Investor Valuation of Tax Avoidance through Uncertain Tax Positions

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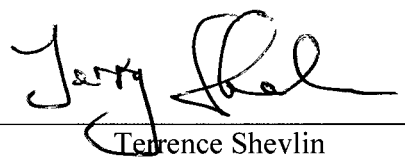

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Abstract

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This paper examines equity investor valuation of tax avoidance achieved through uncertain tax positions. New financial reporting standards require firms to separately disclose their contingent liabilities for tax positions that may be disallowed upon tax return audit. This disclosure provides investors with information about the magnitude of firms' tax avoidance activity through uncertain tax positions, or uncertain tax avoidance. I find evidence consistent with investors positively valuing uncertain tax avoidance, suggesting that tax-related contingent liabilities are viewed very differently from other liabilities. My findings are consistent with investors interpreting managers' past uncertain tax avoidance as an indicator of future uncertain tax avoidance where the economic benefit of avoidance (i.e., cash tax savings) is expected to be retained, and/or a positive reputation effect associated with uncertain tax avoidance activity. Cross-sectional tests provide some evidence that uncertain tax avoidance is positively valued only in well-governed firms, consistent with investors believing the economic benefit of uncertain tax avoidance does not fully accrue to shareholders when governance mechanisms are weak.

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DEDICATION

To my wonderful parents Steve and Julie, my insightful sister April, and my amazing spouse Eric. I am eternally grateful for your encouragement and support, and am proud to call you my family.

I. Introduction

This paper examines equity investor valuation of tax avoidance achieved through uncertain tax positions. Tax avoidance refers to "the reduction of explicit taxes" (Hanlon and Heitzman 2010, p.137),[1] and a tax position refers to the determination of whether and/or when an item is taxable or deductible. Favorable tax positions reduce taxes in the current period. Corporate tax law is often ambiguous as to whether and/or when an item is taxable or deductible, and managers often take favorable corporate tax positions that may not be sustained upon tax return audit. Because there is considerable uncertainty as to whether the economic benefit (i.e., cash tax savings) of these favorable tax positions will be retained, I refer to this type of tax avoidance as *uncertain* tax avoidance.

It is important to understand whether and to what extent uncertain tax avoidance is valued by equity investors (the residual claimants of the firm), as managers expend significant financial and human capital resources to engage in this type of tax avoidance. Little is known about how investors view uncertain tax avoidance, primarily because investors have historically had little information to use in evaluating whether corporate tax avoidance is achieved through certain or uncertain tax positions. Financial accounting standards require firms to recognize a contingent liability when there is uncertainty as to whether a favorable tax position will be fully sustained, and as of 2007 FASB Interpretation No. 48 *Accounting for Uncertainty in Income Taxes, an Interpretation of FASB Statement No. 109 Accounting for Income Taxes* (FIN 48) requires firms to separately disclose their tax-related contingent liabilities (i.e., tax reserves) in their income tax

[1] Hanlon and Heitzman (2010) note in their review of tax research in the accounting literature that there is no universally accepted definition of tax avoidance. The authors define tax avoidance broadly to reflect all transactions that have any effect on firms' explicit tax liability and intentionally do not distinguish between transactions that are tax-advantaged by law and transactions undertaken explicitly to reduce taxes (whether legal or illegal). I rely on this broad definition of tax avoidance in my paper.

footnotes.[2] I use FIN 48 tax reserves for uncertain tax positions as a proxy for uncertain tax avoidance in my empirical analysis.

It is ex-ante unclear whether equity investors view uncertain tax avoidance as value decreasing or increasing. There are three reasons why investors would negatively value uncertain tax avoidance. One, investors may believe that tax authority scrutiny, or the likelihood and/or thoroughness of a tax return audit, of *current* and *prior period* tax returns is increasing in the dollar value of a manager's disclosed uncertain tax avoidance activity. Tax authority scrutiny consumes managerial time and effort that could otherwise be devoted to firm operations, and a higher level of scrutiny is expected to be positively associated with a greater likelihood of at least a portion of current or prior period uncertain tax positions being disallowed. Disallowance results in a future cash outflow to the tax authority equal to the tax liability itself plus tax authority-assessed interest and penalties. It is precisely the potential for disallowance that gives rise to the recording of a contingent liability for financial reporting purposes. Economic theory predicts and empirical research finds evidence consistent with other types of contingent liabilities being negatively valued by investors (Banks and Kinney 1982; Barth and McNichols 1994; Cohen et al. 2011).

Two, investors may believe that tax authority scrutiny of *future period* tax returns is increasing in the dollar value of a manager's disclosed uncertain tax avoidance activity, which could adversely affect future cash flows in two different ways. If a manager decreases his future uncertain tax avoidance activity in anticipation of the additional future scrutiny, the firm pays more cash taxes in the future. Alternatively, if a manager continues to engage in the same level of uncertain tax avoidance activity, the additional future scrutiny makes concealing the avoidance activity more difficult and costly (Bosch and Eckard 1991).

[2] FIN 48 is now codified within Accounting Standards Codification (ASC) 740-10 *Income Taxes*.

Three, there could be a negative reputation effect associated with a firm being viewed as a "poor corporate citizen" unwilling to pays its "fair share" of taxes (Hanlon and Slemrod 2009). If a firm's reputation as a bad corporate citizen negatively impacts customer, supplier, and/or creditor willingness to do business with firm management, a firm may be subject to lower future revenues and/or higher future transaction costs (Klein and Leffler 1981). In addition, investors may believe that managers willing to "cheat" the government are also willing to "cheat" shareholders (Desai and Dharmapala 2006, 2009a, 2009b). These three factors predict that investors negatively value uncertain tax avoidance.

In contrast, there are two reasons why investors would positively value uncertain tax avoidance. One, if past and current uncertain tax avoidance activity is positively associated with future uncertain tax avoidance activity *and* the economic benefit of future uncertain tax avoidance is expected to be retained, a firm will pay less cash taxes in the future (increasing shareholders' residual claim). Anecdotal and empirical evidence suggest that past and current period uncertain tax avoidance is an indicator of future uncertain tax avoidance. In practice, many tax avoidance transactions are designed to generate tax benefits for multiple periods (Graham and Tucker 2006). In addition, prior research finds that many firms are able to persistently avoid taxes over time horizons of up to ten years (Dyreng et al. 2008) and identifies a managerial "tax avoidance style" that persists throughout a manager's career at different firms (Dyreng et al. 2010). It is also reasonable for investors to expect the economic benefit of future uncertain tax avoidance to be largely retained. Future cash outflows to the tax authorities related to uncertain tax avoidance are jointly determined by tax return audit probability, uncertain tax position detection risk, and tax authority settlement rates. Taxing authorities do not have sufficient resources to audit every tax return filed or detect every uncertain tax position reflected

in the returns that are audited, and research finds that the IRS generally settles corporate tax disputes for a fraction of the total amount in dispute (Mills 1998; Hanlon et al. 2007).

Two, there could be a positive reputation effect associated with managers who engage in uncertain tax avoidance activity being viewed as good stewards of firm resources. At the most basic level, when a manager engages in tax avoidance, he is preventing a transfer of firm resources to the government. Uncertain tax avoidance activity suggests managers are actively taking advantage of and/or seeking opportunities to prevent this transfer of firm resources. Similar to investors placing a premium on firms with managers who exhibit financial reporting expertise (Bartov et al. 2002), investors may also place a premium on firms with managers who demonstrate tax avoidance expertise. These two factors predict that investors positively value uncertain tax avoidance. In sum, the existence and direction of the association between firm value and uncertain tax avoidance is an unanswered and important empirical question.

To test my research question, I hand-collect tax reserve data from S&P 500 firms' Form 10-K income tax footnotes during firms' initial two years of FIN 48 compliance (for fiscal years ending between December 15, 2007 and December 14, 2009). Aggregate tax reserves for my sample of 485 (472) firm-year observations in the first (second) year of compliance total $183.7 ($191.6) billion. Comparing this dollar value to the $272.2 billion of average annual corporate income tax revenue collected by the IRS during the last decade highlights the economic significance of corporate tax reserves. Using a stock price level (returns) research design, I find a positive relation between firm value and tax reserves (changes in firm value and tax reserves), consistent with investors positively valuing uncertain tax avoidance. My price level tests reveal that the portion of uncertain tax avoidance that gives rise to permanent tax savings is driving this positive valuation.

In cross-sectional analysis, I consider whether investor valuation of uncertain tax avoidance varies with respect to firms' corporate governance mechanisms. An emerging stream of literature suggests that self-serving managers use the complexity and opacity of tax avoidance transactions as a shield to conceal opportunistic behavior, and managers willing to "cheat" the government might also be willing to "cheat" shareholders (Desai and Dharmapala 2006, 2009a, 2009b). When governance mechanisms are weak, managers are more easily able to engage in opportunistic behavior at the expense of shareholders. I find evidence that the positive relation between firm value and total tax reserves (as well as changes in firm value and tax reserves) is present only in well governed firms, consistent with investors perceiving the benefit of uncertain tax avoidance to not accrue to shareholders when governance is weak.

This study provides unique insight into how investors value corporate tax avoidance when there is considerable uncertainty as to whether the economic benefit of avoidance (i.e., cash tax savings) will be retained. My findings further our understanding of whether investors perceive uncertain tax avoidance to be value enhancing or value destroying. In addition, evidence consistent with investors positively valuing a contingent liability is interesting in itself, as prior research finds that investors negatively value other types of contingent liabilities (Banks and Kinney 1982; Barth and McNichols 1994). Finally, my findings provide evidence useful to managers and boards of directors concerned with equity investor perception of corporate tax avoidance through uncertain tax positions.

The remainder of this paper is organized as follows. Section II discusses financial reporting for uncertain tax positions. Section III discusses related literature and the development of my hypotheses, and Section IV describes my sample selection and research design. Section V presents my findings and Section VI concludes.

II. Financial Reporting for Uncertain Tax Positions

FIN 48 was issued to address the diversity in accounting for uncertainty in income taxes observed in practice. Effective for fiscal periods beginning after December 15, 2006, FIN 48 "prescribes a recognition threshold and measurement attribute for the financial statement recognition and measurement of a tax position taken or expected to be taken in a tax return" (p.1) and requires firms to separately disclose uncertain tax position information in their income tax footnotes.[3] Prior to FIN 48, firms were not required to separately disclose their uncertain tax return position information, and very few firms provided this information voluntarily (Gleason and Mills 2002).[4]

FIN 48 requires corporate managers to evaluate every individual tax position taken on all foreign and domestic tax returns their firm files (or chooses not to file) to determine whether "it is more-likely-than-not, based on the technical merits, that the [tax] position will be sustained upon examination" (p.5). For tax positions that do *not* meet this threshold, firms are not allowed to recognize any of the economic benefit of the tax position in their financial statements. Instead, firms establish a contingent liability (i.e., tax reserve) equal to one hundred percent of the tax liability exposure associated with the uncertain tax position. For tax positions that *do* meet this threshold, firms are allowed to recognize in their financial statements "the largest amount of tax benefit that is greater than fifty percent likely of being realized upon effective settlement with a

[3] The term tax position refers to "a position in a previously filed tax return or a position expected to be taken in a future tax return that is reflected in measuring current or deferred income tax assets and liabilities for interim or annual periods. A tax position can result in a permanent reduction of income taxes payable, a deferral of income taxes otherwise currently payable to future years, or a change in the expected realizability of deferred tax assets. The term tax position also encompasses, but is not limited to: a) a decision not to file a tax return; b) an allocation or a shift of income between jurisdictions; c) the characterization of income or a decision to exclude reporting taxable income in a tax return; d) a decision to classify a transaction, entity, or other position in a tax return as tax exempt; or e) an entity's status, including its status as a pass-through entity or a tax-exempt not-for-profit entity" (Master Glossary, FASB 2009).

[4] Gleason and Mills (2002) examine 100 large manufacturing firms over a nine-year period (1987-95) and find that only eight percent of firm-year observations contained any type of tax reserve information other than years subject to tax authority examination.

taxing authority" (p.5) and are required to establish a tax reserve equal to the difference between the total tax liability exposure and the tax benefit allowed to be recognized. Tax reserves are often referred to as "unrecognized tax benefits" (UTBs) because the accrual of a contingent liability and associated tax expense translates into the benefit of the tax position being "unrecognized" in firms' financial statements. Appendix B provides a detailed illustration of financial accounting for uncertain tax positions under FIN 48.

FIN 48 requires firms to disclose the portion of their current period change in tax reserves related to new uncertain tax positions taken in the current period, changes related to uncertain tax positions taken in prior periods, settlements with the tax authorities, and statute of limitation lapses. Firms are also required to disclose the portion of tax reserves that would affect their effective tax rate (ETR), or total tax expense divided by pre-tax book income, if the financial statement benefit of the underlying uncertain tax positions was recognized at a future date. In general, reserves for uncertain tax positions relating to the determination of *when* an item is taxable/deductible do not affect a firm's ETR. In contrast, reserves for uncertain tax positions relating to the determination of *whether* an item is taxable/deductible do affect the ETR when the benefit of the position is recognized in the firm's financial statements. Tax positions for which there is uncertainty as to *when* (*whether*) an item is taxable/deductible generally relate to temporary (permanent) tax savings.[5] I use the portion of a firm's tax reserves that would affect its ETR as a proxy for the portion of a firm's uncertain tax avoidance that gives rise to permanent tax savings in my empirical analysis.

[5] Taking accelerated depreciation on property that might not qualify for "bonus" depreciation under IRC §168(k) is an example of an uncertain tax position that generates a temporary book-tax difference that does not affect a firm's ETR. Including the wages of employees who perform services that might not be considered "qualifying services" in the research and experimentation tax credit calculation under IRC §41 is an example of an uncertain tax position that generates a permanent book-tax difference that does affect a firm's ETR.

III. Related Literature and Hypotheses Development

3.1 Hypothesis Development: Negative Valuation of Uncertain Tax Avoidance

I argue that there are three primary reasons why investors would negatively value uncertain tax avoidance. These three reasons relate to the negative future cash flow implications of 1) *current* and *prior period* uncertain tax avoidance; 2) *future period* uncertain tax avoidance; and 3) the reputation effect associated with a firm being viewed as a poor corporate citizen.

3.1.1. Negative future cash flow implications of current and prior period uncertain tax avoidance. Liabilities are "probable future sacrifices of economic benefits arising from present obligations" (FASB 1985, p.1), and economic theory predicts and empirical research finds evidence consistent with firm value being negatively associated with liabilities (Landsman 1986; Barth 1991; Amir 1993; Barth et al. 2001) and contingent liabilities (Banks and Kinney 1982; Barth and McNichols 1994; Cohen et al. 2011). Tax reserves are by definition contingent liabilities, with the FASB expressly stating that tax reserves "represent an enterprise's potential future obligation to the taxing authority for [an uncertain] tax position" (FIN 48, p.7).

There was significant concern in the tax, accounting, and legal communities that FIN 48 tax reserve disclosures would provide the IRS with a "roadmap" to firms' most vulnerable tax issues, which in turn would increase corporate cash outflows to the taxing authorities. Industry experts noted that FIN 48 is "one of the most significant enforcement tools that the IRS has been presented with in recent years" (Willens 2006, p.2), giving "the IRS a real boost in its efforts to identify and examine a company's most controversial tax positions" (Shaw 2006, p.1). A KPMG webcast reveals that 89 percent of tax professionals surveyed believe it is "highly likely" or "likely" FIN 48 will increase tax return audits (KPMG 2007). If investors share these concerns and believe that tax authority scrutiny of a firm's *current* and *prior period* tax returns is

increasing in the dollar value of a manager's disclosed uncertain tax avoidance activity, it is reasonable to expect at least a portion of a firm's current and/or prior period uncertain tax positions to be discovered and disallowed.

When a tax position is disallowed, a firm incurs a cash outflow equal to the tax liability itself as well as tax authority-assessed interest and penalties.[6] A firm also faces additional compliance costs associated with amending its tax returns in other jurisdictions to reflect the change in taxable revenues and/or deductible expenditures associated with the tax position disallowance, which may lead to an increase in tax authority scrutiny in these other jurisdictions. Finally, increased tax authority scrutiny consumes managerial time and effort that could otherwise be devoted to firm operations. In sum, the cost of a manager taking a favorable but uncertain corporate tax position that is subsequently disallowed may exceed the cost of never taking the favorable tax position to begin with.

3.1.2. Negative future cash flow implications of future period uncertain tax avoidance. Investors could also believe that tax authority scrutiny of a firm's *future period* tax returns is increasing in the dollar value of a manager's correctly disclosed uncertain tax avoidance activity. Additional scrutiny of future period tax returns can negatively affect future cash flows in two ways. One, if a manager decreases his future uncertain tax avoidance activity in anticipation of increased future tax authority scrutiny, the firm pays higher future cash taxes. A 2007 survey reveals that nearly 60 percent of public company tax executives surveyed anticipated that FIN 48 would reduce their firm's willingness to take aggressive tax positions, with "potential road map to IRS" selected as the most common reason for the expected reduction in willingness.

[6] The IRS assesses interest on federal tax underpayments exceeding $100,000 at the quarterly federal short-term interest rate plus five percentage points (Internal Revenue Code (IRC) §6621). From 2005 through 2009, the average IRS underpayment interest rate was 8.9 percent (http://www.dol.gov/ebsa/calculator/c1underpaymentrates.html). A penalty equal to twenty (seventy-five) percent of the federal tax underpayment is imposed for inaccurate tax returns due to negligence or disregard of tax rules and regulations under IRC §6662 (tax return fraud under IRC §6663).

Interestingly, managers of self-described "aggressive tax planning firms" answered this question similarly to managers of self-described "non-aggressive tax planning firms," consistent with managerial concern of tax authority scrutiny cutting across all types of firms (Table 6, Graham et al. 2011). Two, if a manager continues to engage in the same level of uncertain tax avoidance activity in the future, the additional future tax authority scrutiny makes concealing the avoidance activity from the tax authorities more difficult and costly. Both of these scenarios suggest that uncertain tax avoidance disclosures reveal that a portion of a firm's expected future profit stream is lost because the tax avoidance activity generating the profits will cease in entirety, be curtailed, or be continued but at a higher cost of concealment (Bosch and Eckard 1991).

3.1.3. Negative future cash flow implications of a reputation for being a poor corporate citizen. If uncertain tax avoidance is interpreted as an indicator of managers engaging in illegal or dishonest activities and/or firms being "poor corporate citizens" unwilling to pay their fair share of taxes (Hanlon and Slemrod 2009), this could affect future cash flows in three different ways. One, customers and suppliers may become wary of dealing with an unscrupulous manager, decreasing future revenues and increasing future transaction costs when customers and suppliers take their business elsewhere (Klein and Leffler 1981). Two, a manager's "penchant for dishonesty" may suggest that the manager is engaging in other (not yet known) illegal or dishonest activities, which could lead to additional future costs and/or a decline in expected future profits if these activities are discovered (Bosch and Eckard 1991). Finally, corporate tax avoidance often attracts Congressional scrutiny, which can lead to the subsequent disallowance of corporate tax preferences. For example, the U.S. corporate alternative minimum tax (AMT) was enacted in 1986 in response to media reports that many profitable firms were paying no income tax through perfectly legal deductions and credits (Senate 1986). Frischmann et al.

(2008) document a negative abnormal stock market return the day the *Wall Street Journal* reported that the U.S. Senate Permanent Subcommittee on Investigations sent letters to at least 30 corporations requesting information about the tax transactions that gave rise to the firms' large FIN 48 tax reserves. The authors note this negative market response is consistent with "investors concerned Congress might enact new tax rules targeted at the transactions underlying the [tax reserves]" (p.274), highlighting the potential future costs of Congressional scrutiny of uncertain tax avoidance. The three points developed in Section 3.1 lead to my first hypothesis:

H1a: Firm value is negatively associated with uncertain tax avoidance.

3.2 Hypothesis Development: Positive Valuation of Uncertain Tax Avoidance

Alternatively, I argue that there are two primary reasons why investors would positively value uncertain tax avoidance. These two reasons relate to the positive future cash flow implications of 1) *future period* uncertain tax avoidance; and 2) the reputation effect associated with a manager being viewed as a good steward of firm resources.

3.2.1. Positive future cash flow implications of future period uncertain tax avoidance. If managers' past and current period uncertain tax avoidance activity is positively associated with future period uncertain tax avoidance activity *and* the economic benefit of future uncertain tax avoidance (i.e., cash tax savings) is retained, a firm will pay less in future cash taxes. In practice, many transactions that allow firms to avoid taxes are multi-period in nature and generate tax savings for more than a single year. Graham and Tucker (2006) find that the average tax shelter provides tax benefits for 3.5 years, and Dyreng et al. (2008) find that many firms are able to persistently avoid taxes over long time horizons of up to ten years. Prior research has also identified a managerial "tax avoidance style" that persists throughout a manager's career at different firms (Dyreng et al. 2010). This anecdotal and empirical evidence suggests that

managers' past and current uncertain tax avoidance activity is an indicator of future uncertain tax avoidance activity.

It is also reasonable for investors to expect the economic benefit of future uncertain tax avoidance to be retained (i.e., not lead to a future cash outflow). Because FIN 48 requires firms to disclose a single tax reserve value aggregated across all world-wide tax jurisdictions for all entities included in a firm's consolidated financial statements, it is unclear if FIN 48 disclosures are informative to any individual tax authority. The lack of jurisdiction-specific information provided by FIN 48 suggests the disclosure may have no discernable effect on tax authority scrutiny. To illustrate, General Electric's 2008 Form 10-K reports that the firm annually files more than 7,500 income tax returns in more than 250 global tax jurisdictions, making it unclear as to which jurisdiction(s) the firm's year-end $6.7 billion FIN 48 tax reserve balance relates to. FASB board member Katherine Schipper's comment that "the IRS has a far more detailed and effective roadmap in its Schedule M-3 than it would be provided by any [FIN 48] disclosure" (FASB 2006b, p.4) is consistent with FIN 48 being of little incremental use to taxing authorities.[7]

Future cash outflows to the taxing authorities related to uncertain tax avoidance are jointly determined by 1) tax return audit probability; 2) uncertain tax position detection risk; and 3) tax authority settlement rates. First, taxing authorities do not have sufficient resources to audit every corporate tax return filed. For corporations with more than $250 million in assets (the largest asset class for which data are available), the IRS' tax return audit rate was less than 32

[7]Interestingly, the Large and Mid-Sized Business division of the IRS collected tax reserves data from public firms' Form 10-K filings during the initial years of FIN 48 compliance. In 2010, the IRS began to require firms with greater than $100 million in assets to annually file Schedule UTP, a form which provides the IRS with additional information about the uncertain tax positions underlying the tax reserves firms disclose in their Form 10-Ks (with the filing requirement for firms with less than $100 million in assets phasing in over the next four years). See Edwards et al. (2011) for a detailed discussion of the schedule and initial market reaction to the IRS' surprise announcement of the new schedule. While the creation of Schedule UTP indicates the IRS is paying attention to firms' FIN 48 disclosures, it also suggests that the FIN 48 disclosures did not provide the IRS with sufficient information to fully identify firms' uncertain tax positions.

percent during the last decade and declined to less than 27 percent in 2007 through 2009.[8] Second, for those tax returns that are audited, the tax authorities are unlikely to detect and/or fully examine every uncertain tax position taken (Erard 2007). Finally, anecdotal evidence suggests and empirical research finds evidence consistent with corporate taxpayers settling tax disputes for amounts significantly less than the proposed deficiencies. Data from IRS operational audits related to corporate tax returns filed from 1982 through 1992 reveal that corporations paid an average of 25 percent of the IRS-proposed tax deficiency (Mills 1998). While Hanlon et al. (2007) find that this rate is 60 percent when examining completed audits of corporate tax returns filed from 1983 through 1998, the authors state that this "is almost certainly an upper-bound estimate of the rate for all companies" (p.183) due to the dataset's exclusion of the audits related to more controversial IRS-proposed deficiencies of larger dollar values that remained open at the time data were collected.[9] The above evidence suggests that investors could reasonably expect the economic benefit of future uncertain tax avoidance activity to be retained.[10]

3.2.2. Positive future cash flow implications of a reputation for being a good steward of firm resources. Because uncertain tax avoidance arises through a manager's willingness to engage in tax-minimizing efforts when presented with unclear or ambiguous tax situations, uncertain tax avoidance activity suggests managers are actively taking advantage of and/or seeking opportunities to prevent a transfer of firm resources to the government (which increases

[8] Corporate tax return audit data are from http://trac.syr.edu/tracirs/newfindings/auditdata.html. Approximately 1,200 taxpayers are considered IRS Coordinated Industry Case (CIC) group members based on seven criteria measuring taxpayer size (assets and receipts) and complexity of operations. CIC group member tax returns are generally audited every year. While the IRS does not publicly disclose the identities of CIC group members, it is likely that many of the S&P 500 firms in my sample are CIC firms (Exhibit 4.46.2-2 of the Internal Revenue Manual).

[9] The IRS operational audit data used in Hanlon et al. (2007) are from the Voluntary Compliance Baseline Measurement program compiled by the Large and Mid-Size Business Research Division of the IRS.

[10] Note that if H1a (firm value is positively associated with uncertain tax avoidance) is descriptive, an audit probability, detection risk, and settlement rate of less than one hundred percent is expected to dampen the negative tax reserve coefficient from negative one towards zero.

shareholders' residual claim). Similar to investors placing a premium on firms with managers who demonstrate expertise in consistently meeting or beating analyst expectations (Bartov et al. 2002) and boards of directors paying a premium to retain audit firms with city-level and country-level industry expertise (Ferguson et al. 2003), investors may place a premium on firms with managers who demonstrate expertise in avoiding corporate taxes. The two points developed in Section 3.2 lead to my second hypothesis:

H1b: Firm value is positively associated with uncertain tax avoidance.

3.3. Hypothesis Development: Differential valuation of uncertain tax positions that generate permanent tax savings versus temporary tax savings.

Uncertain tax positions can give rise to either permanent or temporary tax savings. As permanent tax savings suggests a future cash outflow will never occur while temporary tax savings suggests an otherwise current period cash outflow has only been postponed to a future period, permanent tax savings have a greater economic value than temporary tax savings. If I find evidence consistent with investors negatively valuing uncertain tax avoidance, I expect investors to view losing the benefit of a permanent avoidance of taxes more negatively than losing the benefit of a temporary deferral of taxes. Similarly, if I find evidence consistent with investors positively valuing uncertain tax avoidance, I expect investors to view retaining the benefit of a permanent avoidance of taxes more positively than retaining the benefit of a temporary deferral of taxes. This suggests that investors will place a larger valuation weight on uncertain tax avoidance that generates permanent tax savings relative to temporary tax savings. Formally stated,

H2: Firm value is more strongly associated with uncertain tax avoidance that gives rise to permanent tax savings relative to temporary tax savings.

3.4 Hypothesis Development: Uncertain Tax Avoidance in a Principal-Agent Framework

While tax avoidance research is well established in the economics literature, the focus is almost entirely on individual tax avoidance (Allingham and Sandmo 1972; Andreoni et al. 1998; Slemrod and Yitzhaki 2002). For an individual taxpayer, one hundred percent of the benefits of tax avoidance accrue to the taxpayer because there is no separation of ownership and control. In a corporate setting, a principal (owner) engages an agent (manager) to act on behalf of the principal, requiring the principal to bestow the agent with significant decision-making authority. While monitoring and bonding mechanisms can mitigate the extent to which the agent maximizes his own utility at the expense of the principal's utility, the incomplete nature of contracting allows for managerial opportunism (Berle and Means 1932; Jensen and Meckling 1976). Larcker et al. (2007) define corporate governance as "the set of mechanisms that influence the decisions made by managers when there is separation of ownership and control" (p.964). When these mechanisms are sufficiently weak, manager and shareholder interests are not aligned and managers can engage in self-serving behavior at the expense of shareholders.

Desai and Dharmapala (2006, 2009a, 2009b) are among the first to directly consider tax avoidance within a principal-agent framework and hypothesize that if tax avoidance is achieved through activities that opportunistically obfuscate a transaction for tax purposes, managers might also be willing to engage in activities that opportunistically obfuscate a transaction for financial reporting purposes. The authors predict that tax avoidance is of greater benefit to shareholders in well governed firms "not simply because of a tendency among managers of poorly governed firms to waste or dissipate a larger share of any value-generating activity in which they may engage, but also because complex and obfuscatory tax avoidance activities create a potential

shield for managerial opportunism, and this factor will naturally loom larger at firms where governance institutions are weaker" (Desai and Dharmapala 2009b, p.179).

Desai and Dharmapala (2006) find that annual increases in tax avoidance are associated with decreases in managerial incentive compensation in poorly governed firms, which the authors interpret as managers of poorly governed firms using the shield provided by complex tax avoidance transactions to conceal the perquisites consumed to offset managers' lower incentive compensation. Two subsequent studies examine whether investor perception of tax avoidance varies as a function of firm governance. Desai and Dharmapala (2009a) find that the positive association between firm value and tax avoidance is attenuated in firms with weaker governance, and Wilson (2009) finds that well-governed tax shelter firms earn higher positive abnormal returns relative to poorly governed tax shelter firms during tax shelter participation years.

I believe that uncertain tax avoidance activity is more consistent with the complex and obfuscatory type of tax avoidance that can be used by managers as a shield for opportunism relative to Desai and Dharmapala's (2006, 2009a) use of a variation of the difference between book income and estimated taxable income as a tax avoidance proxy in their studies. Unlike FIN 48 tax reserves, the authors' book-tax difference variable is unable to distinguish between ordinary/uncontroversial tax avoidance activity (e.g., municipal bond investments) where the economic benefit of avoidance is expected to be retained and more sophisticated/complex tax avoidance transactions that may be disallowed by the tax authorities. Wilson's (2009) tax shelter participation measure is a better proxy for the complicated tax avoidance transactions that could provide a shield for managerial opportunism relative to Desai and Dharmapala's (2006, 2009a) book-tax difference variable. However, because investors generally learn of firms' tax sheltering activity many years after the sheltering occurred, it is difficult to use this proxy to assess investor

valuation of tax avoidance. In contrast to tax sheltering activity, the salient and annual nature of FIN 48 tax reserve disclosures ensures that investors are aware of managers' uncertain tax avoidance activity at the time investor perception of tax avoidance is measured.

If investors believe that managers of firms with weaker governance mechanisms use uncertain tax avoidance activity as a shield for opportunistic behavior, I expect to observe a more negative (or less positive) relation between firm value and uncertain tax avoidance in firms with weaker governance, regardless of whether investors negatively or positively value uncertain tax avoidance. Formally stated,

> **H3: Firm value is less positively associated with uncertain tax avoidance when governance is weak.**

3.5 Other Research Examining the Relation between Firm Value and Uncertain Tax Avoidance

I am aware of three studies that examine how investors value uncertain tax avoidance, all of which use 2007 first quarter FIN 48 initial tax reserve disclosures. Frischmann et al. (2008) find that tax reserves that generate permanent tax savings are positively associated with abnormal short-window stock returns, while tax reserves that generate temporary tax savings are not associated with short-window stock returns. Robinson and Schmidt (2009) examine eight 'completeness' and four 'clarity' aspects of FIN 48 disclosure quality and find that high disclosure quality dampens the positive abnormal returns associated with initial tax reserve disclosures, which the authors interpret as the market penalizing firms for revealing proprietary information. Finally, Song and Tucker (2008) examine the relation between uncertain tax avoidance and debt policy. While not the focus of their study, the authors document a positive relation between Tobin's Q and total tax reserves.

My study provides three unique insights. One, a stock price level research design allows the valuation weights investors place on assets, liabilities, and net income to serve as valuation benchmarks, allowing me to draw inferences regarding the *extent* to which investors favorably or unfavorably view uncertain tax avoidance relative to other accounting information. Two, examining the relation between annual changes in firm value and changes in tax reserves captures investor belief revisions regarding uncertain tax avoidance. Because it is unclear what investors' pre-FIN 48 priors were regarding firms' uncertain tax avoidance activity, Frischmann et al.'s (2008) and Robinson and Schmidt's (2009) finding of a positive market reaction to firms' initial tax reserve disclosures can be interpreted as consistent with investors responding positively to either 1) uncertain tax avoidance or 2) lower than expected tax reserve values. Examining the association between annual changes in firm value and changes in tax reserves provides a clearer test of investor belief revisions regarding uncertain tax avoidance. Three, no prior study considers whether investor valuation of uncertain tax avoidance varies cross-sectionally with firms' governance mechanisms, which provides evidence as to whether investors perceive the agency theory of taxation to be descriptive.

IV. Sample Selection and Research Design

4.1 Sample Selection

FIN 48 requires publicly traded firms to separately disclose their contingent liabilities for uncertain tax positions for fiscal periods beginning after December 15, 2006. Because tax reserve data must be hand-collected from firms' financial statement income tax footnotes, I limit my sample to S&P 500 Composite Index firms as of January 1, 2007. The total market capitalization of S&P 500 Index firms comprises 75 percent of the U.S. equities market, resulting in an economically meaningful sample of firm-year observations. Tax reserve data for fiscal years ending between December 15, 2007 and December 14, 2009 were available when data were hand-collected. Table 1 details my sample selection process, and Appendix C provides an excerpt from Merck & Co., Inc.'s 2008 FIN 48 disclosure to give readers a better understanding of the hand-collected tax reserves data. Beginning with 1,000 potential firm-year observations, I eliminate 27 observations related to firms that were acquired or liquidated during the sample period and 24 observations with insufficient FIN 48, Compustat, and/or CRSP data. My initial sample includes 949 firm-year observations with non-missing tax reserve values (486 unique firms; 463 firms have two years of observations and 20 (3) firms have an observation in only the first (second) year).

It is important to note that a firm's disclosed tax reserve value is a function of both a manager's uncertain tax avoidance activity and financial reporting incentives. Like any accounting estimate subject to discretion, managers may be opportunistic in their recording of tax reserves (Hanlon and Heitzman 2010). While prior research finds evidence consistent with earnings management through the tax reserve accrual (Gupta and Laux 2008; Cazier et al. 2010), other research finds no evidence that the positive relation between tax reserves and confidential

uncertain tax avoidance disclosures made to the IRS is attenuated by managers' financial reporting incentives (Lisowsky et al. 2010). Taken together, these findings suggest that tax reserves measure uncertain tax avoidance activity, but with some degree of error.

4.2 Regression Specifications

To examine the relation between firm value and uncertain tax avoidance, I use a standard inputs-to-valuation research design based loosely on the valuation model presented by Ohlson (1995) in which stock price per share is regressed on net income per share and book value of equity per share. Ohlson (1995) shows that the weight on net income (book value of equity) is increasing (decreasing) in the persistence of earnings so that when earnings are highly persistent (transitory), book value of equity will receive a low (high) weight in the regression. Regressing firm value on net income and either book value of equity or assets and liabilities is a research design commonly used in the accounting literature (Landsman 1986; Barth 1991; Barth and Landsman 1995; Barth et al. 1998), with one researcher noting that the Ohlson (1995) model is "...perhaps the most pervasive valuation model in accounting research today" (Barth 2000, p.13).

Barth et al. (1998) explain that this research design expresses market value of equity (MVE) as a linear function of both recognized net assets (RNA) and unrecognized net assets (UNA):[11]

[1] $MVE_{jt} = \alpha_1 RNA_{jt} + \alpha_2 UNA_{jt}$

The authors state that "if book values of recognized [net] assets equal their fair values and fair values are well-defined as in a setting economically equivalent to perfect and complete

[11] Examples of unrecognized net assets include research and development expenditures, advertising expenditures, business growth opportunities, etc.

markets, and if UNA is observable and measureable without error, α_1 and α_2 each equal one" (p.6). The authors point out that in an empirical setting, book values are not equal to fair values, markets are not perfect and complete, and UNA is not directly observable and measureable without error. Therefore, when conducting empirical research, net income is used as a proxy for UNA (based on the idea that net income partially reflects the revenues and expenses related to UNA), book value of equity is used as a proxy for RNA, and an intercept and error term are included because market value of equity reflects value-relevant information that has yet to be reflected in either net income or book value of equity (e.g., order backlog, pending patents, etc.).

To test the relation between firm value and uncertain tax avoidance (H1a and H1b), I estimate the following regression:

[2a] $$PRICE_{jt} = \beta_0 + \beta_1 NI_{jt} + \beta_2 TA_{jt} + \beta_3 TL\_NORESERVE_{jt} + \beta_4 RESERVE_{jt} + \beta_k Controls + \varepsilon_{jt}$$

where PRICE is stock price per share, NI is net income before extraordinary items per share, TA is total assets per share, TL_NORESERVE is total liabilities per share excluding total tax reserves per share, and RESERVE is total tax reserves for uncertain tax positions (my proxy for uncertain tax avoidance) per share of firm *j* in year *t*. Equation 2a is a transformation of Equation 1 in which NI proxies for unrecognized net assets (UNA), the variables TA, TL_NORESERVE, and RESERVE proxy for recognized net assets (RNA), and PRICE proxies for MVE, with all proxies measured on a per share basis. Prior research predicts and finds that firm value is positively associated with both net income ($\beta_1 > 0$) and total assets ($\beta_2 > 0$) and negatively associated with total liabilities ($\beta_3 < 0$) (Barth et al. 1998, Barth et al. 2001). H1a (H1b) predicts that uncertain tax avoidance is negatively (positively) associated with firm value, or $\beta_4 < 0$ ($\beta_4 > 0$). All variables are defined in detail in Appendix A, and all independent variables are scaled by the number of shares outstanding at fiscal year-end to mitigate scale effects (Barth and Kallapur

1996; Barth and Clinch 2009).[12] PRICE is measured one day after the Form 10-K filing date, and all other variables are measured at fiscal year-end.

Control variables include deferred tax assets (DTA), deferred tax liabilities (DTL), post-retirement benefit liabilities (PENSION and OPEB), and industry and quarter-year indicators. Prior research finds that deferred tax liabilities (DTL), which reflect temporary tax deferral through tax positions where there is no uncertainty as to whether the economic benefit of tax avoidance will be retained, are negatively associated with firm value (Amir et al. 1997; Ayers 1998). Because it is likely managers avoid taxes through both uncertain and certain tax positions (i.e., RESERVE and DTL are expected to be correlated), DTL is included as a control variable. Following Ayers (1998), deferred tax assets (DTA), net pension liabilities (PENSION), and other post-employment benefit liabilities (OPEB) are also included as independent variables because these variables are correlated with both DTL and firm value. Industry indicators based on the Fama-French 12-industry classification capture fixed industry-level differences in the extent of firms' unrecognized net assets, financial reporting practices, and tax avoidance opportunities. Quarter-year indicators capture macroeconomic factors affecting both firm value and tax planning opportunities that differ across time.[13] TA (TL_NORESERVE) is adjusted for the separate asset (liability) variable(s) included in each regression specification.

To test the relation between firm value and the portion of uncertain tax avoidance that gives rise to permanent relative to temporary tax savings (H2), I use the portion of a firm's tax reserve balance that would affect the ETR as a proxy for a firm's permanent tax savings from

[12] Barth and Clinch (2009) define scale effects as "incorrect inferences in capital markets-based accounting research associated with size differences across firms" (253). Using data simulated from a modified Ohlson (1995) valuation model, the authors find that share-deflated (and, to a lesser degree, undeflated) specifications generally perform best in the presence of scale effects.

[13] A 12-industry classification is used as opposed to a 48-industry classification to yield a reasonable number of firm-year observations per industry. Quarter-year indicators (e.g., a separate indicator for all firm-year observations with fiscal periods ending January 1 through March 31, 2008, April 1 through June 30, 2008, etc.) are used because macroeconomic factors were volatile during my sample time period.

uncertain tax avoidance (RESERVE_PERM). The remainder of a firm's tax reserve balance is used as a proxy for a firm's temporary tax savings from uncertain tax avoidance (RESERVE_TEMP). I use these two variables to estimate the following equation:

[2b] $$PRICE_{jt} = \beta_0 + \beta_1 NI_{jt} + \beta_2 TA_{jt} + \beta_3 TLNORESERVE_{jt} + \beta_{4a} RESERVE\_PERM_{jt} + \beta_{4b} RESERVE\_TEMP_{jt} + \beta_k Controls + \varepsilon_{jt}$$

H2 predicts that firm value is more strongly associated with uncertain tax avoidance that gives rise to permanent tax savings relative to temporary tax savings (i.e., β_{4a} is of a larger negative (positive) magnitude relative to β_{4b} if I find evidence consistent with H1a (H1b)). Control variables are the same as those included in Equation 2a.

My cross-sectional empirical tests use the Gompers et al. (2003) Governance Index (GINDEX) as a proxy for a broad measure of the strength of a firm's corporate governance. GINDEX is a count variable that reflects the presence of 24 different charter/bylaw provisions firms adopt that reduce shareholder rights.[14] Higher GINDEX values indicate a greater reduction in shareholder rights, which is suggestive of weaker corporate governance.[15] To test the relation between firm value and uncertain tax avoidance conditional on corporate governance (H3), I estimate the following equation:

[3] $$PRICE_{jt} = \beta_0 + \beta_1 NI_{jt} + \beta_2 TA_{jt} + \beta_3 TL\_NORESERVE_{jt} + \beta_4 RESERVE_{jt} + \beta_5 WEAKGOV_{jt} + \beta_6 WEAKGOV*RESERVE_{jt} + \beta_k Controls + \varepsilon_{jt}$$

[14] Examples of these 24 provisions include classified boards, poison pills, and general takeover defenses to delay hostile bids. See Appendix 1 of Gompers et al. (2003) for additional information. Bebchuk et al. (2009) find that changes in only six of the 24 provisions included in the Governance Index are associated with changes in firm value and use these six provisions to construct the Entrenchment Index, an index ranging from zero to six. The Entrenchment Index value for the firm-year observations in my sample at the 25th (75th) percentile is three (four), suggesting a lack of meaningful cross-sectional variation in this variable for my sample of firm-years.

[15] Brickley and Zimmerman (2010) conclude that i.) a firm's entire governance system is endogenous and ii.) researchers cannot meaningfully classify any specific governance feature as "good" or "bad" or assign weights to any individual governance feature. Regarding the first point, a discussion of how the endogeneity of corporate governance (based on Dey 2008) is expected to affect my research design is included in Appendix D. Regarding the second point, the Gompers et al. (2003) Governance Index is constructed on the premise that shareholders are *more likely to be* worse off when corporate provisions that reduce shareholder rights and/or limit shareholder oversight are adopted. Gompers et al. (2003) acknowledge the difficulty of and subjectivity in researcher-assigned weightings to individual governance characteristics, choosing to equally weight each governance provision for this very reason.

where WEAKGOV is an indicator variable set equal to one when GINDEX is greater than or equal to the within-sample median value of nine, and set equal to zero otherwise. The coefficient β_4 ($\beta_4 + \beta_6$) can be interpreted as equity investors' valuation of uncertain tax avoidance for firms with stronger (weaker) corporate governance. H3 predicts that uncertain tax avoidance is less positively (or more negatively) associated with firm value when governance is weak ($\beta_6 < 0$). I also estimate Equation 3 after replacing RESERVE with RESERVE_PERM and RESERVE_TEMP and interacting WEAKGOV with both variables.

My second set of tests use a stock returns-based model to examine the relation between the annual change in firm value and the annual change in uncertain tax avoidance. This additional analysis is meant to complement the price-level tests presented in Equations 2a, 2b, and 3 using a research design less subject to commonly cited econometric concerns, which include but are not limited to incorrectly calculated coefficient standard errors due to heteroskedasticity, scale effects, and correlated omitted variables (Christie 1987; Landsman and Maglioli 1988; Easton 1998). Note, however, that I attempt to address these econometric concerns in the price-level tests by employing White standard errors to mitigate concerns regarding heteroskedasticity, using various scalers to mitigate concerns regarding scale effects (Barth and Clinch 2009), and providing supplemental tests (tabulated in Panel B of Table 5) to mitigate concerns that a correlated omitted variable is driving the relation between firm value and uncertain tax avoidance. The returns-based tests are conducted with the following equations:

[4a] $RET_{jt} = \beta_0 + \beta_1 NI\_ADJ_{jt} + \beta_2 NI_{jt-1} + \beta_3 \Delta RESERVE_{jt} + \varepsilon_{jt}$

[4b] $RET_{jt} = \beta_0 + \beta_1 NI\_ADJ_{jt} + \beta_2 NI_{jt-1} + \beta_{3a} \Delta RESERVE\_PERM_{j} + \beta_{3b} \Delta RESERVE\_TEMP_{jt} + \varepsilon_{jt}$

where RET is a firm's annual size-adjusted return inclusive of dividends cumulated beginning 250 trading days prior to and ending one day after a firm's Form 10-K filing date, NI_ADJ is net

income before extraordinary items adjusted for the current period change in tax reserve, and ΔRESERVE (ΔRESERVE_PERM and ΔRESERVE_TEMP) is the annual change in RESERVE (RESERVE_PERM and RESERVE_TEMP). I include both current and prior period net income before extraordinary items in the regression equations to allow for a more general earnings specification model (Oler et al. 2007). H1a (H1b) predicts that an increase in uncertain tax avoidance is negatively (positively) associated with a change in firm value, or $\beta_3 < 0$ ($\beta_3 > 0$) in Equation 4a. H2 predicts that a change in firm value is more strongly associated with a change in uncertain tax avoidance that gives rise to permanent tax savings relative to temporary tax savings (i.e., in Equation 4b, β_{3a} is of a larger negative (positive) magnitude relative to β_{3b} if I find evidence consistent with H1a (H1b)).

I also examine whether the relation between changes in firm value and uncertain tax avoidance varies as a function of firms' governance mechanisms using the following equation:

[5] $$RET_{jt} = \beta_0 + \beta_1 NI_{jt} + \beta_2 NI_{jt-1} + \beta_3 \Delta RESERVE_{jt} + \beta_4 WEAKGOV_{jt} + \beta_5 WEAKGOV_{jt} * \Delta RESERVE_{jt} + \varepsilon_{jt}$$

H3 predicts that firm value is more negatively (or less positively) associated with uncertain tax avoidance when governance mechanisms are weak ($\beta_5 < 0$). I also estimate Equation 5 after replacing ΔRESERVE with ΔRESERVE_PERM and ΔRESERVE_TEMP and interacting WEAKGOV with both variables.

Barth et al. (2001) note that studies employing a price-level research design are "interested in determining what is reflected in firm value" while studies employing a returns-based research design are "interested in determining what is reflected in changes in value over a specific period of time" (p.95). The authors go on to note that "if the research question involves determining whether the accounting amount is timely, examining changes in value is the appropriate research design choice" (p.95). As a manager is required to provide at fiscal year-end an estimate of his

firm's expected change in uncertain tax reserves for the next fiscal year if one can be made (FIN 48, paragraph 21(d)(3)), information about expected tax reserve changes is included in some (but not all) firms' Form 10-K. Therefore, information about changes in uncertain tax avoidance realized during the fiscal year may be pre-empted by managers' forward-looking estimates of expected changes in uncertain tax reserves. The realistic possibility the information will be pre-empted suggests that realized changes in tax reserves may not be of a timely nature to market participants. This potential lack of timeliness suggests that a price-level research design – which does not require information to be disclosed within a specific window of time – may be a more appropriate research design to address the relation between firm value and uncertain tax avoidance. Therefore, the returns-based models discussed above serve only to complement my primary market valuation-based (i.e., price-level) research design.

V. Empirical Results

5.1 Descriptive Statistics

The descriptive statistics presented in Table 2 are tabulated after estimating Equation 2a and removing outlier observations that exert significant influence in the regression, reducing my sample from 949 to 919 firm-year observations related to 479 unique firms (a three percent reduction in sample size). The Cook's distance statistic is used to determine whether the *i*th observation exerts significant influence on the regression coefficients and is calculated by summing the squared differences between the estimated y values using all observations and the estimated y values after deleting the *i*th observation and then dividing by the estimated variance of the error term multiplied by the number of explanatory variables included in the regression (Kennedy 2003, p. 379). To mitigate the effect of extreme influential observations, observations with a Cook's distance value greater than the critical cutoff $[4 \div (n - (k + 1)]$ are eliminated, where n (k) refers to the number of observations (independent variables) in each regression equation.[16] As the Cook's distance cutoff criterion is applied separately in each regression estimated, the number of firm-year observations included in each regression specification varies.

Panel A of Table 2 reports tax reserve descriptive statistics prior to scaling by shares outstanding to give readers a sense of the economic magnitude of corporate tax reserves. The mean (median) dollar value of year-end tax reserves for my 919 sample firm-years is $380.47 ($109.40) million and are on average three percent of a firm's total liabilities. The large RESERVE standard deviation value highlights the variation in firms' tax reserve values; while

[16] When data are winsorized at the 1st and 99th percentiles, the RESERVE coefficient when estimating Equation 2a is equal to 4.34 and highly significant (p-value < 0.001). This coefficient value suggests that a one dollar per share increase in tax reserves is associated with more than a four-fold increase in price, which is too large to be economically plausible. The decline in the RESERVE coefficient value after eliminating 30 observations with a Cook's distance value that exceeds the critical cutoff value of $[4 \div (n - (k + 1)]$ is consistent with the removal of outlier observations that exert significant influence on a particular coefficient (Fox 2008, p.255).

38 firm-year observations have a RESERVE value of zero, pharmaceutical giant Merck's $3.67 billion tax reserve as of December 31, 2008 represents 14 percent of the firm's total liabilities.

The average RESERVE value is equal to 51 percent of a firm's year-end cash balance, suggesting that firms would use a significant portion of their cash on hand to pay the tax authorities if firms' underlying uncertain tax positions were disallowed. The mean dollar value of tax reserves for uncertain tax positions that generate permanent tax savings (RESERVE_PERM) in my sample is $236.89 million, or more than 60 percent of a firm's average RESERVE balance. Retaining each firm's most recent year observation, the 479 firms in my sample have reserved for a total of $189.70 billion of uncertain tax positions (untabulated).

These values are qualitatively similar to those provided by early descriptive research reporting on the magnitude of firms' tax reserves (Blouin et al. 2007; Dunbar et al. 2007; Nichols et al. 2007; Zion 2007). For example, Blouin et al. (2007) hand-collect tax reserves data for the largest 100 non-financial, non-regulated firms (where size is determined by averaging a firm's market value of equity and total asset ranks to capture both new and old economy firms) from firms' 2007 first quarter Form 10-Qs. The authors report that as of December 31, 2006 these 100 firms' tax reserves average $780 million, or 1.8 percent of total assets. Applying this same ranking criterion to firms in the S&P 500 yields a sample of 100 firms with average tax reserves of $750 million, or 1.4 percent of total assets (untabulated). In addition, a May 2007 report by Credit Suisse reveals that the 361 S&P 500 firms with calendar year-ends report average 2007 tax reserves of $391 million (Zion, 2007), which is qualitatively similar to the mean RESERVE value reported in Panel A of Table 2.

Panel B of Table 2 shows that the mean RESERVE (RESERVE_PERM) value scaled by shares outstanding at fiscal year-end is $0.58 ($0.35). Total assets (liabilities) per firm-year

average $79.64 ($62.23) per share, and the average GINDEX value is 9.50 and ranges from a minimum of 3 to a maximum of 16 (untabulated).[17] Panel C of Table 2 reports the descriptive statistics for the variables used in my returns analysis. The mean (median) annual change in tax reserves (ΔRESERVE) is 0.010 (0.007) per share, with an average increase (decrease) in tax reserves related to positions that generate permanent (temporary) tax savings of 0.017 (-0.014) per share (ΔRESERVE_PERM and ΔRESERVE_TEMP, respectively).

Table 3 presents an industry frequency analysis based on the Fama-French 12-industry classification. Industries are presented in descending order of mean tax reserves as a percentage of total liabilities by industry. While the medical industry (which includes firms like Pfizer and Merck) has the largest tax reserves as a percentage of liabilities at 6.9 percent, the telephone and television transmissions industry (which includes firms like Time Warner and Comcast) has the largest average dollar value of tax reserves at $1,017 million per firm. Interestingly, five of the twelve industries have tax reserves equal to more than 70 percent of year-end cash on hand. The Pearson correlations presented in Panel A of Table 4 reveal that PRICE is positively correlated with NI (ρ = 0.53), TA (ρ = 0.13), TL_NORESERVE (ρ = 0.09), RESERVE (ρ = 0.21), and the tax reserve sub-components RESERVE_PERM (ρ = 0.18) and RESERVE_TEMP (ρ = 0.11).

5.2 Regression Results – Price Level Tests of H1a, H1b, and H2

Panel A of Table 5 presents the results from estimating Equations 2a and 2b, which test whether firm value is negatively or positively associated with uncertain tax avoidance (H1a and H1b) and whether firm value is more strongly associated with uncertain tax avoidance that gives rise to permanent relative to temporary tax savings (H2). All reported test statistics are calculated

[17] The GINDEX descriptive statistics for my sample are qualitatively similar to those reported in Table 2 of Gompers et al. (2003) (e.g., a mean and median value of 9, a standard deviation of 2.8, and a minimum (maximum) value of 2 (18) for a sample of more than 5,500 firm-years).

using White heteroskedasticity-consistent standard errors, and all price-level regressions include industry and year-quarter indicator variables to control for fixed effects. I first estimate Equation 2a omitting RESERVE to provide a benchmark for subsequent regression results. Column 1 of Panel A of Table 5 reports that firm value is positively and significantly associated with net income (β_1 = 1.62) and total assets (β_2 = 0.74) and negatively associated with total liabilities (β_3 = -0.75), and the adjusted R-square of 54.6 percent suggests the model has reasonably high explanatory power.[18] Untabulated tests reveal that β_1 is greater than its theoretical value of positive one, β_2 is less than its theoretical value of positive one, and β_3 is greater than its theoretical value of negative one at a one percent level, consistent with Barth et al.'s (1998) comment that empirical values often differ from theoretical values because "book values do not equal fair values, fair values are not well-defined, and unrecognized net assets are not directly observable" (p.6).

Column 2 shows the results from regressing stock price on net income, assets, liabilities less tax reserves, and tax reserves (with all independent variables scaled by shares outstanding). The RESERVE coefficient is positive and significantly different from zero (β_4 = 2.22, t = 2.99), consistent with firm value being positively associated with uncertain tax avoidance (H1b). Interestingly, the RESERVE coefficient is not significantly different from the net income coefficient (χ^2 = 0.61, p-value = 0.44), consistent with investors viewing current and prior period tax reserves as an indicator of expected future economic benefits achieved through uncertain tax avoidance. When tax reserves are divided into the components that give rise to permanent versus temporary tax savings in Column 3, the RESERVE_PERM coefficient is positive and highly

[18] These coefficients are similar to those reported in recent studies using price level regressions. For example, Song et al. (2010) assess the relation between firm value and assets and liabilities measured at fair value using a price-level regression and report a net income coefficient of 1.632, an asset (liability) coefficient of 0.801 (-0.818), and an adjusted R^2 of 56.53 percent (Table 3).

significant (β_{4a} = 4.46, t = 2.60) while the RESERVE_TEMP coefficient is not significantly different from zero (β_{4b} = -0.36, t = -0.35). The RESERVE_PERM coefficient is significantly greater in magnitude than the RESERVE_TEMP coefficient (χ^2 = 4.41, p-value = 0.04), consistent with investors placing a larger valuation weight on uncertain tax avoidance that gives rise to permanent tax savings relative to temporary tax savings (H2).

Column 4 (5) of Panel A of Table 5 presents the Equation 2a (2b) regression results after including DTA, DTL, PENSION, and OPEB as additional control variables. Column 4 shows that the RESERVE coefficient remains positive and significant (β_4 = 1.22, t = 1.74), and Column 5 shows that the RESERVE_PERM coefficient remains positive and significant (β_{4a} = 2.81, t = 1.91) and the RESERVE_TEMP coefficient remains negative and insignificant (β_{4b} = -0.84, t = -0.78). Untabulated tests reveal that the RESERVE (RESERVE_PERM) coefficient β_4 (β_{4a}) in Column 4 (5) is not significantly different from the NI coefficient β_1, consistent with investors viewing prior and current period uncertain tax avoidance as an indicator of future uncertain tax avoidance that will generate future cash tax savings (i.e., future earnings).

I conduct several sensitivity tests to confirm that the regression results presented in Column 5 of Panel A of Table 5 are robust to the inclusion of additional independent variables that may be correlated with tax reserves (my variable of interest). First, because current period changes in the tax reserve unrelated to settlements with the taxing authorities affects both current period net income and the year-end tax reserve balance, there may be concern that this amount is accounted for twice in Equations 2a and 2b. Re-estimating Equation 2b after replacing NI with the current period change in tax reserves unrelated to settlements (ΔRESERVE_NOTSETTLE) and net income adjusted for this amount (NI_ADJ2) yields no change in inferences (e.g., the RESERVE_PERM coefficient remains positive and significant and the RESERVE_TEMP

coefficient remains negative and insignificant). Inferences are similar when NI is replaced with pre-tax book income (PTBI), current tax expense (CTE), deferred tax expense adjusted for changes in tax reserves unrelated to settlements (DTE_ADJ), and ΔRESERVE_NOTSETTLE (Column 1b of Panel B of Table 5).

Second, as growth firms are expected to engage in more transactions that give rise to tax uncertainty (transfer pricing issues due to expanding operations abroad, research and development credit issues due to substantial investments in future potential products, etc.) and therefore have larger tax reserves, it is possible that the RESERVE coefficient is capturing investors' positive valuation of growth opportunities. Interestingly, a t-test reveals that average RESERVE, RESERVE_PERM, and RESERVE_TEMP values are not significantly different for higher growth versus lower growth firms (using firms' most recent annual percentage change in revenue (CH_REV%) as a proxy for realized growth following Kolev (2008) and analysts' long-term earnings growth forecast (IBES_LT_GROWTH) as a proxy for expected future growth following Cohen et al. (2011)). This result suggests growth is not a correlated omitted variable, and re-estimating Equation 2b after including either growth proxy as an independent variable yields no change in inferences, confirming this assertion (Columns 2a and 2b of Panel B of Table 5, respectively).

Third, firms with tax net operating loss (NOL) carryforwards, or tax losses firms were unable to utilize in prior and current periods that are carried forward to offset taxable income in future periods and therefore provide future tax savings, are expected to engage in less uncertain tax avoidance activities. This is because the marginal benefit from the tax savings generated by uncertain tax positions is lower for these firms relative to firms without tax NOLs. A *t*-test reveals that average RESERVE, RESERVE_PERM, and RESERVE_TEMP values are smaller

for firm-year observations with positive tax NOL carryforwards, consistent with this expectation. To the extent the existence of a tax NOL indicates lower profitability to investors, it is possible that the positive RESERVE coefficient is capturing investors' positive valuation of profitability for firms without tax NOLs (i.e., firms with larger RESERVE values).

Column 3a of Panel B of Table 5 shows that when the variable TAX_NOLCF is included as an independent variable, the variable coefficient is negative and significant, consistent with investors less favorably valuing firms with lower profitability. Additionally, investors are expected to less favorably value uncertain tax avoidance in firms with tax NOL carryforwards due to the smaller marginal benefit an additional dollar of tax savings provides tax NOL firms. Consistent with this conjecture, Column 3b reveals that investors favorably value uncertain tax avoidance to a lesser extent in firms with tax NOL carryforwards (β_{10b} = -0.405, t = -1.71).[19]

In untabulated tests I also consider the impact of loss observations on my regression results, as loss firms comprise 16 percent of my sample. Including a binary indicator variable set equal to one when NI is less than zero and interacting this indicator variable with NI yields a significant NI coefficient of 6.93 for profit firms and an insignificant NI coefficient of -0.21 for loss firms, the latter of which is consistent with losses being transitory in nature (Hayn 1995). I do not interact the binary loss indicator variable with RESERVE, as a t-test reveals that mean RESERVE and RESERVE_PERM values are not significantly different for profit versus loss firms. Finally, estimating the regression with unscaled variables (Barth and Clinch 2009), using revenue as an alternate scaler, using price two days or three days after a firm's Form 10-K filing

[19]The Compustat variable *tlcf* is missing for fifty percent of my sample firm-year observations. As a t-test confirms that RESERVE and RESERVE_PERM values are not significant different for firm-year observations with and without *tlcf* values, I reset missing *tlcf* values equal to the sample median to avoid losing so many observations. Resetting missing *tlcf* values equal to zero yields similar inferences, as does retaining only observations with non-missing *tlcf* values and transforming *tlcf* into a quintile ranking (untabulated).

date as a regressant, or clustering standard errors by firm[20] also yield no change in inferences (untabulated). In summary, Panels A and B of Table 5 provides regression results consistent with investors favorably valuing uncertain tax avoidance (H1b), with the portion of uncertain tax avoidance that gives rise to permanent tax savings driving this positive relation (H2).[21]

5.3 Regression Results – Price Level Tests of H3

Regression results testing whether the relation between firm value and uncertain tax avoidance varies with firm governance are presented in Table 6. Column 1 presents evidence consistent with investors positively valuing uncertain tax avoidance in firms with stronger governance ($\beta_4 = 2.33$, $t = 2.62$) and not valuing uncertain tax avoidance in firms with weaker governance ($\beta_4 + \beta_6 = 1.07$, p-value = 0.22), consistent with investors perceiving the economic benefit of tax avoidance to accrue to shareholders only when governance is strong.[22] Note, however, that the interaction coefficient β_6 is not significantly different from zero. The results in Column 2a suggest that the uncertain tax avoidance components that give rise to permanent versus temporary tax savings do not vary cross-sectionally with governance. However, the regression results in Column 2b show that when WEAKGOV is interacted with only

[20] My sample contains a maximum of two observations per firm, mitigating the concern that the time-series correlation generally present in price-level regressions is affecting regression standard errors. Clustering standard errors by firm yields a small increase (decrease) in standard errors (t-statistics) with no change in inferences relative to the regression results presented in Column 5 of Table 5 obtained using White standard errors (untabulated).

[21] When firms' estimated liability for tax reserve-related interest and penalties scaled by shares outstanding (IP) is added to Equation 2b as an independent variable, the RESERVE_PERM coefficient increases to 9.07 and is highly significant (t-statistic = 3.90), the RESERVE_TEMP coefficient remains insignificant, and the IP coefficient is -18.48 and is highly significant (t-statistic = -4.43). As general inferences regarding the positive relation between firm value and uncertain tax avoidance activity remain unchanged when IP is excluded from the regression and interest and penalties are not the focus of my study, I do not further explore why the RESERVE_PERM and IP coefficients in this regression are so large.

[22] This finding is also consistent with investors believing that managers of poorly governed firms use more discretion in the financial reporting of tax reserve values, making the tax reverse too noisy a measure of uncertain tax avoidance to be reflected in firm value. Bowen et al. (2008) find that while financial reporting discretion is associated with weaker governance, this discretion is positively related to firms' future performance, which the authors interpret as inconsistent with financial reporting discretion reflecting managerial opportunism. See Dechow et al. (2010) for a review of the literature examining the relation between governance and earnings quality.

RESERVE_PERM (the only component of RESERVE found to be associated with firm value in Panels A and B of Table 5), investors positively value uncertain tax avoidance in firms with stronger governance (β_{4a} = 4.67, t =1.79) but not in firms with weaker governance ($\beta_{4a} + \beta_{6a}$ = 1.71, p-value = 0.22).

5.4 Regression Results – Return Level Tests of H1a, H1b, H2, and H3

Table 7 presents the regression results from estimating the relation between annual changes in firm value and changes in uncertain tax avoidance (Equations 4a and 4b). The regression results presented in Column 1a show no evidence of a relation between changes in firm value and changes in uncertain tax avoidance. It is important to note that ΔRESERVE is a function of 1) reserve decreases due to settlements with the taxing authorities (which affects cash outflows but not tax expense or net income) and 2) reserve increases due to current period uncertain tax avoidance activity and increases/decreases due to changes in the uncertainty of prior period tax avoidance activity (which affect tax expense and therefore net income). When an uncertain tax position is disallowed (in full or in part) by the taxing authorities, a firm incurs a cash outflow and decreases its tax reserve balance (because the tax position is no longer uncertain). This transaction has no impact on net income due to accrual accounting, as the tax expense related to the position was recorded when the tax reserve was originally accrued. Similarly, all increases and decreases in tax reserves unrelated to settlements have no cash flow implication but do affect tax expense. sAs these two drivers of changes in tax reserves have very different economic implications, I separate ΔRESERVE into these two sub-components (ΔRESERVE_SETTLE and ΔRESERVE_NOTSETTLE, respectively), replace NI_ADJ with net

income before extraordinary items adjusted for the portion of the change in tax reserves that affects net income (NI_ADJ2), and re-estimate Equation 4a.

Column 1b presents regression results consistent with investors positively valuing increases in tax reserves related to current period uncertain tax avoidance activity and changes in prior period tax avoidance activity uncertainty ($\beta_{3d} = 0.09$, $t = 1.74$), highlighting the importance of decomposing change in tax reserves into these two subcomponents. While the ΔRESERVE_NOTSETTLE coefficient in Column 1b indicates a one dollar per share increase in tax reserves unrelated to settlements is associated with a nine percent increase in firm value, I find no statistical difference between the ΔRESERVE_NOTSETTLE and NI_ADJ2 coefficients (p-value = 0.27), highlighting the large standard deviation associated with the change in reserve component that affects net income. In Column 1c, ΔRESERVE_NOTSETTLE is removed as an independent variable (as this change in reserve component affects cash outflows but not tax expense or net income), and in Column 1d NI_ADJ2 is decomposed into pre-tax book income (PTBI), current tax expense (CTE), and deferred tax expense adjusted for the current period change in tax reserves (DTE_ADJ). The ΔRESERVE_NOTSETTLE variable remains positive and significant in both regression specifications, and the coefficient is not significantly different from NI_ADJ2 (PTBI) in Column 1c (1d).

In Column 2, I separate ΔRESERVE into ΔRESERVE_PERM and ΔRESERVE_TEMP and find no relation between changes in firm value and either tax reserve subcomponent. Given the importance of separating the change in tax reserves into a settlement and non-settlement component shown in Columns 1b through 1d, the lack of significance in Column 2 could be due to my inability to separate ΔRESERVE_PERM and ΔRESERVE_TEMP into the portions related and unrelated to settlements (as this disclosure is not required by FIN 48).

Table 8 presents regression results after adding WEAKGOV as an independent variable and interacting WEAKGOV with the change in tax reserves variable(s). Column 1a displays evidence consistent with investors positively valuing increases in uncertain tax avoidance in firms with stronger governance (β_3 = 0.08, t = 2.01) and less favorably valuing increases in uncertain tax avoidance in firms with weaker governance (β_5 = -0.08, t = -1.33), consistent with H1b and H3. Summing β_3 and β_5 reveals that investors do not value increases in uncertain tax avoidance in firms with weak governance ($\beta_3 + \beta_5 = 0.00$). Inferences are generally consistent when the RESERVE variable is divided into ΔRESERVE_SETTLE and ΔRESERVE_NOTSETTLE in Columns 1b and 1c, although the interaction coefficients β_{5c} and β_{5d} are not significantly different from zero in Column 1c. However, the finding does not hold when ΔRESERVE is separated into ΔRESERVE_PERM and ΔRESERVE_TEMP (likely due to my inability to separate ΔRESERVE_PERM and ΔRESERVE_TEMP into settlement and non-settlement components).

5.5 Additional Sensitivity Analysis (Untabulated) – Price Level Tests of H1a and H1b

Because a firm's disclosed tax reserve value is a function of both a manager's uncertain tax avoidance activity and the decision to record the tax reserve for financial reporting purposes (Hanlon and Heitzman 2010), it is possible that investors may take managers' financial reporting practices into consideration when evaluating the magnitude of firms' tax reserves. If a manager's reporting practices are conservative (aggressive) in nature, a firm's reported tax reserve value is more likely to be overstated (understated) relative to its "true" value. If investors recognize that the reported tax reserve balance could be overstated (understated), investors are expected to place a smaller (larger) valuation weight on the reported tax reserve value, making investors'

valuation of the recorded reserve reflective of the firm's "true" but unobservable uncertain tax avoidance activity. This smaller or larger valuation weight is expected irrespective of whether investors positively or negatively value uncertain tax avoidance activity.

In my empirical analysis I proxy for the extent to which managers' financial reporting practices reflect accounting conservatism using 1) non-operating accruals averaged over the prior three years (Givoly and Hayn 2000; Beatty et al. 2008)[23] and 2) the difference between cash flow from operations skewness and earnings skewness averaged over the prior three years (Beatty et al. 2008). Larger negative values of non-operating accruals indicate greater financial reporting conservatism, and larger positive values of cash flow-to-earnings skewness indicate greater financial reporting conservatism. Estimating Equation 2a (2b) and including each conservatism proxy - both as a separate regressor and interacted with RESERVE (RESERVE_PERM) - yields no evidence that investors place a differential valuation weight on tax reserves in firms with more conservative financial reporting practices. This finding can be interpreted as consistent with Lisowsky et al. (2010)'s failure to document that managers' financial reporting incentives attenuate the positive relation between tax reserves and confidential uncertain tax avoidance disclosures made to the IRS.

I also consider whether investor valuation of uncertain tax avoidance varies with firms' marginal tax rates, with the expectation that investors will more favorably value uncertain tax avoidance in firms with high marginal tax rates (because each additional dollar of uncertain tax avoidance provides a larger marginal benefit for these firms relative to lower marginal tax rate firms). However, estimating Equation 2a (2b) and including firms' simulated marginal tax rates -

[23] Givoly and Hayn (2000) define annual non-operating accruals as total accruals (before depreciation) minus operating accruals, or [net income – depreciation - cash flow from operations] minus [Δaccounts receivable + Δinventories + Δprepaid expenses - Δaccounts payable - Δtaxes payable], scaled by lagged total assets (Figure 1, p.303).

both as a separate regressor and interacted with RESERVE (RESERVE_PERM) - fails to provide evidence that investor valuation of uncertain tax avoidance differs across marginal tax rates.[24] My lack of findings may be due in part to investor difficulty in estimating firms' marginal tax rates, as the simulated marginal tax rates used in my analysis are researcher-estimated and quite sophisticated in their calculation.

[24] Simulated marginal tax rate data were obtained from John Graham's faculty website (http://faculty.fuqua.duke.edu/~jgraham/taxform.html). This (lack of a finding) is robust to using raw, quintile-ranked, and decile-ranked marginal tax rate values, as well as and an indicator variable set equal to one for observations with marginal tax rates in the top quintile or decile.

VI. Conclusion

This paper examines whether and to what extent equity investors value uncertain tax avoidance using firms' contingent liabilities for uncertain tax positions as a proxy for uncertain tax avoidance. My stock price level tests yield evidence consistent with investors positively valuing managers' uncertain tax avoidance activity, with the portion of uncertain tax avoidance that gives rise to permanent tax savings driving this positive valuation. My returns tests yield evidence consistent with investors positively valuing increases in uncertain tax avoidance, confirming my price level results. This positive valuation suggests that tax reserves are viewed very differently from other contingent liabilities. My findings are consistent with investors viewing managers' past and current period uncertain tax avoidance as an indicator of future uncertain tax avoidance where the economic benefit of avoidance (i.e., cash tax savings) is expected to be retained, and/or a positive reputation effect associated with uncertain tax avoidance activity.

I also examine whether the relation between firm value and uncertain tax avoidance varies as a function of firms' governance mechanisms. The type of tax positions that require firms to record a contingent tax liability for financial reporting purposes often require managers to obfuscate the transaction in order to conceal the uncertain tax position from the taxing authorities. When governance mechanisms are weak, managers may utilize the obfuscation provided by complex tax transactions to engage in opportunistic behavior. I find that total uncertain tax avoidance (increases in tax reserve increases unrelated to settlements) are positively associated with firm value (changes in firm value) in only the most well-governed firms, consistent with investors believing the benefits of uncertain tax avoidance do not fully accrue to shareholders when governance is weak.

My findings make a significant contribution to the literature's understanding of how equity investors value uncertain tax avoidance. Empirical examinations of this relation prior to 2007 were based on researcher-inferred estimates of tax reserves from detailed decompositions of tax expense and income taxes payable, which may or may not have been the same tax reserve estimates inferred by equity investors. FIN 48 requires firms to disclose a dollar estimate of managerial tax avoidance activity achieved through uncertain tax positions, allowing researchers for the first time to assess investor valuation of salient uncertain tax avoidance information. It is important to understand how investors value uncertain tax avoidance, as corporate managers devote significant financial and human capital resources to engaging in uncertain tax avoidance activity. Evidence consistent with investors positively valuing a liability is interesting in itself. Finally, evidence consistent with investors positively valuing uncertain tax avoidance is expected to be of interest to both managers and boards of directors concerned with equity investor perception of this type of tax avoidance.

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Appendix A
Variable Definitions

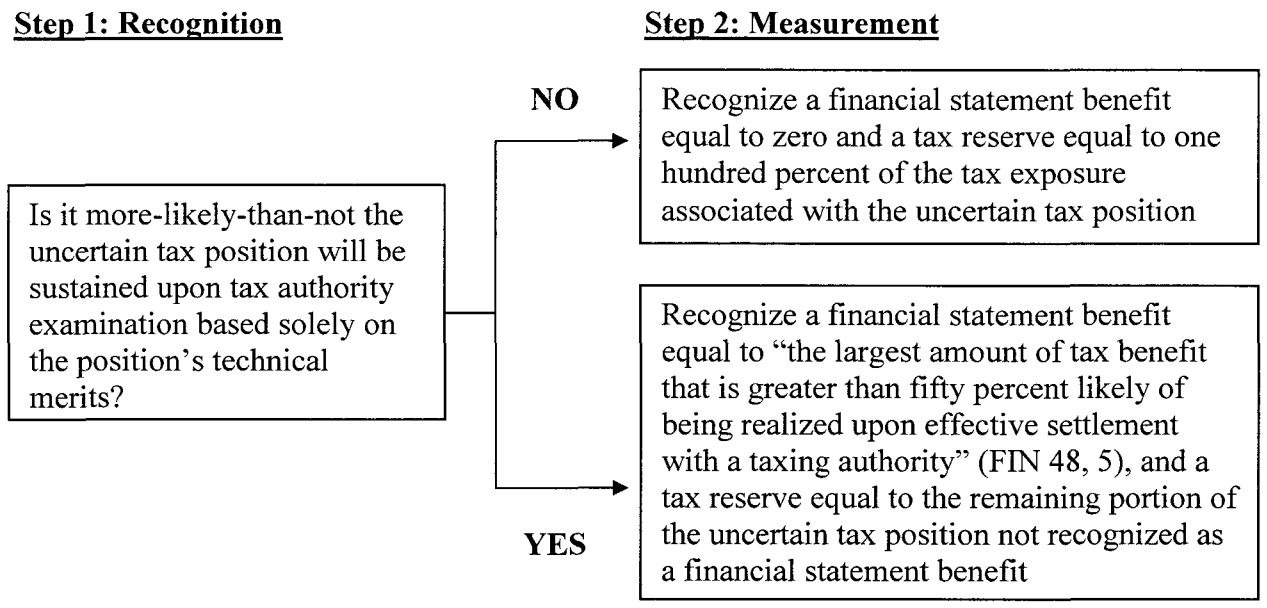
Variable	Description
$CH\_REV\%_t$	Annual percentage change in revenue [$(revt_t - revt_{t-1}) \div revt_{t-1}$]
CTE_t	Current tax expense (*txc*), scaled by number of shares outstanding at fiscal year-end (*csho*)
DTA_t	Net deferred tax assets (*txndba*), scaled by number of shares outstanding at fiscal year-end (*csho*)
DTE_ADJ_t	Deferred tax expense (*txdi*) adjusted for the current period portion of the change in tax reserves that affects net income = $TXDI_t$ - $\Delta RESERVE\_NOTSETTLE_t$, scaled by number of shares outstanding at fiscal year-end (*csho*)
DTL_t	Net deferred tax liabilities (*txndbl*), scaled by number of shares outstanding at fiscal year-end (*csho*)
GINDEX	Gompers et al. (2003) Governance Index (as of December 31, 2006)
$IBES\_LT\_GROWTH_t$	Analysts' consensus long-term growth forecast as reported in I/B/E/S
MVE_t	Market value of equity = number of shares outstanding (*csho*) * stock price per share (*prcc_f*)
NI_t	Net income before extraordinary items (*nibx*), scaled by number of shares outstanding at fiscal year-end (*csho*)
NI_ADJ_t	Net income before extraordinary items adjusted for the current period change in tax reserves = $NI_t + \Delta RESERVE_t$, scaled by number of shares outstanding at fiscal year-end (*csho*)
NI_ADJ2_t	Net income before extraordinary items adjusted for the current period portion of the change in tax reserves that affects net income = $NI_t + \Delta RESERVE\_NOTSETTLE_t$, scaled by number of shares outstanding at fiscal year-end (*csho*)
$OPEB_t$	Other post-employment benefits liability (*prba* * -1), scaled by number of shares outstanding at fiscal year-end (*csho*)
$PENSION_t$	Pension accumulated benefit obligation less pension plan assets (*pbaco* - *pplao*), scaled by number of shares outstanding at fiscal year-end (*csho*)
$PRICE_t$	Stock price per share (CRSP *prc*), measured one day after a firm's Form 10-K filing date
$PTBI_t$	Pre-tax book income (*pi*), scaled by number of shares outstanding at fiscal year-end (*csho*)
$RESERVE_t$	Contingent liability for uncertain tax positions (i.e., tax reserve), scaled by number of shares outstanding at fiscal year-end (*csho*)
$RESERVE\_PERM_t$	Portion of RESERVE that would reduce the effective tax rate (ETR) if the economic benefit of the uncertain tax avoidance were recognized, scaled by number of shares outstanding at fiscal year-end (*csho*)

$RESERVE\_TEMP_t$	Portion of RESERVE that would not affect the effective tax rate (ETR) if the economic benefit of the uncertain tax avoidance were recognized = $RESERVE_t$ – $RESERVE\_PERM_t$, scaled by number of shares outstanding at fiscal year-end (*csho*)
RET_t	Annual size-adjusted return inclusive of dividends (security *j*'s raw return less the raw return for the same size decile portfolio of firms), cumulated beginning 250 trading days prior to and ending one day after the Form 10-K filing date
TA_t	Total assets (*at*), scaled by number of shares outstanding at fiscal year-end (*csho*)
TA_ADJ_t	Total assets (*at*) net of any other assets included in the regression specification, scaled by number of shares outstanding at fiscal year-end (*csho*)
TAX_NOLCF_t	Tax net operating loss carryforward (*tlcf*), scaled by number of shares outstanding at fiscal year-end (*csho*)
TL_t	Total liabilities (*lt*), scaled by number of shares outstanding at fiscal year-end (*csho*)
TL_ADJ_t	Total liabilities (*lt*) net of any other liabilities included in the regression specification, scaled by number of shares outstanding at fiscal year-end (*csho*)
$TL\_NORESERVE_t$	Total liabilities (*lt*) net of tax reserves = TL_t – $RESERVE_t$, scaled by number of shares outstanding at fiscal year-end (*csho*)
WEAKGOV	Indicator variable set equal to one when GINDEX is greater than or equal to the within-sample median value of nine, and set equal to zero otherwise
$\Delta RESERVE_t$	Current period change in $RESERVE_t$ = $RESERVE_t$ – $RESERVE_{t-1}$, scaled by number of shares outstanding at fiscal year-end (*csho*)
$\Delta RESERVE\_PERM_t$	Current period change in the portion of RESERVE that would reduce the ETR if the economic benefit of the uncertain tax avoidance were recognized = $RESERVE\_PERM_t$ – $RESERVE\_PERM_{t-1}$, scaled by number of shares outstanding at fiscal year-end (*csho*)
$\Delta RESERVE\_TEMP_t$	Current period change in the portion of RESERVE that would not affect the ETR if the economic benefit of the uncertain tax avoidance were recognized = $RESERVE\_TEMP_t$ – $RESERVE\_TEMP_{t-1}$, scaled by number of shares outstanding at fiscal year-end (*csho*)
$\Delta RESERVE\_NOTSETTLE_t$	Current period change in RESERVE due to current period uncertain tax avoidance activity and changes in the uncertainty relating to prior period tax avoidance activity = $\Delta RESERVE_t$ – $\Delta RESERVE\_SETTLE_t$, scaled by number of shares outstanding at fiscal year-end (*csho*)
$\Delta RESERVE\_SETTLE_t$	Current period decrease in RESERVE due to settlements with the tax authorities, scaled by number of shares outstanding at fiscal year-end (*csho*)

All variables are measured at fiscal year-end unless otherwise stated. *Compustat* variable names are referenced in parentheses where applicable.

Appendix B
Illustration of Financial Reporting for Uncertain Tax Positions Pursuant to FIN 48[25]

FIN 48 requires a two-step process in determining the amount of financial reporting tax contingent liability (i.e., tax reserve) to be recorded for each uncertain tax position.



Example:
A firm has two uncertain tax positions related to its 200X federal tax return:

Project A R&D Credit:	$225,000
Project B R&D Credit:	$250,000
Total R&D Credit:	$475,000

The appropriate unit of account for each tax position is determined by considering both the level at which management 1) accumulates information to support its tax return and 2) anticipates addressing the issue with the taxing authority. In this example, management determines that it accumulates information to support the firm's tax return and anticipates addressing the issue with the taxing authority at the project level.

Step 1: Recognition

- Project A: Management determines that the uncertain tax position underlying this project does not meet the more-likely-than-not threshold due to management's reliance on Treasury Regulations that have been proposed but not enacted.

[25]This illustration is adapted from Appendix A of FASB Interpretation No. 48 *Accounting for Uncertainty in Income Taxes, an Interpretation of FASB Statement No. 109 Accounting for Income Taxes* (FIN 48). The recognition portion of FIN 48 is codified as Accounting Standards Codification (ASC) 740-10-25-5 through 25-17, the measurement portion is codified as ASC 740-10-30-7, and the illustrative examples are codified as ASC 740-10-55-99 through 55-116.

- Project B: Management determines that the uncertain tax position underlying this project does meet the more-likely-than-not threshold.

Step 2: Measurement

- Project A: Management will recognize a financial statement benefit of zero and a tax reserve equal to one hundred percent of the tax exposure associated with the uncertain tax position, or $225,000. The journal entry is as follows:

DEBIT	Tax Expense	225,000
	CREDIT Tax Reserve Liability	225,000

- Project B: Management will recognize a financial statement benefit equal to the largest amount of tax benefit that is greater than fifty percent likely of being realized upon effective settlement with a taxing authority. This means that management must estimate the amount of tax benefit expected to be sustained at varying levels of likelihood based solely on the technical merits of the underlying tax position:

Likelihood	Cumulative Likelihood	Amount Expected to be Sustained upon Effective Settlement
10%	10%	$250,000
30%	40%	$230,000
20%	**60%**	**$200,000**
40%	100%	$150,000

Based on the above schedule, the largest amount of tax benefit that is greater than fifty percent likely of being realized upon effective settlement is shown in the third row (where the 'cumulative likelihood' is equal to sixty percent). Management will recognize a $200,000 financial statement benefit and record a tax reserve equal to the remaining portion of the uncertain tax position not recognized as a financial statement benefit ($250,000 – $200,000 = $50,000). The journal entry is as follows:

DEBIT	Tax Expense	50,000
	CREDIT Tax Reserve Liability	50,000

The tax reserve is released/reversed (i.e., the financial statement benefit from the tax position is recognized in the financial statements) in the first interim period that the uncertain tax position meets the more-likely-than-not threshold, is effectively settled through IRS examination, negotiation, or litigation, or on expiration of the relevant statute of limitations.

Appendix C
FIN 48 Disclosure Example
Merck & Co., Inc.'s 2008 Form 10-K Income Tax Footnote Excerpt

A reconciliation of the beginning and ending amount of unrecognized tax benefits is as follows:

	2008
Balance as of January 1	$3,689.5
Additions related to current year positions	269.4
Additions related to prior year positions	64.2
Reductions for tax positions of prior years	(310.5)
Settlements	(38.8)
Lapse of statute of limitations	(8.8)
Balance as of December 31	$3,665.0

If the Company were to recognize the unrecognized tax benefits of $3.66 billion at December 31, 2008, the income tax provision would reflect a favorable net impact of $2.91 billion.

The information in this disclosure is used to create the following variables:

$RESERVE_t$ = **3,665 M**

$RESERVE\_PERM_t$ = **2,910 M**

$RESERVE\_TEMP_t$ = $RESERVE_t$ – $RESERVE\_PERM_t$
= 3,665 – 2,910 = **755 M**

$\Delta RESERVE_t$ = $RESERVE_t$ – $RESERVE_{t-1}$
= 3,665 – 3,689.5 = **(24.5 M)**

$\Delta RESERVE\_SETTLE_t$ = **(38.8 M)**

$\Delta RESERVE\_NOTSETTLE_t$[26] = $\Delta RESERVE_t$ – $\Delta RESERVE\_SETTLE_t$
= (24.5 M) – (38.8 M) = **14.3 M**

[26] ΔRESERVE_NOTSETTLE can also be calculated by summing all tax reserve changes in the above schedule unrelated to settlements (i.e., 269.4 + 64.2 + (310.5) + (8.8) = 14.3).

Appendix D
Endogeneity of Corporate Governance and Agency Conflicts

Dey (2008) suggests that corporate governance mechanisms arise endogenously in response to firms' agency conflicts. The following explains how Dey's finding of a positive relation between agency conflicts and governance mechanisms is expected to affect my research design.

Consider the following matrix of high vs. low levels of ex-ante agency conflicts (left column) and high vs. low levels of ex-post corporate governance mechanisms (top row) that arise in response to firms' ex-ante agency conflicts.

		Ex-Post Governance Mechanisms	
		High	Low
Ex-Ante Agency Conflicts	High	**1** *at equilibrium*	**2** *under-correcting*
	Low	**3** *over-correcting*	**4** *at equilibrium*

Cells 1 and 4 represent "at equilibrium" firms, or firms with corporate governance mechanisms similar in scope to their agency conflicts (i.e., high agency conflicts and high governance mechanisms in Cell 1 and low agency conflicts and low governance mechanisms in Cell 4). Cell 3 represents "over-correcting" firms, or firms with low ex-ante agency conflicts that have adopted high (i.e., strong) governance mechanisms. In other words, these are firms with a big solution to a small problem. Cell 2 represents "under-correcting" firms, or firms with high ex-ante agency conflicts that have adopted low (i.e., weak) governance mechanisms. These are firms with a small solution to a big problem. Therefore, agency conflicts are only expected to be a concern in "under-correcting" firms (Cell 2) because the high level of ex-ante agency conflicts are unlikely to be fully mitigated by the weak ex-post governance mechanisms adopted.

This suggests that sorting firms into high and low corporate governance groups has the following implications. The high corporate governance group includes both "at equilibrium" (Cell 1) and "over-correcting" (Cell 3) firms, suggesting net agency problems (i.e., those conflicts not mitigated by corporate governance mechanisms) are not likely to be a significant concern for firms with strong corporate governance. The low corporate governance group includes both "at equilibrium" (Cell 4) and "under-correcting" (Cell 2) firms, suggesting net agency problems are a concern for the Cell 2 firms included in this group. This suggests that strong corporate governance can be used as a proxy for smaller net agency problems while weak corporate governance can be used as a proxy for larger net agency problems, albeit with the "at equilibrium" firms in Cell 4 firms adding noise to the proxy.

Table 1
Sample Selection

	Observations
S&P 500 Composite Index firm-year observations for fiscal years ending between December 15, 2007 and December 14, 2009	1,000
Less: Firms acquired or liquidated	(27)
Less: Firms with insufficient FIN 48, Compustat, and/or CRSP data	(24)
Usable firm-year observations with FIN 48 data	949

Table 2
Descriptive Statistics

PANEL A

Variable	N	Mean	Std Dev	P25	P50	P75
$RESERVE_t$ ($M)	919	380.470	855.805	40.000	109.400	293.000
$RESERVE\_PERM_t$ ($M)	889	236.886	560.038	21.200	60.400	167.670
$RESERVE\_TEMP_t$ ($M)	889	137.784	406.846	4.200	25.200	93.300
$RESERVE_t \div TL_t$	919	0.029	0.041	0.006	0.016	0.036
$RESERVE_t \div CASH_t$	919	0.508	4.476	0.045	0.133	0.340
MVE_t ($M)	919	21,277	39,602	4,537	9,117	19,802

PANEL B

Variable	N	Mean	Std Dev	P25	P50	P75
$PRICE_t$	919	33.428	22.615	16.500	28.550	46.860
NI_t	919	1.569	4.350	0.877	2.008	3.413
TA_t	919	79.637	142.644	21.554	39.246	72.877
TA_ADJ_t	919	77.057	140.923	20.251	37.758	70.185
TL_t	919	62.231	135.051	11.788	24.220	49.291
$TL\_NORESERVE_t$	919	61.647	134.900	11.417	23.888	48.716
TL_ADJ_t	919	57.074	134.079	10.217	19.437	39.549
$RESERVE_t$	919	0.584	0.806	0.168	0.375	0.721
$RESERVE\_PERM_t$	889	0.351	0.415	0.094	0.219	0.445
$RESERVE\_TEMP_t$	889	0.220	0.497	0.015	0.092	0.228
DTA_t	919	2.579	3.257	0.760	1.620	3.149
DTL_t	919	3.463	5.039	0.428	1.564	4.592
$PENSION_t$	919	0.324	1.935	0.000	0.000	0.435
$OPEB_t$	919	0.786	1.840	0.000	0.137	0.823
$PTBI_t$	919	2.569	5.713	1.287	2.939	5.024
CTE_t	858	0.993	1.380	0.323	0.820	1.425
DTE_ADJ_t	857	-0.019	1.402	-0.180	0.025	0.282
$CH\_REV\%_t$	919	0.056	0.272	-0.023	0.058	0.124
$IBES\_LT\_GROWTH_t$	867	0.144	0.227	0.038	0.124	0.218
TAX_NOLCF_t	919	1.624	3.979	0.751	0.781	0.781
GINDEX	847	9.497	2.423	8.000	9.000	11.000
WEAKGOV	847	0.659	0.474	0.000	1.000	1.000

PANEL C

Variable	N	Mean	Std Dev	P25	P50	P75
RET_t	925	-0.029	0.327	-0.222	-0.030	0.167
NI_ADJ_t	925	1.746	4.469	0.947	2.093	3.533
NI_ADJ2_t	925	1.791	4.476	0.988	2.105	3.573
NI_{t-1}	925	2.638	2.944	1.313	2.354	3.689
$\Delta RESERVE_t$	925	0.010	0.224	-0.045	0.007	0.068
$\Delta RESERVE\_PERM_t$	634	0.017	0.172	-0.021	0.005	0.052
$\Delta RESERVE\_TEMP_t$	634	-0.014	0.255	-0.038	0.000	0.019
$\Delta RESERVE\_SETTLE_t$	925	-0.045	0.113	-0.041	-0.008	0.000
$\Delta RESERVE\_NOTSETTLE_t$	925	0.054	0.213	-0.006	0.027	0.101
GINDEX	850	9.502	2.412	8.000	9.000	11.000
WEAKGOV	850	0.661	0.475	0.000	1.000	1.000

All variables are defined in Appendix A. In Panel A, variables are reported unscaled. In Panel B (C), all variables excluding CH_REV%, IBES_LT_GROWTH, GINDEX, and WEAKGOV (RET, GINDEX, and WEAKGOV) are reported on a per-share basis.

Table 3
Industry Composition

Industry	Sample Composition		Mean $RESERVE_t \div TL_t$	Mean $RESERVE_t$ ($M)	Mean $RESERVE_t \div CASH_t$
	N	%			
Medical (Healthcare, Equipment, Drugs)	66	*6.8*	0.069	677.8	0.248
Business Equipment	142	*16.5*	0.058	372.1	0.150
Manufacturing (Machines, Trucks, Planes, Furniture)	98	*7.9*	0.033	258.4	0.383
Consumer Durables (Cars, Household Appliances)	72	*10.7*	0.032	215.2	0.765
Chemicals and Allied Products	33	*3.1*	0.025	330.9	1.274
Telephone and Television Transmission	33	*9.1*	0.023	1017.1	0.869
Other	82	*3.5*	0.022	291.7	0.265
Wholesale and Retail	93	*10.4*	0.022	174.7	0.297
Energy (Oil, Gas, Coal)	57	*6.7*	0.016	421.7	2.786
Utilities	64	*1.8*	0.013	318.8	0.741
Consumer NonDurables (Food, Textiles, Apparel)	15	*6.8*	0.012	191.0	0.219
Financial Services	164	*16.8*	0.005	483.6	0.058
	919	*100.0*			

All variables are defined in Appendix A. Industry classification is based on the Fama French 12-industry classification using four-digit SIC codes and can be found at *http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_12_ind_port.html*.

Table 4
Correlation Matrix
(Spearman below \ Pearson above)

PANEL A

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
(1)	PRICE$_t$	-	**0.53**	**0.13**	**0.13**	**0.09**	**0.09**	**0.08**	**0.21**	**0.18**	**0.11**	**0.11**	**0.29**	**-0.15**	**0.22**	**0.56**	**0.48**	**0.14**	**0.20**	**0.27**	-0.05	0.06	**0.06**
(2)	NI$_t$	**0.74**	-	0.06	0.06	0.03	0.03	0.02	**0.09**	0.06	**0.08**	**-0.07**	**0.17**	-0.03	**0.16**	**0.98**	**0.47**	**0.46**	**0.30**	**0.22**	**-0.07**	**0.07**	0.06
(3)	TA$_t$	**0.23**	**0.34**	-	**1.00**	**1.00**	**1.00**	**0.99**	**0.20**	**0.15**	**0.19**	**0.54**	**0.24**	-0.05	0.03	0.04	**0.19**	**-0.21**	**-0.09**	**-0.12**	-0.05	-0.01	0.03
(4)	TA_ADJ$_t$	**0.23**	**0.34**	**1.00**	-	**1.00**	**1.00**	**0.99**	**0.20**	**0.15**	**0.19**	**0.52**	**0.23**	-0.06	0.02	0.05	**0.19**	**-0.20**	**-0.08**	**-0.12**	-0.06	-0.01	0.03
(5)	TL$_t$	**0.14**	**0.25**	**0.96**	**0.95**	-	**1.00**	**1.00**	**0.19**	**0.15**	**0.18**	**0.53**	**0.21**	-0.05	0.02	0.01	**0.16**	**-0.22**	**-0.10**	**-0.13**	-0.05	-0.02	0.02
(6)	TL_NORESERVE$_t$	**0.13**	**0.25**	**0.96**	**0.95**	**1.00**	-	**1.00**	**0.19**	**0.14**	**0.18**	**0.53**	**0.21**	-0.05	0.02	0.01	**0.16**	**-0.22**	**-0.10**	**-0.13**	-0.05	-0.02	0.02
(7)	TL_ADJ$_t$	**0.12**	**0.23**	**0.94**	**0.94**	**0.99**	**0.99**	-	**0.17**	**0.13**	**0.16**	**0.50**	**0.16**	**-0.07**	-0.01	0.00	**0.15**	**-0.23**	**-0.10**	**-0.13**	-0.06	-0.03	0.02
(8)	RESERVE$_t$	**0.20**	**0.19**	**0.27**	**0.26**	**0.28**	**0.27**	**0.27**	-	**0.75**	**0.83**	**0.31**	**0.36**	**0.09**	**0.20**	**0.10**	0.02	**0.11**	-0.05	-0.07	**0.12**	0.06	0.01
(9)	RESERVE_PERM$_t$	**0.16**	**0.14**	**0.12**	**0.11**	**0.12**	**0.11**	**0.12**	**0.85**	-	**0.25**	**0.29**	**0.09**	**0.15**	**0.19**	0.06	0.07	0.01	-0.05	-0.03	**0.18**	**0.08**	0.02
(10)	RESERVE_TEMP$_t$	**0.14**	**0.15**	**0.33**	**0.33**	**0.35**	**0.34**	**0.33**	**0.67**	**0.31**	-	**0.19**	**0.35**	0.00	**0.13**	**0.09**	**0.13**	0.02	-0.03	-0.06	0.04	0.04	0.01
(11)	DTA$_t$	**0.16**	**0.23**	**0.56**	**0.53**	**0.58**	**0.58**	**0.54**	**0.41**	**0.36**	**0.33**	-	**0.43**	**0.25**	**0.45**	**-0.09**	**0.11**	**-0.30**	**-0.17**	**-0.08**	**0.07**	**0.06**	0.06
(12)	DTL$_t$	**0.24**	**0.33**	**0.63**	**0.62**	**0.62**	**0.62**	**0.54**	**0.22**	**0.07**	**0.28**	**0.52**	-	**0.06**	**0.33**	**0.21**	**0.20**	**0.15**	0.05	0.01	-0.03	0.06	**0.09**
(13)	PENSION$_t$	**-0.17**	-0.03	0.03	0.02	**0.07**	**0.07**	0.02	**0.07**	**0.11**	-0.04	**0.18**	0.05	-	**0.14**	-0.03	-0.01	0.02	-0.03	-0.06	**0.10**	**0.08**	0.04
(14)	OPEB$_t$	**0.26**	**0.37**	**0.41**	**0.39**	**0.44**	**0.44**	**0.39**	**0.33**	**0.25**	**0.25**	**0.51**	**0.50**	**0.17**	-	**0.16**	**0.07**	**0.08**	-0.01	0.02	0.03	**0.11**	0.05
(15)	PTBI$_t$	**0.73**	**0.98**	**0.34**	**0.34**	**0.26**	**0.26**	**0.23**	**0.18**	**0.12**	**0.17**	**0.22**	**0.35**	-0.03	**0.37**	-	**0.56**	**0.53**	**0.33**	**0.23**	**-0.07**	**0.07**	0.06
(16)	CTE$_t$	**0.58**	**0.71**	**0.34**	**0.34**	**0.27**	**0.26**	**0.26**	**0.19**	**0.16**	**0.21**	**0.25**	**0.27**	-0.06	**0.25**	**0.75**	-	**-0.14**	**0.14**	**0.19**	-0.05	**0.08**	0.05
(17)	DTE ADJ$_t$	**0.09**	**0.25**	**0.10**	**0.10**	**0.12**	**0.13**	**0.10**	**-0.10**	**-0.11**	-0.05	-0.03	**0.20**	**0.07**	**0.20**	**0.28**	**-0.11**	-	**0.25**	0.05	-0.01	0.03	0.03
(18)	CH_REV%$_t$	**0.36**	**0.33**	-0.03	-0.03	**-0.09**	**-0.09**	**-0.10**	0.00	-0.01	-0.03	**-0.13**	**0.07**	**-0.10**	0.01	**0.33**	**0.27**	-0.01	-	**0.26**	-0.01	0.05	0.07
(19)	IBES LT GROWTH$_t$	**0.37**	**0.37**	**-0.08**	**-0.08**	**-0.15**	**-0.15**	**-0.17**	-0.06	-0.01	**-0.09**	**-0.08**	0.02	**-0.08**	0.02	**0.38**	**0.29**	**0.09**	**0.45**	-	**0.08**	-0.02	-0.06
(20)	TAX NOLCF$_t$	**-0.11**	**-0.17**	0.06	0.06	**0.09**	**0.08**	**0.09**	**0.15**	**0.15**	0.05	**0.13**	0.05	**0.10**	0.02	**-0.19**	**-0.21**	**-0.09**	-0.05	**-0.07**	1.00	0.00	0.02
(21)	GINDEX	**0.07**	**0.13**	**0.13**	**0.13**	**0.12**	**0.12**	**0.12**	0.04	0.04	0.03	**0.13**	**0.14**	0.03	**0.20**	**0.13**	**0.17**	0.04	0.01	0.00	0.03	-	**0.77**
(22)	WEAKGOV	**0.07**	**0.11**	**0.12**	**0.12**	**0.12**	**0.12**	**0.12**	0.01	0.00	0.03	**0.11**	**0.16**	0.01	**0.15**	**0.11**	**0.10**	0.02	0.00	-0.03	0.05	**0.83**	-

All variables are defined in Appendix A. Correlations significant at the 5 percent level are **bolded.**

Table 4
Correlation Matrix
(Spearman below \ Pearson above)

PANEL B

		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
(A)	RET_t	-	**0.36**	**0.36**	0.03	0.03	0.08	-0.01	-0.02	0.05	-0.04	0.00
(B)	NI_ADJ_t	**0.29**	-	**1.00**	**0.41**	-0.02	**0.09**	-0.03	-0.05	0.00	0.05	0.04
(C)	NI_ADJ2_t	**0.29**	**1.00**	-	**0.41**	-0.03	0.08	-0.03	**-0.08**	0.01	0.05	0.04
(D)	NI_{t-1}	0.05	**0.71**	**0.71**	-	0.03	0.02	-0.03	**-0.08**	**0.08**	**0.09**	**0.07**
(E)	$\Delta RESERVE_t$	0.05	**0.13**	**0.11**	0.03	-	**0.48**	**0.80**	**0.35**	**0.87**	-0.04	-0.04
(F)	$\Delta RESERVE\_PERM_t$	0.07	0.08	0.07	0.05	**0.59**	-	**-0.14**	**0.28**	**0.33**	**-0.09**	-0.07
(G)	$\Delta RESERVE\_TEMP_t$	0.01	**0.10**	**0.09**	0.02	**0.63**	-0.05	-	0.06	**0.76**	0.01	0.01
(H)	$\Delta RESERVE\_SETTLE_t$	-0.03	**-0.12**	**-0.14**	**-0.14**	**0.27**	**0.16**	**0.24**	-	**-0.11**	**-0.09**	**-0.09**
(I)	$\Delta RESERVE\_NOTSETTLE_t$	**0.07**	**0.18**	**0.19**	**0.09**	**0.84**	**0.49**	**0.54**	**-0.17**	-	0.00	0.01
(J)	GINDEX	-0.04	**0.11**	**0.12**	**0.15**	-0.07	**-0.10**	-0.01	**-0.09**	-0.01	-	**0.77**
(K)	WEAKGOV	0.00	**0.09**	**0.09**	**0.11**	-0.06	-0.06	-0.02	-0.06	-0.02	**0.83**	-

All variables are defined in Appendix A. Correlations significant at the 5 percent level are **bolded**.

Table 5
Panel A: Relation between Firm Value and Uncertain Tax Avoidance
$Y = PRICE_t$

	VARIABLE	Pred	[1]	[2]	[3]	[4]	[5]
B1	NI_t	+	1.624 ***	1.626 ***	1.596 ***	1.624 ***	1.602 ***
			(7.29)	*(7.52)*	*(7.54)*	*(7.63)*	*(7.65)*
B2	TA_t	+	0.741 ***	0.709 ***	0.718 ***		
			(11.97)	*(11.34)*	*(11.28)*		
B2a	TA_ADJ_t	+				0.647 ***	0.665 ***
						(10.40)	*(10.45)*
B3	TL_t	-	-0.751 ***				
			(-11.70)				
B3a	$TL\_NORESERVE_t$	-		-0.723 ***	-0.733 ***		
				(-11.16)	*(-11.15)*		
B3b	TL_ADJ_t	-				-0.665 ***	-0.682 ***
						(-10.45)	*(-10.51)*
B4	$RESERVE_t$	+/-		2.223 ***		1.216 *	
				(2.99)		*(1.74)*	
B4a	$RESERVE\_PERM_t$	+/-			4.464 ***		2.814 *
					(2.60)		*(1.91)*
B4b	$RESERVE\_TEMP_t$	+/-			-0.355		-0.835
					(-0.35)		*(-0.78)*
B5	DTA_t	+				0.891 ***	0.883 ***
						(3.30)	*(3.24)*
B6	DTL_t	-				-0.365 **	-0.396 **
						(-1.83)	*(-1.89)*
B7	$PENSION_t$	-				-1.342 ***	-1.443 ***
						(-3.89)	*(-4.08)*
B8	$OPEB_t$	-				0.208	0.112
						(0.55)	*(0.29)*
B4a > B4b					*(4.41)* **		*(2.95)* **
Industry & Quarter/Year Indicators			Y	Y	Y	Y	Y
N			924	922	890	919	889
Adj. R^2			0.546	0.555	0.554	0.571	0.566

All variables are defined in Appendix A. T-statistics are reported in parentheses below each coefficient estimate and are determined using White standard errors. Chi-square statistics are presented when comparing the equality of coefficients instead of F-statistics because the heteroskedasticity-consistent covariance matrix estimates used to generate White standard errors are asymptotic as opposed to exact. ***,**, and * indicate the coefficient is significantly different from zero at the 1, 5, and 10 percent level, respectively using a one-tailed (two-tailed) test of significance for variables with (without) a directional prediction.

Table 5
Panel B: Relation between Firm Value and Uncertain Tax Avoidance (Sensitivity Tests)
$Y = PRICE_t$

	VARIABLE	Pred	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]
B1	NI_t	+			1.535 ***	2.268 ***	1.589 ***	1.614 ***
					(6.69)	*(11.40)*	*(7.68)*	*(7.70)*
B1a	NI_ADJ2_t	+	1.602 ***					
			(7.75)					
B1b	$PTBI_t$	+		0.995 ***				
				(5.48)				
B1c	CTE_t	+		4.172 ***				
				(4.95)				
B1d	DTE_ADJ_t	-		0.388				
				(0.52)				
B1e	$\Delta RESERVE\_NOTSETTLE_t$	+/-	2.245	8.101 **				
			(1.35)	*(2.41)*				
B2	TA_ADJ_t	+	0.676 ***	0.627 ***	0.652 ***	0.663 ***	0.667 ***	0.672 ***
			(10.68)	*(9.54)*	*(10.25)*	*(11.33)*	*(10.55)*	*(10.55)*
B3	TL_ADJ_t	-	-0.694 ***	-0.641 ***	-0.668 ***	-0.686 ***	-0.687 ***	-0.693 ***
			(-10.71)	*(-9.54)*	*(-10.26)*	*(-11.20)*	*(-10.62)*	*(-10.64)*
B4a	$RESERVE\_PERM_t$	+/-	2.603 *	3.701 **	3.162 **	4.613 ***	3.318 **	4.112 **
			(1.78)	*(2.50)*	*(2.13)*	*(3.20)*	*(2.25)*	*(2.49)*
B4b	$RESERVE\_TEMP_t$	+/-	-1.619	-1.668	-0.930	-0.996	-0.804	-0.825
			(-1.45)	*(-1.46)*	*(-0.88)*	*(-0.95)*	*(-0.76)*	*(-0.78)*
B5	DTA_t	+	0.881 ***	0.837 ***	0.920 ***	0.717 **	0.925 ***	0.938 ***
			(3.24)	*(2.71)*	*(3.25)*	*(2.27)*	*(3.45)*	*(3.47)*
B6	DTL_t	-	-0.432 **	-0.631 ***	-0.406 **	-0.473 ***	-0.417 **	-0.424 **
			(-2.07)	*(-2.67)*	*(-1.93)*	*(-2.45)*	*(-2.00)*	*(-2.02)*
B7	$PENSION_t$	-	-1.386 ***	-1.237 ***	-1.309 ***	-1.361 ***	-1.415 ***	-1.318 ***
			(-3.99)	*(-3.78)*	*(-3.73)*	*(-3.85)*	*(-4.08)*	*(-3.87)*
B8	$OPEB_t$	-	0.109	0.062	0.232	-0.264	0.095	0.131
			(0.28)	*(0.14)*	*(0.59)*	*(0.68)*	*(0.24)*	*(0.34)*
B9a	$CH\_REV\_PCT_t$	+			9.680 ***			
					(3.43)			
B9b	$IBES\_LT\_GROWTH_t$	+				15.430 ***		
						(5.55)		
B10a	TAX_NOLCF_t	-					-0.251 ***	-0.123
							(-2.94)	*(-0.96)*
B10b	TAX_NOLCF_t * $RESERVE\_PERM_t$	-						-0.405 **
								(-1.71)
B4a > B4b			*(3.80)* **	*(6.63)* ***	*(3.72)* **	*(7.31)* ***	*(3.81)* **	*(4.73)* **
B4a + B10b								3.707 **
								(5.49)
Industry & Quarter/Year Indicators			Y	Y	Y	Y	Y	Y
N			886	823	886	829	891	890
Adj. R^2			0.568	0.598	0.572	0.615	0.567	0.557

All variables are defined in Appendix A. T-statistics are reported in parentheses below each coefficient estimate and are determined using White standard errors. Chi-square statistics are presented when comparing the equality of coefficients instead of F-statistics because the heteroskedasticity-consistent covariance matrix estimates used to generate White standard errors are asymptotic as opposed to exact. ***,**, and * indicate the coefficient is significantly different from zero at the 1, 5, and 10 percent level, respectively using a one-tailed (two-tailed) test of significance for variables with (without) a directional prediction.

Table 6
Cross-Sectional Tests: Relation between Firm Value and Uncertain Tax Avoidance
$Y = PRICE_t$

	VARIABLE	Pred	[1]		[2a]		[2b]	
B1	NI_t	+	1.770	***	1.697	***	1.698	***
			(8.00)		*(8.18)*		*(8.18)*	
B2	TA_ADJ_t	+	0.603	***	0.630	***	0.614	***
			(9.27)		*(9.41)*		*(9.27)*	
B3	TL_ADJ_t	-	-0.624	***	-0.651	***	-0.636	***
			(-9.32)		*(-9.48)*		*(-9.34)*	
B4	$RESERVE_t$	+/-	2.332	***				
			(2.62)					
B4a	$RESERVE\_PERM_t$	+/-			5.315	*	4.668	*
					(1.83)		*(1.79)*	
B4b	$RESERVE\_TEMP_t$	+/-			-4.159		-0.203	
					(-1.33)		*(-0.18)*	
B5	WEAKGOV	-	-0.011		-0.014		0.609	
			(-0.01)		*(-0.01)*		*(0.42)*	
B6	WEAKGOV * $RESERVE_t$	-	-1.260					
			(-1.05)					
B6a	WEAKGOV * $RESERVE\_PERM_t$	-			-2.542		-2.959	
					(-0.81)		*(-1.09)*	
B6b	WEAKGOV * $RESERVE\_TEMP_t$	-			2.629			
					(0.80)			
B7	DTA_t	+	0.986	***	0.944	***	0.952	***
			(3.57)		*(3.40)*		*(3.52)*	
B8	DTL_t	-	-0.323	*	-0.313	*	-0.292	*
			(-1.44)		*(-1.36)*		*(-1.30)*	
B9	$PENSION_t$	-	-1.423	***	-1.409	***	-1.239	***
			(-4.26)		*(-4.59)*		*(-4.03)*	
B10	$OPEB_t$	-	-0.125		-0.429		-0.325	
			(-0.32)		*(-1.15)*		*(-0.86)*	
B4 + B6		+/-	1.072					
			(1.50)					
B4a + B6a		+/-			2.773	*	1.709	
					(3.24)		*(1.50)*	
B4b + B6b		+/-			-1.530			
					(1.76)			
N			847		816		819	
Adj. R^2			0.559		0.559		0.557	

All variables are defined in Appendix A. T-statistics are reported in parentheses below each coefficient estimate and are determined using White standard errors. Chi-square statistics are presented when testing the significance of the sum of coefficients instead of F-statistics because the heteroskedasticity-consistent covariance matrix estimates used to generate White standard errors are asymptotic as opposed to exact. ***,**, and * indicate the coefficient is significantly different from zero at the 1, 5, and 10 percent level, respectively using a one-tailed (two-tailed) test of significance for variables with (without) a directional prediction.

Table 7
Relation between Changes in Firm Value and Uncertain Tax Avoidance
$Y = RET_t$

	VARIABLE	Pred	[1a]	[1b]	[1c]	[1d]	[2]
B0	Intercept	+/-	-0.045 ***	-0.045 ***	-0.048 ***	-0.045 ***	-0.035 ***
			(-3.53)	*(-3.35)*	*(-3.64)*	*(-3.23)*	*(-2.14)*
B1	NI_ADJ_t	+	0.033 ***				
			(13.02)				
B1a	NI_ADJ2_t	+		0.030 ***	0.031 ***		0.028 ***
				(12.09)	*(10.82)*		*(10.15)*
B1b	$PTBI_t$	+				0.028 ***	
						(13.18)	
B1c	CTE_t	+				-0.015	
						(-1.64)	
B1d	DTE_ADJ_t	-				0.001	
						(0.16)	
B2	NI_{t-1}	-	-0.016 ***	-0.016 ***	-0.016 ***	-0.017 ***	-0.016 ***
			(-5.26)	*(-5.19)*	*(-5.14)*	*(-4.87)*	*(-4.14)*
B3	$\Delta RESERVE_t$	+/-	0.006				
			(0.52)				
B3a	$\Delta RESERVE\_PERM_t$	+/-					0.098
							(1.59)
B3b	$\Delta RESERVE\_TEMP_t$	+/-					0.008
							(0.18)
B3c	$\Delta RESERVE\_SETTLE_t$	+/-		0.021			
				(0.28)			
B3d	$\Delta RESERVE\_NOTSETTLE_t$	+/-		0.085 *	0.078 *	0.079 *	
				(1.74)	*(1.77)*	*(1.90)*	
B3a > B3b							*(1.93)* *
N			930	925	928	864	634
Adj. R^2			0.144	0.143	0.140	0.156	0.142

All variables are defined in Appendix A. T-statistics are reported in parentheses below each coefficient estimate and are determined using White standard errors. Chi-square statistics are presented when comparing the equality of coefficients instead of F-statistics because the heteroskedasticity-consistent covariance matrix estimates used to generate White standard errors are asymptotic as opposed to exact. ***,**, and * indicate the coefficient is significantly different from zero at the 1, 5, and 10 percent level, respectively using a one-tailed (two-tailed) test of significance for variables with (without) a directional prediction.

Table 8
Cross-Sectional Tests: Relation between Changes in Firm Value and Uncertain Tax Avoidance
$Y = RET_t$

	VARIABLE	Pred	[1a]	[1b]	[1c]	[2]
B0	Intercept	+/-	-0.045 **	-0.045 **	-0.038 *	-0.009
			(-2.40)	*(-2.36)*	*(-1.70)*	*(-0.35)*
B1	NI_ADJ_t	+	0.034 ***			
			(12.57)			
B1a	NI_ADJ2_t	+		0.034 ***	0.034 ***	0.031 ***
				(12.96)	*(12.91)*	*(11.23)*
B2	NI_{t-1}	-	-0.017 ***	-0.017 ***	-0.018 ***	-0.020 ***
			(-5.08)	*(-4.98)*	*(-5.28)*	*(-4.23)*
B3	$\Delta RESERVE_t$	+/-	0.083 **			
			(2.01)			
B3a	$\Delta RESERVE\_PERM_t$	+/-				0.195
						(1.19)
B3b	$\Delta RESERVE\_TEMP_t$	+/-				0.119 **
						(2.04)
B3c	$\Delta RESERVE\_SETTLE_t$	+/-		0.126 **	0.212	
				(1.83)	*(0.87)*	
B3d	$\Delta RESERVE\_NOTSETTLE_t$	+/-		0.141 ***	0.148 **	
				(2.66)	*(2.53)*	
B4	WEAKGOV	-	-0.003	-0.000	-0.009	-0.032
			(-0.12)	*(-0.01)*	*(-0.36)*	*(-1.16)*
B5	WEAKGOV * $\Delta RESERVE_t$	-	-0.084 *			
			(-1.33)			
B5a	WEAKGOV * $\Delta RESERVE\_PERM_t$	-				-0.107
						(-0.60)
B5b	WEAKGOV * $\Delta RESERVE\_TEMP_t$	-				-0.154 **
						(-2.00)
B5c	WEAKGOV * $\Delta RESERVE\_SETTLE_t$	-			-0.193	
					(-0.74)	
B5d	WEAKGOV * $\Delta RESERVE\_NOTSETTLE_t$	-		-0.127 *	-0.108	
				(-1.45)	*(-0.98)*	
B3 + B5			-0.001			
			(0.00)			
B3a + B5a						0.088
						(1.69)
B3b + B5b						-0.035
						(0.48)
B3c + B5c					0.019	
					(0.03)	
B3d + B5d				0.014	0.040	
				(0.03)	*(0.19)*	
N			850	846	846	579
Adj. R^2			0.153	0.154	0.148	0.154

All variables are defined in Appendix A. T-statistics are reported in parentheses below each coefficient estimate and are determined using White standard errors. Chi-square statistics are presented when testing the significance of the sum of coefficients instead of F-statistics because the heteroskedasticity-consistent covariance matrix estimates used to generate White standard errors are asymptotic as opposed to exact. ***,**, and * indicate the coefficient is significantly different from zero at the 1, 5, and 10 percent level, respectively using a one-tailed (two-tailed) test of significance for variables with (without) a directional prediction.

VITA

Allison Koester was born in Gainesville, Georgia and attended primary school in Texas and secondary school in Minnesota, Kansas, and Nebraska. She earned a Bachelor of Science in Business Administration with an emphasis in accounting from the University of Arizona, graduating *summa cum laude* in 2003. She earned a Master of Accountancy from The George Washington University in 2004 and a Master of Science in Business Administration from the University of Washington in 2009. In 2011 Allison earned a Doctor of Philosophy in Business Administration from the Foster School of Business at the University of Washington. Allison has accepted a faculty position as an assistant professor of accounting at Georgetown University in Washington, DC. Allison is married to Eric Koester, who serves as Chief Operating Officer and General Counsel of Zaarly, Inc., a proximity-based, real-time buyer-centric marketplace.