

THE FINANCIAL REPORTING AND TAX AGGRESSIVENESS
IMPLICATIONS OF SCHEDULE UTP

by

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ABSTRACT

In 2010, the Internal Revenue Service (IRS) announced the requirement to disclose uncertain tax positions (UTPs) on a new schedule (Schedule UTP) to be filed with federal corporate income tax returns. Schedule UTP requires companies to report line-item detail to the IRS of the aggregate disclosure requirement of uncertain tax benefits (UTBs) established by FIN 48 (KPMG 2010a). I examine firms' change in reporting UTBs subsequent to the announcement of Schedule UTP. Overall, the results indicate firms reduce not only the levels of reported UTB, but they also significantly reduced the year to year changes in reported UTBs. Consistent with my predictions, firms which are required to file Schedule UTP earlier have an incrementally more significant reduction in reported UTBs. Results provide mixed evidence for financially conservative firms. Contrary to expectations, the decrease in reported UTBs is not incrementally more significant for firms in the upper quartile of tax aggressiveness. Additionally, I examine whether the announcement of Schedule UTP impacts other proxies for tax aggressive behavior. Results indicate that book-tax differences decrease subsequent to Schedule UTP. However, neither measure of tax aggressiveness based on effective tax rates provides statistically significant results. This finding suggests the decrease in reported UTBs is merely a change in reporting behavior and not a change in aggressive tax behavior.

DEDICATION

This dissertation is dedicated to my family and friends, particularly my patient wife, who encouraged me throughout this process. Without their support this research would not have been possible.

LIST OF ABBREVIATIONS AND SYMBOLS

IRS	Internal Revenue Service
FASB	Financial Accounting Standards Board
FIN 48	Financial Accounting Standards Board Interpretation No. 48
ICW	Internal control weakness
p	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
SOX	The Sarbanes-Oxley Act of 2002
t -stat	Computed value of t test
UTB	Unrecognized Tax Benefit reported in the financial statements
UTP	Uncertain Tax Position taken on a tax return

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CHAPTER 1

INTRODUCTION

In this study I examine whether increased Uncertain Tax Position (UTP) reporting directly to the Internal Revenue Service (IRS) is associated with changes in how firms report Uncertain Tax Benefits (UTBs) in their financial statement footnotes. Using annual data from Form 10-K and quarterly data from Form 10-Q, I perform a pre-post analysis to identify any changes in financial statement reporting after the announcement of Schedule UTP. Both Shackelford and Shevlin (2001) and Hanlon and Heitzman (2010) call for additional research that examines the interaction between financial reporting and tax reporting, and since Schedule UTP is based on the financial reporting requirements established by Financial Accounting Standards Board (FASB) Interpretation No. 48 (FIN 48)¹ this setting provides an excellent opportunity to extend research in both areas.

Several significant changes related to income tax reporting have occurred over the past decade including the development of Form 8886 and Schedule M-3 by IRS, and FIN 48. The unifying goal of each of these changes was to improve the transparency of income tax reporting. Schedule UTP was originally announced on January 26, 2010, and is the latest step in this move toward improving income tax reporting transparency. In fact, former IRS Commissioner Lawrence Gibbs has called Schedule UTP “the biggest change in tax administration in the last 50

¹ Under the FASB Accounting Standards Codification, requirements under FIN 48 have been incorporated into ASC Topic 740, Income Taxes. However, FIN 48 is typically referenced by practitioners and in the academic literature.

years” (Harvey 2011). Schedule UTP requires companies to report line-item detail to the IRS of the aggregate disclosure requirements established by FIN 48 (KPMG 2010a). Using a pre-post research design with panel data, I examine the association between (1) the announcement of Schedule UTP and the total dollar amount of unrecognized tax benefits (UTBs) which is reported in the financial statements, and (2) the announcement of Schedule UTP and the level of tax aggressiveness firms exhibit.² With more stringent disclosures reported directly to the IRS, I expect firms will report lower levels of UTBs and overall tax aggressiveness will decrease, on average, subsequent to the announcement of Schedule UTP.

Schedule UTP is based on the financial statement disclosures required by FIN 48 (Shulman 2010)³. FIN 48 standardizes the recognition and measurement of UTBs in corporate financial statements and requires an annual reconciliation of the aggregate amount of UTBs for which the firm has created a reserve. Schedule UTP requires disclosure directly to the IRS of all significant UTPs that comprise the aggregate UTB amount firms disclose in their financial statements.

Schedule UTP serves as a natural experiment to test a previously untestable element of FIN 48. According to FIN 48, paragraph 7a and ASC 740-10-25-7, when firms assess the amount to record for a UTB they are required to assume the IRS will examine the position with full knowledge of all relevant facts. The requirements of Schedule UTP move reality closer to the theoretical requirements (100% audit certainty) of FIN 48. If firms report lower levels of UTBs after Schedule UTP was announced, it indicates firms either engage in less aggressive UTPs or they did not fully comply with the reporting requirements of FIN 48.

² Unrecognized Tax Benefits (UTBs) are reported in the financial statement footnotes. Uncertain Tax Positions (UTPs) are positions a firm takes when reporting to the IRS. Although UTBs and UTPs are closely related, I refer to UTBs when discussing financial statement disclosures and UTPs when discussing IRS disclosures.

³ See Figures 1 and 2 for a summary of the similarities and differences between FAS 109, FIN 48, and Schedule UTP.

According to FIN 48 paragraph 7a, “It shall be presumed that the tax position will be examined by the relevant taxing authority that has full knowledge of all relevant information.” (FASB 2006) Because firms are required to operate under the assumption of certain examination, the potential increase in detection risk associated with Schedule UTP should not impact financial reporting. I assert if there is any change to UTB reporting subsequent to the announcement of Schedule UTP, it indicates firms are not complying with this requirement.

For example, assume a company takes an uncertain position on its tax return after FIN 48 and records a reserve in their financial statements. Then the IRS announces Schedule UTP and the firm decides it is too risky to take the same position so they no longer need to reserve for it. If increased IRS disclosure causes firms to change their tax positions, the implication is they didn't initially operate under the assumption of 100% chance of audit as required by FIN 48.⁴

Shortly after its announcement, articles in business publications began to highlight the potential impact of Schedule UTP. *CFO.com* lists Schedule UTP as one of the top five tax issues of which firms should be aware in 2011 (Leone and Katz 2011). In a survey of over 1,100 members of KPMG's Tax Governance Institute, 52% of respondents believe steps to reduce UTBs are necessary due to the new tax reporting requirements. Additionally, 47% believe Schedule UTP will increase tension among their audit firm, tax advisors and tax department (KPMG 2010b). While the KPMG survey does not indicate whether firms plan to change reporting behavior or change tax aggressive behavior in order to reduce UTBs, the survey results clearly indicate many firms plan to alter their course of action regarding tax uncertainty.

Several studies examine the quality of the initial FIN 48 disclosures (Gross 2011; Nichols 2008; Robinson and Schmidt 2013). While firms generally comply with the technical

⁴ I provide an additional illustration in Appendix C.

requirements of FIN 48, the assessment is the overall quality of the disclosures is low. One requirement of FIN 48 is that firms assume (1) the IRS knows all the information relating to UTPs and (2) IRS examination is certain. Schedule UTP provides a unique setting to empirically test whether firms were applying this requirement of FIN 48 as the standard setters intended. If firms were reporting UTBs under the assumption the IRS had complete knowledge of all tax positions, then financial reporting of UTBs should not be significantly impacted by the increased disclosure requirements of Schedule UTP. However, if firms alter their UTB reporting subsequent to the announcement of Schedule UTP, this suggests firms were not fully applying the FIN 48 requirements as the FASB intended.

My study has two main objectives. First, I test whether firms decrease reported UTBs subsequent to the announcement of Schedule UTP, and whether the decrease in UTBs is incrementally different for firms which are required to file Schedule UTP earlier, tax aggressive, or financially conservative. Second, I test whether this decrease represents a change in financial reporting behavior only, or whether Schedule UTP is associated with a change in firms' aggressive tax behavior.

Extant accounting literature based on deterrence theory supports my conjecture that firms will reduce the amount of UTBs disclosed in the financial statement footnotes subsequent to the announcement of Schedule UTP. Deterrence theory, a component of agency theory, predicts an increase in compliance as detection risk increases (Carnes and Englebrecht 1995). An agency relationship exists when one party (the principal) engages another party (the agent) to act on his or her behalf. This contract between parties can be actual or implied (Jensen and Meckling 1976). Since the U.S. tax system relies on self-reporting by taxpayers, an agency relationship exists between the government (acting as principal) and the taxpayer (acting as agent).

Generally in an agency relationship, the agent does not always act in the principal's best interests. Monitoring and sanctions can be used to align the interests of the principal and the agent (Boly 2011; Jensen and Meckling 1976). In the current context, the IRS fulfills the role of monitor. As monitoring increases, detection risk also increases. Detection risk is a combination of two factors: the probability a return will be selected for audit and the probability the non-compliance will be detected during an audit (Jackson and Jones 1985). Generally, all studies which examine detection risk conclude increased detection risk leads to more compliant behavior (Fischer et al. 1992). IRS Commissioner Douglas Shulman specifically states the goals of Schedule UTP are to prioritize selection of taxpayers and issues to audit, and to improve audit efficiency (Shulman 2010). Therefore, Schedule UTP increases both audit probability and detection probability for firms with large UTB balances.

Recent tax studies use the level of UTBs reported by firms as a proxy for tax aggressive behavior (Hanlon and Heitzman 2010; Lisowsky et al. 2010). Since UTBs represent uncertain positions taken on a firms' tax return, it is reasonable to conjecture that firms with larger UTB balances have more aggressive tax positions. Prior research provides evidence that firms with more aggressive tax positions are subject to increased scrutiny from regulators (Badertscher et al. 2009; Frank et al. 2009; Mills 1998; Mills and Sansing 2000). Using confidential IRS information, Mills (1998) finds firms with large book-tax differences are more likely to be selected for audit by the IRS than firms with smaller book-tax differences. Therefore, firms have an incentive to reduce their reported level of UTBs under the Schedule UTP reporting regime.

While I expect that firms desire to reduce their reported amount of UTBs subsequent to the announcement of Schedule UTP in order to avoid scrutiny by the IRS, firms may not be able to reduce UTB amounts without an actual change in behavior. The Sarbanes-Oxley Act of 2002

(SOX) significantly altered managers' perceptions of their tax department. According to a KPMG survey, in 2001, managers' top priorities were effective tax rate management and cash tax savings. However, in 2006, managers' priorities were related to accurate financial reporting and SOX 404 compliance (KPMG 2006). SOX 404 audits have also reported a significant number of tax internal control weaknesses (Gleason et al. 2012). This combination of increased auditor scrutiny and shift in managers' priorities indicate the ability to opportunistically manipulate reported UTBs may have decreased.⁵

I use a pre-post research design with panel data to test the association of the announcement of Schedule UTP with reported UTBs. After controlling for firm characteristics which prior research suggests are associated with reported UTBs, I test whether firms reduce their UTBs after the announcement of the requirements of Schedule UTP. Specifically, I expect, on average, firms will have a significant decrease in their reported UTBs for periods after Schedule UTP was announced. I also test whether changes are incrementally different for firms which are required to file Schedule UTP earlier, tax aggressive firms, and financially conservative firms. I expect the decrease to be greatest for firms with the earliest implementation of Schedule UTP, for tax aggressive firms, or for financially conservative firms.⁶ Finally, I test whether the decrease in UTBs is merely a change in financial reporting or a real change in aggressive tax reporting.

I present a summary of the results of my main hypothesis tests in Appendix D. Overall, the evidence suggests that firms reduce reported UTBs in their financial statements subsequent to

⁵ Although the opportunities may have decreased, they still exist. Gupta et al. (2015) examine earnings management using tax accruals and conclude firms use this method less post-FIN 48. However, Cazier et al. (2015) conclude firms still engage in earnings management using tax accruals post-FIN 48. So while fewer firms may engage in earnings management post-FIN 48, evidence suggests it still occurs.

⁶ I expect firms with the earliest implementation date to have larger decreases in UTBs because of the immediacy of filing Schedule UTP. Firms which have several years before they are required to file the schedule may reduce UTBs gradually. I expect financially conservative firms to have a greater decrease because if they are over-reserved, they have more ability to decrease UTBs quickly.

the announcement of Schedule UTP. The results are consistent with both levels of UTBs and yearly changes in UTBs. The results are most significant for the largest firms which are required to file Schedule UTP earliest. The results are mixed regarding firms which are conservative in their financial reporting. When I examine levels of UTB reporting, the results disappear once I control for firm fixed effects. However, when I examine yearly changes to UTB reporting the results more consistently suggest firms which are more conservative in their financial reporting have more negative changes in UTBs than firms which are not conservative.

Results for firms in the highest quartile of tax aggressiveness are also mixed. Generally, only firms in the highest quartile of BTD and PermBTD significantly reduce UTBs. This result provides evidence to suggest that all firms, not just tax aggressive firms, are motivated to reduce UTBs after the announcement of Schedule UTP. Finally, the evidence suggests tax aggressive behavior does not diminish subsequent to Schedule UTP. The results indicate only BTDs decrease significantly, but ETRs do not significantly increase. These results, along with the results of an overall decrease in UTBs, suggest that firms are merely changing their financial reporting behavior and not their aggressive tax behavior. Although the requirements of FIN 48 and ASC 740 do not specify quarterly disclosure of UTBs, they do require firms to report material changes to UTBs quarterly. The results using quarterly data are qualitatively similar to the results using annual data. This study is the first to examine quarterly UTB reporting in addition to annual UTB reporting.

This study responds to the call by Shackelford and Shevlin (2001) and Hanlon and Heitzman (2010) for research on the interaction between financial reporting behavior and tax reporting behavior. It also extends the growing literature which examines the association between changes in tax reporting requirements and changes in other behavior (Blouin et al. 2007,

2010; Cazier et al. 2015; Donohoe & McGill 2011; Dunbar et al. 2010; Gupta et al. 2015).

Specifically, I extend Abernathy et al. (2013) by examining the financial reporting reaction of all firms impacted by Schedule UTP, as well as the change in tax aggressiveness, if any. This study also extends the academic literature on financial reporting quality, which should be of interest to the FASB. Since firms reduce UTBs subsequent to the IRS announcement of Schedule UTP without an accompanying decrease to tax aggressive behavior, the evidence suggests firms were not reporting UTBs according to the guidelines set forth by FIN 48.

This study is also of interest to the IRS. Because Schedule UTP is associated with a change in UTB reporting, this suggests firms believe the schedule will provide useful information to the IRS. However, the lack of association between Schedule UTP and actual tax payments indicates Schedule UTP may not have the effect the IRS desires. As Donohoe and McGill (2011) conclude, “[a]ccounting and tax reports should not be a cat-and-mouse game to the public or the government. The question becomes the size of the bell to put on the mouse (McGill and Outslay 2003).” This study will help answer whether the Schedule UTP “bell” is large enough to impact behavior.

The paper is organized as follows. Chapter 2 provides a summary of Schedule UTP and the other major tax reporting changes which have occurred in the past decade. Chapter 3 reviews the existing literature concerning FIN 48 and tax aggressiveness and develops the hypotheses. Chapter 4 provides a description of the sample selection and data used for the tests and identifies the models for estimating UTBs. Chapter 5 presents the results of my regression equations using annual data. Chapter 6 presents the results of my regression equations using quarterly data, and Chapter 7 concludes.

CHAPTER 2

BACKGROUND

Schedule UTP was initially announced by IRS Commissioner Douglas Shulman on January 26, 2010 (Shulman 2010). Under the proposed requirements, all firms over \$10 million in assets would be required to provide a brief description of each UTP for which a reserve required under FIN 48 was established in the financial statements. In addition, firms would report the Internal Revenue Code Section which applied to each position as well as the maximum potential liability the firm would face if the position was disallowed by the IRS upon examination. Each of the Big Four accounting firms, as well as numerous law firms and regional accounting firms, provided comment letters to the IRS expressing concerns regarding the stringent requirements of Schedule UTP. The IRS responded to these concerns by reducing the required disclosures from a maximum dollar amount to a ranked order of uncertain tax positions. The schedule is phased in over a five year period so only firms with over \$100 million in total assets are required to file Schedule UTP for tax years 2010 and 2011. Firms over \$50 million are required to file beginning with tax year 2012, and firms over \$10 million are required to file beginning with tax year 2014.

Critics of Schedule UTP claim its disclosure requirements will provide a “roadmap” of firms’ tax strategies to the IRS. Similar criticism was raised concerning Schedule M-3 and FIN 48. However, the notion of avoiding disclosure of such a “roadmap” dates back several decades.

In *United States v. Arthur Young & Co.* (1984), the Supreme Court ruled tax accrual workpapers are not protected upon request from the IRS. The general consensus of studies which examine the implications of and reactions to this decision is the *Arthur Young* decision will negatively impact auditor-client relationships because the information contained in the workpapers would provide the IRS a “roadmap” to audit aggressive or uncertain positions taken on a tax return (Allen 1987; Kline 1986; Merline 1986; Peithman 1985).

Kline (1986) notes the IRS reiterated its existing “policy of restraint”⁷ eight days after the *Arthur Young* decision was announced. The IRS simultaneously reiterated the “policy of restraint” when it released the final Schedule UTP. However, Schnee and Taylor (1984) report a significant increase in IRS requests for tax accrual workpapers after the “policy of restraint” was originally issued in 1981. So while the “policy of restraint” remains the internal policy of the IRS, it may not provide the protection it purports. Also, the disclosures required by Schedule UTP seem to give the IRS access to the information contained in the tax accrual workpapers without violating the “policy of restraint.”

More recently, both the IRS and the FASB have enacted changes which require additional disclosures. In 2003, the IRS finalized regulations and developed Form 8886 for reporting transactions which are potentially abusive (tax shelters). In 2004, the IRS developed Schedule M-3, which expanded the reconciliation from book income to taxable income from 10 lines (Schedule M-1) to over three pages (Boynton and Mills 2004). The FASB also implemented changes to the financial reporting of taxes with Interpretation No. 48 (FIN 48) in 2006. FIN 48 is an interpretation of FAS 109 and requires more consistent measurement and reporting of UTBs. Figure 1 presents a summary of changes between FAS 109 and FIN 48.

⁷ The “policy of restraint” is an internal IRS policy which states that although the IRS has the authority to examine the independent auditor’s workpapers, an IRS auditor will not request those workpapers unless the agent believes the item is material and information concerning the item cannot be obtained from other sources.

	FAS 109	FIN 48
Recognition	“Probable”	“More likely than not”
Valuation	Valuation Allowance	Largest amount which is >50% likely
De-Recognition	Valuation Allowance	When no longer more likely than not
Disclosure	None Required	Quarterly reporting; annual reconciliation

Figure 1. Summary of Changes Between FAS 109 and FIN 48

One of the most significant requirements of FIN 48 is firms must provide a tabular reconciliation of UTB changes in their annual financial statement footnotes. The annual reconciliation requires firms to disclose increases due to new positions taken during the year, increases or decreases due to positions taken in prior periods, decreases due to settlements with the IRS, and decreases due to positions in which the statute of limitations has lapsed.

One of the primary objections to FIN 48 is it would provide a “roadmap” to the IRS concerning firms’ UTPs (Frischmann et al. 2008; Donohoe and McGill 2011). Despite concerns by managers, no evidence to date confirms FIN 48 disclosures have provided useful information to tax enforcement authorities (Nichols 2008; Hanlon and Heitzman 2010). These findings are not surprising, though, because the FASB is concerned with financial reporting and not whether standards provide information to the IRS. In contrast, the stated goals of Schedule UTP are to prioritize selection of taxpayers and issues to audit and to improve audit efficiency (Shulman 2010).

FIN 48, the financial accounting standard upon which Schedule UTP is based, is effective for fiscal years beginning after December 15, 2006. FIN 48 is an aggregate, probability-weighted calculation for tax positions the firm believes “more likely than not” would be upheld

upon examination by the IRS. FIN 48 requires an annual reconciliation for the changes to recorded UTBs. These include changes to UTBs taken in the current period, changes to UTBs taken during a prior period, decreases to UTBs as a result of settlements with a taxing authority, and decreases to UTBs as a result of a lapse in the statute of limitations. Additional disclosures are required for the amount of UTBs that impacts the effective tax rate, the amount of penalties and interest related to UTBs, the potential amount UTBs could change during the next twelve months, and all tax years still subject to examination.

Disclosure on Schedule UTP is required for each US federal tax position for which a UTB has been recorded in the financial statements. However, if a firm does not create a UTB reserve because of an IRS administrative practice to not examine a particular issue, disclosure is still required on Schedule UTP. One major difference is Schedule UTP does not require a dollar valuation for a tax position, but instead requires an order ranking if multiple UTPs are disclosed. In addition, Schedule UTP requires a concise description of the position, the specific Internal Revenue Code section for which a UTP applies, the year the position applies, whether the position is a permanent or temporary difference, and whether the position is greater than ten percent of the total amount of all UTPs reported.

Schedule UTP is based on the disclosures required for financial reporting (Shulman 2010), but requires a ranking of UTPs rather than the aggregate disclosure required under FIN 48. I provide a summary of the differences between FIN 48 and Schedule UTP in Figure 2. Schedule UTP provides a unique setting to examine the relationship between financial reporting and tax reporting because there are few examples of required tax disclosures which are based on financial accounting disclosures.⁸

⁸ Schedule M-3 is another example, but it is merely a reconciliation between financial reporting and income tax reporting (Harvey 2011).

	FIN 48	Preliminary Schedule UTP	Final Schedule UTP
Implementation/ Announcement Date	December 16, 2006	January 26, 2010	September 24, 2010
Disclosure	Aggregate; probability-weighted	Detail; maximum potential liability	Detail; rank order
Description	Current year, changes to prior year, settlements, lapse of statute of limitations	Code Section, year applied, timing, nature of item, rationale	Code Section, year applied, timing, nature of item
Other Details		Administrative practice, intent to litigate	Administrative practice
Firms Affected	>\$10 million in assets	>\$10 million in assets	>\$100 million in assets in 2010; >\$50 million in assets in 2012; >\$10 million in assets in 2014

Figure 2. Summary of Changes Between FIN 48 and Schedule UTP

Schedule UTP overlaps with other disclosures currently required by the IRS, specifically Schedule M-3 and Form 8886. In fact, the American Institute of Certified Public Accountants (AICPA) and the Tax Executives Institute each submitted letters to the IRS during the summer of 2011 requesting the IRS eliminate or reduce the requirements of Schedule M-3 due to the overlap of required information (Bennett 2011). However, Harvey (2011) notes neither Schedule M-3 nor Form 8886 was designed to directly disclose all material issues to the IRS, and Commissioner Shulman has stated specifically Schedule UTP will be a much more effective tool for tax enforcement than Schedule M-3 (Shulman 2010).

Form 8886 requires firms to disclose “reportable transactions” to the IRS.⁹ This

⁹ Reportable transactions are required disclosures related to tax shelters in which a firm participates. The general categories of reportable transactions are: listed transactions, confidential transactions, transactions with contractual protection, transactions of interest, and loss transactions. Penalties for failure to report transactions on

requirement was instituted in the American Jobs Creation Act of 2004 and was directly influenced by the use of tax shelters in the 1990s and early 2000s. Significant disagreement exists concerning the effectiveness of Form 8886. Proponents of the disclosure describe it as one of the most effective tools the IRS has for detecting tax shelters (Blank 2009). In her speech before the American College of Tax Counsel, Pamela Olson declared, “The tax shelter war is over. The government won (Olson 2006).” However, critics cite the limitations of the IRS to effectively use the disclosures reported to them. Since the penalties for failure to file Form 8886 are so great, many firms over-report transactions. Over-reporting prevents the IRS from assessing failure-to-file penalties, but at the same time burdens the IRS with unnecessary paperwork which makes it more difficult to determine which transactions are actually abusive (Blank 2009).

While firms could over-report on Schedule UTP, it is less likely to occur with Schedule UTP than Form 8886. Form 8886 requires disclosure of transactions the IRS has already identified as possibly abusive. If firms are engaging in similar transactions, they have a greater chance of escaping detection if they over-report Form 8886. Schedule UTP is not limited to transactions of which the IRS is aware, so firms may be less likely to draw attention to positions the IRS has not yet identified.

Conversely, firms could fail to report sufficient useful information to the IRS on Schedule UTP. Commissioner Shulman announced initial filing statistics for Schedule UTP in November 2011, indicating many firms report few, if any, UTPs (Shulman 2011). The effectiveness of IRS forms often remains subject to debate for years after their implementation. Practitioners and academics disagree on the usefulness of Form 8886 and Schedule M-3, as well as Schedule UTP. However, Carnes and Englebrecht (1995) find the perception of an increase in detection risk

Form 8886 are generally 75% of the tax savings related to participation in the activity.

motivates change in behavior, not just an actual increase in detection risk. Therefore, if firms think Schedule UTP will provide information to the IRS, they will potentially change behavior even if the schedule does not provide useful information.

CHAPTER 3

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

3.1 Reduction in Reported UTBs

Schedule UTP is based on FIN 48 disclosures, the effects of which have been the focus of a significant amount of research. This research has evaluated the impact of FIN 48 on disclosure quality (Gross 2011; Nichols et al. 2007; Nichols 2008; Robinson and Schimdt 2013), tax aggressiveness (Lisowsky et al. 2010; Beck and Lisowsky 2014), investor reaction (Frischmann et al. 2008; Koester 2011), earnings management (Cazier et al. 2015; Gupta et al. 2015), tax reporting (Dunbar et al. 2010) and financial reporting (Blouin et al. 2010). The announcement of Schedule UTP provides a unique setting to extend the FIN 48 literature to test the additional impact of disclosure directly to the IRS.

Robinson and Schmidt (2013) examine initial FIN 48 disclosures and develop a disclosure score for firms which measures completeness and clarity of FIN 48 disclosures. They find most firms provide disclosures which contain all the required items (completeness), but the disclosures are vague (clarity). These results are qualitatively similar to Nichols (2008). The setting of Schedule UTP allows me to examine an additional aspect of completeness which is not considered by Nichols (2008) or Robinson and Schmidt (2013). Specifically, if firms assume 100% likelihood of IRS audit in their UTB calculation, the additional disclosure required by Schedule UTP should not significantly impact UTBs.

Blouin et al. (2010) also examine the financial reporting implications of increased tax disclosures using FIN 48 as their setting, but several key differences exist between their study and mine. Blouin et al. (2010) examine firms' reporting decisions surrounding the adoption of FIN 48, but their sample is comprised of firms who are under continuous examination from the IRS. Therefore, avoiding detection by the IRS is not a significant motivation in their study. Also, due to the limited financial statement disclosures firms provide prior to FIN 48, their tests are limited to a binary variable indicating whether or not firms report a decrease in UTBs and are based on a relatively small sample. I use a large sample to test not only whether firms report a decrease in UTBs, but also the amount of decrease.

My study also differs in regards to the setting under examination. Blouin et al. (2010) focus on the initial period in which UTB disclosure was required, and the preceding quarters. The period they study is unique because when the measurement and disclosure of UTBs were first required, any changes in reported UTBs were charged directly to retained earnings and did not impact income. This requirement may have motivated firms to release excess reserves prior to the adoption of FIN 48 and thereby positively impact earnings. Alternatively, firms may have been motivated to be more conservative (and therefore report a larger reserve for UTBs) at FIN 48 adoption because an increase in UTBs would not negatively impact earnings. In fact, Blouin et al. (2010) report several firms which reduced the level of UTBs in the quarters leading up to adoption of FIN 48 but then increased the level of UTBs at adoption. This indicates firms may have used FIN 48 simply as an earnings management technique by releasing reserves when it would affect income but increasing reserves when it would not affect income.

While Blouin et al. (2010) find evidence which suggests firms released UTB reserves into earnings more quickly than historical levels, they acknowledge their sample size is limited and

their results may not generalize to a larger population. Dunbar et al. (2010) use a large population and do not find evidence that firms released UTB reserves prior to adoption of FIN 48 more quickly than historical levels.¹⁰ My study extends Blouin et al. (2010) by examining the change in reporting of a larger sample of firms when an additional layer of accountability directly to the IRS is added to the existing disclosure requirements.

Since Schedule UTP only requires a ranked order and not a dollar amount associated with each UTP, some may suggest it does not provide a useful “roadmap” to the IRS. However, the IRS has a large database of UTB disclosures (Beck and Lisowsky 2014), so they are able to compare firms’ Schedule UTP reporting to the dollar amounts reported in firms’ financial statements. Also, converting actual amounts into a ranked order is a common statistical procedure used in extant accounting literature. One advantage of using ranked data (e.g., Iman and Conover 1979) is it performs well with both linear and nonlinear data and is effective in prediction models. Conover and Iman (1981) demonstrate ranked data out-performs actual data in statistical tests when populations are nonnormal. Although ranked data may not provide specific information concerning the amount of each UTP, the goal of the IRS is not to reconcile UTB and UTP amounts. The stated goal for Schedule UTP is to determine which companies to select for audit and on which issues to focus. The existing information the IRS has concerning UTBs coupled with the ranked order provided by UTPs should enable the IRS to use the information to identify specific firms and content areas to select for examination.

Mills et al. (2010) develop a model of taxpayer behavior under FIN 48. They conjecture firms’ UTB balances under FIN 48 provide a signal to the IRS indicating the strength of the positions taken in the tax return. UTB balances are one proxy for tax aggressiveness used in the

¹⁰ Dunbar et al. (2010) use a slightly different research design where they utilize a changes model to test whether the increases to UTBs decreased surrounding adoption of FIN 48. They also limit their analysis to domestic activities.

extant literature (Beck and Lisowsky 2014; Hanlon and Heitzman 2010). Prior research provides evidence which suggests firms which are more tax aggressive are subject to increased scrutiny from regulators (Badertscher et al. 2009; Frank et al. 2009; Mills 1998; Mills and Sansing 2000). Therefore, firms are motivated to reduce UTB balances in order to signal more certainty to the IRS and reduce the appearance of tax aggressiveness.

Schedule UTP has a tiered implementation based on firm size. Firms with assets greater than \$100 million are required to file Schedule UTP for 2010. Firms with assets greater than \$50 million are required to file for 2012, and firms with assets greater than \$10 million are required to file for 2014. This tiered implementation provides a natural experiment to examine the association of the schedule on different sub-samples of firms based on when they are required to file Schedule UTP. Firms with assets between \$10 million and \$50 million are not required to file Schedule UTP until 2015 (tax year 2014), so they have a relatively long period between announcement and implementation of Schedule UTP. Therefore, I expect these firms, on average, to have the least change associated with Schedule UTP. Conversely, firms with more than \$100 million in assets are required to file Schedule UTP in 2011 (tax year 2010). These firms have the least amount of time between the announcement and implementation of Schedule UTP, so I expect these firms to have the greatest change.

While it is possible that firms with less than \$100 million in assets will not change their reporting behavior until the year they are required to file Schedule UTP, I expect firms will be motivated to change prior to their implementation date. Many tax planning strategies are very complex and possibly take several years to “unwind”. If firms stop using these strategies, they will report fewer current year UTB additions. Also, the statute of limitations for the IRS to examine a tax return is at least three years, so positions taken on prior year returns can still be

examined once the initial Schedule UTP is filed. Since the IRS also has access to firms' financial statements, firms will benefit by reducing their UTBs prior to filing Schedule UTP.

The preceding discussion demonstrates how Schedule UTP will provide additional information to the IRS concerning firms' UTPs and why this could motivate firms to alter their UTB reporting. My first set of hypotheses, stated in alternative form, is:

H1a: On average, firms will report lower UTB amounts after the announcement of Schedule UTP than they reported prior to the announcement of Schedule UTP.

H1b: Firms with the earliest (latest) implementation of Schedule UTP will report the largest (least) reduction in reported UTBs.

3.2 Financial Reporting Conservatism

My second hypothesis relates specifically to firms who may report larger amounts of UTBs than other firms in similar situations. Statement of Financial Accounting Concepts (SFAC) 2 defines conservatism as "a prudent reaction to uncertainty to try to ensure that uncertainties and risks inherent in business situations are adequately considered" (FASB 1980). I define conservative firms as firms that accumulate large income-reducing (negative) non-operating accruals. If firms use conservative accounting policies, they demonstrate a bias for income-reducing accruals over income-increasing accruals (Givoly and Hayn 2000; Ruch and Taylor 2011). If firms possess this bias, I conjecture they will report larger UTBs than similar firms which do not use conservative accounting policies. Because reporting large UTBs provides a signal of aggressive tax behavior to the IRS, I conjecture firms which employ conservative practices will reduce UTBs because the announcement of Schedule UTP increases the potential costs of examination by the IRS. I use the measure developed by Givoly and Hayn (2000) because UTBs are income-reducing accruals, so their measure can help identify firms that could have a bias for reporting larger UTB amounts (variable FinCons in Appendix A).

This conservatism may also facilitate earnings management (Jackson and Liu 2010; Penman 2001). Jackson and Liu (2010) examine the relationship between conservative reporting and earnings management and find conservative firms are associated with increased incidences of earnings management. If firms have larger income-reducing accruals, they have more opportunity to release those accruals to meet earnings objectives. While not directly related to the current study, the relationship of earnings management and financial reporting of income taxes is also examined in the academic literature (Cazier et al. 2015; Dhaliwal et al. 2004; Gupta et al. 2015). Cazier et al. (2015) provide evidence which suggests firms continue to manage earnings post-FIN 48 using tax accounts, such as UTBs. If firms which are conservative reduce UTBs associated with the IRS announcement of Schedule UTP, they may have less ability to reduce UTBs to manage earnings in the future. I look forward to future research that examines this question.

To the extent large UTB balances provide a signal to the IRS of weaker tax positions (Mills et al. 2010), Schedule UTP increases the costs of being over-reserved. Therefore, I expect more financially conservative firms to decrease their reported UTBs more than firms who are not financially conservative. My second hypothesis, in the alternate form, is:

H2: Firms which are more conservative in their financial reporting will reduce their reported UTBs more than firms which are not conservative in their financial reporting.

3.3 Tax Aggressiveness

My third hypothesis relates to firms which are aggressive in their income tax reporting. Prior research provides evidence which suggests tax aggressive firms are subject to increased scrutiny by the IRS (Frank et al. 2009; Mills 1998; Mills and Sansing 2000). The announcement of Schedule UTP indicates the IRS' intent to identify and constrain aggressive tax reporting. Therefore, aggressive firms have increased incentives to reduce their level of aggressiveness

because the cost of detection has increased (Chen and Chu 2005; Slemrod 2004). Prior research also provides evidence which suggests increased regulation affects real firm behavior. Donohoe and McGill (2011) demonstrate firms reduced their book-tax differences surrounding the announcement of Schedule M-3. Similarly, Blouin et al. (2010) provide evidence that firms reduced their tax reserves and increased settlements with the IRS prior to the enactment of FIN 48.

Since tax return data is not publicly available, I use several proxies for tax aggressiveness based on financial information.¹¹ These proxies are commonly used in the extant literature (see Hanlon & Heitzman 2010 for a discussion of each proxy). My third hypothesis, stated in the alternative form, is:

H3: Firms which are more tax aggressive will reduce their reported UTBs more than firms which are less tax aggressive.

3.4 Changes in Financial Reporting vs. Changes in Tax Aggressiveness

A reduction in the amount of UTBs after the announcement of Schedule UTP could have two alternative explanations: it could represent a change in financial reporting or a change in tax aggressiveness. My final hypothesis is designed to distinguish between these alternative explanations. Due to the increased focus placed on tax reporting after SOX and FIN 48, firms may not be able to reduce the amount of UTBs disclosed in their financial statements without a corresponding reduction in the level of their aggressive tax behavior. Gleason et al. (2012) document a decrease in firms' ability to manage earnings using tax accruals after a SOX Section 404 internal control weakness (ICW) relating to income taxes. They also note a significant number of reports which indicate material ICWs involve tax-related weaknesses. This, coupled

¹¹ Similar to Lisowsky et al. (2010), due to the correlation among the proxies for tax aggressiveness, I include one measure at a time in my regression models.

with tax managers' shift in focus from cash tax savings to compliance (KPMG 2006), indicates firms are more concerned with accurate tax reporting than they are with using tax accounts to manipulate earnings.

Several experimental studies have examined the impact of detection risk on compliance. The general consensus is an increase in the probability of detection (detection risk) leads to less aggressive, or more compliant, behavior (Beck et al. 1991; Carnes and Englebrecht 1995; Fischer et al. 1992; Klepper and Nagin 1989; Spicer and Thomas 1982). A key finding of prior research is perceived detection risk, not actual detection risk, influences behavior (Buchheit et al. 2005; Fischer et al. 1992; Webley et al. 1991). Webley et al. (1991) find when detection risk is low, even small increases in perceived detection risk have a substantial impact on compliance. Since the overall audit rate by the IRS is relatively low, this finding is important for the current study.¹²

Buchheit et al. (2005) empirically test whether a change in IRS reporting requirements impacts behavior. They examine a change in substantiation requirements for non-cash charitable contributions and find a significant negative correlation between detection risk and aggressive behavior. Similarly, Hoopes et al. (2012) provide evidence which suggests corporate tax avoidance decreases as audit probability increases. Schedule UTP provides a unique opportunity to examine how a change in IRS reporting impacts actual behavior.

When Schedule UTP was first announced, the *New York Times* reported Schedule UTP represents a shift in the balance of power from corporate taxpayers to the IRS (Browning 2010). If firms believe this shift is significant enough to increase detection risk, firms which take uncertain tax positions might be more conservative in those positions because of the increase in detection risk of overly aggressive tax positions (Chen and Chu 2005; Slemrod 2004).

¹² Overall, corporations with assets > \$10 million have an audit rate of roughly 15% (Tomohara et al. 2012; Tozzi 2011).

Therefore, my final hypothesis is:

H4: Firms will reduce their level of tax aggressiveness subsequent to the announcement of Schedule UTP.

CHAPTER 4

SAMPLE SELECTION AND RESEARCH DESIGN

4.1 Sample Selection

My sample of firms begins with all firms subject to FIN 48 and Schedule UTP disclosure requirements (assets > \$10 million). Consistent with prior research, I exclude firms in financial industries and utilities because they have different tax reporting motivations than other firms (Blouin et al. 2010; Hanlon 2005). Since my dependent variable is based on the reporting requirements established under FIN 48, I use 2007 as the beginning of my sample. I examine UTB disclosures from Forms 10-Q and 10-K found in the Securities and Exchange Commission's (SEC) EDGAR Database. I obtain company financial data from the Industrial Quarterly file and Industrial Annual file of Compustat. My final sample contains 1,555 unique firms between 2007 and 2011, resulting in 7,775 firm-year observations.

4.2 Research Design Overview

Using panel data, I perform OLS regressions both with and without controls for firm fixed effects. I use panel data in each of my tests for two main reasons. First, panel data is particularly useful when analyzing policy changes (Wooldridge 2009, pg. 462). Second, panel data controls for firm fixed effects which produces stronger econometric tests for my variables of interest (Wooldridge 2009, pg. 456). Controlling for these unobserved firm characteristics eliminates the potential risk that factors not included in my model might be impacting the results.

I present the results both with and without controls for firm fixed effects to demonstrate

how these controls can impact results. This has implications for both the current study, and also for commonly used control variables that were examined without controls for firm fixed effects. When results change once fixed effects are included in the model, the results are likely due to correlated omitted variables. Including fixed effects also allows for a more parsimonious model because many control variables for firm characteristics can be excluded if they are not a variable of interest.

I also employ both a levels model as well as a changes model to test for changes in financial reporting associated with the announcement of Schedule UTP. Controlling for firm fixed effects and using a changes model each correct for unobserved heterogeneity resulting from omitted variables. I control for serial correlation and heteroskedasticity using White's robust standard error measure (White 1980).

4.3 Impact on UTB Levels

H1a predicts an overall decrease in UTBs subsequent to the announcement of Schedule UTP. In order to test H1a, I estimate the following regression:

$$\text{UTB} = \beta_0 + \beta_1 \text{SchUTP} + \beta_2 \text{ROA} + \beta_3 \text{Size} + \beta_4 \text{Growth} + \beta_5 \text{Leverage} + \beta_6 \text{NOL} + \beta_7 \text{Foreign} + \beta_8 \text{R\&D} + \varepsilon \quad (1)$$

I fully define all variables in Appendix A. SchUTP is an indicator variable which represents the time period after Schedule UTP was announced. Therefore, H1a predicts β_1 will be negative.

I control for firm characteristics associated with tax aggressiveness and uncertainty in tax reporting in the extant research. I specifically include R&D and Foreign because the IRS reports the R&D credit and transfer pricing as the two most common UTPs reported on Schedule UTP in the initial year (Shulman 2011). Because I use panel data to control for firm fixed effects, I can eliminate many determinants of tax uncertainty and maintain a relatively parsimonious model.

I expect positive coefficients for ROA and Size because larger, more profitable firms have more incentives and opportunities to engage in potentially risky tax planning which results in more UTPs. I expect a positive coefficient for Growth because growing firms often face more uncertainty than stable firms. I expect a negative coefficient on Leverage. Because firms receive a tax deduction for interest expense, firms with large amounts of debt have less incentive to undertake uncertain positions to avoid taxes. I expect a negative coefficient for NOL because firms with larger NOLs also have less incentive to undertake uncertain positions. Foreign and R&D are proxies for complex tax environments and represent opportunities for tax avoidance. Also, two of the most common UTP disclosures for the initial Schedule UTP filing involve the research credit and transfer pricing (Shulman 2011). Therefore, I expect a positive coefficient for both Foreign and R&D.

H1b, H2 and H3 predict incrementally larger reduction in UTBs based on proximity of implementation date of Schedule UTP, financial reporting conservatism, and tax aggressiveness, respectively. In order to test H1b, H2 and H3, I expand equation (1) and estimate the following regression:

$$\begin{aligned}
 \text{UTB} = & \beta_0 + \beta_1 \text{SchUTP} + \beta_2 \$100\text{mil} + \beta_3 \$50\text{mil} + \beta_4 \text{FinCons} + \beta_5 \text{TaxAgg} + \\
 & \beta_6 \text{SchUTP} * \$100\text{mil} + \beta_7 \text{SchUTP} * \$50\text{mil} + \beta_8 \text{SchUTP} * \text{FinCons} + \\
 & \beta_9 \text{SchUTP} * \text{TaxAgg} + \beta_{10} \text{ROA} + \beta_{11} \text{Size} + \beta_{12} \text{Growth} + \beta_{13} \text{Leverage} + \\
 & \beta_{14} \text{NOL} + \beta_{15} \text{Foreign} + \beta_{16} \text{R\&D} + \varepsilon
 \end{aligned} \tag{2}$$

\$100mil and \$50mil are indicator variables which indicate the cutoff point of tiered implementation of Schedule UTP. I expect firms' reaction to vary based on when they are required to file Schedule UTP with the IRS. FinCons is a measure of firms' financial reporting conservatism based on Givoly and Hayn (2000).¹³ I modify their measure by removing the

¹³ I use the Givoly & Hayn (2000) measure because the amount of UTBs reported by a firm is essentially a reserve for potential future tax liability, so their measure most closely resembles the nature of UTBs. I modify the measure by removing all tax accruals rather than just income taxes payable. Also, as noted by Ruch & Taylor

accrual for UTBs in order to avoid any mechanical relationship between this independent variable and the dependent variable. FinCons is an indicator variable representing firms in the lowest quartile (most income-reducing) of nonoperating accruals. TaxAgg is a proxy for tax aggressive firms. I use two main types of proxies for tax aggressiveness commonly used in the extant literature: Book-Tax Differences (BTD) and Effective Tax Rate (ETR). BTD includes Total Book-Tax Differences (TotBTD), Permanent Book-Tax Differences (PermBTD) and Discretionary Permanent Book-Tax Differences (DPermBTD) (Donohoe and McGill 2011; Frank et al. 2009; Lisowsky et al. 2010). ETR includes BookETR and CashETR (De Waegenare et al. 2010; Dyreng et al. 2008; Lisowsky et al. 2010). TaxAgg is an indicator variable which represents firms in the highest quartile of aggressive behavior.¹⁴ All other variables are previously defined.

H1b predicts firms which are required to file Schedule UTP earliest will have the most motivation to quickly reduce their reported UTBs. I conjecture all firms will reduce UTBs subsequent to the announcement of Schedule UTP. However, smaller firms have a longer time frame before the requirements of Schedule UTP are implemented. I predict their reduction of UTBs will be more gradual and expect a negative coefficient for both β_6 and β_7 , with a more negative coefficient for β_6 .

H2 predicts financially conservative firms with potentially greater UTB accruals will have more incentive to reduce their UTBs relative to firms which are less conservative in their financial reporting. I therefore expect β_8 to be negative. H3 predicts that Schedule UTP increases the detection risk more for tax aggressive firms, so they will be more motivated to

(2011), their measure also captures both conditional and unconditional conservatism which could impact a firm's UTB reporting decisions.

¹⁴ BTD is positively associated with tax aggressiveness while ETR is negatively associated with tax aggressiveness. Therefore, firms in the *highest* quartile of BTD are identified as aggressive while firms in the *lowest* quartile of ETR are identified as aggressive.

reduce UTBs than firms which are not aggressive in their tax reporting. I therefore expect β_9 to be negative.

4.4 Impact on UTB Changes

In addition to a levels analysis, I perform an analysis of the changes in annual changes to reported UTBs subsequent to Schedule UTP. In a first differences model, each variable is converted to a “change” variable by subtracting the variable from the previous period. This is one method to control for unobserved firm effects using panel data (Wooldridge 2009).

Specifically, I re-estimate equation (2) by subtracting t-1 from t for each continuous variable as follows:

$$\begin{aligned} \Delta UTB = & \beta_0 + \beta_1 \Delta SchUTP + \beta_2 \$100mil + \beta_3 \$50mil + \beta_4 FinCons + \beta_5 TaxAgg + \\ & \beta_6 \Delta SchUTP * \$100mil + \beta_7 \Delta SchUTP * \$50mil + \beta_8 \Delta SchUTP * FinCons + \\ & \beta_9 \Delta SchUTP * TaxAgg + \beta_{10} \Delta ROA + \beta_{11} \Delta Size + \beta_{12} \Delta Growth + \beta_{13} \Delta Leverage + \\ & \beta_{14} \Delta NOL + \beta_{15} \Delta Foreign + \beta_{16} \Delta R\&D + \varepsilon \end{aligned} \quad (3)$$

This model allows me to determine how UTBs change during 2010, the year in which Schedule UTP was announced. It also provides evidence about differences in changes based on implementation date, financial reporting conservatism and tax aggressiveness. Since 2010 is the only year that marks a change in the reporting regime, all interactive terms are for that year only. Predictions for the variables of interest are the same as in the previous section.

To examine whether changes in reporting are merely an initial reaction to Schedule UTP or if they persist beyond 2010, I adjust SchUTP to an indicator variable to represent all periods after Schedule UTP was announced. Specifically, I estimate the following:

$$\begin{aligned} \Delta UTB = & \beta_0 + \beta_1 SchUTP + \beta_2 \$100mil + \beta_3 \$50mil + \beta_4 FinCons + \beta_5 TaxAgg + \\ & \beta_6 SchUTP * \$100mil + \beta_7 SchUTP * \$50mil + \beta_8 SchUTP * FinCons + \\ & \beta_9 SchUTP * TaxAgg + \beta_{10} \Delta ROA + \beta_{11} \Delta Size + \beta_{12} \Delta Growth + \beta_{13} \Delta Leverage + \\ & \beta_{14} \Delta NOL + \beta_{15} \Delta Foreign + \beta_{16} \Delta R\&D + \varepsilon \end{aligned} \quad (4)$$

Equation 4 provides evidence on changes during the total time before and after Schedule UTP. If changes occur in 2010 and then vary similarly to the pre-Schedule UTP period, equation (4) will not detect any significance in the post-Schedule UTP period.

4.5 Impact on Tax Aggressiveness

H4 predicts a decrease in the actual level of firms' tax aggressiveness subsequent to the announcement of Schedule UTP. I test this prediction with the following model:

$$\text{TaxAgg} = \beta_0 + \beta_1 \text{SchUTP} + \sum \lambda \text{Controls} + \varepsilon \quad (5)$$

I convert the continuous tax aggressive variables to an indicator variable for my tests of UTB reporting because I am interested in the differential association for aggressive firms relative to non-aggressive firms. However, for my tests using tax aggressiveness as the dependent variable, I leave each variable as a continuous variable because I am interested in the overall impact in the variable associated with Schedule UTP for all firms.

Each proxy for tax aggressiveness has different determinants (control variables), so I estimate each dependent variable in a separate regression defined below¹⁵. However, the variable of interest in each regression remains SchUTP. I predict a negative value of β_1 for each regression based on BTDs (i.e., less BTDs implies less tax aggressiveness). For ETR regressions I expect a positive value for β_1 (i.e., higher ETR implies less tax aggressiveness). Since none of my tax aggressiveness proxies are directly related to Schedule UTP, evidence of a decrease in these measures of tax aggressiveness subsequent to the announcement of Schedule UTP provides support for H4.

4.5.1 Book-Tax Differences

TotBTD represents pre-tax income less estimated taxable income. Since taxable income

¹⁵ Specifically, BTD control variables include discretionary accruals, while ETR control variables include changes in NOLs. All other control variables are identical.

is not publicly available, I estimate taxable income as the sum of total current tax expense grossed up by the statutory tax rate minus the change in NOL carryforward. PermBTD equals TotBTD minus temporary BTD. DPermBTD is a proxy for tax aggressiveness based on Frank et al. (2009) and Donohoe and McGill (2011). DPermBTD is based on a two-stage regression where the residual from the first equation (Eq. 6) is used as the dependent variable in the second equation (Eq. 7). Specifically, I estimate the following regressions:

$$\begin{aligned} \text{DPermBTD} = & \alpha_0 + \alpha_1 \text{Intangible} + \alpha_2 \text{UNCON} + \alpha_3 \text{MI} + \alpha_4 \text{CSTE} \\ & + \alpha_5 \Delta\text{NOL} + \alpha_6 \text{LagPermBTD} + \varepsilon \end{aligned} \quad (6)$$

$$\begin{aligned} \text{BTD} = & \beta_0 + \beta_1 \text{SchUTP} + \beta_2 \text{DAcc} + \beta_3 \text{R\&D} + \beta_4 \text{PPE} + \beta_5 \text{Inv} \\ & + \beta_6 \text{Leverage} + \beta_7 \text{Foreign} + \beta_8 \text{ROA} + \beta_9 \text{Size} + \varepsilon \end{aligned} \quad (7)$$

I estimate each measure of BTD (TotBTD, PermBTD, and DPermBTD) in equation 7 to determine the association between BTD and Schedule UTP. The variable of interest is SchUTP. A negative and significant coefficient on β_1 indicates BTDs, and therefore tax aggressiveness, have decreased subsequent to Schedule UTP.

4.5.2 Effective Tax Rate

Both BookETR and CashETR have been widely used in the academic literature as a proxy for tax avoidance. Also, Commissioner Shulman's comments concerning Schedule UTP indicate the IRS hopes Schedule UTP will increase tax collections. Therefore, an examination of ETR is appropriate. BookETR is total income tax expense divided by pre-tax income. Cash ETR is cash taxes paid divided by pre-tax income. Recent studies indicate the measure is not associated with the most aggressive forms of tax avoidance (Hanlon and Heitzman 2010; Lisowsky 2010); however, De Waegenare et al. (2010) demonstrate cash ETR is an effective measure of tax aggressiveness. Dyreng et al. (2008) discuss some limitations when using cash ETR and recommend a long-range measure over a yearly measure. However, using a long-range

measure confounds the effects of Schedule UTP on cash taxes paid. Therefore, my measure of cash ETR is yearly cash taxes paid divided by pre-tax income. I estimate the following regression:

$$\begin{aligned} \text{Book(Cash)ETR} = & \beta_0 + \beta_1 \text{SchUTP} + \beta_2 \Delta\text{NOL} + \beta_3 \text{R\&D} + \beta_4 \text{PPE} + \beta_5 \text{Inv} \\ & + \beta_6 \text{Leverage} + \beta_7 \text{Foreign} + \beta_8 \text{ROA} + \beta_9 \text{Size} + \varepsilon \end{aligned} \quad (8)$$

The variable of interest is SchUTP. Since an increase in ETR represents less aggressiveness, a positive and significant coefficient on β_1 provides support for H4.

CHAPTER 5

EMPIRICAL RESULTS - ANNUAL

5.1 Primary Test Results

5.1.1 Descriptive Statistics

My sample consists of 1,555 unique firms which report UTBs in each year between 2007 and 2011, resulting in a sample size of 7,775 firm-year observations. Since my research design employs panel data, firms are required to report all variables each year. While this decreases the overall sample size, analyzing the same firms each period allows for more robust statistical tests. My analysis using annual data can be divided into three main categories: changes in levels of UTBs after the announcement of Schedule UTP, changes in annual changes to reported UTBs in only the year Schedule UTP was announced, and changes in annual changes after the announcement of Schedule UTP. I report each category with and without firm fixed effects. I examine both overall level of UTBs and annual changes to UTBs to determine the full extent of the association between UTBs and Schedule UTP. I report both with and without firm fixed effects to inform researchers how the results change once firm fixed effects are included. Since empirical research cannot prove a causal relationship between variables, the more evidence I have to support my hypotheses, the more strongly I can draw inferences from the results.

I report descriptive statistics for the sample in table 1. Panel A of table 1 presents the entire sample from 2007-2011 while Panel B presents the period prior to the announcement of Schedule UTP and Panel C presents the period subsequent to the announcement of Schedule

UTP. It is interesting that the total reported UTBs do not vary significantly in the Pre- and Post-Schedule UTP periods (mean UTB = 78.6 and 78.1, respectively). At first glance it appears there is no significant difference in UTB reporting.

Table 1

Descriptive Statistics for Annual Panel Data Sample

Panel A: Full Sample				
Variable	N	Mean	Median	StdDev
Net Income	7775	248.654	20.611	1942.08
Pre-tax Income	7775	386.286	29.262	2326.33
Total Assets	7775	6181.9	822.6	28571.8
UTB (millions)	7775	78.4217	5.092	382.3
UTB (scaled)	7775	0.01431	0.00644	0.03099
Cash ETR	7775	0.09223	0.1294	6.7867
GAAP ETR	7775	0.14742	0.27474	3.35958
Panel B: Pre-SchUTP				
Variable	N	Mean	Median	StdDev
Net Income	4665	198.64	15.327	2222.27
Pre-tax Income	4665	330.176	22.6	2514.31
Total Assets	4665	5883.24	789.782	28146.5
UTB (millions)	4665	78.6278	5.067	384.339
UTB (scaled)	4665	0.01488	0.00671	0.03404
Cash ETR	4665	0.01114	0.1243	8.66403
GAAP ETR	4665	0.15706	0.28188	2.10613
Panel C: Post-SchUTP				
Variable	N	Mean	Median	StdDev
Net Income	3110	323.675	30.025	1418.83
Pre-tax Income	3110	470.45	41.1545	2009.16
Total Assets	3110	6629.89	892.663	29197.1
UTB (millions)	3110	78.1125	5.1525	379.283
UTB (scaled)	3110	0.01345	0.00594	0.02573
Cash ETR	3110	0.21386	0.13805	1.59236
GAAP ETR	3110	0.13295	0.26777	4.6441

Another interesting observation is the seemingly low value for Cash ETR¹⁶. Unlike many studies that use Cash ETR, I do not eliminate loss firms. The reason many studies eliminate loss firms is because evaluation of loss firms' ETR is difficult because it produces a negative ETR. I do not eliminate loss firms because loss firms still report UTBs. Also, eliminating firms that have a loss in any sample year would significantly reduce my sample size because I employ panel data in my analysis. I also convert ETR to an indicator variable for aggressive firms, so I do not interpret negative ETRs. Since the main focus of this study concerns UTB reporting, I choose to keep loss firms in my sample.

5.1.2 Impact on UTB Levels

I report the OLS regression results of the test of H1a in table 2. Consistent with my prediction, the coefficient on β_1 is negative and significant ($p < 0.000$). Since the dependent variable is a log transformation, interpretation of the coefficient is in percentages and requires an exponential calculation where e is raised to the power of the coefficient. Specifically, the results of table 2 indicate that on average, reported UTBs decrease by 10.1% in the Schedule UTP regime ($e^{-0.106421} = .899$). Each of the control variables in equation (1) is significant. However, the coefficients for ROA, Growth, and NOL are in the opposite direction than predicted. While prior research indicates firms with higher profitability and growth (NOLs) are associated with more (less) tax aggressive behavior, the results in table 2 indicate they do not necessarily result in larger (smaller) reported UTBs¹⁷.

I report the regression results of equation (1) using annual panel data with fixed effects in table 3. Using panel data while controlling for firm fixed effects provides much stronger support for my hypotheses because it allows me to control for unobserved heterogeneity caused by

¹⁶ When I winzorize Cash ETR between 0 and 1, the mean value increases to 19.2% which is similar to other studies.

¹⁷ See Chapter 7 for further discussion of the implications of the findings concerning ROA, Growth, and NOL.

correlated omitted variables. Similar to the OLS regression which does not control for firm fixed effects, the coefficients for SchUTP, Size, and Foreign ($t = -2.47, 9.21, \text{ and } 1.3$, respectively) are all significant in the predicted direction. One of the most significant differences between table 3 and table 2, and a significant reason for using panel data controlling for fixed effects, is the difference in the coefficient for the intercept. The t-statistic changes from -60.21 ($p < 0.000$) to 1.36 ($p = 0.174$) when I control for firm fixed effects, so correlated omitted variables is less of a concern.

Table 2

OLS Test for Decrease in UTB Levels - Annual

Variable	Predicted Sign	Coefficient (Std Error)		t-stat
Intercept		-3.089592 (0.0513162)	***	-60.21
SchUTP	-	-0.106421 (0.0270266)	***	-3.94
ROA	+	-0.1222858 (0.0536486)	**	-2.28
Size	+	0.7857268 (0.0087409)	***	89.89
Growth	+	-0.0000199 (0.0000096)	**	-2.08
Leverage	-	-0.5388805 (0.0860169)	***	-6.26
NOL	-	0.1228445 (0.0268378)	***	4.58
Foreign	+	0.0084176 (0.0040902)	**	2.06
R&D	+	0.0016123 (0.0004103)	***	3.93

*** $p < .01$; ** $p < .05$

Table 3

Panel Data with Fixed Effects Test for Decrease in UTB Levels - Annual

Variable	Predicted Sign	Coefficient (Std Error)	t-stat
Intercept		0.2771236 (0.2035264)	1.36
SchUTP	-	-0.0376544 (0.0152672)	*** -2.47
ROA	+	-0.0136806 (0.0121792)	-1.12
Size	+	0.27555 (0.0299039)	*** 9.21
Growth	+	-0.000011 (0.0000137)	-0.81
Leverage	-	0.0946141 (0.0654310)	1.45
NOL	-	-0.0009527 (0.0380803)	-0.03
Foreign	+	0.0028531 (0.0021863)	* 1.30
R&D	+	-0.0004042 (0.0003582)	-1.13

*** p < .01; * p < .10

Table 4 provides the results from equation (2) to test H1b, H2 and H3. Because the proxies for tax aggressiveness are highly correlated, I present the results for each proxy independently in Panels A-E. The coefficients of interest for H1b are β_6 and β_7 . Consistent with expectations, the coefficient for the largest firms which were required to file Schedule UTP immediately is negative and significant in each regression ($p < 0.000$). However, while the coefficient for firms between \$50 million and \$100 million is negative, it is not statistically significant. This indicates that firms which are not required to file Schedule UTP immediately do not significantly alter UTB financial reporting.

Table 4

OLS Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness - Annual

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		-2.7046570 *** (0.0500483)	-54.04	-2.7798380 *** (0.0514250)	-54.06	-2.6431310 *** (0.0517921)	-51.03
SchUTP		0.0948846 * (0.0540871)	1.75	0.0749681 (0.0545539)	1.37	0.0870346 (0.0558537)	1.56
\$100mil		-1.1569910 *** (0.0487772)	-23.72	-1.1670090 *** (0.0492465)	-23.70	-1.1533910 *** (0.0495718)	-23.27
\$50mil		-0.5300340 *** (0.0490398)	-10.81	-0.5243265 *** (0.0493138)	-10.63	-0.5236470 *** (0.0499541)	-10.48
FinCons		0.1246416 *** (0.0450472)	2.77	0.1526724 *** (0.0448612)	3.40	0.1220344 *** (0.0444906)	2.74
TaxAgg		-0.1040515 ** (0.0417780)	-2.49	0.1754666 *** (0.0426060)	4.12	-0.3135109 *** (0.0424445)	-7.39
SchUTP*\$100mil	-	-0.1996130 *** (0.0626575)	-3.19	-0.2177354 *** (0.0633119)	-3.44	-0.2101835 *** (0.0631383)	-3.33
SchUTP*\$50mil	-	-0.0396722 (0.0789053)	-0.50	-0.0398031 (0.0802066)	-0.50	-0.0424215 (0.0796331)	-0.53
SchUTP*FinCons	-	-0.1136625 ** (0.0670770)	-1.69	-0.1005555 * (0.0669307)	-1.50	-0.1087720 * (0.0663474)	-1.64
SchUTP*TaxAgg	-	-0.0024058 (0.0633896)	-0.04	0.1247341 ** (0.0617517)	2.02	0.0509210 (0.0660878)	0.77
ROA	+	-0.0481380 *** (0.0165916)	-2.90	-0.0697235 ** (0.0299135)	-2.33	-0.0494206 *** (0.0174848)	-2.83
Size	+	0.8828952 *** (0.0110470)	79.92	0.8738037 *** (0.0109870)	79.53	0.8822682 *** (0.0108808)	81.09
Growth	+	-0.0000222 ** (0.0000092)	-2.42	-0.0000208 ** (0.0000090)	-2.30	-0.0000226 ** (0.0000089)	-2.55
Leverage	-	-0.5460975 *** (0.0878406)	-6.22	-0.4831608 *** (0.0847928)	-5.70	-0.5428532 *** (0.0874322)	-6.21
NOL	-	0.1104069 *** (0.0277862)	3.97	0.2067093 *** (0.0278162)	7.43	0.0925408 *** (0.0265705)	3.48
Foreign	+	0.0085452 ** (0.0038052)	2.25	0.0083534 ** (0.0037647)	2.22	0.0088803 ** (0.0038600)	2.30
R&D	+	0.0007266 *** (0.0002582)	2.81	0.0007118 *** (0.0002658)	2.68	0.0005996 ** (0.0002649)	2.26

Table 4 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		-2.8089190 *** (0.0548040)	-51.25	-2.7307930 *** (0.0520341)	-52.48
SchUTP		0.0668980 (0.0628028)	1.07	0.0733986 (0.0621639)	1.18
\$100mil		-1.1440920 *** (0.0501453)	-22.82	-1.1638010 *** (0.0490982)	-23.70
\$50mil		-0.5336146 *** (0.0491644)	-10.85	-0.5287436 *** (0.0492252)	-10.74
FinCons		0.1246055 *** (0.0450778)	2.76	0.1325870 *** (0.0454524)	2.92
TaxAgg		0.1285310 *** (0.0427859)	3.00	0.0009815 (0.0390071)	0.03
SchUTP*\$100mil	-	-0.1825753 *** (0.0672850)	-2.71	-0.1853785 *** (0.0665444)	-2.79
SchUTP*\$50mil	-	-0.0426072 (0.0790310)	-0.54	-0.0362154 (0.0788141)	-0.46
SchUTP*FinCons	-	-0.1150214 ** (0.0668981)	-1.72	-0.1198847 ** (0.0677778)	-1.77
SchUTP*TaxAgg	-	0.0581395 (0.0664456)	0.87	0.0311588 (0.0626233)	0.50
ROA	+	-0.0463285 *** (0.0153880)	-3.01	-0.0545771 *** (0.0198880)	-2.74
Size	+	0.8866165 *** (0.0111906)	79.23	0.8804407 *** (0.0112565)	78.22
Growth	+	-0.0000216 ** (0.0000094)	-2.31	-0.0000217 *** (0.0000092)	-2.37
Leverage	-	-0.5425984 *** (0.0883961)	-6.14	-0.5313960 *** (0.0879858)	-6.04
NOL	-	0.1339617 *** (0.0261547)	5.12	0.1406445 *** (0.0260002)	5.41
Foreign	+	0.0090447 *** (0.0038405)	2.36	0.0087027 ** (0.0038644)	2.25
R&D	+	0.0005851 ** (0.0002661)	2.20	0.0007167 *** (0.0002589)	2.77

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

H2 predicts conservative firms will reduce their reported UTBs because Schedule UTP potentially increases the cost of accruing large UTBs. The variable of interest for H2 is FinCons. Results for H2 are consistent with predictions. For each measure of tax aggressiveness, the coefficient on β_8 is negative and significant. The most significant effect is in Panel E where the measure of tax aggressiveness is Cash ETR ($p=0.039$). The results indicate firms which are conservative in their financial reporting reduce reported UTBs 11.3% more than firms which are not conservative in their financial reporting.

The coefficient of interest for H3 is β_9 . Prior research suggests more tax aggressive firms will attempt to reduce the appearance of aggressiveness to the IRS, so these firms will be motivated to reduce the level of reported UTBs more than non-aggressive firms. Contrary to expectations, none of the coefficients for β_9 is significant in the predicted direction, and all but Panel A report positive coefficients. In Panel B, where tax aggressiveness is measured by permanent book-tax differences, the results indicate firms with the highest permanent book-tax difference report 13.3% higher UTBs after the announcement of Schedule UTP ($p=0.022$). This result is particularly interesting because it provides evidence which suggests all firms, not just tax aggressive firms, decrease UTBs after the announcement of Schedule UTP. An alternative interpretation of this result is aggressive firms believe Schedule UTP will increase the likelihood of IRS examination, so they increase UTBs to reflect this risk. These results suggest firms may not report UTBs assuming IRS examination is certain prior to the announcement of Schedule UTP. Similar to table 2, the coefficients for ROA, Growth, and NOL are consistently contrary to their predicted signs.

Overall, the results from table 4 provide evidence which suggests firms with an immediate implementation date for Schedule UTP and firms which are conservative in their

financial reporting significantly reduce the level of UTBs reported in their financial statements. However, the results do not indicate an association between tax aggressiveness and reduced reporting of UTBs following the announcement of Schedule UTP.

Table 5 provides the results from equation (2) to test H1b, H2, and H3 using annual panel data with fixed effects. Once again, each measure of tax aggressiveness is measured separately to avoid multicollinearity. The coefficients of interest for H1b are β_6 and β_7 . Consistent with table 4, the coefficients for β_6 are negative and significant for each measure of tax aggressiveness. The coefficients for β_7 are, once again, negative but not statistically significant. Similar to table 4, the results indicate the largest firms reduce their level of UTBs more significantly than small or medium-size firms, and provide evidence that firms with earlier reporting requirements to the IRS are more concerned with reducing levels of UTBs reported in their financial statements.

The coefficient of interest to test my hypothesis that firms which are conservative in their financial reporting reduce UTB levels more than firms which are not conservative in their financial reporting is β_8 . The results indicate a positive, rather than a negative reaction, but the coefficients are not statistically different from zero. Therefore, once I control for firm fixed effects, the results do not provide evidence to support H2. These results indicate the results reported in table 4 could be due to unobserved firm effects.

The coefficient of interest to test my hypothesis that tax aggressive firms are more likely to reduce their appearance of aggressiveness is β_9 . The only measure of tax aggressiveness which provides support for H3 is book-tax differences in Panel A ($p=0.009$). Although these results indicate firms with aggressive levels of BTDs reduce their level of reported UTBs more than other firms, the results, along with the results presented in table 4, fail to provide consistent

evidence that firms with aggressive tax reporting are motivated to reduce their level of UTB reporting more rapidly than other firms.

Table 5

Panel Data with Fixed Effects Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness - Annual

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		0.1328054 (0.2077537)	0.64	0.1795698 (0.2063343)	0.87	0.169776 (0.2076533)	0.82
SchUTP		0.0386793 ** (0.0184594)	2.10	0.0213869 (0.0187306)	1.14	0.0319341 (0.0195698)	1.63
\$100mil		-0.2253592 *** (0.0611054)	-3.69	-0.2179117 *** (0.0608641)	-3.58	-0.2130799 *** (0.0609465)	-3.50
\$50mil		-0.1391851 *** (0.0396647)	-3.51	-0.1384266 *** (0.0397102)	-3.49	-0.1344574 *** (0.0396057)	-3.39
FinCons		0.062475 ** (0.0265848)	2.35	0.0610602 ** (0.0262676)	2.32	0.0597655 ** (0.0261886)	2.28
TaxAgg		-0.0155279 (0.0232597)	-0.67	-0.0268008 (0.0256830)	-1.04	-0.0593393 ** (0.0270236)	-2.20
SchUTP*\$100mil	-	-0.0705874 *** (0.0269504)	-2.62	-0.0799935 *** (0.0273036)	-2.93	-0.0793261 *** (0.0268035)	-2.96
SchUTP*\$50mil	-	-0.0345738 (0.0351364)	-0.98	-0.0299902 (0.0352780)	-0.85	-0.0308137 (0.0354173)	-0.87
SchUTP*FinCons	-	0.0101011 (0.0368050)	0.27	0.0159812 (0.0368587)	0.43	0.0138577 (0.0368369)	0.38
SchUTP*TaxAgg	-	-0.073208 *** (0.0308028)	-2.38	0.0206918 (0.0294395)	0.70	-0.0265053 (0.0338820)	-0.78
ROA	+	-0.0063248 (0.0081557)	-0.78	-0.0064784 (0.0082593)	-0.78	-0.0048685 (0.0078472)	-0.62
Size	+	0.3266445 *** (0.0349664)	9.34	0.3183528 *** (0.0347948)	9.15	0.3207548 *** (0.0349336)	9.18
Growth	+	-0.0000116 (0.0000137)	-0.85	-0.0000118 (0.0000137)	-0.86	-0.0000116 (0.0000136)	-0.85
Leverage	-	0.0848418 (0.0711643)	1.19	0.0915317 (0.0693312)	1.32	0.0877383 (0.0688884)	1.27
NOL	-	-0.0149344 (0.0376281)	-0.40	-0.0065087 (0.0385529)	-0.17	-0.0096632 (0.0381121)	-0.25
Foreign	+	0.0029502 * (0.0022212)	1.33	0.0029754 * (0.0022267)	1.34	0.0030347 * (0.0022280)	1.36
R&D	+	-0.0004199 (0.0003971)	-1.06	-0.0004317 (0.0003938)	-1.10	-0.0004312 (0.0003962)	-1.09

Table 5 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		0.1631247 (0.2081622)	0.78	0.1393745 (0.2081890)	0.67
SchUTP		-0.0088886 (0.0252827)	-0.35	-0.0060405 (0.0246207)	-0.25
\$100mil		-0.2329908 *** (0.0610397)	-3.82	-0.2335097 *** (0.0615727)	-3.79
\$50mil		-0.1402736 *** (0.0399739)	-3.51	-0.1428507 *** (0.0398526)	-3.58
FinCons		0.0642535 ** (0.0266110)	2.41	0.0623872 ** (0.0265633)	2.35
TaxAgg		-0.0314229 (0.0241159)	-1.30	0.0056006 (0.0197880)	0.28
SchUTP*\$100mil	-	-0.0548741 ** (0.0297510)	-1.84	-0.0566569 ** (0.0285679)	-1.98
SchUTP*\$50mil	-	-0.0317135 (0.0347682)	-0.91	-0.0291544 (0.0351196)	-0.83
SchUTP*FinCons	-	0.0119414 (0.0368604)	0.32	0.0086769 (0.0369334)	0.23
SchUTP*TaxAgg	-	0.0668707 (0.0357469)	1.87	0.0460859 (0.0330407)	1.39
ROA	+	-0.0085284 (0.0092089)	-0.93	-0.0072871 (0.0084356)	-0.86
Size	+	0.3221329 *** (0.0347921)	9.26	0.3249564 *** (0.0350373)	9.27
Growth	+	-0.0000118 (0.0000136)	-0.87	-0.0000117 (0.0000137)	-0.85
Leverage	-	0.0956934 (0.0683034)	1.40	0.0871287 (0.0699080)	1.25
NOL	-	-0.002073 (0.0378338)	-0.05	-0.0030923 (0.0379307)	-0.08
Foreign	+	0.002829 (0.0022454)	1.26	0.0031286 * (0.0022557)	1.39
R&D	+	-0.000393 (0.0003995)	-0.98	-0.0004098 (0.0004007)	-1.02

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** $p < .01$; ** $p < .05$; * $p < .10$

5.1.3 Impact on UTB Changes

Table 6 presents the results from equation (3). The regression equation is similar to equation (2) except the dependent variable is the change in reported UTBs rather than the level of reported UTBs, and all continuous control variables are transformed to change variables. In addition, the interaction term, ΔSchUTP , represents the change in reporting regime (i.e., 2010). This allows me to test the initial reaction to the announcement of Schedule UTP. This “changes in changes” design is popular when examining reactions to a change in policy (Wooldridge 2009). Consistent with expectations, both β_6 and β_7 are negative and significant in each panel, with β_6 providing more significant results than β_7 . This provides additional support for H1b and indicates both large and medium firms changed their year over year reporting of UTBs after the announcement of Schedule UTP. Results for H2 are consistent with table 4.

Using the changes model, results for H3 are mixed. While the coefficients are significant in each proxy for tax aggressiveness, only Total BTB ($p=0.004$) and Perm BTB ($p=0.001$) are associated with a reduction in reported UTBs. One explanation for these results is BTB measures of tax aggressiveness rely on financial accounting numbers which are subject to manipulation by managers. This could indicate these firms are opportunistically reducing UTBs to avoid the appearance of aggressiveness to the URS using UTBs. Measures of tax aggressiveness which involve actual cash paid are associated with an increase in reported UTBs. If firms which pay lower taxes have received the benefit of lower tax expense in their financial statements, they may be more willing to report higher UTB amounts. If they believe the IRS will be more likely to audit them due to the level of cash taxes paid, this could result in a higher accrual for UTPs. Overall, the results from table 6 provide additional support for each of the hypotheses concerning changes in reported UTBs based on specific firm characteristics.

Table 6

OLS Test for Incremental Decrease in UTB Changes Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness - 2010

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		0.0486457 *** (0.0166833)	2.92	0.0371238 ** (0.0170241)	2.18	0.0845757 *** (0.0178068)	4.75
ΔSchUTP		-0.0381721 ** (0.0221965)	-1.72	-0.0370989 ** (0.0220242)	-1.68	-0.0819514 *** (0.0234603)	-3.49
\$100mil		0.4625667 *** (0.0276777)	16.71	0.4542979 *** (0.0276248)	16.45	0.4709977 *** (0.0274717)	17.14
\$50mil		0.0559285 ** (0.0259381)	2.16	0.0561302 ** (0.0260562)	2.15	0.0569014 ** (0.0260415)	2.19
FinCons		0.2179127 *** (0.0456446)	4.77	0.2255440 *** (0.0457823)	4.93	0.2134425 *** (0.0454942)	4.69
TaxAgg		0.0308985 (0.0426248)	0.72	0.0970286 ** (0.0433677)	2.24	-0.1415277 *** (0.0399188)	-3.55
ΔSchUTP*\$100mil	-	-0.5135568 *** (0.0331027)	-15.51	-0.5083167 *** (0.0330153)	-15.40	-0.5326264 *** (0.0327156)	-16.28
ΔSchUTP*\$50mil	-	-0.0653446 ** (0.0346819)	-1.88	-0.0599717 ** (0.0346992)	-1.73	-0.0632239 ** (0.0347083)	-1.82
ΔSchUTP*FinCons	-	-0.1750190 *** (0.0529478)	-3.31	-0.1837087 *** (0.0529058)	-3.47	-0.1646480 *** (0.0528183)	-3.12
ΔSchUTP*TaxAgg	-	-0.1323796 *** (0.0486623)	-2.72	-0.1519272 *** (0.0487824)	-3.11	0.0906981 ** (0.0481032)	1.89
ΔROA	+	-0.0058553 (0.0082591)	-0.71	-0.0063666 (0.0084640)	-0.75	-0.0030074 (0.0077073)	-0.39
ΔSize	+	0.2065575 *** (0.0307960)	6.71	0.2037376 *** (0.0305476)	6.67	0.2118307 *** (0.0308879)	6.86
ΔGrowth	+	0.0000048 (0.0000088)	0.54	0.0000047 (0.0000089)	0.52	0.0000049 (0.0000086)	0.56
ΔLeverage	-	0.0806557 (0.0961085)	0.84	0.0877500 (0.0955268)	0.92	0.0582789 (0.0958028)	0.61
ΔNOL	-	0.0000558 (0.0000910)	0.61	0.0000599 (0.0000915)	0.66	0.0000637 (0.0000913)	0.70
ΔForeign	+	-0.0007338 (0.0015519)	-0.47	-0.0006707 (0.0015574)	-0.43	-0.0008231 (0.0015286)	-0.54
ΔR&D	+	-0.0001286 (0.0003688)	-0.35	-0.0001256 (0.0003701)	-0.34	-0.0001554 (0.0003622)	-0.43

Table 6 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		0.1341389 *** (0.0245923)	5.45	0.1272249 *** (0.0213891)	5.95
Δ SchUTP		-0.1425819 *** (0.0308374)	-4.62	-0.1675483 *** (0.0298213)	-5.62
\$100mil		0.4131124 *** (0.0291175)	14.19	0.4305847 *** (0.0279279)	15.42
\$50mil		0.0555419 ** (0.0267235)	2.08	0.0609998 ** (0.0269610)	2.26
FinCons		0.2193318 *** (0.0455172)	4.82	0.2423923 *** (0.0459679)	5.27
TaxAgg		-0.1595155 *** (0.0373240)	-4.27	-0.1902618 *** (0.0359413)	-5.29
Δ SchUTP*\$100mil	-	-0.4754856 *** (0.0355023)	-13.39	-0.4707049 *** (0.0352631)	-13.35
Δ SchUTP*\$50mil	-	-0.0591313 ** (0.0351945)	-1.68	-0.0620873 ** (0.0355315)	-1.75
Δ SchUTP*FinCons	-	-0.1687806 *** (0.0528623)	-3.19	-0.1991004 *** (0.0534546)	-3.72
Δ SchUTP*TaxAgg	-	0.1595903 *** (0.0454977)	3.51	0.2421929 *** (0.0442837)	5.47
Δ ROA	+	-0.0071804 (0.0090058)	-0.80	-0.0075903 (0.0091963)	-0.83
Δ Size	+	0.2070393 *** (0.0307069)	6.74	0.2054035 *** (0.0299992)	6.85
Δ Growth	+	0.0000047 (0.0000087)	0.55	0.0000047 (0.0000093)	0.51
Δ Leverage	-	0.0892435 (0.0949675)	0.94	0.1018578 (0.0938319)	1.09
Δ NOL	-	0.0000574 (0.0000924)	0.62	0.0000617 (0.0000914)	0.67
Δ Foreign	+	-0.0008149 (0.0015472)	-0.53	-0.0010138 (0.0015866)	-0.64
Δ R&D	+	-0.0000484 (0.0003578)	-0.14	-0.0000164 (0.0003721)	-0.04

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05

Table 7

Panel Data with Fixed Effects Test for Incremental Decrease in UTB Changes Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness - 2010

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		0.2595726 *** (0.0673513)	3.85	0.2577639 *** (0.0669219)	3.85	0.2893171 *** (0.0659065)	4.39
ΔSchUTP		-0.0438008 * (0.0243913)	-1.80	-0.0491300 ** (0.0243248)	-2.02	-0.0927116 *** (0.0257410)	-3.60
\$100mil		0.2935799 *** (0.0731173)	4.02	0.2929128 *** (0.0731603)	4.00	0.3066109 *** (0.0721506)	4.25
\$50mil		0.0814980 (0.0521289)	1.56	0.0806149 (0.0520676)	1.55	0.0898350 * (0.0515405)	1.74
FinCons		0.0225017 (0.0591035)	0.38	0.0234958 (0.0590561)	0.40	0.0161643 (0.0587711)	0.28
TaxAgg		-0.0344876 (0.0592048)	-0.58	-0.0259620 (0.0576337)	-0.45	-0.2007159 *** (0.0556404)	-3.61
ΔSchUTP*\$100mil	-	-0.5364726 *** (0.0358963)	-14.95	-0.5281892 *** (0.0358304)	-14.74	-0.5533123 *** (0.0351047)	-15.76
ΔSchUTP*\$50mil	-	-0.0463748 (0.0383456)	-1.21	-0.0367751 (0.0386725)	-0.95	-0.0384930 (0.0377053)	-1.02
ΔSchUTP*FinCons	-	-0.0717801 (0.0658906)	-1.09	-0.0863737 (0.0657916)	-1.31	-0.0623126 (0.0661047)	-0.94
ΔSchUTP*TaxAgg	-	-0.1527329 *** (0.0502764)	-3.04	-0.1604695 *** (0.0508802)	-3.15	0.0766509 (0.0510518)	1.50
ΔROA	+	-0.0154275 (0.0129354)	-1.19	-0.0159684 (0.0133089)	-1.20	-0.0123244 (0.0107372)	-1.15
ΔSize	+	0.2849053 *** (0.0348586)	8.17	0.2841917 *** (0.0349594)	8.13	0.2893096 *** (0.0352763)	8.20
ΔGrowth	+	0.0000050 (0.0000108)	0.46	0.0000050 (0.0000108)	0.46	0.0000051 (0.0000108)	0.48
ΔLeverage	-	0.1260638 (0.0908069)	1.39	0.1270065 (0.0909389)	1.40	0.0981014 (0.0914740)	1.07
ΔNOL	-	0.0000195 (0.0001028)	0.19	0.0000194 (0.0001029)	0.19	0.0000355 (0.0001036)	0.34
ΔForeign	+	-0.0004079 (0.0017336)	-0.24	-0.0003867 (0.0017299)	-0.22	-0.0005061 (0.0017042)	-0.30
ΔR&D	+	-0.0002528 (0.0005554)	-0.46	-0.0002585 (0.0005550)	-0.47	-0.0002924 (0.0005549)	-0.53

Table 7 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		0.3099044 *** (0.0687404)	4.51	0.2762958 *** (0.0649878)	4.25
Δ SchUTP		-0.1774263 *** (0.0362322)	-4.90	-0.2387793 *** (0.0359630)	-6.64
\$100mil		0.2629112 *** (0.0736598)	3.57	0.2923101 *** (0.0714740)	4.09
\$50mil		0.0781080 (0.0524375)	1.49	0.0918794 * (0.0524797)	1.75
FinCons		0.0308112 (0.0588874)	0.52	0.0433908 (0.0595001)	0.73
TaxAgg		-0.1569912 *** (0.0533964)	-2.94	-0.1177446 *** (0.0452783)	-2.60
Δ SchUTP*\$100mil	-	-0.4801455 *** (0.0403770)	-11.89	-0.4423717 *** (0.0401359)	-11.02
Δ SchUTP*\$50mil	-	-0.0400788 (0.0397989)	-1.01	-0.0294831 (0.0412558)	-0.71
Δ SchUTP*FinCons	-	-0.0700982 (0.0660619)	-1.06	-0.1074395 * (0.0664501)	-1.62
Δ SchUTP*TaxAgg	-	0.2050633 *** (0.0552970)	3.71	0.3019173 *** (0.0513573)	5.88
Δ ROA	+	-0.0183693 (0.0150930)	-1.22	-0.0173388 (0.0147669)	-1.17
Δ Size	+	0.2829042 *** (0.0349107)	8.10	0.2834907 *** (0.0344809)	8.22
Δ Growth	+	0.0000048 (0.0000110)	0.44	0.0000048 (0.0000109)	0.44
Δ Leverage	-	0.1482471 (0.0900251)	1.65	0.1482081 (0.0894632)	1.66
Δ NOL	-	0.0000204 (0.0001037)	0.20	0.0000235 (0.0001030)	0.23
Δ Foreign	+	-0.0005411 (0.0017307)	-0.31	-0.0005735 (0.0017610)	-0.33
Δ R&D	+	-0.0001517 (0.0005294)	-0.29	-0.0001502 (0.0005346)	-0.28

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p<.10

Table 7 presents the results from equation (4) using annual data with firm fixed effects. Similar to table 4, the coefficients for β_6 are negative and significant for each measure of tax aggressiveness and the coefficients for β_7 are negative but not statistically significant. The coefficients for the variable of interest for H2 are consistently negative, but only the coefficient in Panel E is statistically significant ($p=0.053$). Once again, the results of the test of H3 are mixed. The measures of tax aggressiveness based on total BTDs and permanent BTDs are negative and significant, but the measures of tax aggressiveness based on ETRs are positive at statistically significant levels. One notable similarity between table 7 and table 6 is the value of the intercept. Recall that significance of the intercept value significantly changed when I control for firm fixed effects in equations (1) and (2). One explanation for the lack of significant change in equation (4) is first differencing is a statistical tool used to control for correlated omitted variables, so using a change model has already removed much of the explanatory nature of the intercept term.

An additional question that remains is whether the impact on financial reporting is merely a reaction to Schedule UTP which will dissipate over time, or if the change persists in the new reporting regime. To provide evidence regarding this, I adjust SchUTP to an indicator variable for each year after the announcement of Schedule UTP. I examine all years subsequent to the announcement of Schedule UTP to determine if the results remain. The results, presented in table 8, are qualitatively similar to table 6 for each of the variables of interest and each measure of tax aggressiveness. This provides evidence that the change in financial reporting persists over time. It is also interesting that the coefficients for β_7 are more significant when looking at all years after Schedule UTP was announced, which indicates medium firms that file Schedule UTP beginning in 2012 begin reducing their reported UTBs in anticipation of Schedule UTP.

Table 8

OLS Test for Incremental Decrease in UTB Changes Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness - Annual

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		0.0587401 *** (0.0213225)	2.75	0.0448112 ** (0.0217353)	2.06	0.1067626 *** (0.0225435)	4.74
SchUTP		-0.0453114 ** (0.0234955)	-1.93	-0.0369754 (0.0238122)	-1.55	-0.0893862 *** (0.0249548)	-3.58
\$100mil		0.6404416 *** (0.0355790)	18.00	0.6306585 *** (0.0355542)	17.74	0.6556363 *** (0.0353166)	18.56
\$50mil		0.0809255 *** (0.0315865)	2.56	0.0818685 *** (0.0317785)	2.58	0.0805549 *** (0.0317475)	2.54
FinCons		0.2660373 *** (0.0580491)	4.58	0.2764277 *** (0.0582364)	4.75	0.2561438 *** (0.0577677)	4.43
TaxAgg		0.0547126 (0.0542767)	1.01	0.1322232 *** (0.0552461)	2.39	-0.1805692 *** (0.0505707)	-3.57
SchUTP*\$100mil	-	-0.6883450 *** (0.0375969)	-18.31	-0.6824346 *** (0.0376028)	-18.15	-0.7122212 *** (0.0373154)	-19.09
SchUTP*\$50mil	-	-0.0973326 *** (0.0368912)	-2.64	-0.0960427 *** (0.0370619)	-2.59	-0.0960556 *** (0.0371269)	-2.59
SchUTP*FinCons	-	-0.2408888 *** (0.0608091)	-3.96	-0.2517881 *** (0.0609651)	-4.13	-0.2277847 *** (0.0605613)	-3.76
SchUTP*TaxAgg	-	-0.1193960 ** (0.0568922)	-2.10	-0.1629764 *** (0.0576360)	-2.83	0.1184348 ** (0.0540035)	2.19
Δ ROA	+	0.0007011 (0.0074613)	0.09	0.0002084 (0.0075132)	0.03	0.0039849 (0.0077102)	0.52
Δ Size	+	0.1957046 *** (0.0318012)	6.15	0.1930162 *** (0.0314936)	6.13	0.2012702 *** (0.0320007)	6.29
Δ Growth	+	0.0000046 (0.0000079)	0.59	0.0000045 (0.0000080)	0.57	0.0000048 (0.0000076)	0.63
Δ Leverage	-	0.1140773 (0.0950848)	1.20	0.1210499 (0.0946722)	1.28	0.0864974 (0.0943345)	0.92
Δ NOL	-	0.0000700 (0.0000884)	0.79	0.0000736 (0.0000889)	0.83	0.0000781 (0.0000887)	0.88
Δ Foreign	+	-0.0004316 (0.0014074)	-0.31	-0.0003437 (0.0014147)	-0.24	-0.0005039 (0.0013809)	-0.36
Δ R&D	+	-0.0001045 (0.0003639)	-0.29	-0.0001036 (0.0003653)	-0.28	-0.0001246 (0.0003554)	-0.35

Table 8 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		0.1812456 *** (0.0316152)	5.73	0.1418219 *** (0.0252952)	5.61
SchUTP		-0.1836308 *** (0.0343047)	-5.35	-0.1492531 *** (0.0295026)	-5.06
\$100mil		0.5724020 *** (0.0375132)	15.26	0.6200584 *** (0.0357005)	17.37
\$50mil		0.0785664 *** (0.0331075)	2.37	0.0909091 *** (0.0335681)	2.71
FinCons		0.2660789 *** (0.0577644)	4.61	0.2961741 *** (0.0583545)	5.08
TaxAgg		-0.2233372 *** (0.0473911)	-4.71	-0.2399031 *** (0.0462673)	-5.19
SchUTP*\$100mil	-	-0.6252203 *** (0.0399494)	-15.65	-0.6694495 *** (0.0387222)	-17.29
SchUTP*\$50mil	-	-0.0932378 *** (0.0381825)	-2.44	-0.1048595 *** (0.0386648)	-2.71
SchUTP*FinCons	-	-0.2378611 *** (0.0605795)	-3.93	-0.2701220 *** (0.0611514)	-4.42
SchUTP*TaxAgg	-	0.2347838 *** (0.0511566)	4.59	0.2569256 *** (0.0499420)	5.14
Δ ROA	+	-0.0005510 (0.0080968)	-0.07	-0.0011658 (0.0079735)	-0.15
Δ Size	+	0.1967851 *** (0.0317548)	6.20	0.1971861 *** (0.0309387)	6.37
Δ Growth	+	0.0000046 (0.0000077)	0.60	0.0000046 (0.0000084)	0.54
Δ Leverage	-	0.1238715 * (0.0938227)	1.32	0.1235685 * (0.0937243)	1.32
Δ NOL	-	0.0000723 (0.0000903)	0.80	0.0000758 (0.0000888)	0.85
Δ Foreign	+	-0.0005931 (0.0014040)	-0.42	-0.0007353 (0.0014221)	-0.52
Δ R&D	+	-0.0000126 (0.0003493)	-0.04	-0.0000063 (0.0003782)	-0.02

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

Table 9

Panel Data with Fixed Effects Test for Incremental Decrease in UTB Changes Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness - Annual

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		0.2020595 *** (0.0678714)	2.98	0.1963563 *** (0.0671059)	2.93	0.2515399 *** (0.0670955)	3.75
SchUTP		-0.0529352 ** (0.0250122)	-2.12	-0.0432678 * (0.0252370)	-1.71	-0.1010336 *** (0.0269075)	-3.75
\$100mil		0.5596555 *** (0.0757335)	7.39	0.5555743 *** (0.0760246)	7.31	0.5776372 *** (0.0755076)	7.65
\$50mil		0.1061175 * (0.0561874)	1.89	0.1041434 * (0.0560417)	1.86	0.1133879 ** (0.0564935)	2.01
FinCons		0.0443117 (0.0742278)	0.60	0.0497422 (0.0742353)	0.67	0.0314864 (0.0738066)	0.43
TaxAgg		-0.0144293 (0.0685096)	-0.21	0.0163957 (0.0658417)	0.25	-0.2657958 *** (0.0620518)	-4.28
SchUTP*\$100mil	-	-0.7173851 *** (0.0413360)	-17.35	-0.7049027 *** (0.0414422)	-17.01	-0.7422856 *** (0.0407290)	-18.23
SchUTP*\$50mil	-	-0.0455652 (0.0400051)	-1.14	-0.0397324 (0.0404471)	-0.98	-0.0396824 (0.0408502)	-0.97
SchUTP*FinCons	-	-0.1279918 ** (0.0752621)	-1.70	-0.1462643 ** (0.0754706)	-1.94	-0.1195385 (0.0751345)	-1.59
SchUTP*TaxAgg	-	-0.1261461 ** (0.0584212)	-2.16	-0.1955220 *** (0.0558487)	-3.50	0.1294918 ** (0.0532273)	2.43
ΔROA	+	-0.0095071 (0.0098184)	-0.97	-0.0100846 (0.0101995)	-0.99	-0.0054077 (0.0079392)	-0.68
ΔSize	+	0.2622070 *** (0.0358711)	7.31	0.2622024 *** (0.0359023)	7.30	0.2668381 *** (0.0364345)	7.32
ΔGrowth	+	0.0000050 (0.0000105)	0.48	0.0000050 (0.0000105)	0.48	0.0000053 (0.0000103)	0.51
ΔLeverage	-	0.1697781 * (0.0892946)	1.90	0.1710194 * (0.0894989)	1.91	0.1321075 (0.0897640)	1.47
ΔNOL	-	0.0000397 (0.0000973)	0.41	0.0000389 (0.0000976)	0.40	0.0000563 (0.0000980)	0.57
ΔForeign	+	-0.0000652 (0.0015486)	-0.04	-0.0000446 (0.0015416)	-0.03	-0.0001199 (0.0015144)	-0.08
ΔR&D	+	-0.0001893 (0.0005258)	-0.36	-0.0001975 (0.0005308)	-0.37	-0.0002277 (0.0005213)	-0.44

Table 9 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		0.2994748 *** (0.0708245)	4.23	0.2383869 *** (0.0661238)	3.61
SchUTP		-0.2265346 *** (0.0391439)	-5.79	-0.2347008 *** (0.0349043)	-6.72
\$100mil		0.5027493 *** (0.0771332)	6.52	0.5559416 *** (0.0750018)	7.41
\$50mil		0.0990243 * (0.0579936)	1.71	0.1200320 ** (0.0580090)	2.07
FinCons		0.0517062 (0.0740348)	0.70	0.0704316 (0.0747288)	0.94
TaxAgg		-0.2403506 *** (0.0622598)	-3.86	-0.1791110 *** (0.0570028)	-3.14
SchUTP*\$100mil	-	-0.6282367 *** (0.0459284)	-13.68	-0.6360816 *** (0.0430316)	-14.78
SchUTP*\$50mil	-	-0.0408773 (0.0436262)	-0.94	-0.0373854 (0.0421981)	-0.89
SchUTP*FinCons	-	-0.1304891 ** (0.0751532)	-1.74	-0.1666771 ** (0.0755848)	-2.21
SchUTP*TaxAgg	-	0.2918472 *** (0.0572182)	5.10	0.3301506 *** (0.0584144)	5.65
Δ ROA	+	-0.0125665 (0.0119703)	-1.05	-0.0117145 (0.0113922)	-1.03
Δ Size	+	0.2604587 *** (0.0358583)	7.26	0.2647971 *** (0.0352499)	7.51
Δ Growth	+	0.0000049 (0.0000105)	0.47	0.0000049 (0.0000105)	0.46
Δ Leverage	-	0.1938676 ** (0.0884523)	2.19	0.1773850 ** (0.0883737)	2.01
Δ NOL	-	0.0000419 (0.0000989)	0.42	0.0000432 (0.0000973)	0.44
Δ Foreign	+	-0.0002480 (0.0015665)	-0.16	-0.0002897 (0.0015634)	-0.19
Δ R&D	+	-0.0000712 (0.0004982)	-0.14	-0.0000987 (0.0005145)	-0.19

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p<.10

Table 9 presents the results from equation (4) using annual data with firm fixed effects. With the exception of β_7 , the results presented in table 9 are qualitatively similar to table 8. H1b is supported for firms over \$100 million in assets but not for firms between \$50 million and \$100 million. The results support H2 for each measure of tax aggressiveness except discretionary permanent BTDs in Panel C. Once again, the evidence is mixed for H3. When I measure tax aggressiveness in terms of BTDs and permanent BTDs, the coefficient is negative and significant. However, for discretionary permanent BTDs and both measures based on ETRs, the coefficient is positive and significant.

5.1.4 Impact on Tax Aggressiveness

I present the results of H4 in table 10. The purpose of equation (5) is to test whether the impact on reported UTBs is merely a financial reporting change or if it is accompanied by a real reduction in tax aggressive behavior. For table 10, each proxy for tax aggressiveness is defined in Appendix A. Unlike the tests where UTB is the dependent variable, I leave each variable as a continuous variable rather than convert it to an indicator variable. I convert the continuous tax aggressive variables to an indicator variable for my tests of UTB reporting because I am interested in the differential association for aggressive firms relative to non-aggressive firms. For my tests using tax aggressiveness as the dependent variable, I leave each variable as a continuous variable because I am interested in the overall impact in the variable associated with Schedule UTP for all firms.

For each of the tax aggressiveness proxies related to book-tax differences, the coefficients are negative and significant ($p < 0.000$), as predicted. This provides evidence that book-tax differences have gotten smaller post-Schedule UTP. I predict a positive coefficient for proxies related to cash tax payments because an increase in payments indicates a reduction in

aggressiveness. The results indicate no significant change in GAAP ETR and a slight increase in Cash ETR in the Schedule UTP reporting regime. This indicates that book effective tax rates are unchanged, but cash taxes paid have increased, on average, under Schedule UTP.

Table 10

OLS Test for Tax Aggressiveness Decrease

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		-1.1863850 *** (0.1001927)	-11.84	-1.1740040 *** (0.0997225)	-11.77	-0.4825397 *** (0.0744527)	-6.48
SchUTP	-	-0.1328149 *** (0.0282494)	-4.70	-0.1344525 *** (0.0283637)	-4.74	-0.0826365 *** (0.0205746)	-4.02
DAcc		-0.0000155 *** (0.0000054)	-2.88	-0.0000178 *** (0.0000065)	-2.74	-0.0000142 ** (0.0000064)	-2.21
R&D		-0.0029526 (0.0023308)	-1.27	-0.0030079 (0.0023278)	-1.29	-0.0008331 (0.0016184)	-0.51
PPE		0.1051617 *** (0.0242033)	4.34	0.0943357 *** (0.0245083)	3.85	0.1909842 *** (0.0194413)	9.82
Inv		0.8544796 *** (0.0868304)	9.84	0.8403235 *** (0.0871104)	9.65	0.7176054 *** (0.0695054)	10.32
Foreign		-0.0021583 (0.0021186)	-1.02	-0.0019276 (0.0020998)	-0.92	-0.0014459 (0.0015347)	-0.94
ROA		2.3454230 *** (0.2629429)	8.92	2.3380920 *** (0.2591799)	9.02	1.9497040 *** (0.0965211)	20.20
Size		0.1086247 *** (0.0123865)	8.77	0.1081619 *** (0.0123046)	8.79	0.0552056 *** (0.0086367)	6.39

Table 10 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		-0.1993471 (0.1453421)	-1.37	-0.2079134 (0.2778710)	-0.75
SchUTP	+	-0.0603080 (0.0745716)	-0.81	0.1840364 (0.1389473)	1.32
Δ NOL		-0.0000321 (0.0000847)	-0.38	0.0000162 (0.0000304)	0.53
R&D		0.0001666 (0.0002168)	0.77	0.0005101 (0.0005906)	0.86
PPE		0.0486174 (0.0849619)	0.57	0.1517077 (0.1498177)	1.01
Inv		0.0802598 (0.2531684)	0.32	0.5942227 (0.3766511)	1.58
Leverage		-0.1293091 (0.1707761)	-0.76	0.1718306 (0.1805803)	0.95
Foreign		0.1974432 (0.1836058)	1.08	0.1093997 (0.0957868)	1.14
ROA		0.0250466 (0.0224756)	1.11	0.0481716 (0.0362343)	1.33
Size		0.0483567 ** (0.0196823)	2.46	0.0032819 (0.0092596)	0.35

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** $p < .01$; ** $p < .05$; * $p < .10$

Table 11 presents the results of H4 using panel data with firm fixed effects. Similar to table 10, the proxies for tax aggressiveness that use a measure of book-tax differences are each negative and significant. The tax aggressiveness proxies using a measure of ETR are not statistically different from zero, which indicates no change in effective tax rates under Schedule UTP. These results are interesting because the only measures of tax aggressiveness which are reduced under Schedule UTP are based on financial reporting measures. The increased reporting requirements have not translated into more taxes being paid. These results further corroborate the findings of Towery (2014), but with a larger sample size. The results, along with the results

of H1, provide evidence that the reduction of reported UTBs is merely a financial reporting adjustment and not an adjustment toward aggressive tax behavior.

Table 11

Panel Data with Fixed Effects Test for Tax Aggressiveness Decrease

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		-4.7942030 *** (0.9766578)	-4.91	-4.8177140 *** (0.9769842)	-4.93	-3.8008810 *** (0.9627465)	-3.95
SchUTP	-	-0.1519125 *** (0.0228075)	-6.66	-0.1539400 *** (0.0229251)	-6.71	-0.1181101 *** (0.0191654)	-6.16
DAcc		-0.0000048 ** (0.0000024)	-2.03	-0.0000064 *** (0.0000045)	-1.41	-0.0000112 *** (0.0000044)	-2.56
R&D		0.0034572 (0.0024725)	1.40	0.0034113 (0.0024460)	1.39	0.0031053 (0.0025504)	1.22
PPE		-0.0398289 (0.1804416)	-0.22	-0.0663505 (0.1794852)	-0.37	0.1280987 (0.1603056)	0.80
Inv		-0.0014379 (0.4264536)	0.00	-0.0129397 (0.4323860)	-0.03	-0.0790189 (0.3946677)	-0.20
Foreign		-0.0001371 (0.0012913)	-0.11	0.0001201 (0.0013395)	0.09	-0.0003388 (0.0012346)	-0.27
ROA		1.2974590 *** (0.0867820)	14.95	1.2871120 *** (0.0931497)	13.82	1.4341340 *** (0.1123564)	12.76
Size		0.6636997 *** (0.1353522)	4.90	0.6696449 *** (0.1354273)	4.94	0.5615887 *** (0.1335550)	4.20

Table 11 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		-0.1365339 (1.4476920)	-0.09	7.2563330 (6.1608780)	1.18
SchUTP	+	-0.0534065 (0.0708853)	-0.75	0.3216625 (0.2509610)	1.28
ΔNOL		-0.0000246 (0.0000817)	-0.30	0.0001130 (0.0000944)	1.20
R&D		-0.0001080 (0.0001357)	-0.80	-0.0000352 (0.0003630)	-0.10
PPE		0.1093166 (0.1744033)	0.63	-0.2503017 (0.2026045)	-1.24
Inv		-1.8901070 (3.2745050)	-0.58	1.6111220 (1.4001450)	1.15
Leverage		0.2634410 (0.3309444)	0.80	0.1735365 (0.1565166)	1.11
Foreign		0.1818906 (0.1904259)	0.96	0.0953601 (0.1053443)	0.91
ROA		0.0193785 (0.0220211)	0.88	-0.0659847 (0.1004862)	-0.66
Size		0.0528821 (0.1934475)	0.27	-1.0878720 (0.9275057)	-1.17

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05

5.2 Supplemental Tests

5.2.1 Components of Total UTBs

In addition to total reported UTBs, I examine components of total UTBs. Testing the components of UTBs provides insights into how companies reduce their UTBs following the announcement of Schedule UTP. FIN 48 requires an annual reconciliation of UTBs which includes current year additions, changes to prior year estimates, decreases due to settlements with the IRS, and decreases due to the lapse of the statute of limitations. If total UTBs decrease subsequent to Schedule UTP, knowing specifically how firms accomplished the decrease could

provide insight into whether the motivation is based on financial reporting or decreasing tax aggressiveness. I estimate equation 1 using each component of total UTB as my dependent variable and the variable of interest is SchUTP. Consistent with the scaling presented in table 2, I perform a log transformation of each dependent variable.

I present the results of the components of UTBs in table 12. Both current year changes and changes to prior year estimates are negative and significant ($p < 0.000$). The motivation for the decrease in current year additions is unclear because the decrease could be the result of valuation (less conservative/not building reserves) or of uncertain positions which are not being taken anymore. In either case, Schedule UTP impacts the reporting of UTBs in the financial statements. The decrease to changes to prior year estimates is potentially troubling for regulators. FIN 48 stipulates that changes to prior year estimates should only be made based on evaluation of new evidence (FASB, 2006). The negative and significant coefficient on β_1 suggests firms over-reserve UTBs in prior years and are now interested in reducing the appearance of tax aggressiveness to the IRS.

Settlements decrease under the Schedule UTP regime ($p = 0.051$), which possibly indicates firms are less willing to negotiate with the IRS subsequent to the announcement of Schedule UTP. Another explanation is firms were willing to settle with the IRS immediately after FIN 48 was implemented because they feared FIN 48 would provide a “roadmap” to the IRS. The change in lapse in statute of limitations is positive and significant ($p = 0.001$). This result is curious, because it indicates that more UTBs are going undetected prior to the statute of limitations expiring. This finding is particularly troubling for the IRS, and future research should examine whether this trend continues as more firms begin filing Schedule UTP.

Table 12

OLS Test for Decrease in UTB Components

Variable	DV=CYAΔ		DV=PYΔ		DV=Settle		DV=Lapse	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept	-2.038095 *** (0.0488191)	-41.75	0.0759974 (0.0341592)	0.92	-1.6227500 *** (0.0489688)	-33.14	-1.0309300 *** (0.0357128)	-28.87
SchUTP	-0.1394530 *** (0.0222474)	-6.27	-0.1362481 *** (0.0341592)	-3.99	-0.0406739 * (0.0208085)	-1.95	0.0571796 *** (0.0166640)	3.43
ROA	-0.0637398 ** (0.0259522)	-2.46	0.0034278 (0.0362044)	0.31	-0.0655754 ** (0.0327959)	-2.00	-0.0263723 ** (0.0118145)	-2.23
Size	0.4529989 *** (0.0087698)	51.65	-0.0037881 (0.0149921)	-0.25	0.3307302 *** (0.0086238)	38.35	0.02151056 *** (0.0063760)	33.74
Growth	-0.0000161 (0.0000175)	-0.92	-0.0000119 *** (0.0000030)	-3.95	-0.0000063 *** (0.0000020)	-3.22	0.0000154 *** (0.0000029)	5.29
Leverage	-0.5230216 *** (0.0566719)	-9.23	-0.0268815 (0.0599606)	-0.45	-0.3143509 *** (0.0515454)	-6.10	-0.0794832 ** (0.0403538)	-1.97
NOL	-0.0289870 (0.0221172)	-1.31	0.0655571 * (0.0338222)	1.94	-0.0350964 * (0.0205113)	-1.71	-0.0020194 (0.0163826)	-0.12
Foreign	0.0033725 (0.0036885)	0.91	0.0054609 (0.0054032)	1.01	0.0021070 (0.0036991)	0.57	0.0061841 * (0.0034215)	1.81
R&D	0.0014220 *** (0.0002040)	6.97	-0.0004760 (0.0002939)	-1.62	0.0006386 ** (0.0002562)	2.49	0.0002690 ** (0.0001230)	2.19

Note. – White (1980) robust standard errors are in parentheses below the coefficients.

See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p<.10

5.2.2 Time-Series Analysis

Regression models (1), (2), (3), and (4) allow me to analyze the effect of Schedule UTP on UTBs with an indicator variable to identify the post-announcement period. However, the change in UTBs could be gradual, not immediate. To identify such a change I perform a trend analysis. Since there are different implementation timeframes, I will perform this analysis separately for the three sub-sets of firms based on size described above. Similar to Francis and Schipper (1999) and Cohen et al. (2008), I estimate the following regression equation:

$$UTB_t = \beta_0 + \beta_1 t + v_t \quad (9)$$

where t refers to the sample year; ($t = 1 \dots 5$ and corresponds to 2007 . . . 2011). This approach examines the average level of reported UTBs as well as the annual changes in reported UTBs from the initial FIN 48 disclosure to the current year.

Table 13 presents the results from equation (9). The entire sample is broken down by asset size to mirror the reporting requirements of Schedule UTP because I expect firms which are required to report Schedule UTP earlier will have the most significant negative change in 2010 and 2011. Part 1 reports firms with greater than \$100 million in assets, Part 2 reports firms with assets between \$50 million and \$100 million, and Part 3 reports firms with assets between \$10 million and \$50 million. Panel A uses UTB as the dependent variable and Panel B uses ΔUTB as the dependent variable. I use both 2007 and 2009 for my base-level analysis.

The results in table 13 Part 1 Panel A do not indicate a significant time trend for large firms. Using 2007 as the base year, the balance of reported UTBs is positive each year until 2011, but the differences each year are not statistically significant. Using 2009 as the base year illustrates the fact that balances were highest in 2009 because the coefficient for each other year is negative. Once again, the yearly differences are not statistically significant. These results

correspond with the univariate results from Abernathy et al. (2013), and indicate that levels of UTBs are monotonically increasing from 2007 until 2009 and then decrease in both 2010 and 2011.

The results in Panel B examine the changes in UTB reporting each year. Using 2007 as the base year we can see that the changes in 2008-2011 are significantly less than the changes the first year. This is not surprising since 2007 was the initial reporting year. Using 2009 as the base year highlights that the changes in 2008 and 2009 were virtually identical, but the changes in 2010 and 2011 relative to 2009 are negative and significant.

The results in Part 2 indicate a significant positive balance for 2008 and 2010 for medium firms relative to 2007. All years except 2007 have a positive coefficient when using 2009 as the base year. However, none of the coefficients are statistically significant. The results for the changes in UTBs relative to 2007 are qualitatively identical to those in Part 1. However, using 2009 as the base year indicates every year has positive changes relative to 2009, and the changes in 2007 and 2008 are significant.

Panel A of Part 3 reports the time series analysis for small firms. None of the results in Panel A are statistically significant. The results for the changes in UTBs relative to 2007 are qualitatively similar to those in Part 1 and Part 2. Relative to 2009, the only year with significant changes is 2007. Overall, the results in Part 3 indicate a small decrease in reporting for small firms in 2010, but increases in each other year.

In addition, I include a time trend variable to equation (2). Specifically, I estimate the following regression:

$$\begin{aligned}
 \text{UTB} = & \alpha + \beta_1 \text{SchUTP} + \beta_2 \text{\$100mil} + \beta_3 \text{\$50mil} + \beta_4 \text{FinCons} + \beta_5 \text{TaxAgg} + \\
 & \beta_6 \text{SchUTP*\$100mil} + \beta_7 \text{SchUTP*\$50mil} + \beta_8 \text{SchUTP*FinCons} + \\
 & \beta_9 \text{SchUTP*Tax Agg} + \beta_{10} \text{ROA} + \beta_{11} \text{Size} + \beta_{12} \text{Growth} + \beta_{13} \text{Leverage} + \\
 & \beta_{14} \text{NOL} + \beta_{15} \text{Foreign} + \beta_{16} \text{R\&D} + \beta_{17} \text{Time} + \varepsilon
 \end{aligned} \tag{10}$$

Table 13

*OLS Time Series by Size**Part 1 – Large (N=6,762)**Panel A – DV=UTB*

	Base Year = 2007		Base Year = 2009	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	2.3868270 *** (0.0499515)	47.78	2.4585940 *** (0.0508916)	48.31
2007			-0.0717665 (0.0713099)	-1.01
2008	0.0526766 (0.0710480)	0.74	-0.0190899 (0.0717121)	-0.27
2009	0.0717665 (0.0713099)	1.01		
2010	0.0323118 (0.0709683)	0.46	-0.0394548 (0.0716331)	-0.55
2011	-0.0050460 (0.0707247)	-0.07	-0.0768126 (0.0713918)	-1.08

Panel B – DV= Δ UTB

	Base Year = 2007		Base Year = 2009	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	2.3862670 *** (0.0499618)	47.76	0.0353424 ** (0.0167904)	2.10
2007			2.3509250 *** (0.0527076)	44.60
2008	-2.3509110 *** (0.0530363)	-44.33	0.0000137 (0.0244661)	0.00
2009	-2.3509250 *** (0.0527076)	-44.60		
2010	-2.4209290 *** (0.0513930)	-47.11	-0.0700042 *** (0.0206633)	-3.39
2011	-2.3999570 *** (0.0513588)	-46.73	-0.0490327 ** (0.0205784)	-2.38

Note. – White (1980) robust standard errors are in parentheses below the coefficients.

*** p < .01; ** p < .05

Table 13 (continued)

*Part 2 - Medium (N=541)**Panel A – DV=UTB*

	Base Year = 2007		Base Year = 2009	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	0.4651710 *** (0.0560351)	8.30	0.5350520 *** (0.0636763)	8.40
2007			-0.0698810 (0.0848210)	-0.82
2008	0.1438827 * (0.0854396)	1.68	0.0740016 (0.0906348)	0.82
2009	0.0698810 (0.0848210)	0.82		
2010	0.1611234 * (0.0863763)	1.87	0.0912423 (0.0915183)	1.00
2011	0.1195658 (0.0869994)	1.37	0.0496848 (0.0921066)	0.54

Panel B – DV= Δ UTB

	Base Year = 2007		Base Year = 2009	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	0.4651710 *** (0.0560351)	8.30	-0.0179952 (0.0272875)	-0.66
2007			0.4831662 *** (0.0623261)	7.75
2008	-0.4080514 *** (0.0608502)	-6.71	0.0751148 ** (0.0361583)	2.08
2009	-0.4831662 *** (0.0623261)	-7.75		
2010	-0.4665231 *** (0.0589815)	-7.91	0.0166431 (0.0329165)	0.51
2011	-0.4744564 *** (0.0634517)	-7.48	0.0087098 (0.0403832)	0.22

Note. – White (1980) robust standard errors are in parentheses below the coefficients.
See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

Table 13 (continued)

*Part 3 - Small (N=472)**Panel A – DV=UTB*

	Base Year = 2007		Base Year = 2009	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	0.2390566 *** (0.0459628)	5.20	0.3335542 *** (0.0463477)	7.20
2007			-0.0944975 (0.0652740)	-1.45
2008	0.0540026 (0.0623771)	0.87	-0.0404950 (0.0626612)	-0.65
2009	0.0944975 (0.0652740)	1.45		
2010	0.0732974 (0.0683849)	1.07	-0.0212002 (0.0686442)	-0.31
2011	0.1011222 (0.0727882)	1.39	0.0066246 (0.0730319)	0.09

Panel B – DV=ΔUTB

	Base Year = 2007		Base Year = 2009	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	0.2390566 *** (0.0459628)	5.20	-0.0077696 (0.0231136)	-0.34
2007			0.2468262 *** (0.0514472)	4.80
2008	-0.2417037 *** (0.0486754)	-4.97	0.0051225 (0.0281237)	0.18
2009	-0.2468262 *** (0.0514472)	-4.80		
2010	-0.2611378 *** (0.0476288)	-5.48	-0.0143116 (0.0262708)	-0.54
2011	-0.2353260 *** (0.0480371)	-4.90	0.0115001 (0.0270041)	0.43

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01

Table 14

OLS Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness – Time Control

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		-2.7233300 *** (0.0607270)	-44.85	-2.7958870 *** (0.0614625)	-45.49	-2.6666650 *** (0.0616954)	-43.22
SchUTP		0.0676378 (0.0702727)	0.96	0.0514327 (0.0705979)	0.73	0.0545817 (0.0717074)	0.76
\$100mil		-1.1555110 *** (0.0487419)	-23.71	-1.1657200 *** (0.0492044)	-23.69	-1.1519320 *** (0.0495254)	-23.26
\$50mil		-0.5300531 *** (0.0489928)	-10.82	-0.5243725 *** (0.0492725)	-10.64	-0.5236439 *** (0.0498934)	-10.50
FinCons		0.1211252 *** (0.0450127)	2.69	0.1494354 *** (0.0448230)	3.33	0.1184435 *** (0.0444537)	2.66
TaxAgg		-0.1035190 ** (0.0417379)	-2.48	0.1765163 *** (0.0425813)	4.15	-0.3131799 *** (0.0424198)	-7.38
SchUTP*\$100mil	-	-0.2008728 *** (0.0626373)	-3.21	-0.2187567 *** (0.0632969)	-3.46	-0.2113129 *** (0.0631177)	-3.35
SchUTP*\$50mil	-	-0.0390931 (0.0788896)	-0.50	-0.0393154 (0.0802007)	-0.49	-0.0417513 (0.0796154)	-0.52
SchUTP*FinCons	-	-0.1084087 * (0.0670546)	-1.62	-0.0956884 * (0.0669076)	-1.43	-0.1036832 * (0.0663246)	-1.56
SchUTP*TaxAgg	-	-0.0020954 (0.0633790)	-0.03	0.1242370 ** (0.0617478)	2.01	0.0473947 (0.0660856)	0.72
ROA	+	-0.0461344 *** (0.0157036)	-2.94	-0.0677681 ** (0.0285685)	-2.37	-0.0473808 *** (0.0164906)	-2.87
Size	+	0.8824379 *** (0.0110443)	79.90	0.8733661 *** (0.0109827)	79.52	0.8818608 *** (0.0108758)	81.08
Growth	+	-0.0000978 *** (0.0000154)	-6.33	-0.0000965 *** (0.0000156)	-6.18	-0.0000949 *** (0.0000149)	-6.36
Leverage	-	-0.5498182 *** (0.0878771)	-6.26	-0.4866876 *** (0.0848108)	-5.74	-0.5465731 *** (0.0874906)	-6.25
NOL	-	0.1100798 *** (0.0277723)	3.96	0.2064944 *** (0.0278112)	7.42	0.0917316 *** (0.0265643)	3.45
Foreign	+	0.0085515 ** (0.0038111)	2.24	0.0083583 ** (0.0037704)	2.22	0.0088845 ** (0.0038671)	2.30
R&D	+	0.0007369 *** (0.0002549)	2.89	0.0007218 *** (0.0002621)	2.75	0.0006101 ** (0.0002607)	2.34
Time	?	0.0107405 (0.0182000)	0.59	0.0093117 (0.0181506)	0.51	0.0131839 (0.0181204)	0.73

Table 14 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		-2.8287010 *** (0.0646047)	-43.78	-2.7493740 *** (0.0629704)	-43.66
SchUTP		0.0400877 (0.0772700)	0.52	0.0460866 (0.0758621)	0.61
\$100mil		-1.1423380 *** (0.0501078)	-22.80	-1.1624030 *** (0.0490581)	-23.69
\$50mil		-0.5337168 *** (0.0491144)	-10.87	-0.5288298 *** (0.0491759)	-10.75
FinCons		0.1209638 *** (0.0450434)	2.69	0.1289487 *** (0.0454365)	2.84
TaxAgg		0.1303198 *** (0.0427434)	3.05	0.0013057 (0.0390248)	0.03
SchUTP*\$100mil	-	-0.1841246 *** (0.0672750)	-2.74	-0.1863363 *** (0.0665368)	-2.80
SchUTP*\$50mil	-	-0.0420692 (0.0790183)	-0.53	-0.0356236 (0.0787967)	-0.45
SchUTP*FinCons	-	-0.1098080 * (0.0668771)	-1.64	-0.1146933 ** (0.0677776)	-1.69
SchUTP*TaxAgg	-	0.0569579 (0.0664220)	0.86	0.0314779 (0.0626798)	0.50
ROA	+	-0.0441420 *** (0.0146742)	-3.01	-0.0524866 *** (0.0186840)	-2.81
Size	+	0.8862591 *** (0.0111890)	79.21	0.8800372 *** (0.0112510)	78.22
Growth	+	-0.0000994 *** (0.0000155)	-6.41	-0.0000978 *** (0.0000155)	-6.30
Leverage	-	-0.5466072 *** (0.0884465)	-6.18	-0.5352926 *** (0.0880279)	-6.08
NOL	-	0.1333477 *** (0.0261426)	5.10	0.1401286 *** (0.0259873)	5.39
Foreign	+	0.0090550 ** (0.0038463)	2.35	0.0087116 ** (0.0038709)	2.25
R&D	+	0.0005941 ** (0.0002628)	2.26	0.0007270 *** (0.0002554)	2.85
Time	?	0.0108319 (0.0181926)	0.60	0.0106659 (0.0182476)	0.58

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

Table 15

Panel Data with Fixed Effects Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness – Time Control

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		0.1047474 (0.2067933)	0.51	0.1515461 (0.2052304)	0.74	0.1419375 (0.2065805)	0.69
SchUTP		-0.0097464 (0.0277466)	-0.35	-0.0265808 (0.0280364)	-0.95	-0.0175397 (0.0286034)	-0.61
\$100mil		-0.2224993 *** (0.0607374)	-3.66	-0.2151225 *** (0.0605063)	-3.56	-0.2099935 *** (0.0605933)	-3.47
\$50mil		-0.1370000 *** (0.0395261)	-3.47	-0.1362849 *** (0.0395776)	-3.44	-0.1321516 *** (0.0394755)	-3.35
FinCons		0.0609975 ** (0.0265421)	2.30	0.0595938 ** (0.0262320)	2.27	0.0581746 ** (0.0261469)	2.22
TaxAgg		-0.0151238 (0.0232622)	-0.65	-0.0265993 (0.0256614)	-1.04	-0.0604333 ** (0.0270324)	-2.24
SchUTP*\$100mil	-	-0.0706925 *** (0.0268849)	-2.63	-0.0800546 *** (0.0272467)	-2.94	-0.0795525 *** (0.0267235)	-2.98
SchUTP*\$50mil	-	-0.0330202 (0.0351150)	-0.94	-0.0284411 (0.0352599)	-0.81	-0.0292207 (0.0354008)	-0.83
SchUTP*FinCons	-	0.0112193 (0.0368891)	0.30	0.0170031 (0.0369356)	0.46	0.0150390 (0.0369233)	0.41
SchUTP*TaxAgg	-	-0.0738202 *** (0.0308186)	-2.40	0.0196702 (0.0294358)	0.67	-0.0259129 (0.0338645)	-0.77
ROA	+	-0.0055658 (0.0078399)	-0.71	-0.0057157 (0.0079295)	-0.72	-0.0040475 (0.0076109)	-0.53
Size	+	0.3252329 *** (0.0349131)	9.32	0.3170047 *** (0.0347384)	9.13	0.3192654 *** (0.0348772)	9.15
Growth	+	-0.0000112 (0.0000136)	-0.82	-0.0000114 (0.0000136)	-0.84	-0.0000112 (0.0000136)	-0.83
Leverage	-	0.0834927 (0.0717162)	1.16	0.0900784 (0.0698827)	1.29	0.0862154 (0.0694284)	1.24
NOL	-	-0.0213106 (0.0378211)	-0.56	-0.0129261 (0.0388170)	-0.33	-0.0162636 (0.0383490)	-0.42
Foreign	+	0.0029286 (0.0022255)	1.32	0.0029544 (0.0022307)	1.32	0.0030135 (0.0022321)	1.35
R&D	+	-0.0004122 (0.0003903)	-1.06	-0.0004240 (0.0003869)	-1.10	-0.0004235 (0.0003893)	-1.09
Time	?	0.0194773 ** (0.0086372)	2.26	0.0193255 ** (0.0086412)	2.24	0.0198122 ** (0.0086458)	2.29

Table 15 (continued)

Variable	Sign	Panel D: BookETR		Panel E: CashETR	
		Coefficient	t-stat	Coefficient	t-stat
Intercept		0.1357942 (0.2072975)	0.66	0.1126263 (0.2071340)	0.54
SchUTP		-0.0564859 * (0.0323266)	-1.75	-0.0532095 * (0.0316422)	-1.68
\$100mil		-0.2300088 *** (0.0606962)	-3.79	-0.2305932 *** (0.0612044)	-3.77
\$50mil		-0.1381015 *** (0.0398447)	-3.47	-0.1407937 *** (0.0396926)	-3.55
FinCons		0.0627599 ** (0.0265705)	2.36	0.0606166 ** (0.0265339)	2.28
TaxAgg		-0.0311435 (0.0240849)	-1.29	0.0076390 (0.0199111)	0.38
SchUTP*\$100mil	-	-0.0552602 ** (0.0296453)	-1.86	-0.0572892 ** (0.0284387)	-2.01
SchUTP*\$50mil	-	-0.0301494 (0.0347600)	-0.87	-0.0275702 (0.0351093)	-0.79
SchUTP*FinCons	-	0.0130975 (0.0369500)	0.35	0.0101560 (0.0370548)	0.27
SchUTP*TaxAgg	-	0.0662532 * (0.0356801)	1.86	0.0436721 (0.0331504)	1.32
ROA	+	-0.0077555 (0.0087722)	-0.88	-0.0064587 (0.0080548)	-0.80
Size	+	0.3206754 *** (0.0347384)	9.23	0.3233410 *** (0.0349967)	9.24
Growth	+	-0.0000115 (0.0000136)	-0.84	-0.0000114 (0.0000137)	-0.83
Leverage	-	0.0943023 (0.0688153)	1.37	0.0857648 (0.0704723)	1.22
NOL	-	-0.0083955 (0.0380518)	-0.22	-0.0094066 (0.0381258)	-0.25
Foreign	+	0.0028093 (0.0022494)	1.25	0.0031176 (0.0022605)	1.38
R&D	+	-0.0003858 (0.0003928)	-0.98	-0.0004027 (0.0003943)	-1.02
Time	?	0.0192305 ** (0.0086316)	2.23	0.0193110 ** (0.0086895)	2.22

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p<.10

I present the results of equation (10) in table 14. The results are qualitatively similar to those reported in table 4. This is not surprising since the coefficient on the Time variable is not significant in any panel. Table 15 presents the results of equation (10) controlling for firm fixed effects. It is interesting to note that the coefficient for β_{17} is positive and significant in each panel once I control for firm fixed effects. However, the results in table 15 remain qualitatively similar to those reported in table 5.

5.2.3 Structural Break Analysis

Structural Break Analysis has two potential benefits. First, it provides a more powerful test of the significance of Schedule UTP. For example, I expect profitability to have a positive relationship with reported UTBs because profitable firms have incentive to take more aggressive tax positions. However, due to the economic conditions in effect when Schedule UTP was announced, firms are less profitable and the relationship between profitability and reported UTBs may not be significant. Structural Break Analysis allows each control variable to vary during both time periods, so it provides more substantive controls when the independent variables vary over time. This helps to eliminate alternative explanations for why a decrease in UTBs has occurred.

Second, when using a regression model a key assumption is the relationship among variables remains constant over time (Greene 2008). When the relationship changes at some point, a structural break has occurred (Hansen 2001). A structural break can occur, for example, when a change takes place in the regulatory environment under examination (Campbell and Allen 2001). Chow (1960) developed one of the earliest tests to detect a structural break, and numerous studies have used the Chow test in some form.

I examine the effects of Schedule UTP on my variables of interest in equation (2). The

Chow test, to determine if a structural break exists, examines the effects of Schedule UTP on all variables in my model. Several tax professionals have commented concerning the significant changes brought about by Schedule UTP (Harvey 2011; Leone and Katz 2011). When Schedule UTP was first announced, the *New York Times* reported that Schedule UTP represents a shift in the balance of power from corporate taxpayers to the IRS (Browning 2010). This shift could be significant enough to alter the parameters of the models used to predict UTBs.

I perform a Chow test to determine if a structural break accompanies the announcement of Schedule UTP. Specifically, I interact the indicator variable for Schedule UTP with each control variable in equation (2) and test for joint significance of the indicator variable and each of the interaction terms:

$$\begin{aligned}
 \text{UTB} = & \alpha + \beta_1 \text{SchUTP} + \beta_2 \$100\text{mil} + \beta_3 \$50\text{mil} + \beta_4 \text{FinCons} + \beta_5 \text{TaxAgg} + \beta_6 \text{ROA} + \beta_7 \text{Size} + \\
 & \beta_8 \text{Foreign} + \beta_9 \text{Leverage} + \beta_{10} \text{Growth} + \beta_{11} \text{NOL} + \beta_{12} \text{R\&D} + \beta_{13} \text{SchUTP} * \$100\text{mil} + \beta_{14} \\
 & \text{SchUTP} * \$50\text{mil} + \beta_{15} \text{SchUTP} * \text{FinCons} + \beta_{16} \text{SchUTP} * \text{TaxAgg} + \beta_{17} \text{SchUTP} * \text{ROA} + \\
 & \beta_{18} \text{SchUTP} * \text{Size} + \beta_{19} \text{SchUTP} * \text{Foreign} + \beta_{20} \text{SchUTP} * \text{Leverage} + \beta_{21} \text{SchUTP} * \text{Growth} + \\
 & \beta_{22} \text{SchUTP} * \text{NOL} + \beta_{23} \text{SchUTP} * \text{R\&D} + \varepsilon \qquad (11)
 \end{aligned}$$

A structural break is said to occur if the coefficient on any of the interaction terms is significant. Predictions for coefficients associated with variables of interest above remain the same as in equation (2). I do not predict directional changes for control variables because the main focus of structural break analysis is whether or not a break has occurred, not the direction of the change. Since many tax researchers anticipate using UTBs as a proxy for tax aggressiveness, information concerning a structural break will aid in future use of UTBs.¹⁸

¹⁸ A key difficulty in tax research is finding an appropriate proxy for tax variables, since income tax returns are not publicly available. Tax aggressiveness continues to be an important research topic and several researchers have advocated using UTBs as a proxy for tax aggressiveness. If a structural break has occurred concerning the determinants of UTBs, researchers should acknowledge this when using UTBs as a proxy for tax aggressiveness and design their models accordingly.

Table 16

OLS Structural Break Analysis - Annual

	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD		Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat								
Intercept	-2.6827910 *** (0.0608752)	-44.07	-2.7397670 *** (0.0622356)	-44.02	-2.6199490 *** (0.0626760)	-41.80	-2.7718600 *** (0.0661403)	-41.91	-2.6959630 *** (0.0635260)	-42.44
SchUTP	0.0391547 (0.0935939)	0.42	-0.0458602 (0.0953661)	-0.48	0.0220931 (0.0953130)	0.23	-0.0214514 (0.1001701)	-0.21	-0.0187854 (0.1009214)	-0.19
\$100mil	-1.1357370 *** (0.0565907)	-20.07	-1.1438610 *** (0.0569242)	-20.09	-1.1345260 *** (0.0571619)	-19.85	-1.1175270 *** (0.0570901)	-19.57	-1.1374020 *** (0.0566783)	-20.07
\$50mil	-0.5218177 *** (0.0496496)	-10.51	-0.5164506 *** (0.0499274)	-10.34	-0.5164074 *** (0.0505149)	-10.22	-0.5232734 *** (0.0497236)	-10.52	-0.5188102 *** (0.0498379)	-10.41
FinCons	0.1331765 *** (0.0475899)	2.80	0.1647671 *** (0.0472380)	3.49	0.1290716 *** (0.0469053)	2.75	0.1347574 *** (0.0477251)	2.82	0.1439474 *** (0.0481651)	2.99
TaxAgg	-0.0922014 ** (0.0430144)	-2.14	0.1772177 *** (0.0436831)	4.06	-0.3103857 *** (0.0427788)	-7.26	0.1182339 *** (0.0433247)	2.73	-0.0095010 (0.0393270)	-0.24
ROA	-0.0387798 *** (0.0135512)	-2.86	-0.0515743 ** (0.0200713)	-2.57	-0.0389521 *** (0.0137683)	-2.83	-0.0380023 *** (0.0132677)	-2.86	-0.0438872 *** (0.0154770)	-2.84
Size	0.8718012 *** (0.0152602)	57.13	0.8623602 *** (0.0151165)	57.05	0.8725416 *** (0.0149459)	58.38	0.8737190 *** (0.0154312)	56.62	0.8679167 *** (0.0154199)	56.29
Growth	-0.0000212 ** (0.0000084)	-2.53	-0.0000200 ** (0.0000084)	-2.39	-0.0000217 *** (0.0000081)	-2.69	-0.0000207 ** (0.0000086)	-2.42	-0.0000207 ** (0.0000084)	-2.47
Leverage	-0.4402505 *** (0.1123940)	-3.92	-0.3994372 *** (0.1090849)	-3.66	-0.4438434 *** (0.1122150)	-3.96	-0.4371888 *** (0.1131872)	-3.86	-0.4258477 *** (0.1119293)	-3.80
NOL	0.1175931 *** (0.0359679)	3.27	0.1938698 *** (0.0360580)	5.38	0.0919578 *** (0.0344778)	2.67	0.1357039 *** (0.0340707)	3.98	0.1423343 *** (0.0337536)	4.22
Foreign	0.0057243 (0.0040329)	1.42	0.0057010 (0.0040997)	1.39	0.0058890 (0.0039569)	1.49	0.0062701 (0.0040778)	1.54	0.0056238 (0.0040515)	1.39
R&D	0.0006651 *** (0.0002533)	2.63	0.0006779 *** (0.0002514)	2.70	0.0005559 ** (0.0002644)	2.10	0.0005564 ** (0.0002636)	2.11	0.0006679 *** (0.0002501)	2.67

Table 16 (continued)

	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD		Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat								
SchUTP*\$100mil	-0.2492981 *** (0.0913483)	-2.73	-0.2574478 *** (0.0923852)	-2.79	-0.2526344 *** (0.0916644)	-2.76	-0.2500222 *** (0.0922780)	-2.71	-0.2435840 *** (0.0919027)	-2.65
SchUTP*\$50mil	-0.0681933 (0.0818562)	-0.83	-0.0606017 (0.0827445)	-0.73	-0.0674761 (0.0824011)	-0.82	-0.0773244 (0.0819024)	-0.94	-0.0673813 (0.0818292)	-0.82
SchUTP*FinCons	-0.1247693 * (0.0710529)	-1.76	-0.1249096 * (0.0707159)	-1.77	-0.1182406 * (0.0703462)	-1.68	-0.1277706 * (0.0711169)	-1.80	-0.1364648 * (0.0720012)	-1.90
SchUTP*TaxAgg	-0.0310358 (0.0684140)	-0.45	0.1256210 * (0.0679357)	1.85	0.0477207 (0.0676634)	0.71	0.0783378 (0.0679699)	1.15	0.0531433 (0.0651934)	0.82
SchUTP*ROA	-0.067727 (0.0538084)	-1.26	-0.1611280 ** (0.0808103)	-1.99	-0.0809994 (0.0551681)	-1.47	-0.0575629 (0.0555816)	-1.04	-0.0796522 (0.0544336)	-1.46
SchUTP*Size	0.0296827 (0.0219703)	1.35	0.0314124 (0.0218655)	1.44	0.0267058 (0.0216945)	1.23	0.0337727 (0.0222433)	1.52	0.0332744 (0.0223755)	1.49
SchUTP*Growth	-0.0030785 *** (0.0006311)	-4.88	-0.0030261 *** (0.0006520)	-4.64	-0.0030593 *** (0.0006641)	-4.61	-0.0030521 *** (0.0006826)	-4.47	-0.0030487 *** (0.0006386)	-4.77
SchUTP*Leverage	-0.3485166 ** (0.1609553)	-2.17	-0.2881150 * (0.1569352)	-1.84	-0.3285092 ** (0.1613480)	-2.04	-0.3452494 ** (0.1620588)	-2.13	-0.3489945 ** (0.1611486)	-2.17
SchUTP*NOL	-0.0247565 (0.0566820)	-0.44	0.0265666 (0.0566231)	0.47	-0.0038950 (0.0540134)	-0.07	-0.0093840 (0.0530871)	-0.18	-0.0103453 (0.0528602)	-0.20
SchUTP*Foreign	0.0091508 (0.0080709)	1.13	0.0084979 (0.0078019)	1.09	0.0096670 (0.0083813)	1.15	0.0089173 (0.0081208)	1.10	0.0098836 (0.0082189)	1.20
SchUTP*R&D	0.0003567 (0.0010636)	0.34	-0.0001371 (0.0010970)	-0.12	0.0001656 (0.0010689)	0.15	0.0001560 (0.0011201)	0.14	0.0001896 (0.0010716)	0.18

Note. – White (1980) robust standard errors are in parentheses below the coefficients.

See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

Table 16 presents the results from equation (11) to test whether Schedule UTP is associated with a structural break in UTB reporting. This information is useful to researchers when testing hypotheses in the pre- and post-Schedule UTP environment. Several of the interaction terms are significant, which indicates a structural break has occurred. The most significant observation for researchers is the change in sign that occurs with the NOL control variable. In the pre-Schedule UTP environment, the coefficient on NOL is positive and significant; however, in the post-Schedule UTP environment, the coefficient is negative but not significant. Also, the coefficient for R&D is positive and significant before Schedule UTP, but not statistically significant after Schedule UTP.

Table 17 presents the results from equation (11) using panel data with firm fixed effects. Once again, several interaction terms are significant. The variable of interest with these results is Leverage. In the period before Schedule UTP, Leverage is positive in each measure of tax aggressiveness but only significant for the Book ETR measure ($p=0.08$). However, in the period after Schedule UTP was announced, the coefficient for Leverage is negative and significant in each measure of tax aggressiveness. In addition, the coefficient for Growth is negative but not significant before Schedule UTP but is negative and significant after Schedule UTP.

Table 17
Panel Data with Fixed Effects Structural Break Analysis - Annual

	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD		Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat								
Intercept	0.1664718 (0.2116616)	0.79	0.2043504 (0.2107745)	0.97	0.2019386 (0.2122223)	0.95	0.2076440 (0.2133257)	0.97	0.1825544 (0.2119530)	0.86
SchUTP	0.0121470 (0.0472155)	0.26	-0.0261935 (0.0478971)	-0.55	-0.0092855 (0.0492865)	-0.19	-0.0692080 (0.0523255)	-1.32	-0.0687698 (0.0529109)	-1.30
\$100mil	-0.2046030 *** (0.0639572)	-3.20	-0.2015646 *** (0.0638350)	-3.16	-0.1950352 *** (0.0639380)	-3.05	-0.2096074 *** (0.0642995)	-3.26	-0.2104442 *** (0.0643324)	-3.27
\$50mil	-0.1341678 *** (0.0400276)	-3.35	-0.1345390 *** (0.0399905)	-3.36	-0.1301922 *** (0.0399137)	-3.26	-0.1339674 *** (0.0404142)	-3.31	-0.1360841 *** (0.0401628)	-3.39
FinCons	0.0690075 ** (0.0302885)	2.28	0.0670074 ** (0.0297908)	2.25	0.0651382 ** (0.0296964)	2.19	0.0719489 ** (0.0301380)	2.39	0.0705609 ** (0.0302795)	2.33
TaxAgg	-0.0054522 (0.0240212)	-0.23	-0.0223308 (0.0246433)	-0.91	-0.0566330 ** (0.0269580)	-2.10	-0.0363763 (0.0238489)	-1.53	-0.0013400 (0.0195801)	-0.07
ROA	-0.0052080 (0.0078562)	-0.66	-0.0066626 (0.0079578)	-0.84	-0.0045573 (0.0078045)	-0.58	-0.0078795 (0.0085407)	-0.92	-0.0064185 (0.0080534)	-0.80
Size	0.3167313 *** (0.0362268)	8.74	0.3117636 *** (0.0361298)	8.63	0.3126012 *** (0.0362805)	8.62	0.3116250 *** (0.0362844)	8.59	0.3148497 *** (0.0361948)	8.70
Growth	-0.0000113 (0.0000134)	-0.84	-0.0000116 (0.0000134)	-0.87	-0.0000114 (0.0000134)	-0.85	-0.0000117 (0.0000134)	-0.87	-0.0000115 (0.0000135)	-0.85
Leverage	0.1056555 (0.0677956)	1.56	0.1074970 (0.0665759)	1.61	0.1051099 (0.0660446)	1.59	0.1142374 * (0.0651520)	1.75	0.1066632 (0.0660621)	1.61
NOL	-0.0036097 (0.0387396)	-0.09	-0.0083914 (0.0396103)	-0.21	-0.0077781 (0.0393770)	-0.20	-0.0009238 (0.0389085)	-0.02	-0.0034791 (0.0389112)	-0.09
Foreign	0.0004312 (0.0013164)	0.33	0.0004100 (0.0013003)	0.32	0.0004966 (0.0013270)	0.37	0.0002190 (0.0013044)	0.17	0.0003939 (0.0012907)	0.31
R&D	-0.0004357 (0.0004770)	-0.91	-0.0004320 (0.0004774)	-0.90	-0.0004263 (0.0004735)	-0.90	-0.0003732 (0.0004736)	-0.79	-0.0004011 (0.0004774)	-0.84

Table 17 (continued)

	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD		Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
SchUTP*\$100mil	-0.1061542 ** (0.0487842)	-2.18	-0.1053161 ** (0.0490042)	-2.15	-0.1078630 ** (0.0491642)	-2.19	-0.0947799 * (0.0498642)	-1.90	-0.0966599 * (0.0494304)	-1.96
SchUTP*\$50mil	-0.0471711 (0.0370019)	-1.27	-0.0392074 (0.0368937)	-1.06	-0.0403848 (0.0371231)	-1.09	-0.0454925 (0.0365571)	-1.24	-0.0444499 (0.0368195)	-1.21
SchUTP*FinCons	0.0003096 (0.0391636)	0.01	0.0052909 (0.0391976)	0.13	0.0051869 (0.0389864)	0.13	-0.0004486 (0.0390579)	-0.01	-0.0041297 (0.0392175)	-0.11
SchUTP*TaxAgg	-0.1005266 *** (0.0352500)	-2.85	0.0115377 (0.0332841)	0.35	-0.0291004 (0.0354791)	-0.82	0.0788388 ** (0.0358854)	2.20	0.0666455 ** (0.0330208)	2.02
SchUTP*ROA	-0.0263858 (0.0286661)	-0.92	-0.0551548 (0.0399809)	-1.38	-0.0452915 (0.0361599)	-1.25	-0.0421834 (0.0321158)	-1.31	-0.0295104 (0.0285497)	-1.03
SchUTP*Size	0.0175661 (0.0137096)	1.28	0.0150749 (0.0135711)	1.11	0.0150632 (0.0135042)	1.12	0.0190833 (0.0135912)	1.40	0.0190044 (0.0136357)	1.39
SchUTP*Growth	-0.0005861 ** (0.0002628)	-2.23	-0.0005670 ** (0.0002580)	-2.20	-0.0005762 ** (0.0002530)	-2.28	-0.0005491 ** (0.0002379)	-2.31	-0.0005423 ** (0.0002562)	-2.12
SchUTP*Leverage	-0.1483944 *** (0.0521713)	-2.84	-0.1279107 ** (0.0516502)	-2.48	-0.1300447 ** (0.0516123)	-2.52	-0.1367481 *** (0.0519905)	-2.63	-0.1452784 *** (0.0521165)	-2.79
SchUTP*NOL	-0.0346117 (0.03331001)	-1.05	0.0016858 (0.0330508)	0.05	-0.0076719 (0.0312945)	-0.25	-0.0055346 (0.0300892)	-0.18	-0.0026150 (0.0299313)	-0.09
SchUTP*Foreign	0.0079774 (0.0062418)	1.28	0.0081275 (0.0063123)	1.29	0.0080455 (0.0063442)	1.27	0.0081843 (0.0062994)	1.30	0.0086390 (0.0063058)	1.37
SchUTP*R&D	0.0001464 (0.0004952)	0.30	0.0000546 (0.0005057)	0.11	0.0000157 (0.0005064)	0.03	-0.0000489 (0.0005028)	-0.10	0.0000219 (0.0005052)	0.04

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients.

See Appendix A for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

CHAPTER 6

EMPIRICAL RESULTS – QUARTERLY

6.1 Primary test results

6.1.1 Descriptive statistics

FIN 48 establishes clear reporting disclosure requirements for annual UTBs. Most significantly, firms are required to provide a tabular reconciliation of beginning and ending UTB levels. However, the requirements for quarterly reporting are not clearly specified. FIN 48 repeatedly uses the phrase “the first period” to describe when firms should report initial measurement and changes to the initial measurement of UTBs; however, no clear requirements for quarterly disclosures is dictated. ASC 740 strengthens the intent of the FASB by dictating UTBs be recognized in the “first interim period” where the threshold requirements are met, and including ASC740-270 dedicated entirely to interim reporting (FASB 2009). Taken together, it seems clear the FASB intends for companies to update UTBs in their quarterly financial statements and corresponding footnotes. However, FIN 48 paragraph 24 states, “The provisions of this Interpretation need not be applied to immaterial items.” How firms interpret these statements will directly impact their quarterly disclosure of UTBs and an empirical analysis of quarterly reporting is warranted.

I obtain quarterly UTB data using the online Edgar database provided by the U.S. Securities and Exchange Commission (SEC). Using my sample of firms who report annual UTB information for each year from 2007-2011, I manually search each firm’s 10-Q report for income

tax footnote disclosures. I expect firms which report the required elements of UTBs in each annual period are more likely to also report quarterly. After obtaining the UTB footnote disclosures, I combine the data with annual and quarterly data obtained from Compustat in order to perform my regression analysis. My sample contains 31,100 firm-quarter observations.

I present univariate statistics related to quarterly footnote disclosures in table 18. Panel A reports the full sample. The main quantitative difference between table 18 and table 1 is the reported income, but if you multiple the mean and median quarterly net income and pretax income by four, the results are very similar. Once again, the total reported UTBs are positively skewed (mean = 77.5, median = 5.0) which illustrates the importance of transforming the variables for regression analysis. In addition to the continuous variable, I report an indicator variable, Qtr. Disc., which has a value of 1 if the firm reported UTBs in their quarterly financial statements and 0 otherwise. Overall, only 67% of firm quarters report UTBs quarterly.¹⁹

Panels B and C present univariate statistics separately for the Pre- and Post-Schedule UTP periods, respectively. Similar to table 1, both income and assets are higher in the Post-Schedule UTP period. However, mean reported UTBs are larger in the Post-Schedule UTP period using quarterly data (79.47 compared to 76.2) but are slightly smaller using annual data (78.63 compared to 78.11). One explanation for this result is that when a firm does not report quarterly changes to UTBs, I assume that there was no change from the previous quarter. This seems to be a valid assumption because of FIN 48 Paragraph 24.

¹⁹ I discuss Qtr. Disc. further when I discuss my logistic regression. This value is overstated, because it includes Q4 reporting in Form 10-K, and a requirement to be included in my sample is that UTBs have been reported in Form 10-K. If you eliminate Q4, the overall reporting percentage decreases to 59%. See table 26 for complete analysis.

Table 18

Descriptive Statistics for Quarterly Panel Data Sample

Panel A: Full Sample				
Variable	n	Mean	Median	StdDev
Net Income	31100	62.2878	5.738	915.97
Pre-tax Income	31100	96.7375	8.1115	961.766
Total Assets	31100	6152.3	821.549	28604.1
UTB (millions)	31100	77.5155	5.027	371.756
UTB (scaled)	31100	0.0157	0.00635	0.14906
Qtr Disc.	31100	0.67114	1	0.46981
Panel B: Pre-SchUTP				
Variable	n	Mean	Median	StdDev
Net Income	18433	49.3577	4.74	1139.85
Pre-tax Income	18433	82.6889	6.898	1166.59
Total Assets	18433	5903.76	799.665	28236
UTB (millions)	18433	76.1694	5	359.611
UTB (scaled)	18433	0.01712	0.00645	0.19257
Qtr Disc.	18433	0.72249	1	0.44778
Panel C: Post-SchUTP				
Variable	n	Mean	Median	StdDev
Net Income	12667	81.0263	7.3565	414.074
Pre-tax Income	12667	117.078	10.2825	541.443
Total Assets	12667	6508.1	861.499	29120.3
UTB (millions)	12667	79.4744	5.156	388.758
UTB (scaled)	12667	0.01364	0.00618	0.02417
Qtr Disc.	12667	0.5964	1	0.49064

Another striking difference between the two periods is Qtr. Disc. The number of firms reporting quarterly UTB information drops from over 72% before the announcement of Schedule UTP to just under 60% after Schedule UTP was announced. Due to this finding, I include a

binary logit model to examine the likelihood of reporting quarterly UTB information. The logistic regression analysis follows my OLS regression analysis.

6.1.2 Impact on UTB Levels

My analysis using quarterly observations is similar to my analysis using annual observations. I define all quarterly variables in Appendix B. For information firms report quarterly (ROA, Size, Growth, and Leverage), I use values from the Compustat Industrial Quarterly File in my regressions. For information firms do not reported quarterly (NOL, Foreign, R&D), I use the amounts from the prior year end. Because each variable does not change quarterly, I do not perform a changes analysis with the quarterly data.

Because of the nature of the quarterly data, I present the results of my test of H1a using six different samples. As stated earlier, I assume no changes to UTB amounts if nothing was reported for the quarter. To eliminate any bias this might cause, I test my results eliminating groups of companies which do not disclose quarterly information. Figure 3 provides details for both number of unique firms and number of observations for each of the samples reported in Table 19. Panel A is the full original sample of 31,100 firm-quarter observations. Panel B eliminates foreign companies. Since foreign companies file Form 20-F which also requires UTB disclosure, these firms appear in my annual sample. However, there is no corresponding quarterly report for foreign companies, so none of these companies report quarterly UTB changes.

Panels C and D eliminate companies which do not file Form 10-Q for each quarter in the sample period. A company in this group reports annual UTB information for each year 2007-2011, but is missing one or more Form 10-Q. Typical reasons a company falls into this category include mergers and acquisitions, and companies who become publicly traded during the sample

period and report multi-year information the first year they are subject to SEC filing requirements. Panel C eliminates only the missing quarters from analysis, but Panel D eliminates the entire company from analysis if any quarter is missing. Panel C is an unbalanced panel because every firm is not represented every quarter, but Panel D remains a balanced panel.

Panels E and F eliminate companies who do not disclose quarterly UTB information. Panel E eliminates any observation where Qtr. Disc = 0. This also results in an unbalanced sample. Panel F eliminates all firms that do not report quarterly information in each quarter for the sample period 2007-2011. Only 518 firms (33.3%) report quarterly UTB information consistently over the five-year period. The number of observations included in each sample is reported in table 19.

	Firms	Observations
Original Sample	1,555	31,100
Less: Foreign Firms	<u>(76)</u>	<u>(1,520)</u>
US Firms	1,479	29,580
Less: Missing 10-Q	<u>(7)</u>	<u>(595)</u>
US Firms with 10-Q	1,472	28,985
Less: Firms missing any 10-Q	<u>(67)</u>	<u>(885)</u>
US Firms with all 10-Q	1,405	28,100
US Firms with 10-Q	1,472	28,985
Less: Missing UTB Disclosure	<u>-</u>	<u>(8,495)</u>
US Firms Reporting quarterly UTB	1,472	20,490
Less: Firms with missing UTB disc.	<u>(954)</u>	<u>(10,130)</u>
US Firms Reporting UTB each quarter	518	10,360

Figure 3. Quarterly Sample Definition

Table 19

OLS Test for Decrease in UTB Levels - Quarterly

Variable	Panel A: Full Sample		Panel B: No Foreign		Panel C: No Missing		Panel D: No Missing T		Panel E: Report 10Q		Panel F: Report All	
	Coefficient	t-stat										
Intercept	-2.5673800*** (0.0376033)	-68.28	-2.6562340*** (0.0386553)	-68.72	-3.0463670*** (0.0313289)	-97.24	-3.0735970*** (0.0321750)	-95.53	-3.2144300*** (0.0345190)	-93.12	-3.4474170*** (0.0485618)	-70.99
SchUTPQ	-0.1374927*** (0.0137164)	-10.02	-0.1319764*** (0.0137153)	-9.62	-0.0950951*** (0.0135448)	-7.02	-0.0931609*** (0.0137874)	-6.76	-0.0745797*** (0.0159401)	-4.68	-0.1198490*** (0.0206543)	-5.80
ROAQ	-0.0969560** (0.0442370)	-2.19	-0.1118109** (0.0487322)	-2.29	-0.1609832** (0.0662501)	-2.43	-0.1631617** (0.0675182)	-2.42	-0.1495594** (0.0616377)	-2.43	-0.5682009*** (0.1591607)	-3.57
SizeQ	0.7222959*** (0.0054657)	132.15	0.7386143*** (0.0055154)	133.92	0.7875813*** (0.0047281)	166.57	0.7909492*** (0.0048274)	163.85	0.8193019*** (0.0053671)	152.65	0.8879392*** (0.0071473)	124.23
GrowthQ	-0.0001358*** (0.0000451)	-3.01	-0.0001314*** (0.0000436)	-3.01	-0.0009426* (0.0005170)	-1.82	-0.0009429* (0.0005177)	-1.82	-0.0001098*** (0.0000290)	-3.79	-0.0065167*** (0.0014849)	-4.39
LeverageQ	-0.5558315*** (0.0446698)	-12.44	-0.5279323*** (0.0440971)	-11.97	-0.5302584*** (0.0449445)	-11.80	-0.5323008*** (0.0457670)	-11.63	-0.6160426*** (0.0579616)	-10.63	-1.1883240*** (0.0533127)	-22.29
B_NOL	0.0848750*** (0.0138865)	6.11	0.0671419*** (0.0138776)	4.84	0.0970164*** (0.0134862)	7.19	0.1047980*** (0.0137207)	7.64	0.0928232*** (0.0154212)	6.02	0.0433189** (0.0203522)	2.13
B_Foreign	0.0032479*** (0.0010016)	3.24	0.0029990*** (0.0009641)	3.11	0.0023884*** (0.0008164)	2.93	0.0022555*** (0.0007950)	2.84	0.0021981*** (0.0008408)	2.61	0.0018069** (0.0007923)	2.28
B_R&D	0.0015272*** (0.0002400)	6.36	0.0015952*** (0.0002470)	6.46	0.0019958*** (0.0002907)	6.87	0.0020153*** (0.0002936)	6.86	0.0020356*** (0.0006706)	3.04	0.0076719 (0.0092695)	0.83
N	31,100		29,580		28,985		28,100		20,490		10,360	

Note. – White (1980) robust standard errors are in parentheses below the coefficients.

See Appendix B for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

Table 20

Panel Data with Fixed Effects Test for Decrease in UTB Levels - Quarterly

Variable	Panel A: Full Sample		Panel B: No Foreign		Panel C: No Missing		Panel D: No Missing T		Panel E: Report 10Q		Panel F: Report All	
	Coefficient	t-stat	Coefficient	t-stat								
Intercept	1.6789190*** (0.0824323)	20.37	1.6586930*** (0.0893270)	18.57	1.2894990*** (0.1345999)	9.58	1.2851610*** (0.1419041)	9.06	0.9942918*** (0.1631910)	6.09	1.1806810*** (0.2282561)	5.17
SchUTPQ	-0.0082020 (0.0142193)	-0.58	-0.0102332 (0.0140967)	-0.73	-0.0142619 (0.0141542)	-1.01	-0.0168664 (0.0144682)	-1.17	-0.0248553* (0.0149999)	-1.66	-0.0466960** (0.0208492)	-2.24
ROAQ	0.0286837 (0.0245683)	1.17	0.0283210 (0.0244107)	1.16	0.0186316 (0.0239374)	0.78	0.0172970 (0.0244426)	0.71	0.0086537 (0.0220089)	0.39	-0.0986543 (0.0894579)	-1.10
SizeQ	0.0701609*** (0.0121985)	5.75	0.0767014*** (0.0131957)	5.81	0.1321752*** (0.0195624)	6.76	0.1359467*** (0.0205230)	6.62	0.1808437*** (0.0238760)	7.57	0.1628005*** (0.0341948)	4.76
GrowthQ	-0.0000854*** (0.0000084)	-10.19	-0.0000857*** (0.0000086)	-10.02	-0.0002424*** (0.0000499)	-4.86	-0.0002439*** (0.0000503)	-4.85	-0.0001196*** (0.0000049)	-24.23	-0.0003290 (0.0003081)	-1.07
LeverageQ	0.0579466 (0.0556446)	1.04	0.0547018 (0.0562151)	0.97	0.0778229 (0.0556374)	1.40	0.0848246 (0.0553444)	1.53	0.0519823 (0.0649992)	0.80	-0.0234668 (0.1244833)	-0.19
B_NOL	-0.0051919 (0.0355137)	-0.15	-0.0027826 (0.0336296)	-0.08	-0.0120589 (0.0343151)	-0.35	-0.0160289 (0.0352486)	-0.45	-0.0116250 (0.0320945)	-0.36	-0.0269137 (0.0421523)	-0.64
B_Foreign	-0.0001337 (0.0007028)	-0.19	-0.0000327 (0.0006856)	-0.05	-0.0000150 (0.0006851)	-0.02	-0.0000311 (0.0006918)	-0.05	-0.0001284 (0.0006974)	-0.18	0.0001721 (0.0004990)	0.34
B_R&D	-0.0004469 (0.0003316)	-1.35	-0.0004446 (0.0003286)	-1.35	-0.0004247 (0.0003044)	-1.39	-0.0004243 (0.0003020)	-1.40	-0.0003373 (0.0006465)	-0.52	0.0018855 (0.0032335)	0.58
N	1555		1479		1472		1405		1472		518	

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients.

See Appendix B for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

I present the results of equation (1) to test H1a using quarterly data in table 19. The results presented in table 19 are qualitatively identical to the results presented in table 2. For each sample, the coefficient for SchUTPQ is negative and significant. Each control variable follows the same sign and significance as table 2.

I report the results of H1a using quarterly panel data with firm fixed effects in table 20. Similar to table 19, I report six different samples based on firm reporting characteristics. The results using firm fixed effects are much different than the results in which I do not control for them. The coefficient on SchUTPQ is negative and significant in only two of my samples. While these results may seem weak at first glance, I most likely expect to find results in these two samples. Because I assume UTBs remain unchanged if firms do not disclose UTBs in Form 10-Q, these results could be a function of this assumption. The two samples which include only firms which disclose UTB information in Form 10-Q provide evidence to support H1a. The only control variables that provide significant results are SizeQ and GrowthQ.

For brevity, I only report the results of equation (2) using the sample that eliminates foreign firms (Panel B from table 19) and the sample where Qtr. Disc. = 1 (Panel E from table 19). Table 21 reports my sample of 29,580 firm quarter observations from US corporations. The variables of interest to test H1b are β_6 and β_7 . As expected, the coefficient for each measure of tax aggressiveness is negative and significant for β_6 . For the largest firms which are required to report Schedule UTP earliest, there is a 12%-14% decrease in quarterly UTB amounts. In contrast to the annual results in table 3, the coefficient for β_7 is positive. However, the results are not statistically different from zero.

Table 21

OLS Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness – Quarterly, No Foreign Firms

Variable	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept	-2.3170840 *** (0.0376239)	-61.59	-2.3845780 *** (0.0377957)	-63.09	-2.2896240 *** (0.0382047)	-59.93
SchUTPQ	0.0115242 (0.0298087)	0.39	-0.0077313 (0.0301779)	-0.26	0.0161476 (0.0304401)	0.53
\$100mil	-0.7674034 *** (0.0382797)	-20.05	-0.7862987 *** (0.0383791)	-20.49	-0.7676455 *** (0.0383873)	-20.00
\$50mil	-0.4418484 *** (0.0315894)	-13.99	-0.4407651 *** (0.0317898)	-13.86	-0.4393134 *** (0.0317908)	-13.82
FinCons	0.1715989 *** (0.0252285)	6.80	0.2084199 *** (0.0250988)	8.30	0.1731728 *** (0.0251011)	6.90
TaxAgg	-0.0549958 ** (0.0223503)	-2.46	0.2534812 *** (0.0224748)	11.28	-0.1526752 *** (0.0225116)	-6.78
SchUTPQ*\$100mil	-0.1382222 *** (0.0341941)	-4.04	-0.1491784 *** (0.0346927)	-4.30	-0.1451796 *** (0.0342379)	-4.24
SchUTPQ*\$50mil	0.0199812 (0.0436607)	0.46	0.0257687 (0.0444940)	0.58	0.0119570 (0.0437477)	0.27
SchUTPQ*FinCons	-0.1060220 *** (0.0343956)	-3.08	-0.0974846 *** (0.0342220)	-2.85	-0.1056812 *** (0.0342270)	-3.09
SchUTPQ*TaxAgg	0.0087217 (0.0325130)	0.27	0.1109628 *** (0.0315057)	3.52	0.0135234 (0.0337198)	0.40
ROAQ	0.0186838 (0.0251506)	0.74	-0.0427800 (0.0348871)	-1.23	0.0152896 (0.0249935)	0.61
SizeQ	0.7877921 *** (0.0085419)	92.23	0.7783482 *** (0.0085305)	91.24	0.7871122 *** (0.0084901)	92.71
GrowthQ	-0.0001366 *** (0.0000459)	-2.97	-0.0001301 *** (0.0000437)	-2.98	-0.0001359 *** (0.0000462)	-2.94
LeverageQ	-0.5297549 *** (0.0449046)	-11.80	-0.4647917 *** (0.0427153)	-10.88	-0.5313705 *** (0.0446289)	-11.91
B_NOL	0.0565739 *** (0.0143616)	3.94	0.1448761 *** (0.0142045)	10.20	0.0512033 *** (0.0139737)	3.66
B_Foreign	0.0026104 *** (0.0010006)	2.61	0.0025423 ** (0.0010214)	2.49	0.0027034 *** (0.0010102)	2.68
B_R&D	0.0009674 *** (0.0001871)	5.17	0.0010033 *** (0.0001839)	5.46	0.0009237 *** (0.0001852)	4.99

Table 21 (continued)

Variable	Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	-2.4148840 *** (0.0401189)	-60.19	-2.2889160 *** (0.0402988)	-56.80
SchUTPQ	0.0145767 (0.0343337)	0.42	-0.0026645 (0.0344327)	-0.08
\$100mil	-0.7414404 *** (0.0392530)	-18.89	-0.7819927 *** (0.0385909)	-20.26
\$50mil	-0.4457605 *** (0.0318007)	-14.02	-0.4399453 *** (0.0315885)	-13.93
FinCons	0.1663937 *** (0.0253121)	6.57	0.1881304 *** (0.0255761)	7.36
TaxAgg	0.1484858 *** (0.0247420)	6.00	-0.0644311 *** (0.0222029)	-2.90
SchUTPQ*\$100mil	-0.1400886 *** (0.0367026)	-3.82	-0.1276816 *** (0.0364617)	-3.50
SchUTPQ*\$50mil	0.0156303 (0.0437727)	0.36	0.0221755 (0.0436946)	0.51
SchUTPQ*FinCons	-0.1044549 *** (0.0343252)	-3.04	-0.1152848 *** (0.0347792)	-3.31
SchUTPQ*TaxAgg	0.0009565 (0.0358008)	0.03	0.0358377 (0.0325655)	1.10
ROAQ	0.0376888 (0.0277781)	1.36	-0.0058161 (0.0260527)	-0.22
SizeQ	0.7922446 *** (0.0086379)	91.72	0.7837561 *** (0.0086707)	90.39
GrowthQ	-0.0001384 *** (0.0000451)	-3.07	-0.0001341 *** (0.0000458)	-2.93
LeverageQ	-0.5349727 *** (0.0453253)	-11.80	-0.5143476 *** (0.0446362)	-11.52
B_NOL	0.0617296 *** (0.0137029)	4.50	0.0705408 *** (0.0136620)	5.16
B_Foreign	0.0027454 ** (0.0010644)	2.58	0.0025733 *** (0.0009871)	2.61
B_R&D	0.0008254 *** (0.0001912)	4.32	0.0010273 *** (0.0001854)	5.54

Note. – White (1980) robust standard errors are in parentheses below the coefficients.
See Appendix B for variable definitions and calculations.

*** p < .01; ** p < .05

The coefficient of interest to test H2 is β_8 . As predicted, the coefficients for each panel are negative and significant. This provides evidence that supports my hypothesis that firms which are conservative in their financial reporting have a more significant decrease in reported UTBs. The results indicate approximately 10% decrease for conservative firms. Once again, these results are qualitatively similar to the results using annual data.

The coefficient of interest to test H3 is β_9 . Contrary to my prediction, tax aggressive firms do not decrease reported UTBs more than firms which are not tax aggressive. In fact, firms with the most aggressive PermBTDs significantly increase reported UTBs. Overall, this result indicates that firms who are aggressive in other measure are not trying to provide a signal to the IRS using reported UTBs to try to mask their aggressiveness.

I report the sample of all quarters where UTBs are reported in table 22. The results are similar to those reported in table 21. For H2, the results are consistent with my predictions, except for the PermBTD panel, which is not statistically different from zero. The most significant results are in the CashETR panel ($p=0.035$). For H3, both the PermBTD panel and the CashETR panel have positive and significant values for β_9 , which is contrary to my prediction.

Table 23 reports the results of equation (2) to test H1b, H2 and H3 using quarterly panel data with firm fixed effects for US firms. Notice the number of observations has decreased from 29,580 to 1,479, because using panel data with firm fixed effects treats each firm as a single observation rather than treating each quarter as an observation. The results do not support any of the three hypotheses related to size, financial conservatism, or tax aggressiveness.

Table 22

OLS Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness – Quarterly, Firms Reporting UTB in 10-Q

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		-2.7963940 *** (0.0352617)	-79.30	-2.8677280 *** (0.0351052)	-81.69	-2.7724420 *** (0.0358019)	-77.44
SchUTPQ		0.0646193 * (0.0353443)	1.83	0.0341786 (0.0364693)	0.94	0.0647238 * (0.0360171)	1.80
\$100mil		-1.0785500 *** (0.0343320)	-31.42	-1.0890090 *** (0.0343052)	-31.74	-1.0782050 *** (0.0343739)	-31.37
\$50mil		-0.4869088 *** (0.0323627)	-15.05	-0.4842295 *** (0.0326082)	-14.85	-0.4861709 *** (0.0325352)	-14.94
FinCons		0.1346424 *** (0.0253699)	5.31	0.1706204 *** (0.0252364)	6.76	0.1350031 *** (0.0251998)	5.36
TaxAgg		-0.0418943 * (0.0227222)	-1.84	0.2717821 *** (0.0229977)	11.82	-0.1161450 *** (0.0233512)	-4.97
SchUTPQ*\$100mil		-0.1423654 *** (0.0401617)	-3.54	-0.1538634 *** (0.0410681)	-3.75	-0.1451207 *** (0.0399357)	-3.63
SchUTPQ*\$50mil		0.0102759 (0.0516773)	0.20	0.0259226 (0.0535004)	0.48	0.0081863 (0.0516604)	0.16
SchUTPQ*FinCons		-0.0559520 * (0.0390752)	-1.43	-0.0370353 (0.0386900)	-0.96	-0.0553436 * (0.0388973)	-1.42
SchUTPQ*TaxAgg		0.0079407 (0.0367237)	0.22	0.1409576 *** (0.0349957)	4.03	0.0165684 (0.0389192)	0.43
ROAQ		-0.0178191 (0.0270232)	-0.66	-0.0720643 (0.0465573)	-1.55	-0.0202145 (0.0278369)	-0.73
SizeQ		0.8986423 *** (0.0075287)	119.36	0.8879451 *** (0.0075083)	118.26	0.8976618 *** (0.0074824)	119.97
GrowthQ		-0.0001138 *** (0.0000298)	-3.82	-0.0001100 *** (0.0000297)	-3.70	-0.0001127 *** (0.0000293)	-3.84
LeverageQ		-0.6033264 *** (0.0585879)	-10.30	-0.5330239 *** (0.0553510)	-9.63	-0.6058261 *** (0.0582271)	-10.40
B_NOL		0.0864173 *** (0.0157730)	5.48	0.1789581 *** (0.0154157)	11.61	0.0820287 *** (0.0152965)	5.36
B_Foreign		0.0016790 * (0.0008999)	1.87	0.0016612 * (0.0009354)	1.78	0.0017405 * (0.0009082)	1.92
B_R&D		0.0009336 ** (0.0004439)	2.10	0.0010343 ** (0.0004445)	2.33	0.0009007 ** (0.0004364)	2.06

Table 22 (continued)

Variable	Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	-2.9126140 *** (0.0371576)	-78.39	-2.7864800 *** (0.0380122)	-73.30
SchUTPQ	0.0554283 (0.0398054)	1.39	0.0124813 (0.0398512)	0.31
\$100mil	-1.0500190 *** (0.0354260)	-29.64	-1.0900850 *** (0.0345544)	-31.55
\$50mil	-0.4926520 *** (0.0327221)	-15.06	-0.4853787 *** (0.0324637)	-14.95
FinCons	0.1229226 *** (0.0252683)	4.86	0.1442113 *** (0.0257890)	5.59
TaxAgg	0.1808334 *** (0.0251551)	7.19	-0.0377867 (0.0229388)	-1.65
SchUTPQ*\$100mil	-0.1362340 *** (0.0425016)	-3.21	-0.1073868 ** (0.0421081)	-2.55
SchUTPQ*\$50mil	0.0059535 (0.0518489)	0.11	0.0120655 (0.0515131)	0.23
SchUTPQ*FinCons	-0.0553804 * (0.0388888)	-1.42	-0.0715291 ** (0.0394561)	-1.81
SchUTPQ*TaxAgg	0.0356731 (0.0414921)	0.86	0.1001453 *** (0.0373245)	2.68
ROAQ	0.0058869 (0.0244485)	0.24	-0.0267280 (0.0289458)	-0.92
SizeQ	0.9059711 *** (0.0075683)	119.71	0.8972864 *** (0.0077051)	116.45
GrowthQ	-0.0001173 *** (0.0000299)	-3.92	-0.0001126 *** (0.0000295)	-3.81
LeverageQ	-0.6138646 *** (0.0593675)	-10.34	-0.5987729 *** (0.0587282)	-10.20
B_NOL	0.0845173 *** (0.0150772)	5.61	0.0963765 *** (0.0150156)	6.42
B_Foreign	0.0018067 * (0.0009935)	1.82	0.0017162 * (0.0009076)	1.89
B_R&D	0.0006863 (0.0004482)	1.53	0.0009706 ** (0.0004409)	2.20

Note. – White (1980) robust standard errors are in parentheses below the coefficients.
See Appendix B for variable definitions and calculations.

*** p < .01; ** p < .05; *p < .10

Table 23

Panel Data with Fixed Effects Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness – Quarterly, No Foreign Firms

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		1.6548720 ***	17.80	1.6591360 ***	17.97	1.6511680 ***	17.77
		(0.0929578)		(0.0923083)		(0.0928982)	
SchUTPQ		0.0171832	0.88	0.0016415	0.08	0.0200419	0.97
		(0.0194358)		(0.0199140)		(0.0206387)	
\$100mil		0.0001073	0.00	-0.0021088	-0.04	-0.0012405	-0.02
		(0.0546923)		(0.0552439)		(0.0548754)	
\$50mil		-0.0399183	-0.99	-0.0423066	-1.05	-0.0412295	-1.03
		(0.0402941)		(0.0403893)		(0.0402227)	
FinCons		0.0503021 ***	2.65	0.0495133 ***	2.61	0.0504875 ***	2.67
		(0.0189663)		(0.0189426)		(0.0189283)	
TaxAgg		0.0019540	0.09	0.0067798	0.31	0.0212062	0.97
		(0.0218989)		(0.0217450)		(0.0218372)	
SchUTPQ*\$100mil		-0.0203329	-0.78	-0.0319590	-1.19	-0.0221210	-0.85
		(0.0260051)		(0.0268186)		(0.0261096)	
SchUTPQ*\$50mil		0.0039953	0.11	0.0054808	0.15	0.0046152	0.12
		(0.0369392)		(0.0372316)		(0.0369571)	
SchUTPQ*FinCons		-0.0156950	-0.51	-0.0052258	-0.17	-0.0148161	-0.48
		(0.0309540)		(0.0310712)		(0.0308379)	
SchUTPQ*TaxAgg		-0.0168887	-0.56	0.0747193 **	2.56	-0.0267051	-0.81
		(0.0302239)		(0.0291885)		(0.0329854)	
ROAQ		0.0349801	1.39	0.0334975	1.33	0.0343946	1.37
		(0.0251019)		(0.0250939)		(0.0250628)	
SizeQ		0.0752882 ***	5.57	0.0739195 ***	5.52	0.0752287 ***	5.57
		(0.0135079)		(0.0133840)		(0.0135010)	
GrowthQ		-0.0000859 ***	-9.63	-0.0000861 ***	-9.71	-0.0000859 ***	-9.65
		(0.0000089)		(0.0000089)		(0.0000089)	
LeverageQ		0.0580566	1.03	0.0660379	1.20	0.0602339	1.07
		(0.0565717)		(0.0550610)		(0.0564762)	
B_NOL		-0.0030454	-0.09	0.0052402	0.16	-0.0019619	-0.06
		(0.0331803)		(0.0333896)		(0.0334916)	
B_Foreign		-0.0000589	-0.09	-0.0000227	-0.03	-0.0000403	-0.06
		(0.0006813)		(0.0006865)		(0.0006743)	
B_R&D		-0.0004274	-1.26	-0.0004621	-1.35	-0.0004324	-1.27
		(0.0003391)		(0.0003431)		(0.0003416)	

Table 23 (continued)

Variable	Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	1.6694550 *** (0.0931354)	17.93	1.6631180 *** (0.0934335)	17.80
SchUTPQ	-0.0110351 (0.0256409)	-0.43	-0.0165193 (0.0253112)	-0.65
\$100mil	-0.0077595 (0.0547702)	-0.14	-0.0053399 (0.0550401)	-0.10
\$50mil	-0.0407403 (0.0403330)	-1.01	-0.0391836 (0.0404977)	-0.97
FinCons	0.0512296 *** (0.0189677)	2.70	0.0526357 *** (0.0191079)	2.75
TaxAgg	-0.0308909 (0.0201986)	-1.53	-0.0198235 (0.0172127)	-1.15
SchUTPQ*\$100mil	-0.0049617 (0.0297405)	-0.17	-0.0019526 (0.0283573)	-0.07
SchUTPQ*\$50mil	0.0034859 (0.0366025)	0.10	0.0057735 (0.0368266)	0.16
SchUTPQ*FinCons	-0.0165664 (0.0308783)	-0.54	-0.0211570 (0.0312106)	-0.68
SchUTPQ*TaxAgg	0.0505073 (0.0350291)	1.44	0.0518919 * (0.0294201)	1.76
ROAQ	0.0326043 (0.0247018)	1.32	0.0334058 (0.0247383)	1.35
SizeQ	0.0749531 *** (0.0135168)	5.55	0.0756010 *** (0.0135672)	5.57
GrowthQ	-0.0000855 *** (0.0000088)	-9.72	-0.0000857 *** (0.0000087)	-9.83
LeverageQ	0.0606333 (0.0557166)	1.09	0.0554983 (0.0570196)	0.97
B_NOL	-0.0013194 (0.0336477)	-0.04	-0.0024049 (0.0336446)	-0.07
B_Foreign	-0.0000652 (0.0006821)	-0.10	-0.0000286 (0.0006749)	-0.04
B_R&D	-0.0004163 (0.0003493)	-1.19	-0.0004112 (0.0003456)	-1.19

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix B for variable definitions and calculations.

*** $p < .01$; ** $p < .05$; * $p < .10$

Table 24

Panel Data with Fixed Effects Test for Incremental Decrease in UTB Levels Based on Implementation Date, Financial Conservatism, and Tax Aggressiveness – Quarterly, Firms Reporting UTB in 10-Q

Variable	Sign	Panel A: TotBTD		Panel B: PermBTD		Panel C: DPermBTD	
		Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Intercept		1.0378270 *** (0.1609108)	6.45	1.0469730 *** (0.1580972)	6.62	1.0334170 *** (0.1607653)	6.43
SchUTPQ		0.0197308 (0.0195438)	1.01	0.0033270 (0.0204838)	0.16	0.0254257 (0.0206097)	1.23
\$100mil		-0.0968956 ** (0.0543057)	-1.78	-0.1041292 * (0.0539269)	-1.93	-0.0971259 ** (0.0541443)	-1.79
\$50mil		-0.0612364 (0.0377381)	-1.62	-0.0642765 * (0.0374919)	-1.71	-0.0603103 (0.0375673)	-1.61
FinCons		0.0525257 ** (0.0213932)	2.46	0.0551931 *** (0.0214430)	2.57	0.0536821 ** (0.0212794)	2.52
TaxAgg		-0.0227030 (0.0214428)	-1.06	0.0110819 (0.0227241)	0.49	-0.0032480 (0.0238107)	-0.14
SchUTPQ*\$100mil		-0.0458471 ** (0.0268793)	-1.71	-0.0516771 ** (0.0276805)	-1.87	-0.0481071 ** (0.0268402)	-1.79
SchUTPQ*\$50mil		0.0061352 (0.0422375)	0.15	0.0110416 (0.0422674)	0.26	0.0063952 (0.0420348)	0.15
SchUTPQ*FinCons		-0.0001737 (0.0336192)	-0.01	0.0079120 (0.0337608)	0.23	0.0003659 (0.0335376)	0.01
SchUTPQ*TaxAgg		-0.0136852 (0.0319358)	-0.43	0.0631308 ** (0.0304270)	2.07	-0.0341892 (0.0337514)	-1.01
ROAQ		0.0188650 (0.0211201)	0.89	0.0162541 (0.0214380)	0.76	0.0177371 (0.0212104)	0.84
SizeQ		0.1864964 *** (0.0254337)	7.33	0.1836447 *** (0.0250216)	7.34	0.1860209 *** (0.0253622)	7.33
GrowthQ		-0.0001196 *** (0.0000050)	-23.97	-0.0001199 *** (0.0000049)	-24.61	-0.0001195 *** (0.0000049)	-24.20
LeverageQ		0.0509319 (0.0659013)	0.77	0.0614120 (0.0646861)	0.95	0.0562892 (0.0654679)	0.86
B_NOL		-0.0143647 (0.0318097)	-0.45	-0.0048155 (0.0319351)	-0.15	-0.0123418 (0.0318987)	-0.39
B_Foreign		-0.0001398 (0.0006957)	-0.20	-0.0001039 (0.0006974)	-0.15	-0.0000960 (0.0006924)	-0.14
B_R&D		-0.0003756 (0.0006427)	-0.58	-0.0003986 (0.0006291)	-0.63	-0.0003708 (0.0006335)	-0.59

Table 24 (continued)

Variable	Panel D: BookETR		Panel E: CashETR	
	Coefficient	t-stat	Coefficient	t-stat
Intercept	1.0398380 *** (0.1615192)	6.44	1.0316490 *** (0.1617442)	6.38
SchUTPQ	-0.0129555 (0.0246282)	-0.53	-0.0104883 (0.0250498)	-0.42
\$100mil	-0.1081376 ** (0.0545568)	-1.98	-0.1032773 * (0.0544563)	-1.90
\$50mil	-0.0624305 * (0.0376523)	-1.66	-0.0593620 (0.0379629)	-1.56
FinCons	0.0559379 *** (0.0214463)	2.61	0.0572029 *** (0.0214525)	2.67
TaxAgg	-0.0298191 (0.0215852)	-1.38	-0.0214122 (0.0194981)	-1.10
SchUTPQ*\$100mil	-0.0263251 (0.0292305)	-0.90	-0.0293802 (0.0286521)	-1.03
SchUTPQ*\$50mil	0.0074883 (0.0415746)	0.18	0.0082474 (0.0419477)	0.20
SchUTPQ*FinCons	-0.0026237 (0.0335184)	-0.08	-0.0062613 (0.0336711)	-0.19
SchUTPQ*TaxAgg	0.0619981 * (0.0351031)	1.77	0.0502524 (0.0311678)	1.61
ROAQ	0.0151932 (0.0211483)	0.72	0.0156570 (0.0211138)	0.74
SizeQ	0.1870988 *** (0.0255220)	7.33	0.1878848 *** (0.0255263)	7.36
GrowthQ	-0.0001193 *** (0.0000049)	-24.46	-0.0001197 *** (0.0000050)	-23.81
LeverageQ	0.0566891 (0.0651940)	0.87	0.0503866 (0.0657327)	0.77
B_NOL	-0.0104460 (0.0319378)	-0.33	-0.0121793 (0.0320193)	-0.38
B_Foreign	-0.0001290 (0.0006994)	-0.18	-0.0001024 (0.0006913)	-0.15
B_R&D	-0.0003583 (0.0006314)	-0.57	-0.0003555 (0.0006291)	-0.57

Note. – Robust standard errors clustered by firm are in parentheses below the coefficients. See Appendix B for variable definitions and calculations.

*** $p < .01$; ** $p < .05$; * $p < .10$

Table 24 reports the results of H1b, H2 and H3 using quarterly panel data with firm fixed effects for each quarter that a firm reported quarterly UTB information. Notice that the number of observations is the same as the sample of US firms. This is because my quarterly sample includes information reported on the 10-K as the 4th Quarter, so each firm has a minimum of five observations from the annual data. The average number of observations per firm is fourteen and the maximum is twenty.

The results in table 24 support H1b for Panels A-C that define tax aggressiveness in terms of BTDs. The evidence suggests that the largest firms reduce their reported UTB levels more quickly than other firms. Once again, the results do not support H2 or H3.

6.2 Supplemental Tests

6.2.1 Structural Break Analysis

One question concerning the research surrounding Schedule UTP which remains unanswered is when firms actually changed reporting habits. Some question whether firms anticipate an announcement from the IRS concerning UTBs and therefore are motivated to reduce reporting prior to 2010. Others speculate firms do not immediately change behavior at the initial announcement date, but wait until Schedule UTP is more certain. Having firms decrease their level of UTBs prior to 2010 is not a significant problem because it biases the data against me finding my hypothesized results. However, it is a question researchers should attempt to answer. Using annual data does not help identify exactly when firms began reducing their reported UTBs, so quarterly UTB data provides a unique opportunity to answer this question.

I estimate equation (11) using quarterly data, but vary the date for which I consider the break between Pre- and Post-Schedule UTP to occur. I examine five different dates in my quarterly structural break analysis to determine when a structural break occurs, if at all. I find

the Quandt statistic (Hansen 2001; Quandt 1960) by calculating the Chow statistic (Chow 1960) for each break date and choosing the largest Chow statistic. I use the following dates for this analysis:

- SchUTPQ1 = January 26, 2010 – Official Announcement of Schedule UTP
- SchUTPQ2 = April 19, 2010 – Release of Draft Instructions for Schedule UTP
- SchUTPQ3 = September 24, 2010 – Release of Final Instructions for Schedule UTP
- SchUTPQ4 = September 30, 2009 – Q3 for calendar year firms
- SchUTPQ5 = December 31, 2009 – Q4 for calendar year firms

I report the Quandt statistics for the five dates in table 25. Each of the different measures of tax aggressiveness is reported separately, so I compare the F-statistic for each row to determine the largest value where the structural break occurs. For each measure of tax aggressiveness, the date with the largest F-statistic is September 30, 2009. This provides evidence which suggests firms were anticipating Schedule UTP prior to the official IRS announcement. Several academics have suggested that this was true, but these results provide the first documented evidence to support their conjecture.

Table 25
Quandt Statistic - Quarterly

	SchUTPQ1 1/31/2010	SchUTPQ2 4/19/2010	SchUTPQ3 9/24/2010	SchUTPQ4 9/30/2009	SchUTPQ5 12/31/2009
BTD	1,970.92	1,907.16	1,859.87	1,998.22	1,966.64
PermBTD	2,001.94	1,932.68	1,883.37	2,037.03	1,997.35
DPermBTD	1,991.49	1,926.34	1,877.41	2,017.58	1,987.00
GAAP ETR	1,953.52	1,887.19	1,840.03	1,987.39	1,949.23
Cash ETR	1,982.86	1,918.50	1,870.63	2,012.03	1,978.91

Note. – Values are the F-statistic for the following equation: $UTBQ = \alpha + \beta_1 \text{SchUTPQ} + \beta_2 \$100\text{mil} + \beta_3 \$50\text{mil} + \beta_4 \text{FinCons} + \beta_5 \text{TaxAgg} + \beta_6 \text{ROAQ} + \beta_7 \text{SizeQ} + \beta_8 \text{B_Foreign} + \beta_9 \text{LeverageQ} + \beta_{10} \text{GrowthQ} + \beta_{11} \text{B_NOL} + \beta_{12} \text{B_R\&D} + \beta_{13} \text{SchUTPQ} * \$100\text{mil} + \beta_{14} \text{SchUTPQ} * \$50\text{mil} + \beta_{15} \text{SchUTPQ} * \text{FinCons} + \beta_{16} \text{SchUTPQ} * \text{TaxAgg} + \beta_{17} \text{SchUTPQ} * \text{ROAQ} + \beta_{18} \text{SchUTPQ} * \text{SizeQ} + \beta_{19} \text{SchUTPQ} * \text{B_Foreign} + \beta_{20} \text{SchUTPQ} * \text{LeverageQ} + \beta_{21} \text{SchUTPQ} * \text{GrowthQ} + \beta_{22} \text{SchUTPQ} * \text{B_NOL} + \beta_{23} \text{SchUTPQ} * \text{B_R\&D} + \varepsilon$

6.2.2 Logistic Regression

Due to the lack of consistent reporting across the sample period, further analysis about changes in quarterly reporting is warranted. Table 26 presents univariate statistics about the number of firm-quarter observations who report quarterly UTB information for each year in the sample. I eliminate 4th quarter observations because they are reported in Form 10-K not Form 10-Q, and to be included in my sample firms are required to report consistent information each year in Form 10-K. Therefore, using only 10-Q information more accurately measures a change in quarterly reporting. For each year, I have 1,479 unique firms for a possible total of 4,437 quarterly observations. Column D identifies the actual number of observations where quarterly UTB data is disclosed.

Table 26

Quarterly UTB Reporting

Year	N	10-Q Total	10-Q Reporting	% Reporting
2007	1,479	4,437	4,126	92.99%
2008	1,479	4,437	2,506	56.48%
2009	1,479	4,437	2,246	50.62%
2010	1,479	4,437	2,161	48.70%
2011	1,479	<u>4,437</u>	<u>2,059</u>	<u>46.41%</u>
Total		22,185	13,098	59.04%
Pre-Schedule UTP		13,311	8,878	66.70%
Pre-Schedule UTP*		8,874	4,752	53.55%
Post-Schedule UTP		8,874	4,220	47.55%

*Eliminating 2007 observations

An overwhelming percentage of firms, 93%, report in 2007, the initial year FIN 48 is required. However, there is a significant decrease from 2007 to 2008, with further decreases each year through 2011. One reason why 2007 is so high is many firms report the UTB information in the “Accounting Changes” footnote. Many firms which do not report a separate quarterly Income Tax footnote do not report any information related to FIN 48 or UTBs after 2007. Overall, only 59% of the total potential firm-quarter observations disclose UTB data.

I separate the sample into Pre- and Post-Schedule UTP below the reporting percentages by year. Because of the sharp contrast in reporting for 2007, I report both a Pre-Schedule UTP period that includes 2007 and one that excludes 2007 so that the inferences are not misleading. When I include 2007, the percentage of quarterly disclosures decreases from 66.70% to 47.55% in the Pre/Post periods. Even when I exclude 2007, the percentage decreases from 53.55% to 47.55%.

Using fifteen quarters of data between 2007 and 2011, I perform a logistic regression where I investigate whether quarterly reporting is different in the period before and after Schedule UTP is announced. For consistency, I estimate equation (1) and replace the amount of UTB reported in Form 10-Q with an indicator variable. More specifically, I estimate the following binary logit model:

$$\ln \frac{P(\text{Report})}{1-P(\text{Report})} = \beta X + \varepsilon \quad (12)$$

where $P = 1 / 1 + e^{-(\beta X + \varepsilon)}$ = the probability that the firm reports UTB information in Form 10-Q.

$$\beta X = \beta_0 + \beta_1 \text{SchUTPQ} + \beta_2 \text{ROAQ} + \beta_3 \text{SizeQ} + \beta_4 \text{GrowthQ} + \beta_5 \text{LeverageQ} + \beta_6 \text{B_NOL} + \beta_7 \text{B_Foreign} + \beta_8 \text{B_R\&D} + \varepsilon$$

where Report = 1 if the firm reports UTB information in Form 10-Q, 0 otherwise. All other variables have been previously defined.

I present the results of my logistic regression in table 27. As expected, firms are less likely to report information in Schedule 10-Q after the announcement of Schedule UTP (z-statistic = -28.71; odds ratio = 0.4432). While my predictions for control variables are based on the amount of reported UTBs and not the existence of reporting, the results generally follow the same pattern. Since there is wide disparity in quarterly reporting among firms, I look forward to future research that explores characteristics of firms which consistently report quarterly UTB information.

Table 27

Logistic Regression – Quarterly, Full Sample

Variable	Sign	Odds Ratio		z-stat
Intercept		1.6534110 (0.0889337)	***	9.35
SchUTPQ	-	0.4431804 (0.0125601)	***	-28.71
ROAQ	+	1.0992370 (0.1402296)		0.74
SizeQ	+	1.0379770 (0.0080231)	***	4.82
GrowthQ	+	1.0008550 (0.0003855)	**	2.22
LeverageQ	-	0.6790044 (0.0398731)	***	-6.59
B_NOL	-	1.0945400 (0.0307206)	***	3.22
B_Foreign	+	1.0028330 (0.0030837)		0.92
B_R&D	+	0.9863451 (0.0028079)	***	-4.83

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix B for variable definitions and calculations.

*** p < .01; ** p < .05

To account for the significant decrease in quarterly reporting after 2007, I also test equation (12) using 2009 and 2010 only. I present these results in table 28. Consistent with table 27, the odds ratio for SchUTPQ is negative and significant. This provides additional evidence that the results in table 27 are not solely due to the increased quarterly reporting due to the change in accounting principle which firms reported in 2007.

Table 28

Logistic Regression – Quarterly, 2009-2010

Variable	Sign	Odds Ratio		z-stat
Intercept		1.0275490 (0.0836765)		0.33
SchUTPQ	-	0.9222402 (0.0384542)	**	-1.94
ROAQ	+	0.9328966 (0.1923052)		-0.34
SizeQ	+	0.9925545 (0.0111654)		-0.66
GrowthQ	+	1.0008050 (0.0003781)	**	2.13
LeverageQ	-	0.6868669 (0.0600967)	***	-4.29
B_NOL	-	1.0932850 (0.0457600)	**	2.13
B_Foreign	+	1.0259530 (0.0111266)	***	2.36
B_R&D	+	0.9640033 (0.0095586)	***	-3.70

Note. – White (1980) robust standard errors are in parentheses below the coefficients. See Appendix B for variable definitions and calculations.

*** p < .01; ** p < .05

CHAPTER 7

SUMMARY AND CONCLUSIONS

When FIN 48 was enacted by the FASB, many tax practitioners and researchers worried the required disclosures would provide a “roadmap” to the IRS concerning firms’ tax uncertainty (Frischmann et al. 2008). However, little academic research to date has provided evidence to support these fears (Hanlon and Heitzman 2010; Nichols et al. 2007; Nichols 2008). Schedule UTP is based on the financial statement disclosure requirements of FIN 48, but provides additional information directly to the IRS. In this regard, Schedule UTP provides a more detailed “roadmap” in which firms are required to disclose. This study examines whether firms alter their financial reporting of UTBs and their level of overall tax aggressiveness subsequent to the announcement of Schedule UTP.

Overall, the results indicate firms reduce not only the levels of reported UTB, but they also significantly reduced the year to year changes in reported UTBs. Consistent with my predictions, firms which are required to file Schedule UTP earlier have an incrementally more significant reduction in reported UTBs. Supplemental analysis indicates this reduction is achieved through negative and significant changes to current-year additions, prior year adjustments, and statute of limitation lapses. Since FIN 48 states changes to prior year estimates should be based only on the evaluation of new evidence and not merely a change in estimation (FASB 2006), the negative and significant coefficient for Schedule UTP associated with prior year adjustments provides additional evidence that firms are not fully complying with the

requirements of FIN 48.

The association of Schedule UTP and financially conservative firms is mixed. Generally, the overall level of UTBs does not incrementally decrease once firm fixed effects are included in the model. However, year to year changes to UTBs are negative and significant for financially conservative firms. One explanation for this result is that the changes model is more sensitive to changes than the levels model, so while the overall level of UTBs does not significantly decrease for conservative firms the yearly changes do significantly decrease.

Contrary to expectations, the decrease in reported UTBs is not incrementally more significant for firms in the upper quartile of tax aggressiveness. This indicates all firms, not just tax aggressive firms, are interested in reducing UTBs once the IRS requires reporting on Schedule UTP. One additional explanation for the lack of results for tax aggressive firms is that firms which are identified as the most aggressive are also the largest firms which engage in the most sophisticated tax planning strategies. For example, Kocieniewski (2011) reports that while General Electric reports \$5.1 billion profit from US operations, they not only report no income tax expense, they report a tax benefit of \$3.2 billion. I look forward to future research which tests whether “marginally tax aggressive” firms are more motivated to reduce their UTBs under the Schedule UTP regime.

Also contrary to expectations, the overall level of tax aggressiveness for ETR measures does not accompany the decrease in reported UTBs. These results provide evidence to suggest the decrease in UTBs is a change in financial reporting only. Tax aggressiveness based on BTM measures does decrease, but since BTM measures are also based on financial reporting this reduction could also be merely a change in financial reporting and not represent a change in tax aggressive behavior.

One result of interest for academic researchers is the sign for the control variables ROA, Growth, and NOL. Prior research examines these control variables in the context of tax aggressive behavior, but not specifically for UTBs. For example, NOLs are negatively associated with tax aggressive behavior because firms with large NOLs have a limited amount of time to utilize their NOL carryforward on their tax return. Therefore, firms with NOLs don't receive any benefit from aggressive tax reporting. However, NOLs increase uncertainty in tax reporting because of the possibility that the NOL might expire. This provides a possible explanation for the positive coefficient for NOLs in my results.

Similarly, growth firms and profitable firms typically demonstrate a positive association with tax aggressiveness but have a negative association with UTBs. Growth firms are typically newer and less-established firms, so they may not have the resources to devote to complex uncertain tax strategies at this point in their life cycle. Also, the rules for when firms deduct start-up costs differ between financial reporting and tax reporting, so growth firms could have large BTDs due to the differences in reporting regulations. The negative association between UTBs and ROA is surprising. Profitable firms have more incentives and opportunities to engage in potentially risky tax planning, so I would expect them to report higher UTBs. One possible explanation is that firms are using UTBs opportunistically to manage earnings, thereby causing a negative association (Cazier et al. 2015). Researchers should recognize the differences between UTBs and other measures of tax aggressiveness and adjust their predictions accordingly.

My study is unique because it provides evidence related to compliance with FIN 48 which was previously unobservable. Although several studies examine the initial quality of FIN 48 disclosures (Gross 2011; Nichols 2008; Robinson and Schmidt 2013), determining whether firms comply with the requirement to report UTBs assuming complete knowledge by the IRS is

difficult to test empirically. Since firms reduce the amount of UTBs they report subsequent to the announcement of Schedule UTP, this provides evidence that compliance with FIN 48 was not complete regarding that assumption.

My study is also unique because it is the first to examine quarterly UTB reporting. The results of the tests for each hypothesis are qualitatively similar when I use quarterly data compared to annual data. However, the information from the quarterly data provides additional insight. One notable insight is the structural break analysis because I can formally test the conjecture of some academics that firms altered their UTB reporting before the announcement of Schedule UTP in anticipation of an increase disclosure directly to the IRS. The results indicate a structural break occurs during the 3rd quarter of 2009, which provides evidence that firms anticipate the announcement of Schedule UTP. The quarterly data also raises additional questions concerning UTB reporting. I look forward to future research that examines which firms choose to report quarterly UTB information in their footnotes and whether the reporting is associated with earnings management.

As is true with all empirical studies, one limitation of this study is I cannot rule out other macroeconomic factors which occurred during 2010 as a possible explanation for my results. To alleviate these concerns, I examine all major tax laws passed between 2007 and 2011. None of the laws reduce tax uncertainty, and many of them increase tax uncertainty which biases against me finding results. The U.S. economy was still recovering from the economic downturn during my sample period, which could impact UTB reporting. However, the struggling economy exists throughout my sample period, so the likelihood of an impact only in the years after the announcement of Schedule UTP is unlikely. Also, I control for NOLs which should capture some of the effects of the economic conditions.

Since Schedule UTP provides a direct link between financial reporting and tax reporting, I expect future research to examine the relationship between the two reporting regimes in light of the new requirements. Also, since Schedule UTP is so closely related to FIN 48 and much of the FIN 48 research has been inconclusive, future research could examine relationships which many thought would be impacted by FIN 48 but were not. For example, Frischmann et al. (2008) examine the market reaction to FIN 48 and find little evidence of a significant reaction to key dates during the implementation of FIN 48. Similarly, Edwards et al. (2010) and Abernathy et al. (2013) examine the market reaction to Schedule UTP. Other areas which have been examined in regards to FIN 48 include tax reporting (Dunbar et al. 2010) and earnings management (Cazier et al. 2015; Gupta et al. 2015). Future research could examine both of these areas surrounding Schedule UTP to determine its impact, if any.

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APPENDIX A – ANNUAL VARIABLE DEFINITIONS

Dependent Variables

UTB –Dollar amount of reported Uncertain Tax Benefits from the financial statement footnotes from Form 10-K (Log (1+Compustat item TXTUBEND)).

Δ UTB – $UTB_t - UTB_{t-1}$ UTB defined above (Compustat item TXTUBEND – TXTUBBEG).

CY Δ - Changes to current year reported UTBs (Log (1+(Compustat item TXTUBPOSINC – TXTUBPOSDEC))).

PY Δ - Changes to prior year estimated UTBs made in the current year (Log(1+(Compustat item (TXTUBPOSPINC - TXTUBPOSPDEC))). If the PY change (TXTUBPOSPINC – TXTUBPOSPDEC) < 0, I take the Log(absolute value (TXTUBPOSPINC – TXTUBPOSPDEC-1)) and multiply by -1.

Settle – Decreases in reported UTBs due to settlements with tax authorities (Log(1+Compustat item TXTUBSETTLE)).

Lapse – Decreases in reported UTBs due to lapse of the statute of limitations (Log(1+Compustat item TXTUBSOFLIMIT)).

Independent Variables of Interest

SchUTP – Indicator variable representing the Schedule UTP reporting regime. Years ending after January 26, 2010 have a value of 1, 0 otherwise.

Δ SchUTP – Indicator variable representing the year Schedule UTP is announced. Years ending between January 26, 2010 and January 25, 2011 have a value of 1, 0 otherwise.

\$100mil – Indicator variable representing the earliest implementation date of Schedule UTP where firms with assets > \$100 million have a value of 1, 0 otherwise. Firms with assets > \$100 million are required to file Schedule UTP in 2011 for tax year 2010.

\$50mil – Indicator variable representing the next implementation date of Schedule UTP where firms with assets between \$50 million and \$100 million have a value of 1, 0 otherwise. Firms with assets > \$50 million are required to file Schedule UTP in 2013 for tax year 2012.

FinCons – Indicator variable for financial statement conservatism based on nonoperating accruals defined by Givoly and Hayn (2000), where Total Accruals (before depreciation) = (Net Income + Depreciation) - Cash Flow from Operations. Operating Accruals = Δ Accounts Receivable + Δ Inventories + Δ Prepaid Expenses - Δ Accounts Payable - Δ Taxes Payable - Δ UTB. Nonoperating Accruals: Total Accruals (before depreciation) minus Operating Accruals. Firms in the lowest quartile of Nonoperating Accruals have a value of 1, 0 otherwise.

Tax Aggressive Variables

(Note: Each continuous tax aggressiveness variable is converted to an indicator variable where firms in the most aggressive quartile have a value of 1, 0 otherwise.)

TotBTD – Book-Tax Differences = Pre-Tax Income (Compustat item PI) – Minority Interest Income (Compustat item MII) – Change in Tax Loss Carryforward (Compustat item TLCF) – [Federal Tax Expense (Compustat item TXFED) + Foreign Tax Expense (Compustat item TXFO)]/statutory tax rate (35%), scaled by average total assets

Perm BTD – Permanent Book-Tax Differences = BTD defined above – Deferred Income Taxes (Compustat item TXDI) /statutory tax rate (35%), scaled by average total assets

DPerm BTD – Discretionary Permanent Book-Tax Differences = Residuals (ε) from the following equation: PermBTD = α_0 + α_1 Intangible + α_2 UNCON + α_3 MI + α_4 CSTE + α_5 Δ NOL + α_6 LagPermBTD + ε (Frank et al. 2009; Donohoe and McGill 2011).

BookETR – Total Income Tax Expense (Compustat item TXT) / [Pre-Tax Income (Compustat item PI) – Special Items (Compustat item SPI)].

CashETR - Cash Tax Paid (Compustat item TXPD) / [Pre-Tax Income (Compustat item PI) – Special Items (Compustat item SPI)].

Control Variables

ROA – Return on Assets = Pretax Income / Total Assets [Compustat item PI/ AT]

Size – log (Total Assets) [Compustat item AT]

Growth - Book-to-Market Ratio = the natural log of Book Equity / Market Value of Equity [Compustat item CEQ / MKVALT]

Leverage – Ratio of debt to assets where debt is the sum of short-term and long-term debt [Compustat item (DLC + DLTT) / AT]

NOL – Indicator variable where 1 represents firms which have a NOL carryforward [Compustat item TLCF>0], 0 otherwise.

Δ NOL – Change in NOL carryforward [Compustat item TLCF_t – TLCF_{t-1}]

Foreign – Foreign pretax income / Total pretax income [Compustat item PIFO / PI]

R&D – Research and Development Expense / Total Sales [Compustat item XRD / SALE]

Intangible –Intangibles / Total Assets [Compustat item INTAN / AT]

UNCON – Income (loss) reported under the equity method / Total pretax income [Compustat item ESUB / AT]

MI – Minority interest income [Compustat itemMII / AT]

CSTE – Current state income tax expense [Compustat item TXS / AT]

TAcc – Total Accruals = Income before extraordinary items plus total tax expense minus (cash flow from operations + income taxes paid) minus extraordinary items and discontinued operations [Compustat items IBC + TXT – [(OANCF + TXPD) – XIDOC]

DAcc – Discretionary Total Accruals = Residuals (ε) from the following equation: $TAcc = \alpha_0 + \alpha_1 (\Delta Rev - \Delta AR) + \alpha_2 PPE + \varepsilon$ (Frank et al. 2009; Donohoe and McGill 2011) where TAcc is defined above; ΔRev is change sales [Compustat item SALE]; ΔAR is change in accounts receivable [Compustat item RECCH]; PPE is gross property, plant and equipment [Compustat item PPEGT].

PPE – Property, Plant & Equipment / Total Assets [Compustat item PPEGT / AT]

Inv – Inventory / Total Assets [Compustat item INVT / AT]

APPENDIX B – QUARTERLY VARIABLE DEFINITIONS

Dependent Variable

UTB – $\text{Log}(1+\text{UTB})$ Dollar amount of reported Uncertain Tax Benefits from the financial statement footnotes from Form 10-Q.

Independent Variables of Interest

SchUTPQ – Indicator variable representing the Schedule UTP reporting regime. Quarters ending after January 26, 2010 have a value of 1, 0 otherwise.

\$100mil – Indicator variable representing the earliest implementation date of Schedule UTP where firms with assets > \$100 million have a value of 1, 0 otherwise. Firms with assets > \$100 million are required to file Schedule UTP in 2011 for tax year 2010.

\$50mil – Indicator variable representing the next implementation date of Schedule UTP where firms with assets between \$50 million and \$100 million have a value of 1, 0 otherwise. Firms with assets > \$50 million are required to file Schedule UTP in 2013 for tax year 2012.

FinCons – Indicator variable for financial statement conservatism based on nonoperating accruals defined by Givoly and Hayn (2000), where Total Accruals (before depreciation) = (Net Income + Depreciation) - Cash Flow from Operations. Operating Accruals = Δ Accounts Receivable + Δ Inventories + Δ Prepaid Expenses - Δ Accounts Payable - Δ Taxes Payable - Δ UTB. Nonoperating Accruals: Total Accruals (before depreciation) minus Operating Accruals. Firms in the lowest quartile of Nonoperating Accruals have a value of 1, 0 otherwise.

Tax Aggressive Variables

(Note: Each continuous tax aggressiveness variable is converted to an indicator variable where firms in the most aggressive quartile have a value of 1, 0 otherwise.)

TotBTD – Book-Tax Differences = Pre-Tax Income (Compustat item PI) – Minority Interest Income (Compustat item MII) – Change in Tax Loss Carryforward (Compustat item TLCF) – [Federal Tax Expense (Compustat item TXFED) + Foreign Tax Expense (Compustat item TXFO)]/statutory tax rate (35%), scaled by average total assets

Perm BTD – Permanent Book-Tax Differences = BTD defined above – Deferred Income Taxes (Compustat item TXDI) /statutory tax rate (35%), scaled by average total assets

DPerm BTD – Discretionary Permanent Book-Tax Differences = Residuals (ϵ) from the

following equation: $\text{PermBTD} = \alpha_0 + \alpha_1 \text{Intangible} + \alpha_2 \text{UNCON} + \alpha_3 \text{MI} + \alpha_4 \text{CSTE} + \alpha_5 \Delta\text{NOL} + \alpha_6 \text{LagPermBTD} + \varepsilon$ (Frank et al. 2009; Donohoe and McGill 2011).

BookETR – Total Income Tax Expense (Compustat item TXT) / [Pre-Tax Income (Compustat item PI) – Special Items (Compustat item SPI)].

CashETR - Cash Tax Paid (Compustat item TXPD) / [Pre-Tax Income (Compustat item PI) – Special Items (Compustat item SPI)].

Control Variables

ROAQ – Return on Assets = Pretax Income / Total Assets [Compustat item PIQ/ ATQ]

SizeQ – log (Total Assets) [Compustat item ATQ]

GrowthQ - Book-to-Market Ratio = the natural log of Book Equity / Market Value of Equity [Compustat item CEQQ / MKVALTQ]

LeverageQ – Ratio of debt to assets where debt is the sum of short-term and long-term debt [Compustat item (DLCQ + DLTTQ) / ATQ]

B_NOL – Indicator variable where 1 represents firms which have a NOL carryforward [Compustat item TLCF>0], 0 otherwise.

B_Foreign – Foreign pretax income / Total pretax income [Compustat item PIFO / PI]

B_R&D – Research and Development Expense / Total Sales [Compustat item XRD / SALE]

APPENDIX C – ILLUSTRATION

A teenager receives a car from her grandmother for her 16th birthday. The grandmother tells her to keep a record of everywhere she drives and to report the total miles driven each month. She also tells her granddaughter to drive as if her father was sitting in the car beside her. The granddaughter reports the mileage each month, and quickly determines she can still drive to her boyfriend's house occasionally on the days she doesn't work, because the distance is roughly the same.

After several months, the father decides having his daughter on the insurance is too expensive, so he tells his daughter he is going to get a special clip for the car from his insurance agent. The clip provides detailed information about how she is driving, and includes a GPS device which lets her father know exactly where the car is located at all times. When the daughter complains about this, he tells her the clip shouldn't be a burden because she is already providing the information to her grandmother. If the clip changes the daughter's behavior (less driving or safer driving), it indicates she was not fully complying with the instructions from her grandmother to drive as if her father was in the car with her.

APPENDIX D – SUMMARY OF MAIN RESULTS

Table	Data	Model	Fixed Effects	Hypothesis Test					Hypothesis Results					
				H1a	H1b	H2	H3	H4	H1a	H1b	H2	H3	H4	
2	Annual	Levels	No	X						Y				
3	Annual	Levels	Yes	X						Y				
4	Annual	Levels	No		X	X	X				Y	Y	N	
5	Annual	Levels	Yes		X	X	X				Y	N	M	
6	Annual	Changes	No		X	X	X				Y	Y	M	
7	Annual	Changes	Yes		X	X	X				Y	M	M	
8	Annual	Changes	No		X	X	X				Y	Y	M	
9	Annual	Changes	Yes		X	X	X				Y	M	M	
10	Annual	Levels	No						X					M
11	Annual	Levels	Yes						X					M
14	Annual	Levels	No		X	X	X				Y	Y	N	
15	Annual	Levels	Yes		X	X	X				Y	N	M	
19	Quarter	Levels	No	X						Y				
20	Quarter	Levels	Yes	X						M				
21	Quarter	Levels	No		X	X	X				Y	Y	N	
22	Quarter	Levels	No		X	X	X				Y	Y	N	
23	Quarter	Levels	Yes		X	X	X				N	N	N	
24	Quarter	Levels	Yes		X	X	X				M	N	N	

H1a – Firms report lower UTBs after the announcement of Schedule UTP.

H1b – Firms with earliest implementation of Schedule UTP will have greatest reduction of UTBs.

H2 – Financially conservative firms will have a larger decrease.

H3 – Tax aggressive firms will have a larger decrease.

H4 – Tax aggressiveness will decrease after the announcement of Schedule UTP.

Y – Results support hypothesis

N – Results fail to support hypothesis

M – Results are mixed
