of Table 6, as they are not properly referenced in the table. Of the 47 auditors who use

In Panel B of Table 6, H3b and H3c are tested by examining differences in usefulness across subsamples of BTDs. Support is not found for either H3b or H3c: while positive and negative BTDs appear to be equally useful in assessing audit risk, permanent BTDs appear to be marginally more useful than temporary BTDs in assessing audit risk. Thus, while the entire respondent population perceives positive BTDs to be more closely related to increases in audit risk (vis-à-vis negative BTDs), the subsample of auditors who use BTDs to assess audit risk deem permanent BTDs more useful in assessing audit risk (vis-à-vis temporary BTDs). In other words, perceptions of BTDs vary by sign and not nature, while the actual usefulness of BTDs varies by nature and not sign; this variation appears to be driven by positive, not negative BTDs.

5.4. Willingness of Auditors to Use BTDs to Assess Audit Risk

Our final set of hypotheses involves the subsample of auditors who do not currently use BTDs to assess audit risk. Specifically, it is examined if, provided the empirical evidence relating to BTDs and earnings management, auditors who do not currently use BTDs to assess audit risk would consider doing so. It is hypothesized that the willingness to use BTDs to assess audit risk will increase with the severity of the type of earnings management related to BTDs.

Results from this final hypothesis may be found in Table 7. In Panel A it is found that the vast majority of auditors who do not currently use BTDs to assess audit risk would consider doing so, if provided proper evidence of the relationship between BTDs and earnings management. This supports the findings from H2d, as perceptions of the relationship between BTDs and audit risk is a key determinant of usage of BTDs to assess audit risk, and evidence of a relationship between BTDs and earnings may alter

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"Other" BTDs to assess audit risk, 32 provide "usefulness" ratings. The mean usefulness of "Other" BTDs is 5.67, which is statistically greater than 1.0.

such perceptions. Panel B support is provided for H4b, as the percent of auditors willing to use BTDs to assess audit risk is increasing in the severity of the earnings management measure. The findings from this final set of hypotheses have implications for policy-makers and audit firms concerned with reducing all forms of earnings management.

5.5. Robustness Tests

This section examines whether our results are robust to a variety of alternative measures. First, as discussed in Section 5.2, the independent variables used in our probit model are highly correlated. To ensure that our results are not impacted by collinarity, equation (1) is estimated without the three main control variables (*BIGFOUR*, *EXPERIENCE* and *SEC*). Next, each control variable is included separately into the probit model. Additionally, each control variables is dropped and the other two are included. Throughout each of these additional tests, the *PERCEPTION* coefficients exhibit little variation and remains positive and significant (at the 99% level). This is the case with and without the industry control variables.

Next, we examine whether our results are sensitive to the *EXPERIENCE* variable. As described in Section 3.2, *EXPERIENCE* represents the auditor's current position (title) at his/her accounting firms. *EXPERIENCE* is replaced with *YEARS_EXPERIENCE* and *PYEARS_EXPERIENCE*; the former equals all years of accounting experience (incorporating experience in public accounting, industry accounting, and other professional accounting) while the later equals years of public accounting only. The findings regarding the positive impact of auditors' perceptions on the use of BTDs to assess audit risk are not sensitive to the measure of auditor experience.[27]

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[27] *EXPERIENCE* is positive and marginally significant in all four estimates of our main probit model. *YEARS_EXPERIENCE* is also positive in all four probit models, but only marginally significant in three models (it is not significant in regards to large negative, permanent BTDs). Similarly, *PYEARS_EXPERIENCE*

We additionally examine the impact of gender on our findings. Expanding upon studies of psychological and cognitive abilities, the accounting literate predicts that gender differences impact auditing for two reasons. First, females have been shown to exhibit heightened risk aversion, relative to males (Byrnes, *et al*., 1999), and second, females have been found to process information more effectively, relative to males (Meyers-Levy, 1989).[28] By coupling these two lines of research, it sensibly follows that gender may impact audit risk. Indeed, in a study of the effects of gender and task complexity on the accuracy of audit judgments, Chung and Monroe (2001) find that females outperformed males in regards to more complex audit judgments. Additionally, Gold *et al*. (2009) find that female auditors are less influenced by client-provided explanations, relative to male auditors. As such, we examine whether the decision to use BTDs in the risk assessment process is impacted by gender. Our untabulated results regarding gender do not support the notion that gender impacts the decision to use any type of BTD in the risk assessment process.

Next, we expanded upon the findings in Krishnan (2003) and investigate whether industry specialization impacts our findings. Krishnan (2003) finds that clients of auditors with industry specialization exhibit fewer absolute discretionary accruals, relative to clients of non-specialized auditors. Thus, we replace the eight separate industry control variables with *SPECIALIST*, a dummy variable equal to one if the auditor is specializes in one or more industries; zero otherwise. Because many auditors in our sample specialize in more than one industry, to further isolate the impact of specialization we replace

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is also positive in all four probit models, but only marginally significant in two models (it is not significant in regards to both types of large permanent BTDs).

[28] See Gold et. al, 2009 for a detailed explanation of the differences across gender in regards to risk aversion and information processing, as well as a more detailed review of the relationship between gender and auditing.

SPECALIST with *SPECIALIST_ONE*, a dummy variable equal to one if the auditor is strictly a specialist (the auditor only specializes in one industry); zero otherwise. Inclusion of *SPECIALIST* and *SPECIALIST_ONE* in place of industry controls does not alter our main findings. Specifically, *PERCEPTION* remains a universal positive and significant determinant of the auditors' decision to use BTDs to assess audit risk, and similar to our industry dummy variables, *SPECIALIST*/*SPECIALIST_ONE* are not significant.[29]

Finally, we examine the sensitivity of our results to the *BIGFOUR* variable. As described in Section 4, the *BIGFOUR* variable is a dummy variable equal to one if the auditor works for a Big Four firm; zero otherwise. We explore the possibility that the BTD/audit risk relationship may be impacted by a continuous firm size measure, rather than a binary Big Four variable. As such, we replace *BIGFOUR* with *SIZE*, a variable representing the variation in firm size (based upon national revenues) per Table 2. The relationships between the auditors' perceptions of BTDs and their use of BTDs to assess audit risk are not altered by this adjustment, and similar to the *BIGFOUR* variable used in the main tests, *SIZE* is statistically insignificant. Additionally, due to the growth of large, but non-Big Four firms (such as Grant Thornton, BDO Seidman and others), we replace *BIGFOUR* with *TOP10*, a dummy variable equal to one if a firm is a top-10 firm (based upon national revenues); zero otherwise. Again, our results are not altered.

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[29] Krishnan (2003) applies only to Big 6 auditors. Thus, we re-estimate our probit models including *SPECIALIST* and separately, *SPECIALIST_ONE*, using a subsample of only *BIGFOUR* firms. Our results are similar to those using the entire sample, in that *PERCEPTION* remains a strongly significant determinant of BTD usage and *SPECIALIST*/*SPECIALIST_ONE* is insignificant throughout. The only differences in results are in the case of permanent BTDs, where *SEC* becomes marginally significant and *EXPERIENCE* loses significance.

6. CONCLUSION

The aim of this study is to bridge the gap between academic findings and practitioner practices in regards to BTDs and audit risk, using data from the United States. Empirical research has established links between BTDs and earnings management, and separate links between earnings management and audit risk. However, per our knowledge, there are no papers other than Hanlon *et al*. (2012) which study whether such academic findings regarding BTDs are used in the audit practice. While Hanlon *et al*. (2012) provide evidence of an association between high audit fees and BTDs, which suggests that auditors may use BTDs to assess audit risk; [30] this study provides evidence of the relationship between BTDs and audit risk in a more direct form.

We find that auditors, on average, perceive all types of large BTDs to be related to an increase in audit risk. Upon closer inspection, we find that auditors perceive large positive BTDs to have a greater impact on audit risk, vis-à-vis large negative BTDs, while auditors do not perceive large permanent BTDs to have a different impact on audit risk, vis-à-vis large temporary BTDs. In regards to the use of BTDs to assess audit risk, approximately one-third of auditors use some type of BTDs to assess audit risk, and each type of BTD is used by approximately one-quarter of auditors. Usage of BTDs to assess audit risk does not appear to vary with the sign or nature of the BTD. Perception of the BTD/audit risk relationship is found to be a positive and significant determinant of an auditor's decision to use BTDs to assess audit risk. In regards to usefulness of BTDs in assessing audit risk, we find that all BTDs are indeed useful in assessing audit risk. While permanent BTDs are more useful than temporary BTDs in assessing audit risk, this difference is only marginally

[30] Hanlon *et al*. acknowledge that their finding may be attributable to the link between BTDs and firm complexity.

statistically significant, and only relates to positive BTDs. Finally, we find that the vast majority of auditors would consider using BTDs to assess audit risk if provided evidence of their relationship with earnings management, and such willingness is increasing in the severity of the type of earnings management.

The findings contained herein contribute to the academic research linking BTDs to the quality of financial statement earnings. The findings may also be of interest to auditors in designing audit procedures. Further, this study may be of interest to regulators interested in the current use and usefulness of BTDs in the assessment of audit risk, we well as the willingness of auditors to incorporate BTDs in their assessment of audit risk.

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Table 1. Response Rates.

This table summarizes the surveyed population (Panel A) and response rates (Panel B). In Panel A "Small" refers to CPA firms with 501 to 1,000 AIPCA members, "Medium" refers to CPA firms with 1,001 – 5,000 AIPCA members, and "Large" refers to CPA firms with over 5,000 AICPA members.

Panel A: Surveyed Population

	Number of Surveys	Percent
Small	539	17.61%
Medium	521	17.02%
Large	2,001	65.37%
Total	3,061	100%

Panel B: Response Rates

	Number of Surveys
Total surveys mailed	3,061
Returned without forwarding address	(29)
Viable surveys	3,032
Completed sample	337
Incomplete or inappropriate data[31]	(21)
Final sample	316
Response rate (Based upon completed sample)	11.12%
Response Rate (Based upon final sample)	10.43%

[31] Incomplete or inappropriate data mostly involves surveys mailed to non-auditors and surveys where were not completed in a logical manner (i.e. the auditor claimed to use and not use BTDs to assess audit risk).

Table 2. Summary Statistics.

This table provides a general overview of our respondent population.

Practitioner Experience

	Staff	Senior	Manager	Senior Manager	Partner	Principal	Director	Other	No Answer
n =	7	11	19	58	197	11	9	3	1
Percent	2.22%	3.48%	6.01%	18.35%	62.34%	3.48%	2.85%	0.95%	0.32%

Industry Specialty

	Finance	Services	Manufacturing	Retail Trade	Transportation/ Public Utilities	Gov./Public Administration	Generalist/ No Specialty	Other	No Answer
n =	77	121	142	53	17	31	36	59	1
Percent	24.37%	38.29%	44.94%	16.77%	5.38%	9.81%	11.39%	18.67%	0.32%

Firm Size (Based upon National Revenue)

	One of the Fourth Largest	From the Fifth to the 10th Largest	From the 11th to the 30th Largest	The 31st Largest or Below	Other	No Answer
n =	158	80	49	26	3	0
Percent	50.00%	25.32%	15.51%	8.23%	0.95%	0.00%

Percent of Clients Registered with the SEC

	100%	75%	50%	25%	0%	Other[32]
n =	42	51	41	39	120	23
Percent	13.29%	16.14%	12.97%	12.34%	37.97%	7.28%

[32] The majority of "Other" responses pertain to auditors who have 5%, 10% and 15% of clients registered with the SEC. In the analyses the SEC variable is a continuous variable as to properly account for these "other" responses.

Table 3. Auditors' Perceptions of BTDs and Audit Risk.

Panel A: ANOVA Table

This panel summarizes auditors' perceptions of the relationship between large BTDs and audit risk. Values in the table below represent subsample averages (standard deviation in parentheses). The scale ranges from -4.0 (perceived decrease in audit risk) to 4.0 (perceived increase in audit risk) with zero being the middle value (perceived no impact on audit risk). *, **, and *** represent statistical significance (statistically different from zero) at the 90%, 95%, and 99% levels, respectively.

	Temporary BTDs	Permanent BTDs	Total
Positive BTDs	1 1.23*** (1.18) n = 315	2 1.23*** (1.29) n = 314	1.23*** (1.23) n = 629
Negative BTDs	3 0.78*** (1.37) n = 315	4 0.73*** (1.37) n = 315	0.76*** (1.37) n = 630
Total	1.00*** (1.29) n = 630	0.98*** (1.35) n = 629	0.99*** (1.32) n = 1,259

Panel B: Differences in Perceptions

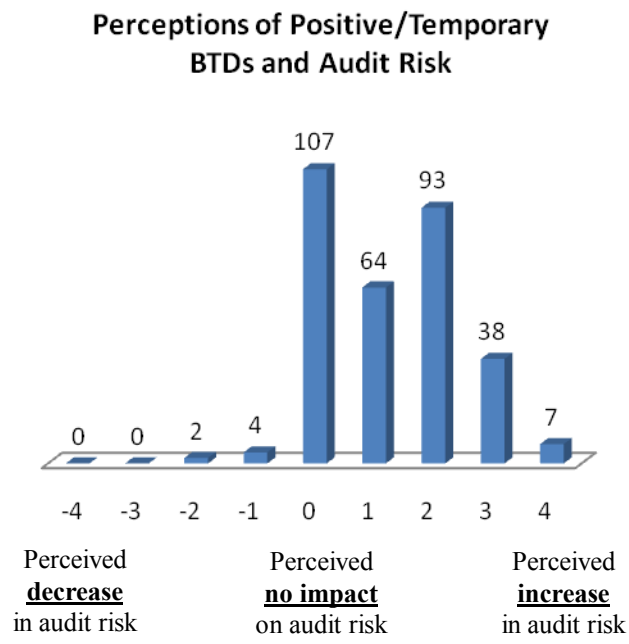
This panel presents differences in auditors' perceptions of the relationship between large BTDs and audit risk. *, **, and *** represent statistical significance at the 90%, 95%, and 99% levels, respectively.

	Predicted Sign	Difference	t-stat	p-value
Positive vs. Negative				
Positive temporary vs. negative temporary (cell 1 vs. cell 3, Panel A)	+	0.45***	4.37	<0.0001
Positive permanent vs. negative permanent (cell 2 vs. cell 4, Panel A)	+	0.50***	4.69	<0.0001
Total positive vs. total negative	+	0.47***	6.41	<0.0001
Temporary vs. Permanent				
Temporary positive vs. permanent positive (cell 1 vs. cell 2, Panel A)	+	0.00	-0.04	0.4842
Temporary negative vs. permanent negative (cell 3 vs. cell 4, Panel A)	+	0.05	0.44	0.3311
Total temporary vs. total permanent	+	0.02	0.30	0.3826

Panel C: Frequency of Responses.

This panel presents the frequency of responses in regards to the auditors' perceptions of the relationships between the various types of large BTDs and audit risk.

1



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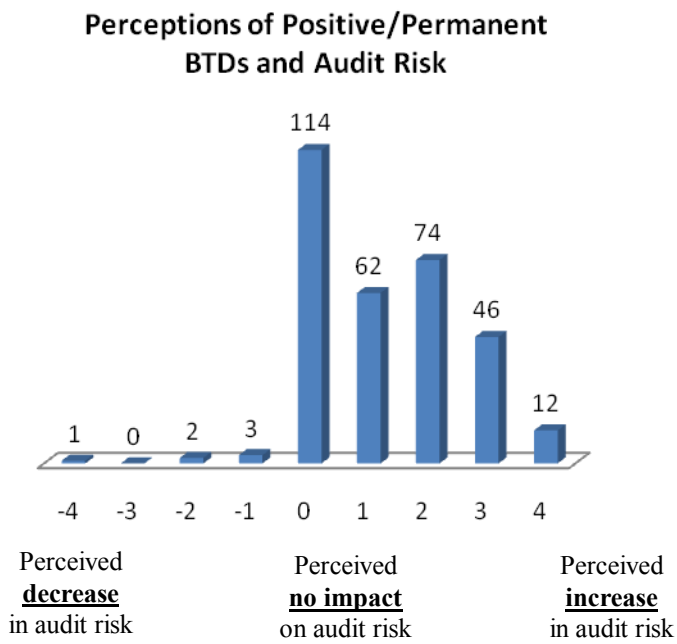

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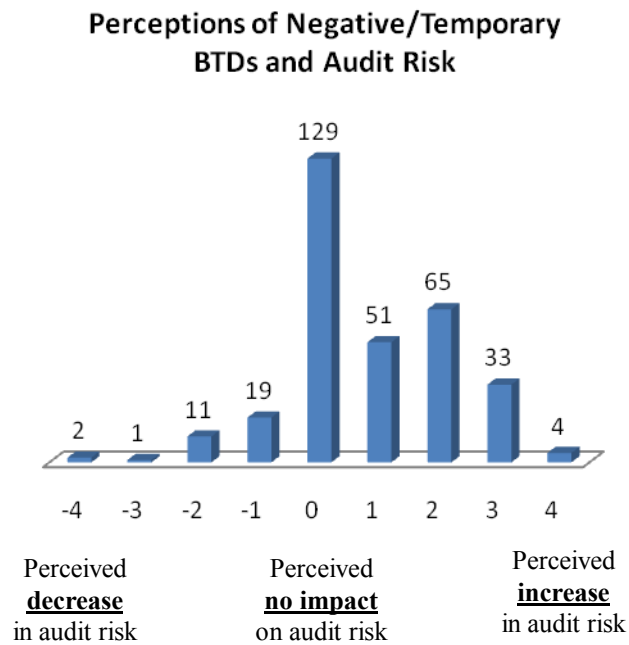

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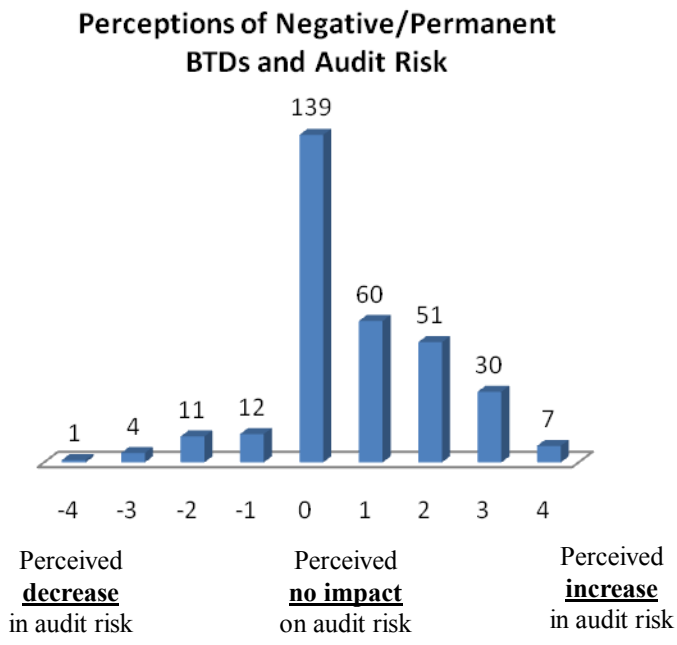

Table 4. Auditors' Use of BTDs to Assess Audit Risk.

Panel A: ANOVA Table

This panel summarizes auditors' use of large BTDs to assess audit risk. Values in the table below represent subsample percentages (standard errors in parentheses). *, **, and *** represent statistical significance (statistically different from zero) at the 90%, 95%, and 99% levels, respectively.

	Temporary BTDs	Permanent BTDs	Total
Positive BTDs	1 26.27%*** (0.02) n = 316	2 25.63%*** (0.02) n = 316	29.43%*** (0.03) n = 316
Negative BTDs	3 25.00%*** (0.02) n = 316	4 23.10%*** (0.02) n = 316	28.16*** (0.03) n = 316
Total	28.16%*** (0.03) n = 316	26.27%*** (0.02) n = 316	33.86%*** (0.03) n = 316

Panel B: Overlap of BTD Use

This panel summarizes the overlap of auditors' use of large BTDs to assess audit risk. Values in the table below represent number of respondents.

	---------- *Type of Large BTD Used to Assess Audit Risk* ----------				
Types of BTDs used	Positive/ Temporary	Positive/ Permanent	Negative/ Temporary	Negative/ Permanent	Other
One	1	1	3	0	9
Two	13	11	11	9	0
Three	7	7	3	3	7
Four	32	32	32	31	1
Five	30	30	30	30	30
TOTAL	83	81	79	77	47

Panel C: Correlation of BTD Use

This panel summarizes the correlation of auditors' use of various types of large BTDs to assess audit risk. Values in the table below represent Pearson correlation coefficients (p-values in parentheses). *, **, and *** represent statistical significance at the 90%, 95%, and 99% levels, respectively.

	Positive/ Temporary	Positive/ Permanent	Negative/ Temporary	Negative/ Permanent	Other
Positive/ Temporary	1.00				
Positive/ Permanent	0.82*** (<0.00)	1.00			
Negative/ Temporary	0.87*** (<0.00)	0.72*** (<0.00)	1.00		
Negative/ Permanent	0.75*** (<0.00)	0.90*** (<0.00)	0.78*** (<0.00)	1.00	
Other	0.48*** (<0.00)	0.49*** (<0.00)	0.46*** (<0.00)	0.43*** (<0.00)	1.00

Panel D: Differences in Use of BTDs in Assessing Audit Risk

This table presents the differences in the use of large BTDs to assess audit risk. *, **, and *** represent statistical significance at the 90%, 95%, and 99% levels, respectively.

	Predicted Sign	Difference	z-value	p-value
Positive vs. Negative				
Positive temporary vs. negative temporary (cell 1 vs. cell 3, Panel A)	+	1.27%	0.36	0.3578
Positive permanent vs. negative permanent (cell 2 vs. cell 4, Panel A)	+	2.53%	0.74	0.2293
Total positive vs. total negative	+	1.27%	0.35	0.3627
Temporary vs. Permanent				
Temporary positive vs. permanent positive (cell 1 vs. cell 2, Panel A)	+	0.64%	0.18	0.4280
Temporary negative vs. permanent negative (cell 3 vs. cell 4, Panel A)	+	1.90%	0.56	0.2883
Total temporary vs. total permanent	+	1.89%	0.54	0.2959

Table 5. Determinants of Auditors' Decision to Use BTDs to Assess Audit Risk.

Panel A: Correlation Matrix

Below are the Pearson correlation coefficients for the independent variables used in regression equation (1), followed by p-values in parenthesis. The independent variables are: *PERCEPTION*, which measures the auditor's perception of the relationship between the relevant large BTD and audit risk, ranging from -4.0 (perceived decrease in audit risk) to 4.0 (perceived increase in audit risk) with zero being the middle value (perceived no impact on audit risk); *BIGFOUR*, a dummy variable equal to one if the auditor works for a Big Four firm, and zero otherwise; *EXPERIENCE* is based upon the auditor's current positive (title) at his/her firm; *SEC* captures the percent of the auditor's clients that are registered issuers with the SEC; and *INDUSTRY* represents the auditors industry specialization. *, **, and *** represent statistical significance at the 90%, 95%, and 99% levels, respectively.

	PERCEPTION	*BIGFOUR*	*EXPERIENCE*	*SEC*
PERCEPTION	1.00			
BIGFOUR	-0.20***	1.00		
	(0.73)			
EXPERIENCE	-0.01	0.22***	1.00	
	(0.86)	(<0.01)		
SEC	-0.05	0.67***	0.24***	1.00
	(0.39)	(<0.01)	(<0.01)	

Panel B: Probit Regressions

Below are regression results from estimating the following probit regression:

$$BTDUSE_{i,t} = \alpha_0 + \alpha_1 PERCEPTION_{i,t} + \alpha_2 BIGFOUR_i + \alpha_3 EXPERIENCE_i + \alpha_4 SEC_i + \alpha_5 INDUSTRY_i \quad (1)$$

Where the dependent variable $BTDUSE_{i,t}$ is a binary variable equal to one if the auditor (i) uses the specific type of large BTD (t) to asset audit risk; zero otherwise, and the independent variables are described in Panel A. Values below represent coefficient estimates, followed by p-values values in parentheses. *, **, and *** represent statistical significance at the 90%, 95%, and 99% levels, respectively.

		-- Type of Large BTD Used to Assess Audit Risk --			
	Predicted Sign	Positive/ Temporary	Positive/ Permanent	Negative/ Temporary	Negative/ Permanent
n		314	313	314	314
Intercept	?	-2.28***	-2.59***	-2.02***	-2.24***
		(<0.01)	(<0.01)	(<0.01)	(<0.01)
$PERCEPTION_{i,t}$	+	0.29***	0.32***	0.32***	0.27***
		(<0.01)	(<0.01)	(<0.01)	(<0.01)
$BIGFOUR_i$	?	0.35	0.27	0.16	0.16
		(0.11)	(0.25)	(0.46)	(0.50)
$EXPERIENCE_i$	?	0.16*	0.22**	0.16*	0.18*
		(0.07)	(0.03)	(0.07)	(0.07)
SEC_i	?	0.45	0.31	0.24	0.35
		(0.12)	(0.31)	(0.42)	(0.25)
$INDUSTRY_i$					
Finance	?	0.01	0.12	0.11	0.20
		(0.97)	(0.56)	(0.59)	(0.32)
Services	?	0.32*	0.18	0.25	0.25
		(0.07)	(0.32)	(0.16)	(0.17)
Manufacturing	?	0.11	0.14	0.00	0.04
		(0.53)	(0.44)	(0.99)	(0.85)
Retail Trade	?	-0.09	-0.28	-0.17	-0.25
		(0.60)	(0.26)	(0.49)	(0.30)
Transportation/Public Administration	?	0.09	0.49	0.24	0.37
		(0.80)	(0.16)	(0.50)	(0.31)
Government/Public Administration	?	-0.72*	-0.63	-0.85**	-0.59
		(0.06)	(0.12)	(0.04)	(0.14)
Generalist/No Specialty	?	0.22	-0.01	0.16	0.05
		(0.43)	(0.98)	(0.57)	(0.86)
Other	?	0.04	0.44*	0.15	0.44**
		(0.87)	(0.05)	(0.52)	(0.05)
Puedo-R^2		12.99%	16.33%	14.08%	14.11%

Table 6. Usefulness of BTDs in Assessing Audit Risk.

Panel A: ANOVA Table.

This panel summarizes the usefulness of large BTDs in assessing audit risk. Values in the table below represent subsample averages (standard deviation in parentheses). The possible scale ranges from 1.0 (not useful) to 9.0 (extremely useful) with 5.0 being the middle value. *, **, and *** represent statistical significance (statistically different from 1.0) at the 90%, 95%, and 99% levels, respectively.

	Temporary	Permanent	Total
Positive	1 4.72*** (1.84) n = 81	2 5.15*** (2.19) n = 82	4.93*** (2.03) n = 163
Negative	3 4.84*** (1.89) n = 76	4 5.13*** (2.16) n = 72	4.98*** (2.02) n = 148
Total	4.77*** (1.86) n = 157	5.14*** (2.17) n = 154	4.95*** (2.02) n = 311

Panel B: Differences in Usefulness of BTDs in Assessing Audit Risk

This table presents the differences in usefulness of large BTDs in assessing audit risk. *, **, and *** represent statistical significance at the 90%, 95%, and 99% levels, respectively.

	Predicted Sign	Difference	t-stat	p-value
Positive vs. Negative				
Positive temporary vs. negative temporary (cell 1 vs. cell 3, Panel A)	+	-0.12	-0.40	0.3445
Positive permanent vs. negative permanent (cell 2 vs. cell 4, Panel A)	+	0.02	0.06	0.4758
Total positive vs. total negative	+	-0.05	-0.19	0.4246
Temporary vs. Permanent				
Temporary positive vs. permanent positive (cell 1 vs. cell 2, Panel A)	+	-0.43	-1.36	0.0883*
Temporary negative vs. permanent negative (cell 3 vs. cell 4, Panel A)	+	-0.29	-0.81	0.1940
Total temporary vs. total permanent	+	-0.37	-1.58	0.0573*

Table 7. Auditor's Willingness to Use BTDs to Assess Audit Risk.

Panel A: Willingness to Use BTDs in Assessing Audit Risk.

This panel provides data regarding auditor's willingness to use BTDs to assess audit risk. The sample population is comprised of auditors who currently do not use BTDs to assess audit risk. Values in represent population proportions (standard errors in parenthesis). *, **, and *** represent statistical significance (statistically different from zero) at the 90%, 95%, and 99% levels, respectively

	Yes	Maybe	No
Q20: If you were provided evidence that BTDs were related to an increase in ***earnings management***, would you consider using BTDs to assess audit risk? (n = 204)	74.02%	17.16%	8.82%
Q21: If you were provided evidence that BTDs were related to an increase in ***earnings restatements***, would you consider using BTDs to assess audit risk? (n = 205)	79.51%	13.66%	6.83%
Q22: If you were provided evidence that BTDs were related to an increase in ***accounting fraud***, would you consider using BTDs to assess audit risk? (n = 205)	85.85%	10.24%	3.90%

Panel B: Differences across Earnings Management Categories.

This Panel provides differences in subsample percentages (z-values in parentheses). *, **, and *** represent statistical significance (at the 90%, 95%, and 99% levels, respectively.

	Answer = Yes		Answer = Maybe		Answer = No	
	Predicted Sign	Difference	Predicted Sign	Difference	Predicted Sign	Difference
Q22 vs. Q20	+	11.83%***	?	-6.91%**	-	-4.92%**
		(2.99)		(-2.03)		(-2.04)
Q22 vs. Q21	+	6.34%**	?	-3.42%	-	-2.93%*
		(1.70)		(-1.07)		(-1.32)
Q21 vs. Q20	+	5.49%*	?	-3.50%	-	-1.99%
		(0.09)		(-0.98)		(-0.75)