Deferred tax expense (DTE) and auditor switches

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ABSTRACT

The study explores the use of the deferred tax expense (DTE) as a proxy for accounting quality and extends the literature that uses tax accounts to investigate auditor-client decisions. The study examines whether the DTE is associated with the probability of an auditor switch. Results indicate a positive association between the magnitude of the DTE and auditor switches, consistent with low earnings quality increasing the probability of an auditor switch. The study also examines whether the DTE influences the weight investors assign to the annual change in earnings. Results indicate investors discount the weight placed in earnings for firms that change to a larger auditor and have large DTE balances, which suggest investors may infer the auditor switch was motivated by opinion shopping. The study also documents that firms switching to smaller auditors experience a better valuation of firms' earnings consistent with effective auditor-client realignment.

Keywords: auditor switch, deferred tax expense, earnings quality, stock returns.

INTRODUCTION

Prior research documents a positive association between the deferred tax expense (DTE) and earnings quality (e.g., Philips, Pincus & Rego, 2003). There is also a growing stream in the audit literature that uses attributes of the tax accounts to improve the understanding of auditor-client dynamics (Hanlon, Krishnan & Mills, 2012; Donohoe & Knechel, 2014; Kuo and Lee 2016). This paper builds on those research streams and examines whether the DTE is associated with the probability of an auditor switch to provide insights about the relation between earnings quality the auditor switch decision. The study also examines whether the DTE influences the weight investors assign to earnings after an auditor switch. The evidence from the study, in general, indicates that the DTE is a suitable alternative for (or an enhancement of) traditional discretionary accrual measures used in the auditor switch literature.

The auditor switch literature provides great insights about the determinants and reasons for auditor switches (Stefaniak *et al.,* 2009). Two accepted theories explaining auditor switches are opinion shopping and signaling. The opinion shopping explanation suggests clients will change auditors due to auditor-client disagreements in the presentation of information on their financial statements (Dye, 1991; Krishnan *et al.,* 1996). The signaling argument, on the other hand, maintains that clients will change auditors to signal investors about the quality of their financial statements (Francis & Wilson, 1988). Regardless of the argument, financial statement quality is at center stage for the decision to switch auditors. This study focuses on using the DTE as a proxy for earnings quality to help understand the auditor switch decision and the stock valuation effects of such decision.

The first part of the paper focuses on using the DTE as an earnings quality proxy to test the influence of earnings quality on the auditor switch decision. The study follows prior literature and predicts a positive association between the low earnings quality (the magnitude of DTE) and the probability of an auditor switch (Johnson & Lys, 1990).

Logistic regression is used to estimate the relation between an auditor switch and the absolute value of the DTE and other controls with a sample of 17,579 firm-years for the period of 1993-2014. Results confirm the positive association between an auditor switch and low earnings quality (Krishnan, 1994; DeFond & Subramanyam, 1998). Results also indicate that the absolute value of DTE is incrementally useful beyond the absolute value of discretionary accruals for explaining auditor switches, and results validate using the DTE as a proxy for earnings quality.

The second part of the paper uses the DTE to test how earnings quality affects the pricing of earnings in the year after an auditor switch. This analysis provides insights regarding investors' perceptions about the auditor switch motivation (i.e., opinion shopping or signaling). The study explores two possible explanations. If the market perceives the motivation for the auditor switch to be opinion shopping, then the effect of the DTE on the pricing of earnings after an auditor switch would be negative. On the other hand, if the market perceives the auditor switch represents the firms' intention to signal its earnings quality or to find a better client-auditor fit then the effect of the DTE on the pricing of earnings would be non-negative.

Regressions of size-industry adjusted stock returns on lagged auditor switch, DTE, change in earnings and controls produce the following insights. The evidence indicates that

market participants discount the weight they place on earnings for firms that change from a smaller to a larger auditor and have extreme values of the DTE. This suggests that investors infer that opinion shopping was the motivation behind the audit switch. The results also suggests that investors interpret a firm change to a smaller auditor to obtain a better client-auditor fit with the purpose of communicating their firms' prospects more effectively.

The study contributes to the literature in several ways. First, it contributes to the audit literature by examining whether the DTE (as a proxy for earnings quality) is a determinant of auditor switches. The study extends Hanlon *et al.* (2012) by validating that the DTE has information about firms' earnings quality that affects decisions by auditors and their clients. Second, the evidence indicates that investors differentiate the effects of earnings quality on the pricing of earnings conditional on the type of auditor switch, which complements previous research investigating the consequences of auditor switches (Sankaraguruswamy & Whisenant, 2004; Knechel *et al.,* 2007). Third, the study investigates the use of the DTE as a valid proxy for earnings quality and contributes to the literature that studies the impact of book-tax differences on earnings quality and stock pricing (Hanlon, 2005; Blaylock *et al.,* 2012). Finally, the study contributes to the understanding of the auditor-client dynamics without emphasizing the regulatory effects of Sarbanes-Oxley (SOX) and other regulations (Knechel, 2015).

MOTIVATION AND LITERAURE REVIEW

In the wake of the accounting scandals of the early 2000s (e.g., Enron and Tyco) and the passage of SOX in 2002, regulators and the general public questioned whether auditor switches affect the financial statements of publicly traded companies and/or whether firms' financial statements provide any insights about the motivation behind the decision of switching auditors. Over the last decade and a half, researchers (e.g., Chaney & Philipich, 2002; Blouin *et al.,* 2007; Hoffman & Nagy, 2016) have explored firms' cross-sectional differences in their financial statements resulting from switching auditors in response to Arthur Andersen's demise and the regulatory requirements imposed by SOX. Although the contributions from this research stream are a valuable addition to the audit literature, they may not generalize to the overall audit markets because those events presented a shock to the audit markets.[1] The goal of this study is to document general features of the audit market as they relate to earnings quality and investors' valuation decisions without concentrating on the particular effects of SOX, similar to the approach used by Tahinakis & Samarinas (2016).

The focus of this study is on validating the DTE as a proxy for earnings quality within the context of the auditor switch decision and whether the DTE, in its role as an earnings quality measure, influences the weight that investors assign to a change in earnings after an auditor switch.

This study proposes that using the DTE as a measure of earnings quality is at least as good as using traditional discretionary accruals measures (e.g., Jones, 1991; Dechow *et al.,* 1995). The DTE's advantage as a proxy for earnings quality relies on the argument that tax laws allow less flexibility in reporting choices than GAAP does (Mills & Newberry 2001; Phillips *et*

[1] Richardson (2006) documents that audit markets change in periods of shocks to the financial reporting system.

al., 2003; Hanlon, 2005). Therefore, the exercise of managerial discretion over the financial reporting process generates temporary book-tax differences that are reflected in the DTE, which then becomes a summary measure of discretion over the financial reporting process. Therefore, the DTE has the advantage of mitigating the potential measurement errors associated with the broader estimation of discretionary accrual measures.

The study builds on Phillips *et al.* (2003) who document that the DTE is incrementally useful over discretionary accruals in detecting earnings management related to loss avoidance. The study also builds on findings by Hanlon (2005) who finds that large values of temporary book-tax differences are associated with lower earnings persistence and lower stock performance. In addition, findings by Ettredge *et al.* (2008) indicate that the DTE is associated with earnings fraud, which is the most egregious form of earnings management. Their results suggest that firms with high levels of the DTE have a higher likelihood of being involved in earnings fraud relative to their industry peers. Thus, the literature establishes a link between the DTE and earnings management that motivates using the DTE as a proxy for earnings quality in the analysis of auditor switches and their consequences.

Within the audit literature, Hanlon *et al.* (2012) explore whether book-tax differences (both temporary and permanent) help to explain audit fees. The authors find that larger book-tax differences are associated with higher audit fees, which they interpret as evidence that book-tax differences contain and reflect information that represents lower earnings quality (i.e., higher audit risk). This paper extends the use of the DTE as a proxy for earnings quality in an audit setting by exploring its explanatory power in the auditor switch model.

This study focuses on the relation between auditor switch and earnings quality because both theoretical (e.g., Antle & Nalebuff, 1991; Dye, 1991) and empirical studies (e.g., Krishnan, 1994; DeFond & Subramanyam, 1998) suggest that financial statement (earnings) quality is an important determinant in the decision to change auditor.

Dye (1991) explores the decision of an auditor switch by modeling how discrepancies about the client's performance between the auditor and its client may result in auditor replacement. The study shows that when the client has superior information regarding its performance than the auditor's report would present, the likelihood of the auditor being replaced increases as the informational gap between the auditor and client increases. Antle & Nalebuff (1991) introduce the possibility of negotiation between the auditor and its client. Their findings suggest that a client replaces its auditor only when the negotiation fails and the client decides to look for an auditor that is more accepting of its views of how to present the firm's financial statement to the public. In both Dye (1991) and Antle & Nalebuff (1991), auditor-client disagreements over the presentation of private information on the financial statements prompt the auditor-switch decision. Therefore, the results from both models suggest that firms with low earnings quality characteristics (i.e., less conservative earnings reports) would try to switch auditors to find a more accommodating auditor.[2]

Empirical studies have approached the relation between conservatism and auditor switches from a different perspective. Krishnan (1994) focuses on auditor conservatism as a

[2] Note that disagreement in this context does not necessarily means the client is trying to report a fraud and it could be a difference of opinions between the parties from reasonable disagreements in the application of generally accepted accounting principles.

reason for an auditor switch using the likelihood of issuing qualified opinions to frame his research question. The author finds that companies that switch auditors after receiving a qualified opinion tend to have more conservative numbers than those companies that did not switch auditors. The author did not find, however, any evidence that switching companies were able to improve their audit opinions after the switch, indicating that any opinion shopping efforts were ineffective. Thus, Krishnan's (1994) results suggest that a conservative audit report may result in an auditor-initiated switch due to the client's risk profile.

DeFond & Subramanyam (1998) extend the literature on the relationship between auditor changes and conservative accounting by examining the level of discretionary accruals in the year before an auditor switch. Their results are consistent with clients switching auditors because the current auditor is too conservative. Unlike Dye (1991), they do not interpret a change in auditor as resulting from a legitimate disagreement about the application of accounting principles. Rather, they suggest that a more likely reason is that auditor conservatism is due to litigation risk, consistent with arguments from Krishnan (1994).

Blouin *et al.* (2007) investigate whether the choice of a new auditor for companies forced to make a switch because of Andersen's downfall are driven by agency costs or by switching costs. Their findings indicate that companies with higher agency costs (e.g., low financial reporting transparency, and greater geographic diversity) are less likely to follow their former Andersen auditors to a new firm. In contrast, firms with high switching costs (i.e., aggressive accruals, financial expert on their audit committee, and Andersen industry specialization) are more likely to follow their former auditors from Andersen to the new audit firm. In particular, their results indicate that not all high discretionary accrual firms appear to decrease their discretionary accrual levels with the new auditor. The evidence on Blouin *et al.* (2007) suggests the effect of an auditor switch on clients' discretionary accrual levels may depend on the risk assessment the new auditor makes on the new client.

Since prior research suggests that an auditor switch may have different implications for the firm's earnings quality, this paper explores whether stock market participants adjust the weight they place on earnings after an auditor switch. In general, the audit literature documents that investors discount firms' stock prices in response to an auditor switch (Kim & Park, 2006; Weiss & Kalbers, 2008) because the change transmits a negative signal to capital market participants (Lu, 2006) or because an auditor switch is a high-cost transaction (Gerakos & Syverson, 2015). Similarly, it is possible that investors modify the weight they place on firms' earnings depending on earnings quality after an auditor switch. If investors infer that the reason for the auditor change is to signal a better quality auditor or an auditor-client realignment, then investors may not discount the weight on earnings for low earnings quality firms. On the other hand, if investors deduce that the auditor switch due to opinion shopping or that it does not improve the quality of the financial statements then they will further discount the weight they place on earnings of such firms.

RESEARCH DESIGN

Measuring the Deferred Tax Expense

This study proposes that, compared to other measures of earnings quality, the DTE has the advantage of being readily available in the financial statements and mitigates estimation problems caused by other earnings quality measures such as discretionary accruals. Several studies in the accounting literature suggest an association between the DTE and earnings quality (Hanlon, 2005), earnings management (Phillips *et al*., 2003; Ettredge *et al*., 2008), and audit risk (Hanlon *et al.,* 2012; Donohoe & Knechel, 2014). Total DTE is defined as the sum of federal and foreign deferred income tax expense (txdfed and txdfo) as reported in the COMPUSTAT Fundamental Annual file.[3]

Identifying Auditor Changes

The change in auditor ($\Delta auditor$) is an indicator variable that equals one if the firm's auditor in year t is different from the auditor in year t-1; the variable is zero otherwise.[4] The variable equals zero if the firm's auditor was Coopers and Lybrand for the year 1997 (au = 3) and PwC (au = 7) for the year 1998 to avoid including auditor changes related to the consolidation of Price Waterhouse with Coopers and Lybrand to form PricewaterhouseCoopers (PwC) in 1997. In addition, Arthur Andersen clients in years 2000 through 2002 are eliminated to avoid including the auditor changes triggered by from Arthur Anderson's demise.[5]

Empirical Models

Testing the effect of DTE on the probability of auditor changes

To test the incremental usefulness of DTE for predicting auditor changes, the analysis uses a logistic regression to model the probability of an auditor switch following research by Gosh & Lustgarten (2006) and Johnson & Lys (1990). The following equation is estimated:

$$\begin{aligned}\Pr(\Delta auditor_{i,t+1}) = f(&\alpha_0 + \beta_1 absdte_{i,t} + \beta_2 absdaccr_{i,t} + \beta_3 priorop_{i,t} + \beta_4 bigN_{i,t} + \beta_5 \Delta sales_{i,t} \\ &+ \beta_6 \Delta assets_{i,t} + \beta_7 \Delta opercashflow_{i,t} + \beta_8 \Delta invrec_{i,t} + \beta_9 \Delta capex_{i,t} + \beta_{10} \Delta acquisitions \\ &+ \beta_{11} \Delta capraised + \beta_{12} \Delta r\&d_{i,t} + \beta_{13} \Delta tie + \sum_T \tau_t year_t + \sum_J \lambda_j industry_j + \varepsilon_{i,t})\end{aligned} \quad (1)$$

[3] If one of the variables is missing, total deferred income tax expense (txdi) is used as DTE.
[4] COMPUSTAT Company Auditor (co_aaudit) file is the source of auditor information.
[5] Although the period of Enron-related Arthur Andersen's auditor changes spans only from late 2001 to 2002, the auditor changes occurring during 2000 are eliminated to provide a clear identification of the period for econometric purposes. In addition, Kumar and Lim (2015) find evidence indicating that Andersen's independence was compromised around the year 2000, which could have triggered some clients to move to another auditor.

where $\Delta auditor_{t+1}$ is the change in auditor in year $t+1$, $absdte_{i,t}$ represents the absolute value of total DTE for firm i in year t scaled by lagged total assets (at), and $absdaccr_{i,t}$ represents total discretionary accruals.

The model includes controls for factors identified in prior research as associated with an auditor change.[6] Prior year opinion, *priorop*, is an indicator variable that equals one if year t opinion was anything other than unqualified. The indicator variable *bigN* controls for whether or not the client is using a Big N international (higher quality) audit firm.

Equation 1 also includes controls for firm performance ($\Delta sales$), changes in the firms asset base ($\Delta assets$, $\Delta inverec$), changes in investment patterns ($\Delta opercashflow$, $\Delta capex$, $\Delta acquisitions$, $\Delta r\&d$), and financing variables ($\Delta capraised$, Δtie). Year indicators are included to control for temporal changes in the audit market and their impact on auditors changes (e.g. audit firm mergers). Industry indicators are included to control for factors in the client's industry that may affect the probability of changing auditors (e.g., high specialization, industry concentration, etc.).

The variable of interest in equation 1 is *absdte.* Assuming extreme levels of DTE indicate low earnings quality, then the coefficient on *absdte* will be positive and significant and would indicate a negative association between earnings quality and auditor switches (Johnson & Lys, 1990). Such result would provide support for the claim that the DTE is a valid proxy for earnings quality in the auditor switch model.

The absolute value of discretionary accruals (*absdaccr*) represents a traditional measure of earnings quality (e.g., DeFond & Subramanyam, 1998; Landsman *et al.,* 2009) and is used to test the incremental explanatory power of *absdte* on the auditor switch model. Discretionary accruals are estimated using the cross-sectional performance matched modified Jones (1991) model (Kothari *et al.,* 2005) as follows:

$$totoperaccr_{i,t} = \varphi_0 + \varphi_1(\Delta rev_{i,t} - \Delta accrec_{i,t}) + \varphi_2 ppe_{i,t} + \varphi_3 roa_{i,t} + \varsigma_{i,t} \quad (2)$$

where $totoperaccr_{i,t}$ is total accruals for firm i in year t, $\Delta rev_{i,t}$ refers to change in net revenue, $\Delta accrec_{i,t}$ refers to change in accounts receivables, $ppe_{i,t}$ refers to property, plant, and equipment and $roa_{i,t}$ refers to pre-tax income with all the variables scaled by lagged total assets. Equation 2 is estimated for each combination of two-digit SIC code and calendar year in COMPUSTAT. Then, $absdaccr_{i,t}$ is the absolute value of the residual from the regression.

The effect of changes in DTE on stock price after an auditor change

The goal of the following analysis is to document how investors perceive the effect of changes in earnings quality after an auditor change. To test the impact of a change in the DTE on annual stock returns after an auditor change, the following equation is estimated using ordinary least squares (OLS):

[6] See Table 1 for detailed variable definitions.

$$return_{i,t} = \phi_0 + \phi_1 \Delta auditor_{i,t-1} + \phi_2 \Delta dte_{i,t} + \phi_3 \left(\Delta auditor_{i,t-1} \times \Delta dte_{i,t} \right) + \phi_4 \Delta pi_{i,t} \quad (3)$$
$$+\phi_5 \left(\Delta pi_{i,t} \times \Delta auditor_{i,t-1} \right) + \phi_6 \left(\Delta pi_{i,t} \times \Delta dte_{i,t} \right) + \phi_7 \left(\Delta pi_{i,t} \times \Delta auditor_{i,t-1} \times \Delta dte_{i,t} \right)$$
$$+\phi_8 pi_{i,t} + \phi_9 bve_{i,t} + \phi_{10} volatility_{i,t}$$

where *return* is firm *i*'s size-industry adjusted annual stock return (including dividends) in year t. The change in auditor (Δ*auditor*) is an indicator variable that takes the value of one if the firm changed its auditor during year *t-1*and zero otherwise. In addition, Δ*auditor* is defined as: 1) one if the auditor change was from a non-BigN firm to a BigN firm or 2) one if the auditor change was from a BigN firm to a non-BigN firm.

The variable Δ*dte* is the change in deferred tax expense, Δ*pi* is the change of pre-tax income, *pi* is pre-tax income and *bve* is total assets minus total liabilities (at – lt) all divided by lagged total assets. The variable *volatility* controls for firm risk and is the five-year standard deviation of the firm's monthly returns for the period ending on year *t-1*.

A negative coefficient on the Δ*auditor* would be consistent with the argument that auditor changes are costly transactions. Alternatively, research by Dye (1991) suggests that auditor changes may be driven by the client's desire to engage an auditor that allows more flexibility in communicating private information through financial reporting—an action that could be perceived as positive by the market. The coefficient on Δ*dte* is expected to be negative given that 1) Δ*dte* represents a change in an expense account and 2) an increase in DTE signals a reduction in earnings quality.

A variable of interest in equation 3 is the interaction between Δ*auditor* and Δ*dte*, which indicates the effect of a lagged change in auditor on changes in earnings quality. A positive ϕ_3 would indicate that investors inferred the change in auditor represented the client's need to signal higher quality financial statements, which may mitigate any decreases in earnings quality (i.e., increases in DTE). Alternatively, a negative ϕ_3 would indicate that investors believe the change in auditor did note improve the client's financial statement quality.

The other variable of interest in equation 3 is the interaction between Δ*auditor,* Δ*pi*, and Δ*dte.* A negative ϕ_7 would indicate that investors discount the weight they place on changes on earnings when there is a decrease in earnings quality following a change in auditor, which is consistent with investors concluding opinion shopping as the motive for the auditor switch. Alternatively, a positive ϕ_7 would indicate that the change in auditors reduces the uncertainty related to lower earnings quality because the auditor switch improved the auditor-client match.

A supplementary analysis focuses on firms with extreme levels of DTE (Hanlon, 2005) to explore the implications of low levels of earnings quality and auditor switches on the weight investors place on earnings. The following equation is estimated using OLS:

$$return_{i,t} = \theta_0 + \theta_1 \Delta auditor_{i,t-1} + \theta_2 lp\_dte_{i,t} + \theta_3 \left(\Delta auditor_{i,t-1} \times lp\_dte_{i,t} \right) + \theta_4 ln\_dte_{i,t} \quad (4)$$
$$+\theta_5 \left(\Delta auditor_{i,t-1} \times ln\_dte_{i,t} \right) + \theta_6 \Delta pi_{i,t} + \theta_7 \left(\Delta auditor_{i,t-1} \times \Delta pi_{i,t} \right) + \theta_8 \left(lp\_dte_{i,t} \times \Delta pi_{i,t} \right)$$
$$+\theta_9 \left(\Delta auditor_{i,t-1} \times lp\_dte_{i,t} \times \Delta pi_{i,t} \right) + \theta_{10} \left(\ln\_dte_{i,t} \times \Delta pi_{i,t} \right)$$
$$+\theta_{11} \left(\Delta auditor_{i,t-1} \times ln\_dte_{i,t} \times \Delta pi_{i,t} \right) + \theta_{12} roa_{i,t} + \theta_{13} bve_{i,t} + \theta_{14} volatility_{i,t} + \zeta_{i,t}$$

The indicator variable *lp_dte* (*ln_dte*) equals one if firm i's DTE falls in the top positive (bottom negative) quartile for year t; other variables are defined as in equation 3.

The variables of interest include the two-way interactions between the change in auditor variable and the extreme DTE indicators as well as the three-way interactions between the change in auditor, the extreme DTE indicators and the change in pre-tax income. The estimates of θ_3 and θ_5 indicate how a lagged change in auditor mediates the impact of extreme values of DTE (lower earnings quality) on investors' stock valuation. Positive signs on the interactions would be consistent with changes in auditors mitigating the low earnings quality suggested by extreme DTE levels. On the other hand, if the change in auditor was driven by a firm's attempt to obtain flexibility to manipulate its financial statements, then θ_3 and θ_5 will exhibit negative coefficients.

The signs on θ_9 and θ_{11} (on the three-way interactions) are expected to be positive and significant if the auditor change mitigates auditor-client communication issues and reduces the uncertainty related to the firm's earnings. Conversely, if investors interpret the auditor switch as a managerial attempt to obtain a more lenient auditor, then θ_9 and θ_{11} would be negative.

RESULTS

Data Set Construction

The data set covers the period from 1992 to 2014 and includes 17,579 firm-years for the auditor switch analyses and 12,189 firm years for the stock return analyses. Data come from COMPUSTAT Fundamental Annual (funda), Company Auditor (co_auditor) and CRSP databases. A total of 91,251 firm-years were identified as U.S. incorporated and December year-end. Then, firm-years in regulated industries (55,294) were eliminated as well as those without sufficient financial statement data to construct the variables of interest for the auditor switch model (16,381). A total of 1,846 firm-years had missing auditor information and were eliminated. Similarly, 151 firm-years with Arthur Anderson as their auditor in years 2000–2002 were eliminated. For the stock returns sample, 5,390 firm-years did not meet the research design criteria and were eliminated.

Descriptive Statistics

Table 2, Panel A presents the descriptive statistics for the audit switch model. Data indicate that 6.8 percent firm-years with auditor changes for the period covered by the sample. The mean *absdte* is 0.01 and the mean *absdaccr* is 0.055. From the firm-years in the sample, 32 percent do not have an unqualified opinion and 84 percent use a large audit firm. Panel B presents the descriptive statistics of the variables used in the stock returns model (equations 3 and 4). The reduced sample produces a lower percentage of auditor changes (6.0 percent compared with 6.8 percent reported in Panel A). The percent of firms changing from a non-Big N auditor is 0.6 percent of the sample representing 10 percent of all auditor switches in the sample. Firms changing from a Big N auditor to a non-Big N auditor represent one percent of the

sample representing 16.6 percent of all the sample's auditor switches. The percentage of firms with large positive (*lp_dte*) and large negative (*ln_dte*) is 13.9 and 11.0, respectively.

Multivariate Analyses

The effect of the DTE on predicting auditor changes

Results from estimating a reduced form of equation 1 that excludes *absdaccr* (Table 3, Column 1) indicate *absdte* is positive and significant (3.874, p-value = 0.034). The finding is consistent with the conservatism explanation of auditor changes where clients of conservative auditors will seek an auditor that will allow them to be more optimistic on the financial statements (Dye, 1991). Column 2, Panel A of Table 3, present the estimation results of a reduced form of equation 1 where *absdte* is excluded. Result indicates a positive and significant association between *absdaccr* and the probability of an auditor switch (1.228, p-value = 0.027).

Table 3, Column 3 of Panel A reports the estimation of equation 1. The estimate on *absdte* is positive and significant (3.518, p-value = 0.055) consistent with the result of the reduced model reported in Column 1. The incremental explanatory power of *absdte* over *absdaccr* on the probability of auditor change is analyzed by conducting a likelihood ratio test. The test assumes the estimation of the full model on equation 1 as the unrestricted model and estimations of equation 1 excluding either *absdaccr* (Table 3, Column 1) or *absdte* (Table 3, Column 2) as the restricted models. Results indicate that adding *absdte* to a model where *absdaccr* is the proxy for earnings quality increases the explanatory power of the model (X^2=3.535, p-value = 0.06); adding *absdaccr* to a model where *absdte* is the proxy for earnings quality increases the explanatory power of the model (X^2=4.004, p-value = 0.05).

Evidence in Table 3 indicates that *absdte* is positively associated with the probability of a future change in auditor, which corresponds to a negative relation between earnings quality and auditor changes. The result is consistent with findings by Phillips *et al.* (2003) and Hanlon *et al.* (2012) that link the deferred tax expense and firms' earnings quality, indicating the DTE is a valid proxy for earnings quality that provides incremental information about firms' earnings quality in the an auditor switch model.

Effect of changes in DTE after an auditor switch

Table 4 presents the results from estimating equation 3. Columns 1 and 2 report results from estimating the model where Δ*auditor* is defined as any auditor change. Results in column 1 indicate a negative association between change in auditor and stock returns (ϕ_1=-0.086, p-value = 0.013), consistent with prior research (Kim & Park, 2006; Weiss & Kalbers, 2008). There is also a negative and significant coefficient on Δ*dte* (ϕ_2=-0.874, p-value = 0.009) indicating that a change in DTE represents an expense that reduces the firm's future cash flows and that a change in DTE represents a decrease in earnings quality. Results do not show significance on the interactions terms in any of the estimations presented in Columns 1 and 2 of Table 4.

Columns 3 and 4 of Table 4 present results from estimating equation 3 for the case where Δ*auditor* is defined as an auditor change from a non-Big N auditor to a Big N auditor. Results in

column 3 indicate that the coefficient on Δ*auditor* is not statistically different from zero (ϕ_1=-0.023, p-value = 0.812). The estimate on Δ*dte* is negative and significant (ϕ_2=-0.905, p-value = 0.006; Column 3) consistent with the result in Columns 1 and 2. The interaction of Δ*auditor* and Δ*dte* exhibits a positive and marginally significant coefficient (ϕ_3=35.806, p-value = 0.071), which is consistent with a change to a larger auditor allowing the client to signal a higher quality audit that mitigates a reduction in earnings quality (i.e., an increase in DTE); no other interaction term is significant in the estimation in Column 3. Results in Column 4 are quantitatively similar to those in Column 3.

Results from estimating equation 3 where Δ*auditor* is defined as an auditor change from a Big N auditor to a non-Big N auditor are reported in Columns 5 and 6 of Table 4. The evidence in Column 5 indicates a positive association between *return* and Δ*auditor* (ϕ_1=0.143, p-value = 0.038). The result is consistent with an auditor-client realignment that allows the firm to better signal its future prospects to the shareholders. This interpretation is further supported by the positive and significant coefficient on the interaction of Δ*auditor* and Δ*pi,* (ϕ_5=0.027, p-value = 0.009). Results in Column 6 are quantitatively similar to those in Column 5.

Results in Table 4 suggest that auditor switches are more consistent with signaling than with opinion shopping behavior. Results also provide consistent evidence of a negative association between changes in DTE and stock returns implying the DTE is associated with the client's earnings quality. In addition, the results in Table 4 also suggest that a change to a larger auditor mediates the uncertainty of the firm's earnings quality in the year after an auditor change.

Effect of large deferred tax expense after an auditor change

Table 5 presents the results of estimating equation 4, which examines the effect of large positive and large negative DTE levels on stock returns conditional on a lagged auditor change. Column 1 presents the estimation where Δ*auditor* is defined as any change in auditor. The parameter estimate of Δ*auditor* (Column 1, Table 5) fails to achieve significance at conventional levels (θ_1= -0.057, p-value = 0.147). The parameter on *lp_dte* indicates a negative and significant association between large values of DTE and stock returns (θ_2= -0.033, p-value = 0.063, one-sided). The coefficient of the interaction between *ln_dte* and Δ*pi* is positive and significant (θ_{10}= 0.366, p-value = 0.033, one-sided). Consistent with prior research, the result suggests investors seem to misunderstand the lower persistence associated with earnings of firms with large negative DTE (Hanlon, 2005). The other interaction terms do not suggest additional effects of changes in auditor or large levels of DTE.

In general, results in Table 5 Column 1 do not suggest the effect of a change in auditor in the prior year moderates the impact of large levels of DTE on earnings and/or the effect of such levels of DTE on stock returns.

Table 5, Column 2 presents the estimation where Δ*auditor* is defined as a change from a non-Big N auditor to a Big N auditor (switch up). Results indicate that, on average, the effect of extreme large negative or extreme large positive DTE on the weight investors place on firms' earnings surprises is adjusted downwards in the year after an auditor change. The sign on $\Delta auditor_{i,t-1} \times lp\_dte \times \Delta pi_{i,t}$ is negative and significant (θ_9= -6.043, p-value < 0.001) and on $\Delta auditor_{i,t-1} \times ln\_dte \times \Delta pi_{i,t}$ (θ_{11}= -1.089, p-value < 0.001). These results indicate that a change

to a larger auditor does not mitigate the negative implications of having lower earnings quality and may be interpreted by investors as auditor shopping by the client.

Wald tests (not tabulated) are performed to document the full effect of the change in auditor on stock returns and the effect of large positive and negative values of DTE (or low values of earnings quality) on stock returns. Test of the effect of a change to a higher reputation auditor for a firm with large values of DTE is negative and significant ($\theta_1+\theta_3+\theta_7+\theta_9$= –5.412, F = 17.62, p-value < 0.001) indicating that investors discount firms with large positive values of DTE (low earnings quality) even when they switch to a higher reputation auditor. A similar effect is found for firms with large negative values DTE ($\theta_1+\theta_5+\theta_7+\theta_{11}$= –1.589, F = 9.09, p-value = 0.003). Findings also indicate negative and significant effects for firms with large positive DTE ($\theta_2+\theta_3+\theta_8+\theta_9$= –5.064, F = 15.530, p-value < 0.001) and large negative DTE ($\theta_2+\theta_5+\theta_8+\theta_{11}$= –1.589, F = 4.067, p-value = 0.031).

Results from estimating equation 4 where the firm changes from a Big N to a non-Big N auditor (Column 3) do not show significance for the three-way interactions, which indicates that the change in auditor does not moderate the stock return effect of exhibiting larger values of DTE on earnings.[7] However, results indicate that a change to a smaller auditor has a positive and significant effect for firms that do not have extreme values of DTE. In particular, the sign on $\Delta auditor_{i,t-1} \times \Delta pi_{i,t}$ is positive and significant (θ_7= 0.027, p-value = 0.007). Further, a Wald test for the effect of a change in auditor on the weight placed on earnings for firms without extreme levels of DTE is positive and significant ($\theta_1+\theta_7$ = 0.223, F = 8.01, p-value = 0.005). This finding is consistent with better auditor-client realignment by changing to a smaller auditor as suggested by the results documented in Table 4 Columns 5 and 6.

The evidence from Table 5 suggests that market participants discount the weight they place on earnings for firms that change to a higher reputation auditor and have extreme values of DTE or lower earnings quality. This suggests that these firms may be looking for a more favorable opinion on their financial statements. The evidence also suggests that investors acknowledge that firms that change to a smaller auditor obtain a better client-auditor fit and are able to communicate their firms' prospects in a more effective way.

CONCLUDING REMARKS

This paper explores the usefulness of the deferred tax expense as a proxy for earnings quality in an audit setting by focusing on the relation between earnings quality and auditor switches. The first part of the study investigates whether using the DTE as a proxy for earnings quality is incrementally useful in predicting auditor switches. The second part of the study investigates whether firms' investors adjust the weight they place on earnings on the year after an audit switch given the firm's DTE attributes.

Results indicate a positive association between auditor change and the magnitude of DTE in the year prior to the change. This suggests that lower earnings quality increases the probability of an auditor switch, consistent with prior literature (e.g., Johnson and Lys, 1990). This finding

[7] Results of the Wald tests for full effects are omitted because they do not yield any additional insights than from those obtained from looking at the three-way interactions.

validates the incremental usefulness of the DTE for predicting auditor switches and adds to the literature that uses attributes of the tax accounts to explore auditor-client behavior.

Results also indicate that the negative valuation effect of an increase in DTE is mitigated for firms that change to a larger auditor. However, the evidence indicates that investors discount the weight they place on earnings for firms that change from a smaller to a larger auditor and have extreme values of DTE (lower earnings quality). In addition, the evidence suggests that investors acknowledge that firms that change to a smaller auditor do so to obtain a better client-auditor fit, which allows firms to communicate their prospects more effectively.

The paper contributes to the audit literature by providing evidence that the DTE contains information about firms' earnings quality that affects decisions by auditors and their clients. The paper also contributes to research investigating the consequences of auditor switches by documenting that investors discriminate the effects earnings quality has on the pricing of earnings, depending on the type of auditor switch. Finally, the study further validates the role of the DTE as a proxy earnings quality in an audit research setting.

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APPENDIX

Table 1. Variable definitions

Variable	Definition (COMPUSTAT item in parentheses)
Auditor switch model	
$\Delta auditor_{i,t+1}$	Equals one if auditor (au) on year t+1 is not equal as auditor on year t; zero otherwise.
$absdte_{i,t}$	Absolute value of the *dte* defined as: federal deferred tax expense (txdfed) plus foreign deferred tax expense (txdfo) scaled by lagged total assets (at).
$absdaccr_{i,t}$	Absolute value of $daccr_{i,t}$ where daccr is the residual from modified Jones (1991) model; crossectional regressions at the two-digit SIC Codes.
$priorop_{i,t}$	Equals one if auditor opinion (auop) on year t is other than unqualified; zero otherwise.
$bigN_{i,t}$	Equals one if firm auditor (au) belongs to the Big N year t; zero otherwise.
$\Delta sales_{i,t}$	Change in sales (sale) from year t-1 to t.
$\Delta assets_{i,t}$	Change in total assets (at) from year t-1 to t.
$\Delta opercashflow_{i,t}$	Change in operating cash flows (oancf) from year t-1 to t.
$\Delta invrec_{i,t}$	Change in inventory and accounts receivable from year t-1 to t.
$\Delta capex_{i,t}$	Change in capital expenditures (capx) from year t-1 to t.
$\Delta acquisitions_{i,t}$	Change in acquisition (aqc) activity from year t-1 to t
$\Delta capraised_{i,t}$	Change in capital raised from year t-1 to t; capital raised is the sum of stock (sstk) and debt issued (dltis) in year t.
$\Delta r\&d_{i,t}$	Change in research and development expenditures (xrd) from year t-1 to t.
$\Delta tie_{i,t}$	Change in times interest earned from year t to t-1 where times interest earned is interest expense (xint) divided by earnings after interest and taxes (ib + txt + xint).
Stock return model	
$return_{i,t}$	Firm i's size-industry adjusted annual stock return (including dividends) for in year t. Firms are ranked and assigned to deciles; industry is based on Fama-French 48 industry classification.
$\Delta auditor_{i,t-1}$	Equals one if auditor (au) on year t-2 is not equal as auditor on year t-1; zero otherwise.
$\Delta auditor\ up_{i,t-1}$	Equals one if auditor (au) on year t-2 is not a Big-N but it is a Big-N auditor on year t-1; zero otherwise.
$\Delta auditor\ down_{i,t-1}$	Equals one if auditor (au) on year t-2 is a Big-N but it is not a Big-N auditor on year t-1; zero otherwise.
$\Delta dte_{i,t}$	Change in dte from year *t-1* to *t*.
$lp\_dte_{i,t}$	Top quartile of firms with positive *dte* in year t.
$ln\_dte_{i,t}$	Bottom quartile of firms with negative *dte* in year t.
$\Delta pi_{i,t}$	Change in pre-tax income (pi) from year t-1 to year t deflated by total assets (at).
$pi_{i,t}$	Pre-tax income (pi) deflated by total assets.
$bve_{i,t}$	Book value of equity (at-lt) deflated by total assets.
$volatility_{i,t}$	Five-year standard deviation of monthly returns for firm i during the period ending on year t-1.

Table 2. Descriptive Statistics

Variable	Mean	Stand. Dev.	Percentiles 5th	25th	50th	75th	95th
Panel A: Auditor switch model (n = 17,579)							
$\Delta auditor_{i,t+1}$	0.068	---	---	---	---	---	---
$absdte_{i,t}$	0.010	0.015	0.000	0.001	0.005	0.011	0.036
$absdaccr_{i,t}$	0.055	0.054	0.003	0.017	0.038	0.074	0.167
$priorop_{i,t}$	0.321	---	---	---	---	---	---
$bigN_{i,t}$	0.835	---	---	---	---	---	---
$\Delta sales_{i,t}$	0.140	0.345	-0.271	-0.014	0.083	0.219	0.709
$\Delta assets_{i,t}$	0.145	0.351	-0.209	-0.020	0.066	0.196	0.784
$\Delta opercashflow_{i,t}$	-0.044	3.635	-3.446	-0.582	-0.023	0.455	3.472
$\Delta invrec_{i,t}$	0.044	0.123	-0.103	-0.010	0.019	0.072	0.271
$\Delta capex_{i,t}$	0.008	0.063	-0.049	-0.008	0.002	0.016	0.078
$\Delta acquisitions_{i,t}$	0.011	0.111	-0.126	0.000	0.000	0.001	0.183
$\Delta capraised_{i,t}$	0.020	0.294	-0.414	-0.049	0.000	0.053	0.496
$\Delta r\&d_{i,t}$	0.006	0.063	-0.018	0.000	0.000	0.005	0.050
$\Delta tie_{i,t}$	-0.013	1.095	-0.927	-0.053	0.000	0.034	0.851
Panel B: Stock return model (n = 12,189)							
$return_{i,t}$	-0.399	0.793	-1.897	-0.745		0.024	0.713
$\Delta auditor_{i,t-1}$	0.060	---	---	---	---	---	---
$\Delta auditor\ up_{i,t-1}$	0.006	---	---	---	---	---	---
$\Delta auditor\ down_{i,t-1}$	0.010	---	---	---	---	---	---
$\Delta dte_{i,t}$	-0.001	0.025	-0.037	-0.007	0.000	0.006	0.035
$lp\_dte_{i,t}$	0.139	---	---	---	---	---	---
$ln\_dte_{i,t}$	0.110	---	---	---	---	---	---
$\Delta pi_{i,t}$	0.008	0.135	-0.217	-0.037	0.012	0.056	0.213
$pi_{i,t}$	0.052	0.179	-0.285	-0.006	0.071	0.145	0.297
$bve_{i,t}$	0.644	0.315	0.208	0.425	0.612	0.818	1.160
$volatility_{i,t}$	0.526	0.253	0.219	0.339	0.476	0.655	1.002

Variables are defined in Table 1. Sample period is 1992 to 2014.

Table 3. Logit regressions on the probability of an auditor change on the absolute value of DTE and controls.

Panel A: Logit regression estimation	Dependent Variable: $\Delta auditor_{t+1}$		
Independent Variables	(1)	(2)	(3)
$absdte_{i,t}$	3.874 **		3.518 *
	2.117		*1.918*
$absdaccr_{i,t}$		1.228 **	1.131 **
		2.205	*2.022*
$priorop_{i,t}$	0.217 ***	0.222 ***	0.219 ***
	2.730	*2.801*	*2.759*
$bigN_{i,t}$	-0.871 ***	-0.851 ***	-0.849 ***
	-11.980	*-11.591*	*-11.562*
$\Delta sales_{i,t}$	-0.042	-0.048	-0.046
	-0.385	*-0.445*	*-0.425*
$\Delta assets_{i,t}$	-0.232	-0.245	-0.243
	-1.539	*-1.638*	*-1.626*
$\Delta opercashflow_{i,t}$	-0.021 ***	-0.021 ***	-0.021 ***
	-2.658	*-2.633*	*-2.622*
$\Delta invrec_{i,t}$	0.571	0.444	0.483
	1.629	*1.273*	*1.384*
$\Delta capexp_{i,t}$	0.227	0.225	0.233
	0.452	*0.454*	*0.471*
$\Delta acquisitions_{i,t}$	0.012	0.026	0.018
	0.039	*0.082*	*0.058*
$\Delta capraised_{i,t}$	0.036	0.031	0.030
	0.284	*0.246*	*0.242*
$\Delta r\&d_{i,t}$	-0.829 **	-0.821 **	-0.840 **
	-2.104	*-2.100*	*-2.142*
$\Delta tie_{i,t}$	0.030	0.027	0.029
	1.105	*1.006*	*1.073*
intercept	-2.180 ***	-2.210 ***	-2.239 ***
	-11.763	*-11.813*	*-11.929*
X^2	663.6394	664.1084	667.6435
Log Likelihood	-4,018.713	-4,018.478	-4,016.711
Pseudo-R^2	0.076	0.076	0.077

Panel B: Test of incremental explanatory power

	(1) vs (3)	(2) vs (3)
X^2 Likelihood ratio Test	4.004	3.535
$P(X^2)$	0.045	0.060

Variables are defined in Table 1. Sample period is 1992 to 2014. *, **, *** denote significance levels of ten, five and one percent, respectively. Panel A reports the logit regression estimates of equation 1. The dependent variable is auditor switch and the variable of interest is the absolute value of deferred tax expense ($absdte_{i,t}$). Panel B presents the result of a Wald test on the incremental explanatory power of absdte over absdaccr (Column 1 versus Column 3) and vice versa (Column 2 versus Column 3). The model in Column 3 is assumed to be the unrestricted model.

Table 4. OLS regressions on annual stock returns on lagged auditor switch and change in DTE.

		Dependent Variable: annual return$_{i,t}$					
		(1)	(2)	(3)	(4)	(5)	(6)
Independent Variables		All		Switch Up		Switch Down	
$\Delta auditor_{i,t-1}$	+/–	-0.086 **	-0.083 **	-0.023	-0.016	0.143 **	0.155 **
		-2.489	*-2.401*	*-0.238*	*-0.172*	*2.075*	*2.246*
$\Delta dte_{i,t}$	–	-0.874 ***	-0.879 ***	-0.905 ***	-0.900 ***	-0.896 ***	-0.882 ***
		-2.628	*-2.643*	*-2.734*	*-2.716*	*-2.676*	*-2.638*
$\Delta auditor_{i,t-1} \times \Delta dte_{i,t}$	+/–	-0.159	0.007	35.806 *	42.339 *	9.024	7.309
		-0.086	*0.004*	*1.807*	*1.838*	*0.508*	*0.483*
$\Delta pi_{i,t}$	+	0.960 ***	0.960 ***	0.954 ***	0.954 ***	0.945 ***	0.947 ***
		11.641	*11.647*	*11.390*	*11.383*	*11.268*	*11.286*
$\Delta auditor_{i,t-1} \times \Delta pi_{i,t}$	+/–	-0.033	-0.058	0.003	0.007	0.027 ***	0.026 **
		-0.102	*-0.184*	*0.108*	*0.292*	*2.618*	*2.518*
$\Delta dte_{i,t} \times \Delta pi_{i,t}$	+/–	-1.892	-1.672	-1.882	-1.834	-1.836	-1.707
		-1.121	*-0.985*	*-1.115*	*-1.086*	*-1.091*	*-1.012*
$\Delta auditor_{i,t-1} \times ln\_dte \times \Delta pi_{i,t}$	+/–	---	-5.314	---	-22.960	---	-33.816
			-0.360		*-0.882*		*-1.155*
$pi_{i,t}$	+	0.221 ***	0.222 ***	0.224 ***	0.224 ***	0.229 ***	0.229 ***
		3.573	*3.582*	*3.601*	*3.601*	*3.691*	*3.695*
bve	+	0.026	0.026	0.026	0.026	0.026	0.027
		0.841	*0.850*	*0.863*	*0.862*	*0.863*	*0.881*
volatility	+/–	-0.159 ***	-0.159 ***	-0.164 ***	-0.165 ***	-0.166 ***	-0.166 ***
		-4.714	*-4.716*	*-4.870*	*-4.872*	*-4.923*	*-4.932*
intercept	+/–	-0.345 ***	-0.346 ***	-0.348 ***	-0.348 ***	-0.349 ***	-0.350 ***
		-15.765	*-15.767*	*-15.868*	*-15.855*	*-15.903*	*-15.914*
Adjusted-R^2		0.043	0.043	0.042	0.042	0.043	0.043
F		38.328	34.537	37.322	33.654	39.044	34.927
N		12189	12189	12189	12189	12189	12189

Variables are defined in Table 1. Sample period is 1992 to 2014. The dependent variable is industry-size adjusted stock returns. *, **, *** denote significance levels of ten, five and one percent, respectively; two-sided except where a sign is predicted. Standard errors are clustered at the firm level.

Table 5. OLS regressions of annual stock returns on lagged auditor switch and extreme values of DTE.

		Dependent Variable: annual return$_{i,t}$					
		(1)		(2)		(3)	
Independent Variables	Pred. Sign	All		Switch Up		Switch Down	
$\Delta auditor_{i,t-1}$	+/–	-0.057		-0.088		0.196	**
		-1.452		*-0.820*		*2.425*	
$lp\_dte_{i,t}$	–	-0.033	*	-0.042	**	-0.039	**
		-1.528		*-2.006*		*-1.825*	
$\Delta auditor_{i,t-1} \times lp\_dte_{i,t}$	+/–	-0.128		0.703	***	-0.194	
		-1.188		*2.922*		*-1.065*	
$ln\_dte_{i,t}$	–	0.005		-0.001		0.004	
		0.197		*-0.047*		*0.142*	
$\Delta auditor_{i,t-1} \times ln\_dte_{i,t}$	+/–	-0.086		0.372	*	-0.302	*
		-0.648		*1.898*		*-1.836*	
$\Delta pi_{i,t}$	+	0.841	***	0.819	***	0.806	***
		9.107		*8.686*		*8.550*	
$\Delta auditor_{i,t-1} \times \Delta pi_{i,t}$	+/–	-0.222		0.017		0.027	***
		-0.617		*0.723*		*2.705*	
$lp\_dte_{i,t} \times \Delta pi_{i,t}$	+/–	0.235		0.319		0.339	
		1.125		*1.549*		*1.639*	
$\Delta auditor_{i,t-1} \times lp\_dte \times \Delta pi_{i,t}$	+/–	1.220		-6.043	***	-1.349	
		1.207		*-4.394*		*-0.785*	
$ln\_dte_{i,t} \times \Delta pi_{i,t}$	+/–	0.366	**	0.416	**	0.414	**
		2.138		*2.360*		*2.366*	
$\Delta auditor_{i,t-1} \times ln\_dte \times \Delta pi_{i,t}$	+/–	0.549		-1.890	***	-0.461	
		0.534		*-3.411*		*-0.229*	
$pi_{i,t}$	+	0.229	***	0.229	***	0.236	***
		3.713		*3.690*		*3.807*	
$bve_{i,t}$	+	0.025		0.026		0.026	
		0.828		*0.868*		*0.871*	
volatility	+/–	-0.158	***	-0.163	***	-0.166	***
		-4.652		*-4.824*		*-4.902*	
intercept	+/–	-0.341	***	-0.342	***	-0.344	***
		-15.506		*-15.549*		*-15.617*	
Adjusted-R^2		0.043		0.042		0.043	
F		27.128		28.420		27.674	

Variables are defined in Table 1. Sample period is 1992 to 2014 and sample size is 12,189. The dependent variable is industry-size adjusted stock returns. *, **, *** denote significance levels of ten, five and one percent, respectively; two-sided except where a sign is predicted. Standard errors are clustered at the firm level.