UNRECOGNIZED TAX BENEFITS:

DISENTANGLING THE EFFECTS OF TAX AGGRESSIVENESS

AND FINANCIAL REPORTING DISCRETION

by

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(Under the Direction of Benjamin C. Ayers)

ABSTRACT

Unrecognized tax benefits (UTBs) provide financial statement users with an assessment of the level of uncertainty associated with a firm's tax planning strategies. Empirical studies use reported UTBs as a proxy for firms' tax aggressiveness, but recent research suggests that a firm's financial reporting incentives influence reported UTBs, making inferences based on reported UTBs problematic. In this study, I investigate whether reported UTBs can be partitioned into two components: (i) a component that reflects a firm's tax aggressiveness (non-discretionary UTBs), and (ii) the remainder that captures the effects of financial reporting incentives (discretionary UTBs). I compute non-discretionary UTBs as the predicted values from a cross-sectional OLS regression of reported UTBs on known determinants of tax aggressiveness, and use the residuals as empirical estimates of discretionary UTBs. I find statistical and economically significant variation in the under- and over-reporting of UTBs that is not attributable to differences in firms' tax aggressiveness. Next, I perform a series of analyses to validate the two proxies. First, I find that non-discretionary UTBs are positively associated with future taxes paid, consistent with non-discretionary UTBs representing firms' liabilities. In contrast, discretionary UTBs are (i) negatively associated with future tax expense reported in the financial statements (i.e., discretionary UTBs predictably reverse) and (ii) not associated with future taxes paid, consistent with discretionary UTBs capturing management's financial reporting discretion. I also observe that the magnitude of discretionary UTBs is greater for firms with tax-related internal control weaknesses or firms that restated their financial

statements for tax-related reasons. Lastly, I find evidence consistent with managers using discretionary UTBs to meet analysts' consensus earnings forecasts. These validation tests provide comfort that discretionary UTBs reflect financial reporting discretion as opposed to an omitted determinant of tax aggressiveness or management's private signal about future taxes paid.

INDEX WORDS: Unrecognized tax benefits; tax aggressiveness; financial reporting discretion

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DEDICATION

To my wife, Roushell, who is always there for me.

Thank you for all of your love, support, help, encouragement and dedication.

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Finally, I want to give the honor and glory to the Lord God Almighty for His countless blessings, mercies and grace that has sustained me over the years. I pray that I will continue to find favor in His eyes.

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CHAPTER 1

INTRODUCTION

Financial Interpretation No. 48 (FIN 48), introduced in 2007, imposes criteria for the recognition, measurement, and mandatory disclosure of unrecognized tax benefits (also referred to as tax reserves).[1] Unrecognized tax benefits (UTBs) provide financial statement users with an assessment of the level of uncertainty associated with a firm's tax planning strategies. Consequently, a number of empirical studies use reported UTBs as a proxy for firms' tax aggressiveness (e.g., Abernathy et al. 2012, Neuman et al. 2012, Ayers and Nesbitt 2012). However, recent research also suggests that financial reporting incentives influence UTBs, which can weaken or alter the relation between reported UTBs and tax aggressiveness and make inferences problematic (De Waegenaere et al. 2010; Hanlon and Heitzman 2010).[2]

Along these lines, De Simone et al. (2013) and Lisowsky et al. (2013) document significant variation in reported UTBs across firms for similar transactions, and Towery (2013) finds significant variation in reported UTBs within the same firm over time. The implications of these studies are especially problematic to financial statement users, tax regulators, and academics who use UTBs as a signal of tax aggressiveness. To provide "less noisy" measures of tax aggressiveness and financial reporting discretion reflected in UTBs, this study investigates whether reported UTBs can be partitioned into two components: a component that reflects a firm's tax aggressiveness (*non-discretionary UTBs*), and the remainder (*discretionary UTBs*) which captures the effect of financial reporting discretion on

[1] An unrecognized tax benefit is a contingent liability that reflects the dollar amount of tax benefits claimed on a firm's tax return(s) that may ultimately be disallowed by the relevant tax authority. By recording the contingent liability (debit to income tax expense, credit to unrecognized tax benefits), the tax savings attributable to the uncertain tax benefits are not reflected in the firm's income statement (i.e., income tax expense is the same as if the firm did not claim the tax benefit on the tax return).

[2] For example, a high reported UTB balance should represent greater tax aggressiveness, but it could also be the result of accounting conservatism, or the presence of cookie-jar reserves. Likewise, a low reported UTB balance should represent a firm that is less tax aggressive, but it could also be the result of a tax aggressive firm understating UTBs due to financial reporting aggressiveness (Hanlon and Heitzman 2010).

reported UTBs. Given that prior research finds that financial reporting aggressiveness and tax aggressiveness are positively correlated (Frank et al. 2009), it is not a foregone conclusion that the two components of reported UTBs can be segregated in a meaningful way.

Following the argument of Hanlon and Heitzman (2010) that both tax and financial reporting incentives influence reported UTBs, I compute *non-discretionary UTBs* as the predicted values from an ordinary least squares (OLS) regression of reported UTBs on determinants of firm-level tax aggressiveness. I define *discretionary UTBs* as the residuals from the regression, with negative (positive) *discretionary UTBs* capturing the level of understatement (overstatement) of reported UTBs due to management's financial reporting discretion. The model estimates the median *non-discretionary UTBs* at 1.14% of total assets, significantly greater than the 0.67% for reported UTBs, consistent with a number of firms understating their UTBs (Towery 2013). Descriptive statistics on *discretionary UTBs* suggest firms understate (overstate) their unrecognized tax benefits by 0.62% (0.78%) of total assets, at the median. This under- (over-) statement translates into $0.1108 ($0.1353) per share, which is economically significant when one considers that the mean (median) analysts' annual consensus forecast for the firms in the sample is $1.89 ($1.42) per share.

As with any residual model, there is the concern that the residual (*discretionary UTBs*) may be i) driven by an omitted tax determinant, ii) reflect other firm characteristics (e.g., management's unintentional errors), or iii) represent idiosyncratic error (i.e., noise). Accordingly, I perform a set of validation tests to provide triangulated evidence that the two measures reflect their underlying constructs. First, I examine the association between *discretionary UTBs* (*non-discretionary UTBs*) and the change in future tax expense and future taxes paid. An inherent property of discretionary accruals is that discretionary accruals made in one period should reverse in a future period (Healy 1985, Dechow et al. 2012). If *discretionary UTBs* capture management's financial reporting discretion in reporting UTBs (and not the result of an omitted determinant of tax aggressiveness or management's private signal about future taxes paid), then *discretionary UTBs* should be negatively associated with future tax expenses but have no association with future taxes paid. Consistent with *discretionary UTBs* capturing management's financial

reporting discretion, I find *discretionary UTBs* are negatively associated with future tax expense in year *t+2* and *t+3* (but not year *t+1*), while *discretionary UTBs* are not associated with future taxes paid in years *t+1* through *t+3*.[3] In contrast, *non-discretionary UTBs* are (i) not associated with future tax expenses and (ii) positively associated with future taxes paid (in year *t+2*), consistent with *non-discretionary UTBs* (or at least a portion of them) representing firm liabilities.[4]

Second, I examine whether *discretionary UTBs* are predictably associated with a weak financial reporting environment. To the extent that *discretionary UTBs* capture management's discretion in its financial reporting of taxes, I anticipate that the opportunity to exercise financial reporting discretion increases when firms have internal control weaknesses related to the financial reporting of taxes (Gleason et al. 2013). Consistent with weak internal controls facilitating managerial discretion, I observe that the absolute magnitude of *discretionary UTBs* (the amount by which reported UTBs deviates from predicted values) is greater for firms that report tax-related internal control weakness under SOX 404. Likewise, in additional analysis, I find that the absolute magnitude of *discretionary UTBs* is greater for firms subject to a tax-related financial restatement.

Finally, I examine the association between *discretionary UTBs* and financial reporting incentives. Managers have varied financial reporting incentives in determining their UTBs, e.g., to achieve an earnings target (Gupta, Laux and Lynch, 2011; Cazier, Rego, Tian and Wilson, 2011), to create cookie-jar reserves, or to avoid detection of tax aggressive positions by tax authorities (Towery, 2013).[5] To date, prior research provides mixed evidence on the use of UTBs to meet earnings targets post-FIN 48. Gupta, et al. (2011) find no evidence that firms use tax reserves to meet analysts' forecasted earnings in the post-FIN 48 period and conclude that FIN 48 led to the curtailment of earnings management via UTBs (at least

[3] The general statute of limitations for the Internal Revenue Service to assess additional tax on a tax return is three years from the later of the unextended due date of the tax return or the date the tax return is filed (IRC Sec. 6501). Lisowsky et al. (2013) and Ciconte et al. (2014) also assume a three-year period for the statute of limitations.
[4] Ciconte et al. (2014) find that reported UTBs are positively associated with future cash tax payments, but this relation weakens as firms engage in greater tax avoidance (i.e., for firms with lower cash effective tax rates).
[5] Towery (2013) provides evidence consistent with firms lowering their reported UTBs, but not the level of tax benefits claimed on their federal tax returns, to avoid Schedule UTP filing requirements. Schedule UTP requires firms to provide a narrative description (including relevant supporting tax code) of tax positions claimed on their federal tax return for which a tax reserve (UTB) is recorded in the financial statements. Chapter 2 describes Schedule UTP in more detail.

initially).[6] In contrast, Cazier et al. (2011) observe a negative association between the change in reported UTBs and the likelihood of meeting analysts' forecast earnings. They conclude that firms continue to manage earnings via the tax reserve post-FIN 48. Using the change in *discretionary UTBs* as a more powerful measure of the effect of earnings management on reported UTBs, along with a broader sample of firms and longer time period (2007 through 2011), I re-examine the question of whether firms use UTBs to meet analysts' forecasted earnings. Consistent both with firms using *discretionary UTBs* to manage earnings in the post FIN 48 period and *discretionary UTBs* capturing the effect of financial reporting incentives on UTBs, I find that firms that record a reduction in *discretionary UTBs* are more likely to meet analysts' consensus earnings forecast.

This study makes the following contributions. First, while prior studies (e.g., Song and Tucker 2008, Cazier et al. 2009 and Lisowsky et al. 2013) develop models of the determinants of reported *aggregate* UTBs, I investigate whether reported UTBs can be partitioned into two components: a component that reflects a firm's tax aggressiveness (*non-discretionary UTBs*), and the remainder which captures the effect of financial reporting discretion on reported UTBs (*discretionary UTBs*).[7] Descriptive data suggest that *discretionary UTBs* can be sizable in magnitude, both relative to *non-discretionary UTBs* and as a percentage of earnings per share. Using a broad-based sample, this evidence is consistent with prior studies that report considerable variation in the reporting of UTBs (De Simone et al. 2013, Towery 2013). Validation tests indicate that *discretionary UTBs* are negatively associated with future tax

[6] In their concluding remarks, Gupta et al. (2011) acknowledge that the curtailment of earnings management via the tax reserve post-FIN 48 may be an initial reaction by firms. They call for future research to re-examine the research question on i) a larger sample and ii) over an extended time period.

[7] Lisowsky, Robinson, and Schmidt (2013) investigate the association between reported UTBs and disclosed corporate tax shelter activities (based on confidential disclosure to the IRS Office of Tax Shelter Analysis). They find evidence that reported UTBs are positively associated with tax shelters. In supplementary analysis, Lisowsky et al. model reported UTBs as a function of the sources of tax uncertainty and use the residuals as their measure of discretionary UTBs. They find a weaker relation between tax shelter activity and their measure of discretionary UTBs and conclude that the positive association between reported UTBs and tax shelter activity is not driven by financial conservatism. In addition to the fundamentally different focus of this study relative to Lisowsky et al. (2013), this study advances the analysis in Lisowsky et al. (2013) in three important ways: i) this study provides evidence of the internal validity of *non-discretionary* and *discretionary UTB* measures, ii) by including proxies for the level of firms' tax aggressiveness, the model controls for cross-sectional differences in tax aggressiveness that would otherwise be captured in the residual (omitted variable problem), and iii) demonstrates that the model of *non-discretionary/discretionary UTBs* can be applied to publicly available data (i.e., *Compustat* database).

expense but not future taxes paid, whereas *non-discretionary UTBs* are not associated with future tax expenses and are positively associated with future taxes paid. In addition, *discretionary UTBs* are positively associated with tax-related internal control weaknesses and tax-related financial restatements. In sum, these findings provide comfort that *discretionary UTBs* reflect financial reporting discretion as opposed to an omitted determinant of tax aggressiveness or management's private signal about future taxes paid.

Second, consistent with firms using *discretionary UTBs* to manage earnings in the post-FIN 48 period, I find that firms that record a reduction in *discretionary UTBs* are more likely to meet analysts' consensus earnings forecast. In addition to providing further comfort that *discretionary UTBs* reflect financial reporting discretion, this evidence contributes to the debate on whether earnings management via tax reserves has been curtailed post-FIN 48. Gupta et al. (2011) conclude from their evidence that earnings management via the tax reserve was curtailed post-FIN 48 (at least initially), while Cazier et al. (2011) finds evidence suggesting the practice continues. The findings in this paper suggest that, despite the strict criteria and rules introduced by FIN 48 guidelines, firms continue to manage earnings via the tax reserves.

Finally, this study's empirical estimate of *non-discretionary UTBs* and *discretionary UTBs* should be of interest to financial statement users, financial and tax regulators, and academics. Financial regulators and researchers who are specifically interested in the relation between UTBs and management's financial reporting incentives can use *discretionary UTBs* as a more powerful proxy relative to reported UTBs. Similarly, tax regulators, financial statement users, and academic researchers who use reported UTBs as a proxy for tax aggressiveness can use *non-discretionary UTBs* as a 'pre-managed' estimate of firms' tax aggressiveness. For example, my empirical estimate of *non-discretionary UTBs* provides tax authorities with a simple acid test on the likelihood that a firm has under- or over-stated its unrecognized tax benefits, thus allowing tax authorities to efficiently allocate scarce resources to audit taxpayers with the greatest probability of underpayment (Mills et al. 2010).

The remainder of the study is organized as follows: Chapter 2 provides a background on FIN 48 and discusses prior literature on UTBs, Chapter 3 describes the empirical model to compute *discretionary* and *non-discretionary UTBs*, Chapter 4 reports the results from estimating the model, Chapter 5 provides validation tests for the two measures, and Chapter 6 concludes.

CHAPTER 2

BACKGROUND AND PRIOR LITERATURE

2.1 Background on FIN 48

Financial Accounting Standards Board (FASB) Interpretation No. 48, *Accounting for Uncertainty in Income Taxes* (FIN 48), introduced in 2007, imposes criteria for recognition, measurement, and mandatory disclosure of a firm's contingent liability for uncertain tax positions (commonly called unrecognized tax benefits). Prior to FIN 48, there was no specific guidance on accounting for uncertain tax positions under SFAS 109 (ASC 740), *Accounting for Income Taxes*, providing firms with ample opportunity to manage tax reserves in the pre-FIN 48 period (Gupta et al. 2011, Blouin and Tuna 2007).[8]

FIN 48 requires a two-step process to determine UTBs. In the *recognition step*, managers evaluate each tax position and assess the likelihood, based on its technical merits, that the tax position will be sustained upon audit by the relevant tax authority.[9] Technical merits include the relevant tax statutes and regulations associated with the tax position as well as any legal opinions on the likely sustainability of the tax position. If a tax position does not meet the 'more likely than not' criteria (commonly interpreted as a greater than fifty percent likelihood of being sustained), then the firm cannot recognize any of the tax benefit and must record a tax reserve for the full amount of the tax liability exposure associated with the uncertain tax position. While FIN 48 clearly states that tax positions should be assessed on their technical

[8] Academic research assumes firms accounted for contingent tax liabilities by following the guidelines of SFAS 5, *Accounting for Contingencies* (Blouin and Robinson 2012). However, the financial reporting guidelines under SFAS 5 were vague, management had significant judgment and discretion in the measurement, recognition, and de-recognition of accruals, and very few firms provided disclosures about their contingent tax liabilities (Gleason and Mills 2002). FASB chairman Robert Herz, in support of FIN 48, stated that the diversity in practice and opacity of disclosure on contingent tax liabilities prior to FIN 48 "lent itself to potential earnings management opportunities" (Reilly 2007).

[9] Under FIN 48, management must assume 100% probability that a tax position taken on a tax return will be audited by the relevant tax authority. While SFAS 5 did not specifically allow firms to consider the probability of audit or risk of detection, Blouin et al. (2007) observe that in practice many firms considered both factors in determining the amount of contingent liability pre-FIN 48.

merits only, anecdotal evidence suggest that management exercises judgment in the recognition step. Lisowsky, Robinson and Schmidt (2013) cite the example of Wells Fargo and Consolidated Edison who were accused of tax shelter activity via similar Sale-In Lease-Out (SILO) and Lease-In Lease-Out transactions. The IRS disallowed the related tax deductions for both companies. Wells Fargo settled out of court in 2008 and reported a decline in tax reserves that fiscal year.[10] In contrast, Consolidated Edison publicly defended its tax position and created no tax reserve in connection with this tax position.

The next step after recognition is the tax reserve *measurement*. If a tax position is not likely to be sustained upon audit, then the firm records a contingent tax liability (UTB) equal to *one hundred percent* of the tax liability exposure associated with the uncertain tax position. Alternatively, for tax positions that are more likely than not to be sustained upon audit, the firm recognizes "the largest amount of tax benefit that is greater than fifty percent likely of being recognized upon effective settlement with a taxing authority" (FASB 2006, p.5). Thus, even when a tax position is likely to be sustained, management has to assess the probable tax benefits to be retained.[11] De Simone et al. (2013) analyze the 2009 financial statements of 19 firms in the paper mill industry engaged in the same underlying transaction that led to an uncertain tax position. They find significant variation in reported UTBs, which they attribute to substantial discretion managers have in making judgment about tax uncertainties.

Abernathy, Davenport, and Rapley (2012) investigate firms' reaction to the introduction of the Schedule for Uncertain Tax Positions (Schedule UTP) by the Internal Revenue Service (IRS), which became effective in 2010. Schedule UTP requires firms to provide a narrative description (and relevant supporting tax code) of current-year tax positions for which an unrecognized tax benefit is recorded in the financial statements. Schedule UTP is being implemented on a phase-in basis: 2010 for firms with total assets > $100M, 2012 for firms with total assets > $50M and 2014 for firms with total assets > $10M. Abernathy et al. document a decrease in reported UTBs in the post Schedule UTP period, suggesting that

[10] While FIN 48 does not require disclosure on specific tax positions, the decline in tax reserves suggests that Wells Fargo created a tax reserve for the transactions.

[11] Tax audits typically involve a negotiation process where the taxpayer and tax authority take opposing positions and work toward a compromise.

firms became either less tax aggressive or more financial reporting aggressive post Schedule UTP. To provide further evidence, Towery (2013) analyzes federal income tax returns filed by firms subject to Schedule UTP in the initial year of Schedule UTP (i.e., 2010) and the prior year (2009). Towery observes that some firms claimed the same level of tax benefits in the post and pre-period despite reporting lower UTBs in the post-period. She concludes that some firms reduced their financial reporting of UTBs to avoid Schedule UTP filing requirements. Towery's findings underline the need to disentangle the effects of financial reporting discretion and tax aggressiveness on reported UTBs.

In addition to the recognition and measurement steps, FIN 48 mandates firms *disclose* in their annual financial statements a tabular roll-forward of the change in the tax reserve for the year, the portion of the tax reserve that would affect the effective tax rate if recognized, and forward-looking statements. Mandatory disclosure is intended to increase the relevance and comparability of firms' unrecognized tax benefits. Robinson and Schmidt (2013) examine the quality of FIN 48 first quarter adoption disclosures for 1,000 *S&P 1500* firms. They find that overall disclosure quality is lower when the proprietary cost of disclosure is expected to be high and that firms use ambiguous language apparently to reduce the information content of disclosures. Blouin et al. (2010) find similar inconsistencies in the clarity of FIN 48 disclosures in regards to whether interest and penalties are included in reported UTBs. Variation in disclosure quality reduces the comparability of reported UTBs, which can be used to obscure discretionary financial reporting activities (Schipper 1989).

In sum, FIN 48 imposes criteria for the recognition, measurement, and mandatory disclosure of unrecognized tax benefits. The new guidelines are intended to increase the comparability of firms' contingent tax liabilities (Blouin and Robinson 2012). However, anecdotal and empirical evidence suggests that managers exercise financial reporting discretion in the FIN 48 reporting process.

2.2 Prior Literature

Prior research acknowledges that reported UTBs are subject to financial reporting discretion, making inferences problematic (Hanlon and Heitzman 2010, De Waegenaere et al. 2010). To address this

concern, a number of early studies include in their empirical model discretionary working capital accruals to proxy for the effect of financial reporting discretion on reported UTBs. Cazier et al. (2009) examine the relation between reported UTBs and discretionary working capital accruals (based on the Kothari et al. (2005) model), using hand-collected disclosures from *S&P 500* and *S&P 400* firms for fiscal year-end 2007. They observe a significant negative relation between discretionary working capital accruals and reported UTBs, providing initial evidence that financial reporting discretion influences reported UTBs.

However, there is concern that UTBs and discretionary working capital accruals are spuriously correlated because discretionary working capital accruals (an after-tax measure) include the current period-change in reported UTBs. To address this concern, Ayers and Nesbitt (2012) use a pre-tax measure of discretionary working capital accruals, based on the model from Frank et al. (2009), and find no significant association between pre-tax discretionary working capital accruals and reported UTBs. Further, a number of contemporaneous studies (e.g., Rego and Wilson 2012, Abernathy et al. 2012, and Neuman et al. 2012) also find no significant association between (after-tax) discretionary working capital accruals and reported UTBs using larger samples of firms. These findings suggest that discretionary working capital accruals are either a noisy proxy for the effects of management's financial reporting discretion on reported UTBs or that firms, on average, do not use significant discretion in determining UTBs.[12] In part, this study is motivated to develop an account-specific empirical estimate of the effect of financial reporting discretion on reported UTBs (i.e., *discretionary UTBs*), consistent with the recommendations of Healy and Whalen (1999) and McNichols (2002) to develop models tailored to specific accruals to reduce measurement error.

[12] Choudhary et al. (2014) develop an estimate of tax accrual quality based on the mapping of tax accruals into cash taxes paid (i.e., in the spirit of Dechow and Dichev (2002)). Consistent with aggregate measures being a noisy proxy in specific settings, they find that the tax accrual quality measure is superior to aggregate accrual quality within a tax setting.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Estimation of Discretionary and Non-Discretionary UTBs

Hanlon and Heitzman (2010) contend that reported UTB balances are driven by two underlying sets of determinants: i) taxes and ii) financial reporting incentives (p. 143). Following the argument of Hanlon and Heitzman (2010), I develop a model to dichotomize reported UTBs into two constructs: *non-discretionary UTBs* reflect the underlying tax determinants of reported UTBs and *discretionary UTBs* capture the effect of financial reporting discretion on reported UTBs. I compute *non-discretionary UTBs* as the predicted values from a cross-sectional OLS regression of reported UTBs on firm-level sources of tax uncertainty and determinants of tax aggressiveness. *Discretionary UTBs* are defined as the residuals from the regression. I rely on prior research on the determinants of reported UTBs (Song and Tucker 2008, Cazier et al. 2009, Lisowsky et al. 2013) to construct the determinants model, as follows:

$$\begin{aligned} UTB_{i,t} = {} & \alpha_0 + \beta_1 PTROA_{i,t} + \beta_2 Size_{i,t} + \beta_3 ForeignSales_{i,t} + \beta_4 R\&D_{i,t} + \beta_5 Leverage_{i,t} \\ & + \beta_6 MtoB_{i,t} + \beta_7 S\&GA_{i,t} + \beta_8 SalesGrowth_{i,t} + \beta_9 PPE_{i,t} + \beta_{10} DefRev_{i,t} \\ & + \beta_{11} NOL_{i,t} + \beta_{12} IndAdjCashETR5_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

In equation (1), $UTB_{i,t}$ is the year-end balance for unrecognized tax benefits for firm *i* in fiscal year *t,* scaled by lagged total assets. $PTROA_{i,t}$ is the ratio of pre-tax income to total assets, a measure of firm's profitability, $Size$ is the natural log of total assets, $ForeignSales_{i,t}$ is the ratio of non-U.S. segment sales to total firm sales, $R\&D_{i,t}$ is the ratio of research and development expenses to total assets, $Leverage_{i,t}$ is the ratio of total debt to total assets, $MtoB_{i,t}$ is the ratio of market value of equity to book value of equity, $S\&GA_{i,t}$ is the ratio of selling and general administration expenses to total assets,

$SalesGrowth_{i,t}$ is the percentage change in net sales, $PPE_{i,t}$ is the ratio of gross property, plant, and equipment to total assets, $DefRev_{i,t}$ is an indicator variable equal to 1 if deferred revenue is non-zero (0 otherwise), $NOL_{i,t}$ is an indicator variable equal to 1 if tax loss carry forward is non-zero (0 otherwise), and $IndAdjCashETR5_{i,t}$ is the industry-mean adjusted cash effective tax rate, computed as the five-year sum of cash taxes paid divided by the five-year sum of pre-tax income.[13] I use cash effective tax rates as a proxy for firms' tax aggressiveness as it is not affected by financial reporting discretion of UTBs.[14] Finally, I include industry fixed effects (2-digit SIC code) and year fixed effects. Appendix A provides a detailed definition for each variable.

Unrecognized tax benefits represent the accumulated uncertain tax positions for all open tax years. As a result, I measure all determinants (with the exception of $IndAdjCashETR5$) over a three-year period (year *t-2* to *t*). For each determinant defined as a ratio (i.e., $PTROA$, $ForeignSales$, $R\&D$, $Leverage$, $MtoB$, $S\&GA$, PPE), I define the three-year measure as the sum of its numerator, deflated by the sum of its denominator. I define all other variables (i.e., $Size$, $SalesGrowth$, $DefRev$, NOL) as averages of their annual values.

Profitable firms have greater incentives to engage in aggressive tax strategies to shield their profits from taxes because profitable firms face a convex tax function (Graham and Smith 1999). Thus, I expect $PTROA_{i,t}$ to be positively associated with $UTB_{i,t}$. The percentage of foreign sales ($ForeignSales_{i,t}$) captures the extent of foreign operations. U.S. multinationals shift income outside of the U.S. to low tax jurisdictions via transfer pricing (Klassen and Laplante 2012). However, transfer prices are subject to the approval of the relevant tax authorities and can be changed if deemed aggressive. Firms with higher research and development ($R\&D_{i,t}$) expenditure have greater tax planning opportunities due to the mobility of intangible assets. In addition, R&D activities generate tax credits; however, not all

[13] I use long-run (5-year) cash effective tax rates to control for measurement error in annual taxes paid (Dyreng et al. 2008). In addition, I subtract industry-mean $CashETR5$ (based on 2-digit SIC Code) to control for clustering within industries (Dyreng et al. 2008).

[14] Because charges (reversals) to the contingent liabilities for UTBs are reflected in the income tax expense line of the income statement, proxies for tax aggressiveness computed using tax expense (e.g. GAAP ETR, book-tax differences, DTax, and Tax Shelter Scores) are also biased by discretionary financial reporting of UTBs.

R&D expenditure qualifies for tax purposes. Firms with higher foreign sales and/or R&D activity are likely to record higher UTBs, anticipating these tax benefits to be challenged by tax authorities.

Firms that are active in aggressive tax planning are likely to engage the services of external consultants, which are reflected in higher selling and general administrative ($S\&GA_{i,t}$) expenses. I use market-to-book ratios ($MtoB_{i,t}$) to proxy for firms' growth opportunities. As firms enter the mature stage of the business life-cycle they engage in tax aggressive strategies to grow profits (Dyreng et al. 2008). Thus, I expect a negative relation between $MtoB_{i,t}$ and $UTB_{i,t}$. Firms that are currently in a high sales growth ($SalesGrowth_{i,t}$) period tend to be in an expansion phase that generates more tax-deductible items (e.g., depreciation) reducing the need for aggressive tax strategies. Similarly, I expect more capital intensive firms ($PPE_{i,t}$) to rely less on aggressive tax strategies to reduce their tax liability. Graham and Tucker (2006) observe that firms found to be engaged in tax shelter activities, on average, have less debt ($Leverage_{i,t}$) than a set of size- and industry-matched control firms. This finding is consistent with firms substituting debt as a tax-shield with more aggressive forms of tax planning, such as tax shelters.[15] Accordingly, I expect a negative association between $UTB_{i,t}$ and the three proxies: $SalesGrowth_{i,t}$, $PPE_{i,t}$, and $Leverage_{i,t}$.

A number of prior studies find that firm size ($Size_{i,t}$) is positively associated with tax aggressiveness (e.g. Mills et al. 1998, Dyreng et al. 2008, Cazier et al. 2009), consistent with larger firms engaging in greater levels of tax aggressiveness. In addition, I include industry-mean adjusted cash effective tax rates ($IndAdjCashETR5_{i,t}$) as a proxy for the overall tax aggressiveness of the firm. To the extent there is a pecking order to firms' preference of tax strategies (non-aggressive over aggressive, *ceteris paribus*), then I expect lower levels of cash effective rates to be associated with higher UTBs. [16] Burton and Karlinsky's (2011) survey of tax practitioners asked them to identify business activities that they perceive as the most complex areas of tax law (where uncertainty would be greater). Areas identified

[15] Wilson (2009) and Lisowsky (2010) also observe a negative relation between tax shelter activity and leverage for their sample of tax shelter participants.

[16] Brown et al. (2013) examine CEO/CFO bonus payments from 2007 to 2009 and find that bonuses are increasing in tax performance (low cash ETRs) but only for firms with low tax risk (low UTBs).

include the application of tax loss carryover limitations ($NOL_{i,t}$), and the tax treatment of deferred revenue ($DefRev_{i,t}$), in addition to a number of the areas previously discussed (e.g., $ForeignSales$ and $R\&D$). Consistent with increased uncertainty about the tax treatment for these activities, I expect a positive association between $UTB_{i,t}$ and $NOL_{i,t}$ ($DefRev_{i,t}$). Finally, I include industry (2 digit SIC Code) and year fixed effects to control for differences in UTBs across industries and time. Appendix A provides a detailed definition for each variable in equation (1).[17]

[17] Song and Tucker (2008) examine firm-characteristics associated with higher UTBs using a sample of 273 industrial firms' first quarter 2007 10-Q filings. Consistent with expectations, they find that large, profitable firms with more selling and general administrative expenses, lower growth rates, less collateral, and intense research and development activity have larger reported UTBs. Cazier et al. (2009) extend the analyses of Song and Tucker to a sample of *S&P 500* and *S&P 400* firms for fiscal year-end 2007. In addition to the results from Song and Tucker (2008), Cazier et al. find that firms with more extensive foreign operations and lower cash effective tax rates are associated with larger UTBs. Lisowsky et al. (2103) examines the relation between reported UTBs and the areas identifies in the Burton and Karlinsky's study. They find that reported UTBs are higher when firms have net operating losses and deferred revenue.

CHAPTER 4

SAMPLE SELECTION AND EMPIRICAL RESULTS

4.1 Sample Selection

The research sample begins with all U.S. domiciled firms in *Compustat* with fiscal years beginning after December 15, 2006 through fiscal year 2011. To control for potential measurement error in the UTB data, I drop observations with missing values for UTBs, rather than assume the firms have no UTBs, generating an initial sample of 13,278 firm-year observations.[18] I exclude 5,050 firm-year observations with negative pre-tax income or negative equity because tax measures are difficult to interpret for loss firms (Gupta and Newberry 1997). I also eliminate firm-years in the financial (SIC Code 6000 - 6999) and utility industries (SIC code 4900 - 4999) because these firms are not required to disclose a number of the determinants used in equation (1) (e.g., research and development expenses, foreign sales). Finally, I eliminate firm-year observations missing sufficient data to compute the variables in equation (1). These restrictions yield a final sample of 6,125 firm-year observations for the determinants model. Table 4.1 summarizes the sample selection process.

4.2 Descriptive Statistics

Table 4.2 presents descriptive statistics for all variables included in the determinants model (continuous variables are winsorized at the 1% and 99% level). The mean (median) reported UTB is 0.0126 (0.0067) with a standard deviation of 0.0173, similar to the amounts reported in Lisowsky et al. (2013). Sample firms are generally growing firms with mean (median) pre-tax return-on-assets (*PTROA*) of 0.0977 (0.0866) and mean (median) sales growth of 0.1061 (0.0704). The majority of firm-year

[18] Lisowsky et al. (2013) compare *Compustat*'s data on UTBs against a confidential database on UTBs from the IRS and observe a non-trivial amount of non-zero missing values in *Compustat*.

observations are multinational firms (median foreign sales = 0.1344) with research and development activity (median R&D expense = 0.0037).

In Table 4.3, I report the correlation matrix for the variables included in equation (1) with Pearson (Spearman) correlations presented above (below) the diagonal. Because inferences are similar for Pearson and Spearman correlations, for brevity I discuss the Pearson correlations. Consistent with prior studies, reported UTBs are positively correlated with firm profitability (*PTROA*), firm size (*Size*), foreign operations (*ForeignSales*), R&D expenses (*R&D*), deferred revenue (*DefRev*), and net operating losses (*NOL*); and negatively correlated with capital intensity (*PPE*), sales growth (*SalesGrowth*), and leverage (*Leverage*). Reported UTBs are also negatively associated with industry-mean adjusted cash effective tax rates (*IndAdjCASHETR5*), suggesting that, on average, firms reporting higher UTBs achieve higher levels of tax avoidance.

4.3 Empirical Results for the Determinants Model

This section reports the results of the determinants model to decompose reported UTBs into *discretionary* and *non-discretionary UTBs*. Table 4.4, Column 1 reports the results using a cross-sectional OLS regression. For comparison purposes, I include the results using a cross-sectional Tobit regression in Column 2 (approximately 12.7% of the sample report a zero balance for UTBs). The sign, magnitude and statistical significance of coefficients are qualitatively similar in both regressions.[19] As a result, and given that the residuals of a Tobit regression are not well-defined (Feng et al. 2009), I use the predicted values and residuals from the OLS regression as estimates of *non-discretionary* and *discretionary UTBs*, respectively. Consistent with the univariate analysis, I find reported UTBs (*UTB*) are increasing in firm size (*Size*, coefficient = 0.0018, *p*-value < 0.0001), percentage of foreign operations (*ForeignSales*, coefficient = 0.0067, *p*-value < 0.0001), research and development activity (*R&D*, coefficient = 0.0853, *p*-value < 0.0001), and selling and general administrative expenses (*S&GA*, coefficient = 0.0082, *p*-value =

[19] An exception is the coefficient on NOL, which is statistically significant in the Tobit regression (coefficient = 0.0016, *p*-value = 0.0009), but marginally significant in the OLS regression (coefficient = 0.0009, *p*-value = 0.0977).

0.0039) and decreasing in level of capital intensity (*PPE*, coefficient = -0.0035, *p*-value = 0.0041), and sales growth (*SalesGrowth*, coefficient = -0.0083, *p*-value < 0.0001). Table 4.4 also indicates that UTBs are decreasing in leverage (*Leverage*, coefficient = -0.0063, *p*-value = 0.0020), consistent with Wilson (2009) and Lisowsky (2010).

Table 4.5, Panel A provides descriptive statistics for the predicted and residual values from the OLS regression, the estimates of *non-discretionary* and *discretionary UTBs*. The median value for *non-discretionary UTBs* is 0.0114, which is higher than the median for reported UTBs of 0.0067 from Table 4.2. The median value for *non-discretionary UTBs* suggests that a number of firms report UTBs that are lower than what their business fundamentals and tax aggressive behavior would predict (Towery 2013). *Discretionary UTBs* report a standard deviation of 0.0157, consistent with significant variation in the reporting of UTBs that is not attributable to tax aggressiveness (De Simone et al. 2013). Because *discretionary UTBs* are centered on zero, I analyze the negative and positive distributions for *discretionary UTBs* separately. The median value for positive (negative) *discretionary UTBs* is 0.0078 (-0.0063), suggesting that some firms significantly overstate (understate) their UTBs relative to *non-discretionary UTBs*. To provide context of the economic magnitude, I compute *discretionary UTBs* on a per share basis ($DiscUTB\_PS = (DiscUTB * total\ assets)/shares\ outstanding$). Results suggest that for firms that understate (overstate) their UTBs, the median firm understates (overstates) its UTBs by 11.08 (13.53) cents per share, median for *DiscUTBNeg_PS* (*DiscUTBPos_PS*). An economically material amount when one considers that the mean (median) analysts' consensus forecast for the sample is $1.89 ($1.42) per share (untabulated).

Table 4.5, Panel B reports the correlation matrix for *discretionary* and *non-discretionary UTBs*, other empirical proxies for tax aggressiveness (book-tax differences (*BTD*), discretionary permanent book-tax differences (*DTax*)), and pre-tax discretionary working capital accruals (*PT_DA*, based on Frank et al. 2009).[20] Wilson (2009) shows that *BTD* and *DTax* are significant predictors of tax shelter activity, a

[20] Book-tax difference (*BTD*) is the difference between worldwide pre-tax income reported in the financial statements and an empirical estimate of a firm's worldwide taxable income. Discretionary permanent book-tax

more extreme form of tax aggressiveness. However, *BTD* is a broad measure that captures both discretionary and non-discretionary tax planning. *DTax* captures discretionary tax aggressiveness but does not reflect tax uncertainty due to temporal differences. Panel B shows *non-discretionary UTBs* are positively related to *BTD* and *DTax*, consistent with *non-discretionary UTBs* capturing firms' tax aggressiveness.[21] The Pearson and Spearman correlations for *discretionary UTBs* and *BTD* (*DTax*) yield mixed results. The Pearson correlation between *discretionary UTBs* and *BTD* (*DTax*) is positive and statistically significant. However, the Spearman correlations are not significant.

Both the Pearson and Spearman correlations between *non-discretionary UTBs* and pre-tax discretionary working capital accruals (*PT_DA)* are negative and statistically significant. In contrast, the Pearson correlation between *discretionary UTBs* and *PT_DA* is positive and statistically significant (the Spearman correlation is not statistically significant). Recall that negative (positive) *discretionary UTBs* reflect income-increasing (-decreasing) accrual management. Taken together, the correlations with *PT_DA* provide some evidence that firms substitute discretionary tax accruals for discretionary pre-tax accruals as the magnitude of tax accruals increase, consistent with firms choosing to manage the tax expense line if non-tax sources of earnings management are insufficient to achieve targets (Dhaliwal et al. 2004).

Overall, the univariate analysis provides initial evidence that managers exercise considerable discretion in the financial reporting of UTBs which is economically significant in magnitude and cross-sectional variation, and that *non-discretionary* UTBs are correlated, in the expected direction, with other measures for tax aggressiveness (*BTD* and *DTax*).

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difference (*DTax*) is the residual from a regression of permanent book-tax differences on its known components (Frank et al. 2009). Increasing values for *BTD* (*DTax*) suggest more tax aggressive firms. Appendix A provides detailed definitions for each variable.

[21] Pearson correlation for *Non-discretionary UTBs* and *BTD* is positive but not statistically significant, suggesting that the relation is non-linear.

Table 4.1
Sample Selection

Data Restrictions	**N**
Sample criteria:	
U.S. domicile firms on *Compustat* annual database for fiscal years 2007 – 2011	29,366
Less:	
Firm-years missing data on unrecognized tax benefits [a]	(16,088)
Firms reporting pre-tax losses (*pi*<0) or negative equity (*ceq*<0)	(5,050)
Financial and utility firms [b]	(1,125)
Firm-years with missing control variables	(978)
Full sample for UTBs Tax Determinants Model	**6,125**

a. To control for measurement error, I drop observations with missing values for UTBs (*txtubend*), rather than assume the firms have no UTBs. Lisowsky et al. (2013) compare *Compustat*'s data on UTBs against a confidential database on UTBs from the IRS and observe a non-trivial amount of non-zero missing values in *Compustat*.

b. I eliminate firm-year observations in the financial (SIC Code 6000 - 6999) and utility industries (SIC code 4900 - 4999) because these firms are not required to disclose a number of the determinants used in equation (1).

Table 4.2
Descriptive Statistics, Determinants of UTBs

Variable	N	Mean	Median	Std Dev	Q1	Q3
UTB	6,125	0.0126	0.0067	0.0173	0.0020	0.0161

Tax aggressive determinants

PTROA	6,125	0.0977	0.0866	0.1001	0.0401	0.1436
Size	6,125	6.7827	6.7640	1.8607	5.5470	7.9960
ForeignSales	6,125	0.2571	0.1344	0.2995	0.0000	0.4582
R&D	6,125	0.0339	0.0037	0.0565	0.0000	0.0449
Leverage	6,125	0.2063	0.1802	0.1880	0.0317	0.3188
PPE	6,125	0.4819	0.3792	0.3550	0.1988	0.6961
MtoB	6,125	2.8462	2.1461	2.5144	1.4337	3.2964
S&GA	6,125	0.2933	0.2370	0.2299	0.1261	0.3883
SalesGrowth	6,125	0.1061	0.0704	0.1700	0.0109	0.1592
IndAdjCashETR5	6,125	0.0311	0.0319	0.1713	(0.0957)	0.1181
DefRev	6,125	0.4214	0.0000	0.4774	0.0000	1.0000
NOL	6,125	0.4922	0.3333	0.4710	0.0000	1.0000

All variables are winsorized at the 1% and 99% level. See Appendix A for variable definitions. I use three-year measures for the tax determinants (except for *IndAdjCashETR5*) because unrecognized tax benefits (UTBs) reflects tax positions for all open tax years (generally three years). For each determinant defined as a ratio (i.e., *PTROA, ForeignSales, R&D, Leverage, MtoB, S&GA, PPE*), I define the three-year measure as the sum of its numerator, deflated by the sum of its denominator. I define all other variables (i.e., *Size, SalesGrowth, DefRev, NOL*) as averages of their annual values.

Table 4.3
Correlation Matrix for Determinants of UTBs

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	*UTB*	1.0000	-0.0073	0.0964	0.2324	0.3407	-0.1070	0.1027	0.1163
		<0.0001	**0.5682**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(2)	*PTROA*	0.0586	1.0000	0.0182	-0.0185	-0.0332	-0.2094	0.3357	0.1396
		<0.0001	**<0.0001**	**0.1537**	**0.1481**	**0.0094**	**<0.0001**	**<0.0001**	**<0.0001**
(3)	*Size*	0.2699	0.0511	1.0000	0.1286	-0.1967	0.3140	0.0662	-0.3729
		<0.0001	**0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(4)	*ForeignSales*	0.3081	-0.0078	0.1601	1.0000	0.2642	-0.0973	0.0198	-0.0717
		<0.0001	**0.5419**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**0.1220**	**<0.0001**
(5)	*R&D*	0.3117	-0.0026	-0.1157	0.4040	1.0000	-0.2537	0.1734	0.3060
		<0.0001	**0.8394**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(6)	*Leverage*	-0.0680	-0.2246	0.3997	-0.0677	-0.2598	1.0000	0.0957	-0.2952
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(7)	*MtoB*	0.2081	0.4862	0.1389	0.0727	0.2148	-0.0185	1.0000	0.2300
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**0.1485**	**<0.0001**	**<0.0001**
(8)	*S&GA*	0.1002	0.1494	-0.3798	-0.0227	0.2498	-0.3653	0.2190	1.0000
		<0.0001	**<0.0001**	**<0.0001**	**0.0761**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(9)	*SalesGrowth*	-0.0350	0.2752	-0.0663	0.0088	0.1323	-0.0362	0.2578	0.0334
		0.0062	**<0.0001**	**<0.0001**	**0.4917**	**<0.0001**	**0.0046**	**<0.0001**	**0.0090**
(10)	*PPE*	-0.1163	-0.0602	0.1237	-0.1634	-0.2881	0.2187	-0.0648	-0.2499
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(11)	*DefRev*	0.1254	-0.0533	-0.0412	0.0537	0.2341	-0.1474	0.1217	0.1436
		<0.0001	**<0.0001**	**0.0012**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(12)	*NOL*	0.0997	-0.1612	0.0849	0.1789	0.1001	0.0907	-0.0326	-0.0461
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**	**0.0106**	**0.0003**
(13)	*IndAdjCashETR5*	-0.0279	0.1511	0.0526	-0.0049	-0.1306	-0.0511	-0.0185	-0.0064
		0.0291	**<0.0001**	**<0.0001**	**0.7007**	**<0.0001**	**0.0001**	**0.1468**	**0.6143**

See Appendix A for variable definitions. Pearson (Spearman) correlations are reported above (below) the diagonal. *p*-values are shown in **bold** type.

Table 4.3
Correlation Matrix for Determinants of UTBs, continued

	Variable	(9)	(10)	(11)	(12)	(13)
(1)	*UTB*	-0.0219	-0.1321	0.1147	0.0767	-0.0551
		0.0870	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(2)	*PTROA*	0.2166	-0.0878	-0.0379	-0.1708	0.0763
		<0.0001	**<0.0001**	**0.0030**	**<0.0001**	**<0.0001**
(3)	*Size*	-0.0824	0.1052	-0.0291	0.0714	0.0315
		<0.0001	**<0.0001**	**0.0228**	**<0.0001**	**0.0136**
(4)	*ForeignSales*	0.0172	-0.1699	0.0599	0.1471	0.0002
		0.1784	**<0.0001**	**<0.0001**	**<0.0001**	**0.9869**
(5)	*R&D*	0.1696	-0.2670	0.3064	0.0813	-0.1513
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(6)	*Leverage*	0.0433	0.1966	-0.1175	0.0841	-0.0486
		0.0007	**<0.0001**	**<0.0001**	**<0.0001**	**0.0001**
(7)	*MtoB*	0.1416	-0.0427	0.0989	-0.0433	-0.0525
		<0.0001	**0.0008**	**<0.0001**	**0.0007**	**<0.0001**
(8)	*S&GA*	0.0329	-0.1798	0.1254	-0.0770	-0.0156
		0.0099	**<0.0001**	**<0.0001**	**<0.0001**	**0.2231**
(9)	*SalesGrowth*	1.0000	-0.1755	0.0932	0.0081	-0.1377
		<0.0001	**<0.0001**	**<0.0001**	**0.5275**	**<0.0001**
(10)	*PPE*	-0.2136	1.0000	-0.1526	-0.0797	0.0564
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(11)	*DefRev*	0.1023	-0.1831	1.0000	0.0478	-0.0900
		<0.0001	**<0.0001**	**<0.0001**	**0.0002**	**<0.0001**
(12)	*NOL*	-0.0036	-0.0869	0.0496	1.0000	-0.0693
		0.7768	**<0.0001**	**0.0001**	**<0.0001**	**<0.0001**
(13)	*IndAdjCashETR5*	-0.1160	0.0695	-0.1197	-0.1036	1.0000
		<0.0001	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**

See Appendix A for variable definitions. Pearson (Spearman) correlations are reported above (below) the diagonal. *p*-values are shown in **bold** type.

Table 4.4
Tax Determinants Model for Unrecognized Tax Benefits (UTBs)

Dep. Variable = UTB_{it}		(1) **OLS** Coeff.	(2) **Tobit** Coeff.
Variable	Pred.	***(p-value)***	***(p-value)***
Intercept	?	-0.0109 ***(0.0010)***	-0.0112 ***(<0.0001)***
PTROA	+	-0.0032 *(0.5313)*	-0.0037 *(0.8577)*
Size	+	0.0018 ***(<0.0001)***	0.0025 ***(<0.0001)***
ForeignSales	+	0.0067 ***(<0.0001)***	0.0076 ***(<0.0001)***
R&D	+	0.0853 ***(<0.0001)***	0.0959 ***(<0.0001)***
Leverage	-	-0.0063 ***(0.0020)***	-0.0064 ***(<0.0001)***
PPE	-	-0.0035 ***(0.0021)***	-0.0025 ***(<0.0001)***
MtoB	-	0.0002 *(0.9407)*	0.0003 *(0.9948)*
S&GA	+	0.0082 ***(0.0039)***	0.0071 ***(<0.0001)***
SalesGrowth	-	-0.0083 ***(<0.0001)***	-0.0091 ***(<0.0001)***
IndAdjCashETR5	-	-0.0021 *(0.2878)*	-0.0003 *(0.4286)*
DefRev	+	-0.0003 *(0.6527)*	0.0003 *(0.2611)*
NOL	+	0.0009 ***(0.0977)***	0.0016 ***(0.0003)***
Adj R^2		0.1982	-
Chi-squared test (χ^2)		-	1,299.88
N		6,125	6,125

This table presents results of cross-sectional OLS (Tobit) regression in column 1 (2) and includes industry (2-digit SIC code) and year fixed effects. I compute *p*-values using robust, firm clustered standard errors. *p*-values are based on one-tailed *t*-statistics where there is a predicted sign and two-tailed tests otherwise. See Appendix A for variable definitions.

Table 4.5
Descriptive Statistics, Discretionary and Non-Discretionary UTBs

Panel A

Variable	N	Mean	Median	Std Dev	Q1	Q3
NonDiscUTB	6,125	0.0126	0.0114	0.0072	0.0075	0.0161
DiscUTB	6,125	0.0000	-0.0037	0.0157	-0.0077	0.0029
DiscUTBNeg	4,096	-0.0074	-0.0063	0.0055	-0.0096	-0.0036
DiscUTBPos	2,029	0.0149	0.0078	0.0187	0.0029	0.0183
Amounts Per Share ($) [a]						
DiscUTBNeg_PS	4,096	-0.1837	-0.1108	0.2266	-0.2364	-0.0463
DiscUTBPos_PS	2,029	0.3224	0.1353	0.6134	0.0446	0.3632

Panel B

Correlation with Tax Avoidance Measures and Pre-Tax Discretionary Working Capital Accruals

	Variable	(1)	(2)	(3)	(4)	(5)
(1)	*DiscUTB*	1.0000	0.0000	0.0422	0.0485	0.0302
		<0.0001	**1.0000**	**0.0010**	**0.0003**	**0.0194**
(2)	*NonDiscUTB*	-0.1902	1.0000	0.0186	0.1906	-0.1034
		<0.0001	**<0.0001**	**0.1487**	**<0.0001**	**<0.0001**
(3)	*BTD*	0.0145	0.0286	1.0000	0.3920	0.0200
		0.2596	**0.0261**	**<0.0001**	**<0.0001**	**0.1241**
(4)	*DTax*	-0.0193	0.2725	0.2103	1.0000	0.0903
		0.1477	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
(5)	*PT_DA*	0.0139	-0.1166	0.0611	0.0343	1.0000
		0.2837	**<0.0001**	**<0.0001**	**0.0106**	**<0.0001**

I report Pearson (Spearman) correlations above (below) the diagonal and show *p*-values in **bold** type.

a. I truncate 7 outliers with common outstanding shares less than 1 million to control for the effect of small denominators in the per share calculation.

See Appendix A for variable definitions.

CHAPTER 5

VALIDATION TESTS

Given that prior research finds that financial reporting aggressiveness and tax aggressiveness are positively correlated (Frank et al. 2009), it is not a foregone conclusion that the two components of reported UTBs can be segregated in a meaningful way. In addition, as with any residual model, there is the concern that the residuals (*discretionary UTBs*) may be i) driven by an omitted tax determinant, ii) reflect other firm characteristics (e.g., management's unintentional errors), or iii) represent idiosyncratic error (i.e., noise). Accordingly, I perform a number of analyses to validate the two empirical estimates.

5.1 Association between Discretionary (Non-discretionary) UTBs and Future Tax Expense and Future Taxes Paid

An inherent property of discretionary accruals is that discretionary accruals made in one period should reverse in a future time period (Healy 1985, Dechow et al. 2012). If *discretionary UTBs* capture managerial discretion in reporting of uncertain tax positions (and not an actual liability for uncertain tax positions), then *discretionary UTBs* should (a) be negatively associated with future tax expenses in the period when the *discretionary UTBs* reverses and (b) have no association with future taxes paid. However, if *discretionary UTBs* represent managers' signal of private information of the firm's tax exposure, then *discretionary UTBs* should be positively associated with future taxes paid. *Ex ante*, it is more difficult to predict the association between *non-discretionary UTBs* and future tax expenses (future taxes paid) because *non-discretionary UTBs* represents a future liability contingent on the detection and adverse outcome of an audit by the tax authority. If firms' uncertain tax positions are detected and settled in favor of the tax authority, then I expect *non-discretionary UTBs* to be positively associated with future taxes paid. Consequently, *non-discretionary UTBs* that result in future taxes paid will have no impact on

future tax expenses. On the other hand, if *non-discretionary UTBs* go undetected by the tax authority, then the liability will reverse on expiration of the statute of limitations, reducing future tax expense with no impact on future taxes paid. Ciconte et al. (2014) investigate whether UTBs reported under FIN 48 are predictive of future income tax cash outflows. The authors find that reported UTBs are positively associated with future tax cash outflows and future IRS audit settlements. In a contemporaneous study, Robinson et al. (2014) review the tabular roll-forward disclosures for unrecognized tax benefits for the period 2007 through 2011. The authors estimate, on average, less than 24 cents out of every dollar of tax reserves is paid out in cash. While the findings of Robinson et al. suggest that only a portion of the contingent tax liability is eventually paid out, the findings are still consistent with a monotonic relationship between UTBs and future taxes paid. As such, I expect a positive association between *non-discretionary UTBs* and future taxes paid.

In sum, I expect *discretionary UTBs* to be negatively associated with the change in future tax expenses but have no association with the change in future taxes paid, while *non-discretionary UTBs* will be positively associated with the change in future taxes paid. I test the association between *discretionary* and *non-discretionary UTBs* and future tax expenses (taxes paid) using the following OLS regressions:

$$\Delta TaxExp_{i,t+n} = \alpha_0 + \beta_1 DiscUTB_{i,t} + \beta_2 NonDiscUTB_{i,t} + \beta_3 \Delta PTROA_{i,t+n} + \beta_4 TaxDef_{i,t} + \beta_5 MtoB_{i,t} + \beta_6 Size_{i,t} + \varepsilon_{i,t} \quad (2)$$

$$\Delta TaxPaid_{i,t+n} = \alpha_0 + \gamma_1 DiscUTB_{i,t} + \gamma_2 NonDiscUTB_{i,t} + \gamma_3 \Delta PTROA_{i,t+n} + \gamma_4 TaxDef_{i,t} + \gamma_5 TaxLosses_{i,t} + \gamma_6 MtoB_{i,t} + \gamma_7 Size_{i,t} + \nu_{i,t} \quad (3)$$

where n=1, 2, 3.

I conduct the test over multiple time periods because the exact timing of the reversal, *ex ante*, is unknown. Unlike discretionary working capital accruals that typically reverse in the next fiscal period, *discretionary UTBs* can take multiple time periods to reverse because reversal is conditional on i) adverse conclusion of a tax audit, ii) management's unilateral decision to reverse the discretionary accrual, or iii)

expiration of the statute of limitations for the related tax years. I select a maximum time horizon of three years as the statute of limitations for corporate taxpayers is generally three years.

In equation (2), the dependent variable ($\Delta TaxExp_{i,t+n}$) is the difference in total tax expense *(txt)* reported in year $t+n$ and year t, each scaled by total assets (*at*) at the beginning of year. To compute $\Delta TaxExp_{i,t+n}$ requires each firm-year observation to have at least one year of lead data on future tax expense, reducing my sample size to 4,739 firm-year observations (for the case when n = 1). The variables of interest are $DiscUTB_{i,t}$ (estimated *discretionary UTBs* in year t) and $NonDiscUTB_{i,t}$ (predicted *non-discretionary UTBs* in year t). If *discretionary UTBs* reverse in a future time period, then I expect a negative coefficient on $DiscUTB_{i,t}$ ($\beta_1 < 0$).

In addition to the variables of interest, I control for factors expected to be associated with future tax expenses. I include the change in pre-tax profitability ($\Delta PTROA_{i,t+n}$), defined as the difference between pre-tax ROA ($PTROA$) in year $t+n$ and year t. Because there is a positive mechanical relation between pre-tax income and tax expense (i.e., higher profits, in general, results in higher taxes), I expect a positive relation between the change in pre-tax ROA and change in tax expenses. Tax deferrals ($TaxDef_{i,t}$, defined as current tax deferred (*txdi*) scaled by total assets at the beginning of the year) controls for taxes deferred in year t that reverse in future years. I include market-to-book ratio ($MtoB_{i,t}$) and firm size ($Size_{i,t}$) to control for growth opportunities and resource availability that can affect the change in firms' future tax expenses. Large and/or mature firms make greater investment in tax planning which should reduce future tax expense (Mills et al. 1998). Finally, year and industry fixed effects capture time-period and industry-specific effects on future tax expense.

In equation (3), the dependent variable ($\Delta TaxPaid_{i,t+n}$) is the difference in cash taxes paid (*txpd*) in year $t+n$ and year t, each scaled by total assets (*at*) at the beginning of year. Similar to $\Delta TaxExp_{i,t+n}$, I require at least one year of lead data on cash taxes paid to compute $\Delta TaxPaid_{i,t+n}$, reducing the sample to 4,642 firm-year observations when n = 1. If *discretionary UTBs* have no effect on future taxes paid while *non-discretionary UTBs* represent liabilities associated with firms' tax aggressiveness, then I

expect an insignificant coefficient on $DiscUTB_{i,t}$ ($\gamma_1 = 0$) and a positive coefficient on $NonDiscUTB_{i,t}$ ($\gamma_2 > 0$).

Similar to equation (2), I include pre-tax profitability ($\Delta PTROA_{i,t+n}$), tax deferrals ($TaxDef_{i,t}$), market-to-book ratio ($MtoB_{i,t}$) and firm size ($Size_{i,t}$), and add tax losses ($TaxLosses_{i,t}$) as an additional control variable. $TaxLosses_{i,t}$ is the balance of net operating losses carry-forward (*tlcf*) scaled by total assets at the beginning of year *t*. If firms use tax losses to lower future taxes paid, then I expect $TaxLosses_{i,t}$ to be negatively associated with future taxes paid.[22]

Panel A of Table 5.1 presents the results for equation (2) with change in tax expense ($\Delta TaxExp_{i,t+n}$) as the dependent variable, where $\Delta TaxExp_{i,t+n}$ is the change in total tax expense from year *t* to year *t+n*, for values of n = 1, 2 and 3. Consistent with expectations, the coefficient for *discretionary UTBs* ($DiscUTB_{i,t}$) is negative and statistically significant in columns (2) and (3) (*p*-value = 0.0123 and 0.0086 respectively), suggesting that *discretionary UTBs* reverse in years *t+2* and *t+3* (i.e., as the statute of limitations ends for year *t*). In contrast, the coefficients for *non-discretionary UTBs* ($NonDiscUTB_{i,t}$) are not statistically significant in any of the three columns, suggesting that *non-discretionary UTBs* do not systematically reverse. As expected, results are consistent with the reversal of current tax deferrals ($TaxDef_{i,t}$) in future years and future tax expenses increasing with greater profitability ($\Delta PT\_ROA_{i,t+n}$).

Table 5.1, Panel B reports the results for equation (3) where the dependent variable is the change in taxes paid ($\Delta TaxPaid_{i,t+n}$) for values of n = 1, 2 and 3. As expected, I observe no significant association between changes in future taxes paid ($\Delta TaxPaid_{i,t+n}$) and *discretionary UTBs* ($DiscUTB_{i,t}$) in any of the three columns. While it is unusual to draw inferences on a null hypothesis, taken together with the results for equation (2), these findings provide evidence that *discretionary UTBs* captures the effect of management's financial reporting discretion and are less likely a private signal of management's

[22] Tax losses ($TaxLosses$) should have no effect on future tax expenses, provided the firm records a deferred tax asset for the tax losses. Results for equation (2) are robust when $TaxLosses$ is included, and the coefficient on $TaxLosses$ is not significant.

belief about the future outcome of firm's uncertain tax positions. The coefficient for *non-discretionary UTBs* ($NonDiscUTB_{i,t}$) when n = 2, Column (2), is positive and statistically significant (coefficient = 0.1023, *p*-value = 0.0210), suggesting *non-discretionary UTBs* represent a future cash taxes outflow for the firm. The lack of statistically significant results in columns (1) and (3) can be attributed to the contingent nature of unrecognized tax benefits. That is, *non-discretionary UTBs* result in a future cash outflow conditional on the firm i) being audited by the relevant tax authority(ies), and ii) the audit resulting in an adverse outcome. Given the low IRS audit rate, the observed relation between *non-discretionary UTBs* and future taxes paid is not unexpected.[23]

5.2 Association between Discretionary UTBs and Tax-Related Internal Control Weaknesses and Financial Restatements

To the extent *discretionary UTBs* capture management's discretion in its financial reporting of tax activities, I anticipate that the magnitude of financial reporting discretion will be higher for firms reporting tax-related internal control weaknesses (ICWs). Prior studies demonstrate the significant role effective internal control systems play in curtailing discretionary financial reporting (e.g. Doyle et al. 2007, Prawitt et al. 2009, Gleason et al. 2013). For example, Doyle et al. (2007) find that firms with company-level internal control weaknesses have lower accrual quality, and Gleason et al. (2013) find that firms with material tax-related ICWs engage in more income-increasing tax expense management. When tax-related internal controls are ineffective, management has a greater ability to exercise discretion in the financial reporting of UTBs, whether over-stating tax reserves to build cookie-jar reserves or under-stating reserves to increase earnings or avoid IRS scrutiny. Prior research also finds that discretionary accruals are positively associated with the likelihood of financial restatement (e.g. Jones et al. 2008, Dechow et al. 1996). Tax-related financial restatements provide external identification of material misstatements (under- or over-statement) in the financial reporting process for taxes, consistent with a

[23] The IRS audit rate for 2011 was less than 2.6% for small corporations (total assets <$10M), 13.3% for corporations with assets < $50M, up to a maximum of 50.5% for corporations at the top end (assets between $5B and $20B), source: *2011 IRS Data Book*.

weak internal control system. To provide additional validation for *discretionary UTBs*, I investigate the relation between *discretionary UTBs* and tax-related internal control weakness (financial restatements). I expect the magnitude of *discretionary UTBs* (i.e., the absolute value) to be associated with a higher likelihood of reporting a tax-related internal control weakness (financial restatement).

I use *Audit Analytics*' database to identify tax-related internal control weaknesses (financial restatements) and cross-match the observations with my sample taken from *Compustat*. I match 62 (78) firms within my sample that report a tax-related internal control weakness (financial restatement) during the sample period.[24] Panel A of Table 5.2 presents the differences in the mean absolute value for *discretionary UTBs* (*AbsDiscUTB*) for firm-years with a tax-related internal control weakness versus all other firm-years in the sample. Consistent with expectation, I find that the mean *AbsDiscUTB* is larger for firm-years with a tax-related internal control weakness (*AbsDiscUTB*=0.0152) compared to all other firm-years (*AbsDiscUTB*=0.0086), statistically significant at *p*-value =0.0013. Panel B of Table 5.2 reports the results for tax-related financial restatements.[25] As expected, I find that the mean *AbsDiscUTB* is larger for firm-years that are subsequently subject to financial restatement for that fiscal year (*AbsDiscUTB*=0.0107) compared to all other firm-years (*AbsDiscUTB*=0.0086), statistically significant at *p*-value =0.0421. These findings are consistent with managers being able to exercise greater discretion in the reporting of UTBs in a financial reporting environment where there are documented cases of internal control weaknesses (Gleason et al. 2013).

5.3 Association between Discretionary UTBs and Meeting Analysts' Forecasted Earnings

Managers have varied financial reporting incentives to under- or over-state their firms' UTBs, e.g., to avoid the scrutiny of tax authorities, to achieve an earnings target, or to create cookie-jar reserves. For example, Towery (2013) provides evidence consistent with firms underreporting their UTBs to avoid providing details of their uncertain tax positions to the IRS under Schedule UTP. In this study, I focus on

[24] Of the 62 (78) reports of tax-related internal control weakness (financial restatement), 30 (39) cases are exclusively tax-related.
[25] I use un-restated financial data to compute *discretionary* and *non-discretionary UTBs*.

management's desire to meet analysts' consensus earnings forecasts. I choose to focus on analysts' forecast for three reasons: i) prior research finds that analysts' forecasts are a primary target for firms (Brown and Caylor 2005), ii) concern that firms were manipulating tax reserves to meet earnings targets helped motivate FIN 48 (Reilly 2007), and iii) there is mixed evidence in the extant literature on whether FIN 48 curtailed earnings management via the tax reserve.

Gupta, Laux and Lynch (2011) examine the quarterly disclosures on tax reserves for 100 randomly selected *Fortune 500* firms in the period prior to (2003 thru 2005) and after (2007 thru 2008) the introduction of FIN 48. They observe that firms that report a reduction in tax reserves are more likely to meet analysts' target in the pre-FIN 48 period, but find no evidence that firms use tax reserves to meet analysts' forecasted earnings in the post-FIN 48 period. Gupta et al. (2011) conclude that FIN 48 led to the curtailment of earnings management via UTBs (at least initially). In contrast, Cazier, Rego, Tian and Wilson (2011) document evidence consistent with the continuation of earnings management via the tax reserve post-FIN 48. They observe a negative association between the change in reported UTBs and the likelihood of meeting analysts' annual consensus forecast among a sample of *S&P 500 LargeCap* and *S&P 400 MidCap* firms for the fiscal period 2007 thru 2009. Using the change in *discretionary UTBs* as a more powerful measure of the effect of earnings management on reported UTBs, a broader sample of firms, and a longer time period (2007 through 2011), I re-examine the question of whether firms use UTBs to meet analysts' forecast earnings. Specifically, I use the following logistic regression model, adapted from Gupta et al. (2011), to test whether firms that experience a reduction in *discretionary UTBs* are more likely to meet analysts' consensus earnings targets:[26]

[26] Cazier et al. (2011)'s research design has been criticized for the endogenous relation between the change in reported UTBs and pre-managed earnings (calculated as reported earnings minus change in reported UTBs), commonly referred to as the "backing-out" problem (Lim and Lustgarten 2003). In contrast, Gupta et al. (2011) uses unadjusted reported earnings to conduct their test for earnings management, and thus, is not subject to the "backing-out" problem. Therefore, I adapt Gupta et al.'s logistic regression model to test for earnings management via UTBs.

$$Prob(\, Meet_{i,t} = 1) = \alpha_0 + \beta_1 RedDiscUTB_{i,t} + \beta_2 R\&D_{i,t} + \beta_3 LaborInt_{i,t} + \beta_4 MtoB_{i,t} + \beta_5 SalesGrowth_{i,t} + \beta_6 LitInd_{i,t} + \beta_7 Analysts_{i,t} + \beta_8 MeetPriorYr_{i,t} + \beta_9 LnShares_{i,t} + \beta_{10} PosUnexpChg_{i,t} + \beta_{11} PTROA_{i,t} + \beta_{12} Size_{i,t} + \beta_{13} WalkDown_{i,t} + \beta_{14} InitialFE_{i,t} + \beta_{15} TaxAgg_{i,t} + \varepsilon_{i,t} \quad (4)$$

The dependent variable, $Meet_{i,t}$, is an indicator variable equal to 1 if actual annual earnings per share (EPS) reported by I/B/E/S equals or exceeds the consensus median analysts' annual EPS forecast prior to the earnings announcement, and zero otherwise. The variable of interest, $RedDiscUTB_{i,t}$, is an indicator variable equal to 1 if there is reduction in the level of *discretionary UTBs* in year *t*, zero otherwise. If firms use the tax reserve to meet earnings targets post-FIN 48, then I expect a positive coefficient on $RedDiscUTB_{i,t}$ ($\beta_1 > 0$).

The remaining explanatory variables control for managers' incentives to meet analysts' forecast, ability to meet analysts' forecasts and other factors shown to be associated with meeting analysts' forecasts. First, firms with greater reliance on implicit stakeholder claims (proxied by research and development expenses ($R\&D_{i,t}$), labor intensity ($LaborInt_{i,t}$)), high growth prospects (market to book ratio ($MtoB_{i,t}$), sales growth ($SalesGrowth_{i,t}$)), operate in an industry with high litigation risk ($LitInd_{i,t}$), with greater analysts following ($Analysts_{i,t}$), or have an history of meeting analysts' expectations ($MeetPrior\ Yr_{i,t}$) face increase incentives to meet analysts' earnings targets (Matsumoto 2002). Second, Barton and Simko (2002) suggest that firms with a larger number of shares ($LnShares_{i,t}$) find it more difficult to manage earnings upward because a penny change in earnings per share (EPS) requires a larger change in actual earnings. Third, firms with positive performance shocks (increase in earnings over prior year ($PosUnexpChg_{i,t}$)), profitable firms ($PTROA_{i,t}$), or firms able to guide analysts' forecast downward ($WalkDown_{i,t}$) are more likely to meet earnings targets (Matsumoto 2002). Initial forecast error ($InitialFE_{i,t}$) controls for uncertainty in the forecasting environment, as it is likely more

difficult for managers to guide analysts' forecasts when uncertainty is high (Matsumoto 2002). Prior research also suggests that larger firms ($Size_{i,t}$) have less optimistic biases in analysts' forecast (Brown 1997, Das et al. 1998). Finally, I include $TaxAgg_{i,t}$ (an indicator variable for firms in the lowest quintile of cash effective tax rates (*IndAdjCashETR5*)) as prior research finds that tax aggressive firms are also aggressive for financial reporting (Frank et al. 2009). With the exception of $LnShares_{i,t}$ and $InitialFE_{i,t}$, I expect a positive coefficient for each of the control variables. Appendix A provides detailed definitions for each variable.

Table 5.3 presents the results of the logistic regression, equation (4). Consistent both with firms using *discretionary UTBs* to manage earnings in the post-FIN 48 period and *discretionary UTBs* capturing the effect of financial reporting incentives on UTBs, I find that the coefficient on *RedDiscUTB* is positive and statistically significant (*p*-value=0.0390). Marginal effects suggest that firms with a reduction in discretionary UTBs (*RedDiscUTB)* are 2.65% more likely to meet analysts' forecast. In addition, I find that the incentives to meet analysts forecast: research and development expenses ($R\&D_{i,t}$), labor intensity ($LaborInt_{i,t}$), litigious industry ($LitInd_{i,t}$), analysts' coverage ($Analysts_{i,t}$), and a pattern of meeting the analysts' earnings target ($MeetPrior\ Yr_{i,t}$) have a significant positive effect on the probability of meeting the earnings targets. The results also suggest that more profitable firms ($PTROA_{i,t}$) and firms that experience an increase in earnings over prior year ($PosUnexpChg_{i,t}$) are more likely to meet analysts' earnings targets.

In summary, univariate analysis and validation tests provide triangulated evidence that *discretionary* (*non-discretionary*) *UTBs* capture the effects of management's financial reporting discretion (tax aggressiveness). *Non-discretionary UTBs* are positively correlated with other proxies for tax aggressiveness (namely, *BTD* and *DTax*) and the change in future taxes paid, consistent with *non-discretionary UTBs* capturing the contingent tax liability associated with firms' tax aggressiveness. In contrast, *discretionary UTBs* reverse in subsequent years (years *t+2* and *t+3*), are unrelated to future taxes paid, increase in magnitude when internal control systems are weak, and firms with reductions in

discretionary UTBs are more likely to meet analysts' consensus earnings targets, consistent with *discretionary UTBs* capturing discretionary financial reporting.

Table 5.1 Panel A
The Association between Discretionary (Non-discretionary) UTBs and Future Tax Expense

		(1)	(2)	(3)
Dep. Variable =		$\Delta TaxExp_{i,t+1}$	$\Delta TaxExp_{i,t+2}$	$\Delta TaxExp_{i,t+3}$
		Coeff.	Coeff.	Coeff.
Variable	Pred.	***(p-value)***	***(p-value)***	***(p-value)***
Intercept	?	-0.0074	-0.0056	0.0101
		(0.2010)	*(0.5357)*	*(0.1123)*
$DiscUTB_{i,t}$	-	-0.0101	-0.1798	-0.2391
		(0.4427)	***(0.0123)***	***(0.0086)***
$NonDiscUTB_{i,t}$	?	-0.3672	-0.4411	-0.1482
		(0.2617)	*(0.3294)*	*(0.2342)*
$\Delta PT\_ROA_{i,t+n}$	+	0.1103	0.0948	0.0851
		(<0.0001)	***(0.0001)***	***(0.0012)***
$TaxDef_{i,t}$	-	-0.9084	-0.9484	-0.8604
		(<0.0001)	***(<0.0001)***	***(<0.0001)***
$MtoB_{i,t}$	+	0.0000	-0.0000	0.0000
		(0.3206)	*(0.7603)*	*(0.2938)*
$Size_{i,t}$	-	0.0013	0.0011	-0.0016
		(0.8654)	*(0.7342)*	***(0.0189)***
Sample period		YE 2007-2010	YE 2007-2009	YE 2007-2008
Adj R^2		0.3954	0.4035	0.3727
N		4,739	3,305	2,020

This table presents results of the cross-sectional OLS regression and includes industry (2-digit SIC code) and year fixed effects. I compute *p*-values using robust, firm clustered standard errors, *p*-values are based on one-tailed *t*-statistics where there is a predicted sign and two-tailed tests otherwise. All continuous variables are winsorized at the 1% and 99% level.

See Appendix A for variable definitions.

Table 5.1 Panel B
The Association between Discretionary (Non-discretionary) UTBs and Future Taxes Paid

		(1)	(2)	(3)
Dep. Variable =		$\Delta TaxPaid_{i,t+1}$	$\Delta TaxPaid_{i,t+2}$	$\Delta TaxPaid_{i,t+3}$
Variable	Pred.	Coeff. ***(p-value)***	Coeff. ***(p-value)***	Coeff. ***(p-value)***
Intercept	?	0.0008 *(0.7167)*	0.0026 *(0.5041)*	-0.0004 *(0.9487)*
$DiscUTB_{i,t}$	0	0.0224 *(0.3380)*	0.0343 *(0.3012)*	0.0120 *(0.8040)*
$NonDiscUTB_{i,t}$	+	0.0478 *(0.1535)*	0.1023 ***(0.0210)***	0.0739 *(0.1689)*
$\Delta PT\_ROA_{i,t+n}$	+	0.0694 ***(0.0009)***	0.0642 ***(0.0001)***	0.0588 ***(0.0008)***
$TaxDef_{i,t}$	+	-0.0209 *(0.8552)*	0.0153 *(0.2370)*	-0.0349 *(0.6812)*
$TaxLosses_{i,t}$	-	0.0010 *(0.9222)*	0.0028 *(0.9998)*	0.0049 *(0.9936)*
$MtoB_{i,t}$	?	0.0000 *(0.6807)*	0.0000 *(0.6883)*	0.0000 *(0.7684)*
$Size_{i,t}$	-	-0.0002 *(0.2461)*	-0.0004 ***(0.0915)***	0.0001 *(0.6039)*
Sample period		YE 2007-2010	YE 2007-2009	YE 2007-2008
Adj R^2		0.1715	0.1784	0.1722
N		4,642	3,231	1,960

This table presents results of the cross-sectional OLS regression and includes industry (2-digit SIC code) and year fixed effects. I compute *p*-values using robust, firm clustered standard errors, *p*-values are based on one-tailed *t*-statistics where there is a predicted sign and two-tailed tests otherwise. All continuous variables are winsorized at the 1% and 99% level.

See Appendix A for variable definitions.

Table 5.2
The Association between Discretionary UTBs and
Tax-Related Internal Control Weaknesses and Financial Restatements

Sample T-tests: Difference in Means

Panel A

	$Sox404\ ICW_{it}$	
	Mean	Std dev
Abs(DiscUTB)[a]		
When *Sox404ICW*=1	0.0152	0.0173
When *Sox404ICW*=0	0.0086	0.0105
Difference	0.0066	0.0106
p-value (one-tailed)	0.0013	

Panel B

	$FSRestated_{it}$	
	Mean	Std dev
Abs(DiscUTB)[a]		
When *FSRestated*=1	0.0107	0.0118
When *FSRestated*=0	0.0086	0.0106
Difference	0.0021	0.0106
p-value (one-tailed)	0.0421	

a. *Abs(DiscUTB)* is the absolute value of *discretionary UTB* and measures the deviation of reported UTB from its predicted value *(non-discretionary UTB).*

b. *Sox404ICW* is an indicator variable equal to 1 for firm-years with a tax-related internal control weakness, 0 otherwise.

c. *FSRestated* is an indicator variable equal to 1 for firm-years with a tax-related financial restatement, 0 otherwise.

Incidents of tax-related internal control weakness and financial restatement are taken from the *Audit Analytics* database. There are 62 reported cases of tax-related internal control weakness for sample firms. Of these 62 cases, 30 cases are exclusively tax-related. For financial restatements, of the 78 reported cases, 39 cases are tax-related restatements exclusively.

I use unrestated financial data from the *Compustat* annual database to compute *discretionary* and *non-discretionary UTBs*.

See Appendix A for variable definitions.

Table 5.3
Discretionary UTBs and the Likelihood of Meeting or Beating Analysts' Annual Consensus Forecast

Dep. Variable : $Meet_{i,t} = 1$		(1) Coeff.	(2)
Variable	Pred.	***(p-value)***	Marginal Effect
Intercept	?	-0.3613	N/A
		(0.1645)	
RedDiscUTB	+	0.1417	2.65%
		(0.0390)	
R&D	+	1.6826	31.52%
		(0.0104)	
LaborInt	+	0.5500	10.30%
		(<0.0001)	
MtoB	+	-0.0089	-0.17%
		(0.6933)	
SalesGrowth	+	-0.6509	-12.19%
		(0.9951)	
LitInd	+	0.2141	4.01%
		(0.0078)	
Analysts	+	0.0212	0.40%
		(0.0037)	
MeetPriorYr	+	0.2849	5.34%
		(0.0004)	
LnShares	-	0.0062	0.12%
		(0.5366)	
PosUnexpChg	+	0.6118	11.46%
		(<0.0001)	
PTROA	+	0.8596	16.10%
		(0.0476)	
Size	+	0.0523	0.98%
		(0.1567)	
WalkDown	+	-0.9094	-17.04%
		(0.7404)	

Table 5.3 cont'd
Discretionary UTBs and the Likelihood of Meeting or Beating Analysts' Annual Consensus Forecast

Dep. Variable : $Meet_{i,t} = 1$		(1) Coeff.	Marginal Effect
Variable	Pred.	***(p-value)***	
InitialFE	-	-3.4762	-65.12%
		(0.0038)	
TaxAgg	+	0.0407	0.76%
		(0.3412)	
Sample period		YE 2008-2011	
Psuedo R^2		0.0861	
Dep variable = 1		2,701	
N		3,729	

This table presents results of the cross-sectional logistic regression, where the dependent variable, $Meet_{i,t}$, is equal to one if actual annual EPS reported by I/B/E/S equals or exceeds the unadjusted consensus median analysts' annual EPS forecast just prior to the earnings announcement, and zero otherwise. The logistic regression includes industry (2-digit SIC code) and year fixed effects. I compute *p*-values using robust, firm clustered standard errors. *p*-values are based on one-tailed *t*-statistics where there is a predicted sign and two-tailed tests otherwise. All continuous variables are winsorized at the 1% and 99% level.

See Appendix A for variable definitions.

CHAPTER 6

SUPPLEMENTARY ANALYSES

In this chapter, I present additional analyses to explore the implications of my findings on the discretionary financial reporting of unrecognized tax benefits. First, I examine the market's valuation of *discretionary* and *non-discretionary UTBs* to evaluate the market's ability to discern firms' discretionary financial reporting. Second, I investigate whether closer IRS monitoring attenuates the association between *non-discretionary UTBs* and future taxes paid.

6.1 Market Pricing of Discretionary and Non-discretionary UTBs

In my first analysis, I examine the market's valuation of *discretionary* and *non-discretionary UTBs*. One objective of FIN 48 is to increase the comparability of firms' tax aggressiveness (FASB 2006). This objective is operationalized via the mandatory disclosure of unrecognized tax benefits, including the tabular roll-forward, disclosure of the amount that would affect the effective tax rate if recognized and forward-looking statements. If, based on mandatory disclosure, market participants are able to compare and detect managerial discretion in the reporting of UTBs, then I expect the market to adjust their valuation of the firm accordingly (Gleason and Mills 2008). Conversely, given the complexity entailed in FIN 48 calculations, the market may not be able to detect evidence of managerial discretion (Kimmelfield 2006, Raby and Raby 2006).

Discretionary UTBs represents management's attempt at "window-dressing" the financial performance of the firm and does not represent any real future economic benefit (or cost) to the firm. As a consequence, I expect the market to **not** price *discretionary UTBs*. On the other hand, *non-discretionary UTBs* represent contingent liabilities that may or may not be paid out by the firm. If the market views *non-discretionary UTBs* as a liability that is more likely than not to be paid out to the tax authorities, then

the market will place a negative value on *non-discretionary UTBs*. The validation tests in Chapter 5.1 find that *non-discretionary UTBs* are associated with future cash taxes paid, consistent with *non-discretionary UTBs*, or at least a portion of it, being a liability (Ciconte et al. 2014). These findings suggest that *non-discretionary UTBs* should be valued negatively by the market.

However, prior research finds contradictory evidence of a positive relation between unrecognized tax benefits and firm value. Frischmann et al. (2008) studies whether the market impounds into price the information contained in the opening UTB balance of 334 S&P 500 firms. They document a significant positive association between returns and the portion of the UTB that affects earnings. The authors provide two possible explanations for the results. First, the market may view *non-discretionary UTBs* as a positive signal of the firm's tax aggressiveness and consider the tax aggressive strategies of the firm to be value-enhancing. Alternatively, the market may view the firm's earnings as being understated due to the conservative assumptions of FIN 48 that all tax positions will be audited and the tax authorities are aware of all relevant information. In either scenario, investors will place a positive value on *non-discretionary UTBs*. Robinson et al. (2014) review the tabular roll-forward disclosures for unrecognized tax benefits for the period 2007 through 2011. The authors estimate, on average, that less than 24 cents out of every dollar of tax reserves is paid out in cash. Similarly, Koester (2011) examines investors' valuation of reported UTBs and finds that investors place a positive valuation on reported UTBs, consistent with investors expecting the majority of the unrecognized tax benefits to be retained by the firm. Consistent with Frischmann et al.'s conjecture that the market views firms' earnings as understated due to the conservative reporting of UTBs, I expect (having controlled for the effects of managerial discretion) market participants to place a positive valuation on *non-discretionary UTBs*.

My expectation is that the market is able to distinguish between *discretionary* and *non-discretionary UTBs*. To test my expectation, I use the Ohlson (1995) valuation model and regress firms' share price on earnings per share and book value of assets and liabilities (measured per share) as follows:

$$Price_{i,t} = \beta_1 Earnings_{i,t} + \beta_2 DTA_{i,t} + \beta_3 AdjAssets_{i,t} + \beta_4 DTL_{i,t} + \beta_5 PenOb_{i,t}$$
$$+ \beta_6 NonDiscUTB_{i,t}^{PS} + \beta_7 DiscUTB_{i,t}^{PS} + \beta_8 AdjLiab_{i,t} + \varepsilon_{i,t} \quad (5)$$

The dependent variable is stock price per share ($Price_{i,t}$), measured 60 working days after the fiscal year end. $Earnings_{i,t}$ is earnings per share (*ni*) for fiscal year t. The book value of equity is separated into its separate components, namely: net deferred tax assets ($DTA_{i,t}$), total assets adjusted for deferred tax assets ($AdjAssets_{i,t}$), deferred tax liabilities ($DTL_{i,t}$), pension obligations ($PenOb_{i,t}$), *non-discretionary UTBs* ($NonDiscUTB_{i,t}^{PS}$), *discretionary UTBs* ($DiscUTB_{i,t}^{PS}$), and total liabilities less deferred tax liabilities, pension obligations, *non-discretionary* and *discretionary UTBs* ($AdjLiab_{i,t}$). I scale all independent variables by the number of common shares outstanding as at the date of the share price. See Appendix A for detailed variable definitions.

If investors discern *discretionary UTBs* as management's attempt at "window-dressing" then I expect investors to place no economic value on $DiscUTB_{i,t}$ (i.e., $\beta_7 = 0$). However, if investors are not able to discern management's financial reporting discretion then investors will place the same value on both components ($\beta_6 = \beta_7$). With regards to *non-discretionary UTBs*, if investors consider *non-discretionary UTBs* to represent a future economic outflow from the firm (i.e., a liability), then I expect a negative valuation ($\beta_6 < 0$). On the other hand, if investors consider *non-discretionary UTBs* to represent a signal of value-enhancing tax aggressive strategies, or an understatement of earnings, then I expect a positive value on $NonDiscUTB_{i,t}$ ($\beta_6 > 0$).

Following Koester (2011) and Ayers (1998), I include the deferred tax components of assets and liabilities (as well as pension obligations) as they have been shown to be correlated with unrecognized tax benefits.[27] Consistent with prior research (Koester 2011, Ayers 1998, Barth et al. 1998), I expect a positive coefficient on $Earnings_{i,t}$, $DTA_{i,t}$, $AdjAssets_{i,t}$, and a negative coefficient on $DTL_{i,t}$, $PenOb_{i,t}$,

[27] Koester (2011) conjectures that it is likely firms avoid taxes using both certain and uncertain tax positions. As a result, UTBs and deferred tax liabilities are expected to be correlated. Ayers (1998) shows that deferred tax liabilities are correlated with deferred tax assets and pension obligations.

$AdjLiab_{i,t}$ consistent with these variables being viewed as residual equity, assets and liabilities respectively.

Table 6.1 reports the results for estimating equation (5) where the dependent variable is the stock price per share ($Price_{i,t}$). I include columns 1 through 3 for comparison with prior research; the results are qualitatively similar to those reported in Koester (2011). In particular, I observe a positive and significant coefficient for reported UTBs in column 3 (coefficient = 3.6348, *p*-value = 0.0002). For brevity I will focus the discussion on column 4, which reports the results for equation (5). I observe the coefficient on *discretionary UTBs* to be statistically different from *non-discretionary UTBs* (untabulated), consistent with investors being able to discern between *discretionary* and *non-discretionary UTBs*. Moreover, I find that the coefficient on *discretionary UTBs* is not statistically different from zero (coefficient = -0.1178, *p*-value = 0.9228), consistent with the market being able to undo management's attempts at "window-dressing" (Gleason and Mills 2008).[28]

Next, I observe a positive association between price per share ($Price_{i,t}$) and *non-discretionary UTBs*. Importantly, after controlling for management's discretionary financial reporting (*discretionary UTBs*), I observe the coefficient on *non-discretionary UTBs* (coefficient = 8.7018, *p*-value = <0.0001) to be similar in magnitude to that reported for $Earnings_{i,t}$ (coefficient = 7.0256, *p*-value = <0.0001). These results are consistent with Frischmann et al.'s explanation that investors view *non-discretionary UTBs* to be the result of understated earnings that will eventually flow to the residual claimants, i.e., the shareholders. Academic researchers are perplexed by the contradictory findings of a positive association between UTBs, a liability account, and firm value. The findings in this paper support the secondary explanation put forward by Frischmann et al. (2008).

[28] The market's ability to undo management's window-dressing raises the question: why do managers bother to window-dress? As discussed earlier, managers may have other financial reporting incentives, e.g., to meet financial performance targets tied to executive compensation (Brown et al. 2013), or to avoid scrutiny from tax authorities (Towery 2013).

6.2 The Effect of IRS Enforcement on the Association between Non-discretionary UTBs and Future Taxes Paid.

Next, I investigate whether closer IRS monitoring attenuates the association between *non-discretionary UTBs* and future taxes paid. In Chapter 5, I find a positive association between *non-discretionary UTBs* and the change in future taxes paid ($\Delta TaxPaid_{i,t+2}$) for year *t+2*. I attribute the lack of statistically significant results for years *t+1* and *t+3* to the contingent nature of unrecognized tax benefits. Given the low IRS audit rate, I conclude the weak relation between *non-discretionary UTBs* and future taxes paid is not unexpected.

A plausible inference from my conclusion is that the relation between *non-discretionary UTBs* and future taxes paid becomes stronger after controlling for IRS enforcement activities. Hoopes, Mescall and Pittman (2012) examine whether firms' tax avoidance activities subside when corporate tax enforcement is more stringent. Using past IRS audit rates as management's expectation for current IRS enforcement, they find closer IRS monitoring limits corporate tax avoidance (proxied by cash effective tax rates).

To test whether IRS enforcement activities attenuate the relation between *non-discretionary UTBs* and future taxes paid, I insert IRS audit rates ($IRSAuditRate_{i,t}$) as an additional control variable in equation (3) and include interaction terms with *discretionary* and *non-discretionary UTBs*:

$$\begin{aligned}\Delta TaxPaid_{i,t+n} = {} & \alpha_0 + \gamma_1 DiscUTB_{i,t} + \gamma_2 NonDiscUTB_{i,t} + \gamma_3 IRSAuditRate_{i,t} \\ & + \gamma_4 DiscUTB * IRSAuditRate_{i,t} + \gamma_5 NonDiscUTB * IRSAuditRate_{i,t} \\ & + \gamma_6 \Delta PTROA_{i,t+n} + \gamma_7 TaxDef_{i,t} + \gamma_8 TaxLosses_{i,t} \\ & + \gamma_9 MtoB_{i,t} + \gamma_{10} Size_{i,t} + \nu_{i,t} \qquad (3a)\end{aligned}$$

where n=1, 2, 3.

Following Hoopes et al. (2012), I proxy for the expected likelihood of an IRS audit using prior year actual IRS audit rates ($IRSAuditRate_{i,t}$) measured as the number of corporate tax return audits

completed in the IRS's fiscal year *t-1* for an IRS asset size group A, divided by the number of corporate tax returns received in the previous calendar year (*t-2*) for the same IRS asset size group A. Appendix B provides a summary of the actual IRS audit rates, by asset size group, for the period 2006 thru 2011. Consistent with the closer IRS monitoring limiting corporate tax avoidance (Hoopes et al. 2012), I expect a positive coefficient on $IRSAuditRate_{i,t}$ ($\gamma_3 > 0$). If closer monitoring leads to greater detection of tax aggressive positions and higher payout to the tax authorities, then I expect a positive coefficient on the interaction term $NonDiscUTB * IRSAuditRate_{i,t}$ ($\gamma_5 > 0$). Since I expect no relation between the main effect term $DiscUTB_{i,t}$and $\Delta TaxPaid_{i,t+n}$, likewise I do not expect a significant coefficient on the interaction term $DiscUTB * IRSAuditRate_{i,t}$ ($\gamma_4 = 0$). All other variables are as previously defined.

Table 6.2 present the results of the estimation of equation (3a), using an OLS cross-sectional regression. After controlling for IRS enforcement activities, I now observe a positive and significant association between *non-discretionary UTBs* ($NonDiscUTB$) and the changes in future taxes paid ($\Delta TaxPaid$) for the years *t+2* and *t+3*, which provides further evidence that *non-discretionary UTBs* reflect future cash taxes outflow (i.e., a liability). In column 3, the coefficient on $IRSAuditRate$ is positive and significant (coefficient = 0.0127, p-value = 0.0638), consistent with closer IRS monitoring limiting corporate tax avoidance (Hoopes et al. 2008).[29] However, the coefficient for $NonDiscUTB * IRSAuditRate$ is not significant. One possible explanation for the lack of evidence is that closer IRS monitoring curtails firms from taking aggressive tax positions, as a consequence firms subject to closer IRS scrutiny may have the same (or less) tax audit deficiencies. Finally, I find no significant association between *discretionary UTBs* ($DiscUTB$) and the change in future taxes paid ($\Delta TaxPaid_{i,t+n}$) or the interaction term $DiscUTB * IRSAuditRate_{i,t}$, consistent with the results from the first validation test in Chapter 5.

[29] IRS audit rates tend to be sticky year-on-year. In additional analysis, I evaluate equation (3a) substituting the level of taxes paid in year *t+n* ($TaxPaid_{i,t+n}$) as the dependent variable and include taxes paid in year *t* ($TaxPaid_{i,t}$) as an additional control variable. Untabulated results find a positive and significant coefficient on *IRSAuditRate* for years *t+2* and *t+3*. All other results are qualitatively similar to those reported in Table 6.2.

Table 6.1
Market Pricing of Discretionary and Non-discretionary UTBs

		(1)	(2)	(3)	(4)
		<----------$Price_{i,t}$---------->			
Dep. Variable =					
		Coeff.	Coeff.	Coeff.	Coeff.
Variable	Pred.	***(p-value)***	***(p-value)***	***(p-value)***	***(p-value)***
Earnings	+	7.6177	8.0650	7.8827	7.0256
		(<0.0001)	***(<0.0001)***	***(<0.0001)***	***(<0.0001)***
Book Value	+	0.9474			
		(<0.0001)			
Total Assets	+		0.7761		
			(<0.0001)		
AdjAssets	+			0.7533	0.4237
				(<0.0001)	***(<0.0001)***
DTA	+			1.4242	0.6802
				(<0.0001)	***(0.0054)***
Total Liabilities	-		-0.7408		
			(<0.0001)		
DTL	-			-1.7424	-0.7909
				(<0.0001)	***(0.0074)***
PenOb	-			-1.5327	-1.0104
				(<0.0001)	***(<0.0001)***
UTB	?			3.6348	
				(0.0002)	
DiscUTB	?				-0.1778
					(0.9228)
NonDiscUTB	?				8.7018
					(<0.0001)
AdjLiab	-			-0.6564	-0.4369
				(<0.0001)	***(<0.0001)***
Adj R^2		0.8002	0.7920	0.7971	0.8376
N		4,910	4,910	4,910	4,910

This table presents results of cross-sectional OLS regression and includes industry (2-digit SIC code) and year fixed effects. See Appendix A for variable definitions. *p*-values are computed using robust, firm clustered standard errors and are based on one-tailed *t*-statistics when predictions are made.

Table 6.2
The Effect of IRS Enforcement on the Association between Non-discretionary UTBs and Future Taxes Paid

Dep. Variable =		(1) $\Delta TaxPaid_{i,t+1}$	(2) $\Delta TaxPaid_{i,t+2}$	(3) $\Delta TaxPaid_{i,t+3}$
Variable	Pred.	Coeff. ***(p-value)***	Coeff. ***(p-value)***	Coeff. ***(p-value)***
Intercept	?	0.0004 *(0.8836)*	-0.0009 *(0.8428)*	-0.0073 *(0.2966)*
$DiscUTB_{i,t}$	0	0.1143 *(0.2774)*	0.0828 *(0.5001)*	-0.0566 *(0.7214)*
$NonDiscUTB_{i,t}$	+	0.0860 *(0.3021)*	0.2647 ***(0.0473)***	0.3270 ***(0.0548)***
IRS Audit $Rate_{i,t}$	+	-0.0002 *(0.5177)*	0.0076 *(0.1021)*	0.0127 ***(0.0638)***
*DiscUTB** *IRS Audit* $Rate_{i,t}$	?	-0.1750 *(0.3386)*	-0.0902 *(0.6657)*	0.1247 *(0.6430)*
*NonDiscUTB** *IRS Audit* $Rate_{i,t}$	+	-0.0732 *(0.6091)*	-0.3067 *(0.8811)*	-0.4764 *(0.9343)*
$\Delta PT\_ROA_{i,t+n}$	+	0.0693 ***(0.0009)***	0.0640 ***(0.0002)***	0.0586 ***(0.0009)***
$TaxDef_{i,t}$	+	-0.0209 *(0.8560)*	0.0157 *(0.2309)*	-0.0338 *(0.6752)*
$TaxLosses_{i,t}$	-	0.0010 *(0.9231)*	0.0028 *(0.9998)*	0.0050 *(0.9937)*
$MtoB_{i,t}$	?	0.0000 *(0.6739)*	0.0000 *(0.7637)*	0.0000 *(0.5763)*
$Size_{i,t}$	-	-0.0001 *(0.3664)*	-0.0005 ***(0.0951)***	0.0001 *(0.5311)*
Sample period		YE 2007-2010	YE 2007-2009	YE 2007-2008
Adj R^2		0.1713	0.1783	0.1726
N		4,642	3,231	1,960

This table presents results of the cross-sectional OLS regression and includes industry (2-digit SIC code) and year fixed effects. See Appendix A for variable definitions. I compute *p*-values using robust, firm clustered standard errors, *p*-values are based on one-tailed *t*-statistics where there is a predicted sign and two-tailed tests otherwise. All continuous variables are winsorized at the 1% and 99% level.

CHAPTER 7

CONCLUSION

FIN 48 provides users of financial statements with a mandated disclosure of the unrecognized tax benefits (UTBs) associated with firms' tax aggressive strategies. While the amounts for UTBs reported in the financial statements provide users with a proxy for firms' tax aggressiveness, reported UTBs are subject to bias due to the financial reporting discretion of management. The presence of financial reporting discretion makes interpretation of changes in reported UTBs and its relation with other firm characteristics problematic. To provide "less noisy" measures of tax aggressiveness and financial reporting discretion reflected in UTBs, this study investigates whether reported UTBs can be partitioned into two components: a component that reflects a firm's tax aggressiveness (*non-discretionary UTBs*), and the remainder which captures the effect of financial reporting discretion on reported UTBs (*discretionary UTBs*).

I compute *non-discretionary UTBs* as the predicted values from an OLS regression of reported UTBs on known determinants of tax aggressiveness, and use the residuals as empirical estimates of *discretionary UTBs*, and conduct a number of validation tests for the two proxies. Consistent with *non-discretionary UTBs* representing firm liabilities, I find that *non-discretionary UTBs* are positively associated with future taxes paid. In contrast, consistent with *discretionary UTBs* capturing management's financial reporting discretion in reporting UTBs, I find that *discretionary UTBs* are (i) negatively associated with future tax expense reported in the financial statements (i.e., *discretionary UTBs* predictably reverse) and (ii) not associated with future taxes paid. I also observe that the magnitude of *discretionary UTBs* is positively associated with tax-related internal control weaknesses and tax-related financial restatements and find evidence consistent with managers using *discretionary UTBs* to meet analysts' consensus earnings forecast.

This study makes the following contributions. First, while prior studies (Song and Tucker 2008, Cazier et al. (2009) and Lisowsky et al. (2013)) develop models of the determinants of reported *aggregate* UTBs, this study investigates whether reported UTBs can be partitioned into two components (i.e., *non-discretionary UTBs* and *discretionary UTBs*). Descriptive data suggest that *discretionary UTBs* can be sizable in magnitude, both relative to *non-discretionary UTBs* and as a percentage of earnings per share. Using a broad-based sample, this evidence is consistent with prior studies (De Simone et al. 2013, Towery 2013) that report considerable variation in the reporting of UTBs. Validation tests provide comfort that *discretionary UTBs* reflect financial reporting discretion as opposed to an omitted determinant of tax aggressiveness or management's private signal about future taxes paid.

Second, consistent with firms using *discretionary UTBs* to manage earnings in the post-FIN 48 period, I find that firms that record a reduction in *discretionary UTBs* are more likely to meet analysts' consensus earnings forecast. In addition to providing further comfort that *discretionary UTBs* reflect financial reporting discretion, this evidence contributes to the debate on whether earnings management via tax reserves has been curtailed post-FIN 48. The findings in this paper suggest that, despite the strict criteria and rules introduced by FIN 48 guidelines, firms continue to manage earnings via the tax reserves.

Finally, this study's empirical estimate of *non-discretionary UTBs* and *discretionary UTBs* should be of interest to financial statement users, financial and tax regulators, and academics. Financial regulators and researchers who are specifically interested in the relation between UTBs and managements' financial reporting incentives can use *discretionary UTBs* as a more powerful proxy relative to reported UTBs. Similarly, tax regulators, financial statement users, and researchers who use reported UTBs as a proxy for tax aggressiveness can use *non-discretionary UTBs* as a 'pre-managed' estimate of firms' tax aggressiveness. For example, my empirical estimate of *nondiscretionary UTBs* provides tax authorities (e.g., the I.R.S.) with a simple acid test on the likelihood that a firm has under- or over-stated its unrecognized tax benefits, thus allowing tax authorities to efficiently allocate scarce resources to audit taxpayers with greatest probability of underpayment (Mills et al. 2010).

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APPENDIX A
Variable definition

Measures of unrecognized tax benefits

$UTB_{i,t}$	Uncertain tax benefits ($txtubend$) scaled by beginning of year assets (at).
$NonDiscUTB_{i,t}$	The predicted value from the OLS regression of reported UTBs (UTB_{it}) on tax determinants.
$DiscUTB_{i,t}$	The residual from the OLS regression of reported UTBs (UTB_{it}) on tax determinants.
$DiscUTB\_PS_{i,t}$	Discretionary UTBs ($DiscUTB_{it}$) deflated by the number of common shares outstanding ($csho$) at end of year *t*. $DiscUTB\_PS_{it} = (DiscUTB_{it} * at) \div csho$

Tax Determinants of UTBs

$DefRev_{i,t}$	Indicator variable equal to 1 if Deferred revenue ($drc + drlt$) is non-zero; 0 otherwise.
$ForeignSales_{i,t}$	Sum of foreign sales ($sales$) scaled by total sales, taken from *Compustat* segment dataset, set to zero if missing.
$IndAdjCashETR5_{i,t}$	Industry mean adjusted $CashETR5$(based on 2-digit SIC code), where $CashETR5$ is measured over five year period ending in year *t*, calculated as the ratio of the sum of taxes paid ($txpd$) over the sum of pre-tax income ($pi - spi$).
$Leverage_{i,t}$	Long term debt ($dltt$)+ short term debt (dlc), scaled by beginning of year assets (at).
$MtoB_{i,t}$	Ratio of market value of equity to book value of equity (($csho * prcc\_f)/ceq$).
$NOL_{i,t}$	Indicator variable equal to 1 if tax losses carried forward is positive ($tlcf > 0$); 0 otherwise.
$PPE_{i,t}$	Gross property, plant and equipment (*ppegt*) scaled by beginning of year assets (at).
$PTROA_{i,t}$	Pre-tax income (pi) scaled by beginning of year assets (at).
$R\&D_{i,t}$	Research and development expenses (xrd) scaled by beginning of year assets (at).
$Size_{i,t}$	Natural log of total assets (at) at the end of the year.
$S\&GA_{i,t}$	Selling and general administrative expenses ($xsga$) scaled beginning of year assets (at).
$SalesGrowth_{i,t}$	Three year average change in sales (*sale*), from year *t-2* to year *t*.

Unrecognized tax benefits represent the accumulated uncertain tax positions for all open tax years. As a result, I measure all determinants (with the exception of IndAdjCashETR5) over a three-year period (year *t-2* to *t*). For each determinant defined as a ratio (i.e., $PTROA$, $ForeignSales$, $R\&D$, $Leverage$, $MtoB$, $S\&GA$, PPE), I define the three-year measure as the sum of its numerator, deflated by the sum of its denominator. I define all other variables (i.e., $Size$, $SalesGrowth$,$DefRev$, NOL) as averages of their annual values.

Proxies for Tax Aggressiveness and Discretionary Working Capital Accruals

$BTD_{i,t}$	Book tax difference computed as book income less taxable income, scaled by beginning of year assets (at): $$BTD = \left[pi - \left\{\frac{txfed + txfo}{STR}\right\}\right] \div at$$
$DTax_{i,t}$	Residual from the following regression estimated by year and 2-digit SIC code (Frank et al 2009): $$PERMDIFF_{it} = \alpha_0 + \alpha_1 INTANG_{it} + \alpha_2 UNCON_{it} + \alpha_3 MI_{it} + \alpha_4 CSTE_{it} + \alpha_5 \Delta NOL_{it} + \alpha_6 LAGPERM_{it} + \varepsilon_{it}$$ Where: $PERMDIFF$= Total book-tax differences – temporary book-tax differences = $[\left\{pi - \left[\frac{txfed+txfo}{STR}\right]\right\} - \left(\frac{txdi}{STR}\right)]$, scaled by beginning of year assets (at); STR= Statutory tax rate (35% for this sample period); $INTANG$= Goodwill and other intangibles ($intan$) divided by total assets at year *t-1*; $UNCON$= Income (loss) reported under the equity method ($esub$) divided by total assets at year *t-1*; MI= Income (loss) attributable to minority interest (mii), scaled by beginning of year assets (at); $CSTE$= Current state tax expense (txs), scaled by beginning of year assets (at); ΔNOL= Change in net operating loss carry forwards ($tlcf$), scaled by beginning of year assets (at); $LAGPERM$= $PERMDIFF$ in year t-1;
$PT\_DA_{i,t}$	Pre-tax discretionary working capital accruals, measured as the residual from the following regression estimated by year and 2-digit SIC code (Frank et al 2009): $$TACC_{it} = \alpha_0 + \alpha_1(\Delta REV_{it} - \Delta AR_{it}) + \alpha_2 PPE_{it} + \eta_{it}$$ Where: $TACC$= Total accruals = $(EBEI + TTE) - [(CFO + ITP) - EIDO]$ from firm *i* in year *t*, scaled by beginning of year assets (at); $EBEI$= earnings before extraordinary items (ibc) from the statement of cash flow; TTE = Total tax expense (txt); CFO = Cash flow from operations ($oancf$); ITP = Income taxes paid from the statement of cash flow ($txpd$); $EIDO$= extraordinary items and discontinued operations ($xidoc$) from the statement of cash flow; ΔREV= Change in sales ($sale$), scaled by beginning of year assets (at); ΔAR = Change in accounts receivable ($recch$), scaled by beginning of year assets (at); PPE = Gross property, plant, and equipment ($ppegt$), scaled by beginning of year assets (at);

Validation tests

$\Delta TaxExp_{i,t+n}$	The change in tax expense (txt) between year $t+n$ and year t, both variables scaled by total assets (at) at the beginning of year.
$\Delta TaxPaid_{i,t+n}$	The change in cash taxes paid $(txpd)$ between year $t+n$ and year t, both variables scaled by total assets (at) at the beginning of year.
$\Delta PTROA_{i,t+n}$	The change in pre-tax return on assets between year $t+n$ and year t. $\Delta PTROA_{i,t+n} = PTROA_{i,t+n} - PTROA_{i,t}$
$TaxDef_{i,t}$	Deferred tax expense $(txdi)$ scaled by beginning of year assets (at).
$TaxLosses_{i,t}$	Tax losses carry forward $(tlcf)$ in year t scaled by total assets (at) at the beginning of year t.
$Sox404ICW_{i,t}$	An indicator variable equal to 1 if the firm has a tax-related internal control weakness under SOX404, 0 otherwise. Source: *Audit Analytics.*
$FSRestated_{i,t}$	An indicator variable equal to 1 if the firm restates their financial statement for tax-related reasons. Source: *Audit Analytics.*

Earnings Mgmt test

$Meet_{i,t}$	Indicator variable set to equal to 1 if actual earnings in the current year are greater than or equal to analysts' median forecast just prior to earnings announcement (source: I/B/E/S), zero otherwise.
$RedDiscUTB_{i,t}$	Indicator variable set equal to 1 when a firm as a reduction in discretionary UTBs ($DiscUTB_{i,t}$), zero otherwise.
$LaborInt_{i,t}$	Labor intensity: 1– gross property, plant, and equipment (PPE_{it}).
$LitInd_{i,t}$	Indicator variable set to equal to 1 when for firm-years in high litigation risk industries (SIC 2833-2836, 3570-3577, 7370-7374, 3600-3674, 5200-5961), zero otherwise.
$Analysts_{i,t}$	The number of analysts that report at least one annual forecast for fiscal year t (source: I/B/E/S).
$MeetPriorYr_{i,t}$	Indicator variable set to equal to 1 if reported earnings in the prior year are greater than or equal to analysts' median forecast just prior to earnings announcement (source: I/B/E/S).
$LnShares_{i,t}$	Natural log of total common shares outstanding $(csho)$ at the end of year t.
$PosUnexpChg_{i,t}$	Indicator variable set to equal to 1 if actual earnings in the current year are greater than actual earnings in the prior year (source: I/B/E/S), zero otherwise.
$Walkdown_{i,t}$	Initial analysts' annual median forecast minus the consensus analysts' forecast used to calculate $Meet_{i,t}$ (source: I/B/E/S), scaled by the end of year share price $(prcc\_f)$.
$InitialFE_{i,t}$	Absolute value of the difference between actual earnings and the initial analysts' annual median forecast (source: I/B/E/S), scaled by the end of year share price $(prcc\_f)$.
$TaxAgg_{i,t}$	Indicator variable set to equal 1 for firm-year observations in the quintile with the lowest cash effective tax rate $CashETR5$ (defined as "most aggressive"), and zero otherwise, where $CashETR5$ is measured over five year period ending in year *t*, calculated as the ratio of the sum of taxes paid $(txpd)$ over the sum of pre-tax income $(pi - spi)$.

Market Pricing test

$Price_{i,t}$	Stock price per share (prc) from CRSP, measured 60 working days after the fiscal year end.
$Earnings_{i,t}$	Net income (ni) divided by the number of shares outstanding $(shrout)$ as at date of stock price $(Price_{i,t})$.
$DTA_{i,t}$	Net deferred tax assets $(txndba)$ divided by the number of shares outstanding $(shrout)$, set to zero if missing.
$AdjAssets_{i,t}$	Total assets (at) less net deferred tax assets $(txndba)$, divided by the number of shares outstanding $(shrout)$.
$DTL_{i,t}$	Net deferred tax liabilities $(txndbl)$ divided by the number of shares outstanding $(shrout)$, set to zero if missing.
$PenOb_{i,t}$	Sum of pension accumulated benefit obligation $(pbaco)$ less pension plan assets $(pplao)$ and other post-employment benefits liability $(-1 * prba)$, divided by the number of shares outstanding $(shrout)$, set to zero if missing.
$DiscUTB_{i,t}^{PS}$	$DiscUTB_{it}$ multiply by total assets (at) at the beginning of year, divided by the number of shares outstanding $(shrout)$.
$NonDiscUTB_{i,t}^{PS}$	$NonDiscUTB_{it}$ multiply by total assets (at) at the beginning of year, divided by the number of shares outstanding $(shrout)$.
$AdjLiab_{i,t}$	Total liabilities (lt) divided by the number of shares outstanding $(shrout)$, less $(DTL_{i,t} + PenOb_{i,t} + NonDiscUTB_{i,t}^{PS} + DiscUTB_{i,t}^{PS})$.

APPENDIX B

Internal Revenue Service (IRS) Annual Audit Rates

	2006	2007	2008	2009	2010	2011
Assets < $10M	0.8%	0.9%	1.0%	0.9%	0.9%	1.0%
$10M ≤ Assets < $50M	14.2%	15.0%	11.7%	10.1%	13.4%	13.3%
$50M ≤ Assets < $100M	13.8%	11.4%	11.7%	14.3%	16.2%	18.9%
$100M ≤ Assets < $250M	14.0%	12.1%	12.8%	13.6%	14.7%	16.6%
$250M ≤ Assets < $500M		14.3%	14.2%	15.8%	16.1%	17.4%
$500M ≤ Assets < $1B		18.5%	18.6%	18.1%	18.1%	20.6%
$1B ≤ Assets < $5B	35.2%[a]	31.6%	31.2%	27.3%	28.6%	31.1%
$5B ≤ Assets < $20B		62.9%	64.2%	48.7%	45.3%	50.5%
Assets ≥ $20B		119.5%[b]	127.1%	114.4%	98.0%	95.6%

IRS audit rates are define as the number of corporate tax return audits completed in the IRS's fiscal year *t* for an IRS asset size group A, divided by the number of corporate tax returns received in the previous calendar year for the same IRS asset size group A.

Source: IRS Annual Data Book, http://www.irs.gov/uac/SOI-Tax-Stats-IRS-Data-Book

a. Assets classes above $500M broken out for fiscal year 2007 onwards.

b. The percentage of returns examined maybe greater than 100 percent of the returns filed in previous calendar year since examinations may be conducted on multiple returns filed in prior calendar years.