Conforming Tax Avoidance and Capital Market Pressure

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1. Introduction

Accounting research has long examined corporate tax practices, especially income tax avoidance. Recent studies focus almost exclusively on tax strategies that reduce income tax liabilities but not financial statement (i.e., book) income, which we refer to as *nonconforming* tax avoidance. However, firms can also reduce their income tax liabilities by engaging in transactions that reduce *both* book and taxable incomes, which we refer to as *conforming* tax avoidance. Although recent accounting research generally disregards the existence of conforming tax avoidance, older accounting research assumes that in some circumstances (e.g., when capital market pressure is low, or in anticipation of large tax rate changes) firms adopt conforming tax strategies (e.g., Penno and Simon 1986; Guenther 1994; Maydew 1997).[1] These studies examine specific transactions that reduce both book and taxable incomes, such as LIFO inventory decisions (e.g., Hunt, Moyer, and Shevlin 1996) or gains and losses from sales and divestitures (e.g., Klassen 1997). However, the accounting literature lacks a broad measure specifically designed to capture conforming tax avoidance. In this study, we develop such a measure. We use LIFO / FIFO inventory method conversions, as well as samples of private and public firms, to validate our measure of conforming tax avoidance. We then investigate the prevalence of conforming tax avoidance amongst a large sample of public firms.

Following Shackelford and Shevlin's (2001) call for research on the determinants of tax aggressiveness, and Weisbach's (2002) recognition of the undersheltering puzzle,[2] accounting researchers have extensively examined corporate tax avoidance. Most studies measure tax avoidance with effective tax rate (ETR) or book-tax difference-based measures, and thus by

[1] Guenther (1994) and Maydew (1997) refer to these practices as "tax-induced earnings management."

[2] Weisbach (2002) was among the first to ask why many firms do not fully take advantage of tax planning opportunities, which has since been referred to as the "undersheltering puzzle."

construction focus on *non*conforming tax strategies. While nonconforming tax avoidance is without question an important, if not dominant, tax planning strategy, it is not the *only* tax strategy. If we are to have a more complete understanding of the determinants of corporate tax avoidance and the undersheltering puzzle, we require empirical measures of both conforming and nonconforming tax avoidance.

Understanding the extent to which firms utilize conforming tax strategies is important because some firms could exhibit high effective tax rates (or low book-tax differences) and thus cause outsiders to conclude the firms do not avoid income taxes, when in fact they are relying on previously undetected, book-tax conforming tax strategies. In this case, studies measuring the extent of tax avoidance in the economy would be understating the amount of income tax avoidance if they solely rely on nonconforming measures of tax avoidance. Research examining the cross-sectional determinants of tax avoidance could generate incorrect inferences regarding the types of firms or managers that avoid income taxes if conforming tax avoidance is not considered. Further, investors and analysts may incorrectly evaluate the tax planning effectiveness of these firms and their managers. In sum, our new measure of conforming tax avoidance, in combination with existing measures of nonconforming tax avoidance, provides a more complete picture of the tax planning effectiveness of firms and their managers.

Our measure of conforming tax avoidance is based on the ratio of cash taxes paid to lagged total assets, which captures total tax avoidance, as well as non-tax operating decisions. Like cash ETR, this ratio is decreasing in tax avoidance. The numerator focuses on actual income tax payments and excludes tax accruals, which can distort a firm's current tax expense.[3]

[3] Prior research indicates managers sometimes use specific tax accruals (e.g., income tax reserves or the valuation allowance) to manage earnings and thus meet or beat an earnings benchmark (Dhaliwal, Gleason, and Mills 2004; Krull 2004; Schrand and Wong 2003; Frank and Rego 2006; Cazier, Rego, Tian, and Wilson 2014).

The denominator is a lagged balance sheet measure that is sensitive to neither current period transactions (e.g., earnings manipulations) nor to Henry and Sansing's (2014) observation that cash ETRs are distorted in the presence of low pretax income. However, both conforming and nonconforming tax strategies reduce the ratio of cash taxes paid to lagged total assets. To remove the impact of nonconforming tax strategies, we orthogonalize the ratio to total book-tax differences. Specifically, we regress the ratio of cash taxes paid to lagged total assets on total book-tax differences, by industry and fiscal year combinations, and extract the residuals from these regressions as our measure of conforming tax avoidance, *CONFORM_TAX*.[4]

We validate *CONFORM_TAX* as a measure of conforming tax avoidance through a series of empirical tests. First, we identify samples of firms that convert from the FIFO inventory method to the LIFO inventory method (and vice versa). Under U.S. federal income tax rules, firms that adopt LIFO for federal income tax purposes must also adopt that method for financial accounting purposes. Thus, the conversion from FIFO to LIFO, which represents an increase in conforming tax avoidance, should be captured by our measure of conforming tax avoidance.[5] Results for empirical tests that examine the mean change in *CONFORM_TAX* from the year prior to LIFO conversion to the year after LIFO conversion confirm that *CONFORM_TAX* captures an increase in book-tax conforming expenditures.

Second, we compare *CONFORM_TAX* for matched samples of private and public-firm years. Prior research provides evidence that private firms are more willing to engage in book-tax

[4] We note that our measure of conforming tax avoidance is not equivalent to a measure of downward earnings management. Downward earnings management through accruals often results in book-tax differences that would not be reflected in our measure. For example, if a firm over-reserves for bad debts to build cookie jar reserves for future earnings manipulations, this action would reduce GAAP earnings but would also lead to a book-tax difference and not reduce taxable income.

[5] This assumption holds provided inventory costs are increasing through time, causing a firm's tax deduction for cost of goods sold to be higher, and thus cash taxes paid to be lower under LIFO than under FIFO.

conforming tax strategies that reduce both book and taxable incomes than public firms, since public firms are typically subject to greater capital market pressure and thus prefer to avoid income taxes through methods that reduce tax but not book income (e.g., Penno and Simon 1986; Cloyd et al. 1996; Mills and Newberry 2001). We utilize two different types of private firms in our analyses, including firms with privately-owned equity but publicly-traded debt ("quasi-private" firms) and also "pure-private" firms, whose debt and equity are both privately-held.[6] For each private firm sample, we create a matched, control sample of firms with publicly-traded equity ("public firms"). Both of our private vs. public firm analyses reveal that private firms have significantly lower mean and median values of *CONFORM_TAX* than matched samples of public firms. Taken together, the results for tests that examine FIFO / LIFO conversions and that compare *CONFORM_TAX* at private and public firms consistently indicate that *CONFORM_TAX* captures conforming tax avoidance.

Third, we regress *CONFORM_TAX* on a private firm indicator variable, proxies for expenses that reduce both book and taxable incomes, and interactions of the private firm indicator variable with each expense. These tests not only examine *whether* private firms engage in more conforming tax avoidance than similar public firms, but they also examine *which expenses* private firms incur to reduce their income tax liabilities below those of public firms. The multivariate results indicate that private firms use more conforming tax strategies than public firms, and private firms use a variety of discretionary expenditures (including advertising and selling, general, and administrative expenses) to reduce their income tax liabilities.

[6] The quasi-private sample firms are typically larger than pure-private sample firms. As a result, the quasi-private firms are more similar to public firms with respect to management and organizational structure than the pure-private firms, and thus potentially provide more appropriate private vs. public firm comparisons. We include the pure-private firm analyses for completeness.

Our final tests examine the extent to which public firms engage in conforming tax avoidance. Recent research relies exclusively on tax measures that only capture book-tax *non*conforming tax avoidance (e.g., ETR or book-tax difference measures). As a result, we have little knowledge of the extent to which public firms adopt conforming tax strategies. Prior research asserts firms that are subject to less capital market pressure are more likely to adopt book-tax conforming tax strategies, as they are less concerned with the amount of income reported in financial reports (e.g., Penno and Simon 1986; Cloyd et al. 1996). Thus, we predict public firms that are subject to lower capital market pressure engage in more conforming tax avoidance and less nonconforming tax avoidance than other public firms. Our empirical results are consistent with these predictions, where lower capital market pressure is proxied by a lack of analyst following, no stock issuance in the current and two subsequent years, lower sales growth, and smaller discretionary accruals. We conclude that conforming tax avoidance is a significant – albeit overlooked – aspect of corporate tax strategies at public firms.

Our study makes several contributions to the accounting literature. To our knowledge, our study is the first to develop and validate a measure of tax avoidance that is specifically designed to capture only book-tax conforming tax avoidance. This measure will allow researchers to consider a broader set of corporate tax strategies than those examined in prior research. For example, researchers can potentially use this measure to further evaluate the "undersheltering puzzle." Perhaps some firms that appear to be undersheltering are simply utilizing book-tax conforming tax strategies. Increasing our understanding of the extent to which firms avoid income taxes in a conforming vs. nonconforming manner should also increase our understanding of how tax avoidance impacts firm value, an issue for which the accounting literature currently provides mixed evidence. Although we do not tackle these research questions in this study, we are hopeful that our measure of conforming tax avoidance can be used in future research to investigate these and other important corporate tax issues.

The remainder of this study proceeds as follows. Section 2 describes prior research and develops the hypothesis. Section 3 develops our measure of conforming tax avoidance and describes our research methodology, while Section 4 discusses our empirical findings. Section 5 concludes.

2. Background and Hypothesis Development

2.1 Extant Measures of Corporate Tax Avoidance

Although previously described as a measure of corporate "tax burden" (e.g., Callihan 1994), the average effective tax rate (ETR) is one of the first measures of corporate tax avoidance commonly used in the accounting literature (e.g., Phillips 2003; Rego 2003).[7] Recent research typically calculates the average ETR as the ratio of total tax expense to pretax income, although other variations of this ratio exist in the literature. Because the numerator is based on a firm's taxable income (plus deferred tax expense), while the denominator is based on financial statement income, the average ETR roughly captures "permanent" differences between book and taxable incomes. There are many sources of permanent book-tax differences, but most are related to income taxation (e.g., foreign and state tax rate differentials, tax credits, income from municipal bonds, structured transactions subject to different book and tax treatment). As a result, the average ETR is now considered a measure of nonconforming tax avoidance.

Due to flaws in the ability of average ETR to accurately measure nonconforming tax avoidance, Dyreng, Hanlon, and Maydew (2008) develop an alternative ETR measure, the cash

[7] The average ETR is also referred to as the "GAAP" ETR because firms that are required to file financial statements with the SEC must disclose this measure in the tax footnotes of their financial statements.

ETR. Recent research calculates the cash ETR as the ratio of cash taxes paid to adjusted pretax income, where both the numerator and the denominator are summed over a multi-year time period – often 3 or 5 years – to smooth out transitory shocks to cash taxes paid and pretax income. Importantly, the numerator is not affected by tax accruals, such as changes to tax reserves or the valuation allowance, which can distort the numerator of average ETR as a proxy for income taxes paid. Cash ETRs also differ from average ETRs because they capture both temporary and permanent book-tax differences, while average ETRs only capture permanent differences. Nonetheless, prior research classifies both as measures of nonconforming tax avoidance.

Recent accounting research also employs several book-tax difference-based measures as proxies for nonconforming tax avoidance. First, total book-tax differences are calculated as the difference between pretax income and estimated taxable income (e.g., Mills 1998, Desai 2003), and by construction include both temporary and permanent book-tax differences. Second, some researchers isolate permanent book-tax differences as a measure of nonconforming tax avoidance, since anecdotal evidence suggests that many tax planning strategies generate permanent rather than temporary book-tax differences (e.g., Weisbach 2002; McGill and Outslay 2004). Third, other researchers calculate discretionary permanent book-tax differences, which exclude permanent differences over which managers have little control (e.g., Frank et al. 2009). All three of these book-tax difference-based measures capture nonconforming tax strategies.

For several reasons research on corporate tax avoidance focuses on measures that only capture nonconforming tax strategies. First, as discussed below, public firms generally prefer to avoid income taxes in ways that reduce taxable income but not book income; that is, they prefer nonconforming tax strategies. Second, even if researchers would like to examine conforming tax avoidance, there is no widely-accepted measure of conforming tax avoidance in the accounting literature. Hanlon and Heitzman (2010) in footnote 49 mention the ratio of cash taxes paid to cash flow from operations as a potential measure of conforming tax avoidance, but acknowledge that this measure only captures tax avoidance via tax accruals that reduce cash taxes paid but not cash flow from operations.[8] As a result, it excludes book-tax conforming tax strategies involving the acceleration of expenses or the deferral of revenue that affect cash flow from operations. We also note that older accounting studies (discussed below) rely on features unique to their research setting to measure conforming tax avoidance, which they refer to as "tax-induced earnings management."

2.2 Research on Book-Tax Conforming Tax Avoidance

There are two streams of research on corporate tax avoidance that are most salient to our study. First, some prior research examines whether firms engage in tax-motivated earnings management to take advantage of changes in corporate tax rates. Second, more recent research examines the incentives for tax avoidance at public and private firms.

2.2.1 Tax-Induced Earnings Management

The Tax Reform Act of 1986 reduced the corporate federal income tax rate from 46 percent in 1986 to 34 percent in 1988. This large tax rate decrease incentivized firms to shift taxable income and losses from one time period to another. Several studies examine the extent to which firms engaged in such income shifting behaviors, including Scholes, Wilson, and Wolfson (1992), Guenther (1994), and Maydew (1997). Although these studies adopt different research methodologies, they each assume that firms shift income and losses in a book-tax

[8] In untabulated robustness tests Dyreng, Hanlon, and Maydew (2010) are the first to suggest and use the ratio of cash taxes paid to cash flow from operations as an alternative to average and cash ETRs; however, they do not evaluate the types of tax avoidance this ratio does (or does not) capture. We are not aware of other studies that utilize this measure.

conforming manner, which we refer to as conforming tax avoidance but they refer to as tax-induced earnings management.

While Scholes et al. (1992) examine income shifting through gross margins and selling, general, and administrative expenses, Guenther (1994) utilizes current accruals as his proxy for tax-motivated income shifting, and Maydew (1997) evaluates income shifting through both recurring (i.e., gross margin) and nonrecurring (i.e., one-time asset dispositions) revenues and expenses.[9] Consistent with the intuition in these studies, we assume that conforming tax avoidance can be achieved through transactions that affect gross margin, selling, general, and administrative expenses, or gains and losses on one-time asset dispositions.[10] However, we develop a measure that is designed to capture *all* conforming tax avoidance, while those studies focus on predictable changes in specific revenues or expenditures.

2.2.2 Tax Avoidance at Public and Private Firms

Accounting research has long recognized that public and private firms are subject to different non-tax costs, and thus face different tax and non-tax tradeoffs. For example, Penno and Simon (1986) assert that because public firms depend on external capital markets for equity financing they are more likely than private firms to use income-increasing accounting methods. They also explain that relative to private firms, the greater separation of ownership and control at public firms causes the compensation contracts for public firm managers to rely more heavily on accounting numbers and thus may further influence the accounting choices of managers at public

[9] Other studies also assume that firms avoid income taxes in a book-tax conforming manner; however, many of these studies focus on specific types of transactions, such as inventory choice (e.g., Dopuch and Pincus 1988; Hunt, Moyer, and Shevlin 1996), compensation decisions (Matsunaga, Shevlin, and Shores 1992), or asset dispositions (Klassen 1997). Because we are interested in a broad measure of conforming tax avoidance, we focus our main discussion on prior studies that examine broad-based, tax-motivated income shifting.

[10] See Appendix B for specific examples of book-tax conforming tax planning strategies.

firms. The questionnaire results in Penno and Simon (1986) imply that managers at private firms are more likely to adopt book-tax conforming tax strategies than managers at public firms.

Cloyd, Pratt, and Stock (1996) survey financial executives at public and private firms and confirm that public firm managers are less likely to select conforming tax strategies than private firm managers. Mills and Newberry (2001) extend Cloyd et al. (1996) by investigating the book-tax differences of public and private firms. Using firm-level tax return data, Mills and Newberry (2001) is the first study to provide large sample evidence that public firms report larger book-tax differences than private firms, consistent with public firms facing greater non-tax (i.e., financial reporting) costs. Taken together, the results in these studies indicate that public firms are more likely than private firms to adopt nonconforming tax strategies. They also imply that private firms are more likely to adopt conforming tax strategies.[11] However, prior research does not examine cross-sectional variation in conforming tax avoidance amongst public firms, since an aggregate measure of conforming tax avoidance has not been available – until now.

2.3 Hypotheses

As discussed above, public and private firms are subject to different capital market pressures, which affect their financial and tax reporting choices (e.g., Penno and Simon 1986; Cloyd et al. 1996; Mills and Newberry 2001). Consistent with capital market pressure systematically differing across public and private firms, we further assert that capital market pressures also vary *within* samples of publicly-traded firms. For example, public firms that require external financing are subject to greater capital market pressure than public firms with sufficient cash on hand to fund operations. We predict that this variation in capital market

[11] In related research, Beatty and Harris (1998) provide some evidence that private banks avoid more income taxes than public banks, and Mikhail (1999) utilizes marginal tax rate measures and finds that private insurance companies engage in more tax planning than public insurance companies. However, these studies examine specific types of transactions and are limited to regulated industries such as banks and insurance companies.

pressure amongst public firms should systematically influence the extent to which public firms engage in book-tax conforming vs. nonconforming tax avoidance. Specifically, we assert public firms that are subject to greater capital market pressure are less likely to avoid taxes in a book-tax conforming manner and more likely to avoid taxes in a nonconforming manner. Such behavior would allow public firms subject to greater capital market pressure to report higher income in their financial statements than to tax authorities.

In contrast, we expect public firms subject to lower capital market pressure will engage in more conforming tax avoidance. This expectation is based on the fact that nonconforming tax avoidance is costly and if the benefits of nonconforming strategies are smaller for firms subject to lower capital market pressure, then conforming tax planning strategies become more appealing. Prior research illustrates that, despite its obvious appeal, nonconforming tax avoidance can impose significant costs. For example, Mills (1998) demonstrates that book-tax differences (an indicator of nonconforming tax avoidance) are positively associated with IRS settlements, while Wilson (2009) shows that book-tax differences are positively associated with identified cases of tax sheltering. Both results are consistent with tax authorities using book-tax differences to identify corporate tax avoidance. Further, Hanlon (2005) finds that large temporary book-tax differences are associated with lower earnings persistence and that investors appear to recognize large temporary book-tax differences as a sign of lower earnings persistence. For firms facing lower levels of capital market pressure, we expect the benefits of conforming tax avoidance to outweigh the costs of nonconforming tax avoidance. Our formal hypotheses, stated in the alternative, are:

H1a: *Conforming tax avoidance is decreasing in capital market pressure at public firms.*

H1b: *Nonconforming tax avoidance is increasing in capital market pressure at public firms.*

We acknowledge that Mills and Newberry (2001) also examine H1b, using total book-tax differences as their measure of nonconforming tax avoidance and several proxies for capital market pressure, including debt constraints, manager bonus contracts, and benchmark beating behavior. However, their research design does not allow them to test H1a (i.e., the extent to which conforming tax avoidance varies with capital market pressure at public firms), which is the focus of our study.[12] Furthermore, H1a and H1b jointly imply that under specific conditions, conforming and nonconforming tax strategies are substitutes at public firms. That is, public firms subject to greater capital market pressure decide to engage in more nonconforming tax avoidance and less conforming tax avoidance. We test this empirical prediction in Section 4.

3. Research Methodology

3.1 Measuring Conforming Tax Avoidance

We base our measure of conforming tax avoidance on the ratio of cash taxes paid to lagged total assets. Tax avoidance strategies that reduce income tax payments to tax authorities reduce the numerator of this ratio. For example, a firm that accelerates expense recognition (e.g., advertising or selling, general, and administrative expenditures) from January 2015 to December 2014 will pay less income tax on its 2014 U.S. income tax return than it otherwise would have. Moreover, the numerator of the ratio is not distorted by tax accruals that only affect financial

[12] We note that zero book-tax differences do not necessarily indicate book-tax conformity. Book-tax differences can also equal zero if changes in the valuation allowance exactly offset changes in deferred tax assets for which managers do not expect to realize future tax benefits. Moreover, because low (or negative) book-tax differences do *not* capture conforming tax avoidance (i.e., they only capture book-tax differences), the analyses in Mills and Newberry (2001) do not shed light on the extent to which public firms engage in conforming tax avoidance.

accounting income but not income tax payments, including changes in tax reserves, the valuation allowance, and deferred income taxes on foreign earnings *not* designated as permanently reinvested abroad. The denominator of the ratio is a lagged balance sheet measure that is sensitive to neither current period transactions (e.g., earnings manipulations) nor to Henry and Sansing's (2014) observations that cash ETRs are distorted in the presence of low pretax income and are sensitive to variation in pretax profitability. Using lagged total assets as the scaler implicitly assumes, holding all else equal (including tax avoidance), that firms of similar asset size pay similar amounts of income taxes.[13]

However, both conforming and nonconforming tax strategies reduce the ratio of cash taxes paid to lagged total assets. For example, given a corporate tax rate of 35 percent, the tax benefit from selling an asset that generates a $100 loss that reduces both book and taxable incomes is equal to the tax benefit from claiming $100 of bonus depreciation that reduces taxable income but not book income. Both tax benefits would reduce the ratio of cash taxes paid to lagged total assets; however, while the former would be considered conforming tax avoidance, the latter would be considered nonconforming tax avoidance. Thus, we require a means of eliminating nonconforming tax avoidance from the ratio of cash taxes paid to lagged total assets.

To remove the impact of nonconforming tax strategies, we orthogonalize the ratio to total book-tax differences. Specifically, we estimate ordinary least squares regressions of the ratio of cash taxes paid to lagged total assets (*TAXESPAID_TO_ASSETS*) on total book-tax differences (*BTD*), by industry (3-digit NAICS code) and fiscal year combinations:

$$TAXESPAID\_TO\_ASSETS_{it} = \beta_0 + \beta_1 BTD_{it} + \varepsilon_{it} \qquad (1)$$

[13] Obviously firms of similar asset size do not necessarily pay similar amounts of income tax, due to variation in industry membership, operational structure, and other non-tax operating decisions. We control for these other sources of variation in the ratio of cash taxes paid to lagged total assets in our research design discussed below.

It most analyses, we estimate equation (1) using Compustat data for all public and quasi-private firm-year observations for which we have requisite data. See Appendix A for detailed variable definitions.[14] For each industry-year combination, the coefficient on *BTD* (β_1) captures the average correlation between total book-tax differences and the ratio of cash taxes paid to lagged total assets, while the intercept reflects the average value of the dependent variable when *BTD* is zero.

We extract the residual (ε) from equation (1) as our measure of conforming tax avoidance, *CONFORM_TAX*. The residual captures deviations in *TAXESPAID_TO_ASSETS* from the expected value of that ratio, for that industry-year combination.[15] By definition, *CONFORM_TAX* is not correlated with *BTD*, and thus is orthogonal to nonconforming tax avoidance (which generates book-tax differences). It also excludes the average value of *TAXESPAID_TO_ASSETS* for a firm with zero book-tax differences in that industry-year combination. As a result, *CONFORM_TAX* primarily reflects two firm attributes that deviate from the "norm" for that industry-year combination: 1) intentional, book-tax conforming tax avoidance, and 2) non-tax operating decisions. For instance, *CONFORM_TAX* will capture conforming tax strategies that reduce a firm's cash taxes paid below the average cash taxes paid for a specific industry and fiscal year combination. However, *CONFORM_TAX* will also capture operating decisions that are unrelated to income taxes, e.g., a strategic decision to pay employees higher wages than other firms in the same industry in an effort to increase employee morale and

[14] In tests that compare pure-private and public firms, we calculate *BTD* differently for pure-private firms because Sageworks does not provide all the tax data items necessary to compute *BTD* as shown in Appendix A. Specifically, in tests that compare pure-private and public firms, we calculate *BTD* for pure-private firms as [pretax income – (cash taxes paid / 0.35)]. We then re-estimate equation (1) based on a sample that includes public, quasi-private, *and* pure-private firm-year observations.

[15] Thus, our estimation method assumes that the average firm in the same 3-digit NAICS industry and fiscal year is the appropriate benchmark for measuring conforming tax avoidance.

productivity. To ensure that *CONFORM_TAX* primarily reflects conforming tax avoidance, we control for non-tax operating decisions in our multivariate regressions.

3.2 Validating CONFORM_TAX as a Measure of Conforming Tax Avoidance

We validate our measure of conforming tax avoidance through a series of empirical tests. First, we identify firms that convert from the first-in-first-out (FIFO) inventory method to the last-in-first-out (LIFO) inventory method (or vice versa) on Compustat. We then compare the mean and median values of *CONFORM_TAX* in the years before and after a FIFO to LIFO (or LIFO to FIFO) conversion. Under U.S. federal income tax rules, firms that adopt the LIFO inventory method must also use that method for financial reporting purposes. Thus, we expect firms that convert from one method to the other to exhibit greater book-tax conformity under LIFO than under FIFO, and thus to exhibit lower values of *CONFORM_TAX* in LIFO years compared to FIFO years (provided inventory costs are increasing through time).[16]

Second, we examine whether *CONFORM_TAX* systematically differs across matched samples of private and public firms. We start with two samples of private firms and match each private firm-year observation to a public firm in the same 3-digit NAICS industry and fiscal year, with the closest total assets. We then test whether the mean and median values of *CONFORM_TAX* differ across the public and private firm matched samples. Consistent with assertions in prior research (e.g., Penno and Simon 1986), we predict that private firms are more likely to use conforming tax strategies and thus have lower *CONFORM_TAX* than similar public firms.

[16] Like ETR-based measures of tax avoidance, lower values of *CONFORM_TAX* indicate greater tax avoidance. Thus, the reader should interpret the results for *CONFORM_TAX* in the same manner as they would interpret results for ETR-based measures of tax avoidance.

Third, we use these same matched samples of private and public firms to regress our measure of conforming tax avoidance on a private firm indicator variable, a series of book-tax conforming expenses through which firms can avoid income taxes, and control variables. The basic regression model is shown in equation (2) below. We use ordinary least squares regression to estimate equation (2) and cluster the standard errors by firm.

$$CONFORM\_TAX = \beta_0 + \beta_1 PRIVATE + \beta_2 EXPENSES + \beta_3 EXPENSES \times PRIVATE + \beta_4 LOG\_ASSETS + \beta_5 SALES\_TO\_NOA + \varepsilon \quad (2)$$

EXPENSES represents two different vectors of book-tax conforming expenditures (discussed below) that firms can use to reduce their income tax payments. By construction, higher values of *EXPENSES* should be associated with lower *CONFORM_TAX*, and thus we expect the coefficients on the expense variables to be negative. We interact *PRIVATE* with each of the expense variables to determine which book-tax conforming expenditures private firms utilize to avoid more income taxes than public firms. If private firms utilize specific expenses to engage in more conforming tax avoidance than public firms, then we expect the coefficients on the interactions of *PRIVATE* with those expenses to also be negative. To the extent that private firms avoid more taxes than public firms in a book-tax conforming manner that is not captured by *EXPENSES*, we expect the coefficient on *PRIVATE* to also be negative and significant.

We include two control variables in equation (2). First, prior research provides mixed evidence on whether corporate tax avoidance is systematically associated with firm size (e.g., Zimmerman 1983; Mills, Erickson, and Maydew 1998; Rego 2003). To ensure that our results are not driven by political costs or opportunities for tax avoidance, we include the natural log of total assets (*LOG_ASSETS*) in our regressions. Second, non-tax operating decisions can affect our dependent variable, *CONFORM_TAX*. For example, a manager may decide to pay higher wages than other firms in the same industry because s/he wants to attract and retain loyal employees. These higher wages would reduce both book and taxable income and thus our measure of conforming tax avoidance. To control for the impact of non-tax operating decisions on *CONFORM_TAX*, we include the ratio of net sales to net operating assets (*SALES_TO_NOA*) in our regressions. This ratio captures the amount of net sales generated by a firm's net operating assets, and thus is one measure of operating efficiency. Presumably, if a firm is spending more on employee wages, research, or advertising for strategic rather than tax reasons, then these firms should exhibit different rates of operating efficiency than other firms. By controlling for operating efficiency in equation (2), we reduce the measurement error in *CONFORM_TAX* as a proxy for conforming tax avoidance.[17]

To identify expenses (*EXPENSES*) that firms incur to avoid taxes in a book-tax conforming manner, we rely on our own professional experiences, as well as conversations with tax partners at large, public accounting firms. Based on these insights, we separately include two vectors of book-tax conforming expenditures (*EXPENSES*) in equation (2) above. The first vector includes the following expense items: interest expense (*INT_EXP*), advertising expense (*ADVERT_EXP*), R&D expense (*R&D_EXP*),[18] selling, general, and administrative expenditures (*SGA_EXP*), special items (*SPEC_ITEMS*),[19] and a LIFO indicator variable (*LIFO_DUMM*), where available. Managers have some discretion over the timing of these expenditures and can

[17] In untabulated analyses we replace *SALES_TO_NOA* with other measures of operating efficiency, including gross margin, and our results are qualitatively similar. We cannot include pretax profitability measures in equation (2) because conforming tax avoidance is directly related to pretax profitability and consequently, we would be controlling for the behavior we seek to uncover through our expense variables.

[18] However, because some firms deduct R&D expenditures on their tax returns (a form of conforming tax avoidance), while others claim R&D tax credits (a form of nonconforming tax avoidance), it is an empirical question whether R&D is associated with conforming tax avoidance at the average firm.

[19] Note that we multiple special items (*SPEC_ITEMS*) by negative one so that larger values are consistent with our other expense variables (e.g., *R&D_EXP*), which are income-decreasing measures.

choose to incur them in tax-efficient time periods (e.g., accelerate them to the current tax year or incur them in high tax rate years), which we refer to as conforming tax avoidance. Appendix B provides examples of conforming tax strategies on which we base our first *EXPENSE* vector.

One difficulty with the expenses listed above is that we cannot distinguish between non-discretionary and discretionary (i.e., tax-motivated) expenditures. To this end, we adopt the real earnings management proxies developed in Roychowdhury (2006). In most studies these proxies are intended to capture discretionary operating decisions that *increase* financial statement income; nonetheless, they also capture many discretionary operating decisions that *reduce* financial and taxable income, and thus should also capture conforming tax avoidance. Based on the analyses in Roychowdhury (2006), our second vector of book-tax conforming *EXPENSES* includes: 1) discretionary changes in cash flow from operations (*DISCR_CFO*), which captures the timing of sales through changes in product prices or credit terms; 2) discretionary changes in production (*DISCR_PROD*), which captures changes in the cost of goods sold due to changes in production; and 3) discretionary expenses (*DISCR_EXP*), which includes advertising, R&D, and SG&A expenditures.[20] We estimate each of these variables cross-sectionally using a sample that includes all public and private firms with requisite data. See Appendix A for details.

We separately examine the two vectors of expenses because we consider them substitutes for each other. While the second (discretionary) expense vector is more similar than the first (total) expense vector to the construct of interest (i.e., discretionary choices that reduce both financial and taxable income), it also likely includes measurement error since the discretionary expense variables are only estimates of deviations from normal expenditures. Thus, we consider the two expense vectors as alternative proxies for the same underlying construct.

[20] Essentially, Roychowdhury (2006) estimates normal and abnormal operating activities relative to current and lagged sales and change in sales.

3.3 Examining Variation in Conforming Tax Avoidance at Public Firms

H1a and H1b predict that conforming (nonconforming) tax avoidance is decreasing (increasing) in capital market pressure at public firms. To test these hypotheses, we estimate equations (3) and (4) below using a sample that only includes public firms with requisite data for fiscal years 1990 through 2010. We cluster the standard errors by firm.

$$CONFORM\_TAX = \beta_0 + \beta_1 AF + \beta_2 ST\_ISSUE + \beta_3 SALES\_GR + \beta_4 DACC + \beta_5 SALES\_TO\_NOA + \beta_6 LOG\_ASSETS + \varepsilon \quad (3)$$

$$CASH\_ETR3 = \gamma_0 + \gamma_1 AF + \gamma_2 ST\_ISSUE + \gamma_3 SALES\_GR + \gamma_4 DACC + \gamma_5 SALES\_TO\_NOA + \gamma_6 LOG\_ASSETS + \delta \quad (4)$$

While *CONFORM_TAX* is our proxy for conforming tax avoidance, we use *CASH_ETR3* as our proxy for nonconforming tax avoidance because this measure captures a broad spectrum of nonconforming tax strategies. Consistent with prior research, we smooth out transitory shocks to pretax income by calculating *CASH_ETR3* over a 3-year time period. Equations (3) and (4) include four proxies for capital market pressure (*AF*, *ST_ISSUE*, *SALES_GR*, *DACC*) and two control variables (*SALES_TO_NOA* and *LOG_ASSETS*). The control variables are as defined in equation (2) above. We briefly describe the capital market pressure variables in the text below. See Appendix A for complete variable definitions.

We consider a broad set of capital market pressure variables, since different firms likely face different types of capital market pressure. One common proxy for capital market pressure is anticipated equity issuances (e.g., Teoh, Welch, and Wong 1998; Shivakumar 2000). Thus, we include an indicator variable (*ST_ISSUE*) that equals one for firms that issue stock in year *t*, *t+1*, or *t+2* (and zero otherwise). Prior accounting research also suggests that managers at public firms are under intense pressure to meet or beat market expectations, especially consensus analyst forecasts (e.g., Jensen 2005; Graham, Harvey, and Rajgopal 2005). Thus, we include *AF*, an indicator variable that equals one for public firms that are followed by sell-side analysts (and zero otherwise). Numerous accounting studies provide evidence that firms manage earnings to meet or beat market expectations, and often times such behaviors are associated with high growth firms (e.g., Barth, Elliott, and Finn 1999; Bartov, Givoly, and Hayn 2002; Skinner and Sloan 2002). Thus, we include sales growth (*SALES_GR*) and discretionary accruals (*DACC*) as additional proxies for capital market pressure. Note that *ST_ISSUE*, *AF*, *SALES_GR*, and *DACC* are all increasing in capital market pressure. H1a (H1b) predicts that as capital market pressure increases, firms engage in less (more) conforming (nonconforming) tax avoidance. Thus, we predict that the coefficients on the capital market pressure variables will be positive (negative) in equation (3) [(4)], where *CONFORM_TAX* (*CASH_ETR3*) is the dependent variable.

4. Discussion of Results

4.1 Data and Sample Selection

To compile our sample of public firms, we start with all public firm-year observations on Compustat with requisite data available in fiscal years 1990 through 2010. We use this sample to test H1a and H1b, which focus exclusively on public firms. In contrast, tests that compare public and private firms are limited to observations with requisite data available in fiscal years 2001 through 2010 (see discussion below). In all of our tests we remove observations for financial institutions or firms in regulated industries (SIC codes 6000–6999 and 4800–4900). We obtain analysts' coverage information from I/B/E/S.

To identify public firms that convert from the FIFO inventory method to the LIFO inventory method (and vice versa), we utilize the Compustat inventory valuation method code (INVALCD) which equals 1 for FIFO and 2 for LIFO. We also require either LIFO or FIFO to be the primary inventory valuation method. Our sample includes 121 public firms that transition from LIFO to FIFO and 46 public firms that transition from FIFO to LIFO.

To construct our sample of quasi-private firms, we follow Katz (2009) and Givoly et al. (2010) and select all firm-year observations on Compustat in any of the ten years from 2001 through 2010 that satisfy the criteria: (1) the firm's stock price at fiscal year-end is *unavailable* (i.e., SEC filings are available, but not year-end stock price); (2) the firm has total debt as well as total annual revenues exceeding $1 million; (3) the firm is a U.S. domiciled company; (4) the firm is not a subsidiary of another public firm; and (5) the firm is not a financial institution or in a regulated industry (SIC codes 6000–6999 and 4800–4900). To ensure that our initial sample includes only private firms with public debt, we remove firms with only historical prospectus information, firms with public equity, firms lacking required financial statement data, firms involved in bankruptcy proceedings, and foreign-domiciled firms. The resulting initial sample consists of 2,796 quasi-private firm years (582 quasi-private firms) with public debt.

We obtain our sample of pure-private firms from Sageworks Inc., a company that collects private firm data from a large number of accounting firms and then develops financial analysis tools, primarily for accounting firms and banks. Sageworks provides data from income statements and balance sheets along with basic demographic information, such as the NAICS industry codes and geographic location. Although firms are anonymous, each firm in the Sageworks database has a unique identifier allowing us to construct a panel dataset. We have Sageworks data for fiscal years 2001 through 2010. To construct our sample of pure-private companies, we follow Minnis (2011) and Badertscher, Shroff, and

White (2013) and exclude all observations with data quality issues as well as non-U.S. based companies. Specifically, we delete all firm-years that fail to satisfy basic accounting identities as well as those with net income (NI), cash flow from operations (CFO), accruals (ACC), or property, plant, and equipment (PPE) that are greater than total assets at year-end. We also require firm-years to have assets and sales greater than $100,000 (Minnis 2011). We remove financial firms (NAICS 52) and regulated utilities (NAICS 22). Finally, we drop firm-year observations with missing values for gross fixed assets, total assets, sales, and net income. Applying the above sampling restrictions and requiring all observations to be obtained from audited financial statements generates an initial sample of 15,251 pure-private firm-years (5,242 firms).[21]

Finally, since public, quasi-private, and pure-private firms differ significantly with respect to average firm size, we match each sample. Specifically, we match each quasi-private or pure-private firm with a public firm in the same fiscal year, the same 3-digit NAICS code, and with the closest total assets. This matching procedure results in a matched sample of 1,098 pairs of quasi-private and public firm-year observations, and a matched sample of 1,201 pairs of pure-private and public firm-year observations.

4.2 Estimation and Validation of CONFORM_TAX

We construct Table 1 based on the sample of public and quasi-private firm-year observations with requisite data for fiscal years 1990 through 2010, prior to any matching of public and private firms. Panel A provides descriptive statistics for the variables used to estimate *CONFORM_TAX*, while Panel B provides descriptive statistics from the estimation of

[21] In the U.S., public and private companies are subject to the same set of GAAP accounting standards. Generally, private companies are not legally obligated to follow GAAP, but they may do so to satisfy lenders, venture capitalists, or other stakeholders. Based on our conversations with Sageworks, our sample of private firms adhere to GAAP-compliant financial statements.

CONFORM_TAX. Panel A shows that the mean (median) value of cash taxes paid to total assets (*TAXESPAID_TO_ASSET*) is 0.025 percent (0.013 percent), while the mean (median) value of book-tax-differences scaled by total assets (*BTD*) is 0.011 (0.009). The statistics in Panel B indicate the mean and median estimated coefficients on *BTD* are close to zero. In other words, there is no significant association between overall tax avoidance (as measured by *TAXESPAID_TO_ASSET*) and nonconforming tax avoidance (as measured by total book-tax differences). The mean (median) adjusted R-squared is 5.8 percent (2.3 percent), suggesting that for most industry-year combinations *BTDs* describe little variation in *TAXESPAID_TO_ASSET*. By construction, the mean value of *CONFORM_TAX* is 0 for the sample of public and quasi-private firm-years used to estimate *CONFORM_TAX.*

[INSERT TABLE 1 HERE]

Table 2 presents results for our first set of tests validating *CONFORM_TAX* as a measure of conforming tax avoidance. Provided inventory costs are increasing through time, we expect the inventory costs of LIFO firms to be higher than those for FIFO firms. As a result, we predict our measure of conforming tax avoidance, *CONFORM_TAX* will be lower (higher) in years that firms utilize LIFO (FIFO), due to the larger (smaller) tax deductions for inventory costs under LIFO (FIFO). By examining the change in *CONFORM_TAX* for firms that convert to and from LIFO and FIFO, we hold all else constant except the firms' change in inventory method.

Panel A presents descriptive statistics for *CONFORM_TAX* for a subset of 121 firms that transition from LIFO to FIFO in year *t*. As expected, the descriptive statistics indicate an increase in the mean (median) *CONFORM_TAX* from year *t-1* when firms followed LIFO to years *t* and *t+1* when the firms convert to FIFO. The difference in the mean value of *CONFORM_TAX* between period *t-1* and period *t+1* is significant at the ($p < 0.10$) level. This result is consistent with book-tax conformity decreasing through time. Panel B presents the results of our examination of 46 firms identified as switching from FIFO to LIFO in year *t*. Switching from FIFO to LIFO is an example of firms adopting a book-tax conforming tax strategy. As such, we expect to observe a decrease in *CONFORM_TAX* after the conversion. Consistent with expectations, the results in Panel B indicate a decrease in the mean and median values of *CONFORM_TAX* from year *t-1* (the final FIFO year) to year *t* (the first LIFO year) and a further decrease in year *t+1*. The difference in means between years *t-1* and *t+1* is significant at the ($p < 0.10$) level. In neither Panel A nor B is the difference in median values between years *t-1* and *t+1* significant, although it is positive (negative) as expected in Panel A (B). Overall, we interpret the results in Table 2 as validation that our measure (*CONFORM_TAX*) effectively detects changes in the level of conforming tax avoidance.

[INSERT TABLE 2 HERE]

Table 3 presents descriptive statistics for our comparison of matched samples of quasi-private and public firm-year observations. With respect to tax characteristics, the quasi-private firms exhibit significantly lower mean and median *TAXESPAID_TO_ASSETS*, *CONFORM_TAX*, and cash effective tax rates (*CASH_ETR*). These differences are consistent with quasi-private firms engaging in more overall, conforming, and nonconforming tax strategies than similar public firms. However, we view these findings as primarily descriptive as they do not control for other firm characteristics. We also note that the mean and median *CASH_ETR* values are similar to those in prior research (e.g., Dyreng et al. 2008). In terms of more general non-tax firm characteristics, the descriptive statistics indicate the quasi-private and public firms are similar in size based on the total assets and net sales statistics, which suggests the matching procedure was effective. However, the quasi-private firms exhibit significantly lower pre-and after-tax profit rates (*PTROA* and *ATROA*), cash flow from operations (*CFO*), but higher levels of long-term debt (*LT_DEBT*). The last result is not surprising, since many of the quasi-private firms were taken private by private equity firms.

[INSERT TABLE 3 HERE]

The final set of descriptive statistics in Table 3 examines possible mechanisms for conforming tax avoidance. Specifically, we test for differences in the level of interest expense, R&D and SG&A expenditures, advertising expense, and special items across the samples of quasi-private and public firms. We also test for differences in the use of the LIFO inventory method and the three proxies for real earnings management. The results of these analyses are mixed. The quasi-private firms exhibit significantly higher mean and median levels of interest expense, but lower levels of R&D and SG&A expenditures. There is not a significant difference in the mean or median level of advertising expenditures, special items, or the LIFO inventory method. The mean values for discretionary changes in cash flow from operations (*DISCR_CFO*) and discretionary changes in production (*DISCR_PROD*) differ in the predicted direction between quasi-private and public firms; however, the results for discretionary expenditures (*DISCR_EXP*) are contrary to expectation. In sum, the results in Table 3 are consistent with quasi-private firms engaging in more conforming tax avoidance than similar public firms, which further validates our conforming tax avoidance measure beyond the FIFO / LIFO analyses in Table 2. However, Table 3 does not reveal *how* the quasi-private firms achieve lower values of *CONFORM_TAX*.

Panel A of Table 4 presents the Pearson correlations for the variables of interest in our comparison of the quasi-private and matched public firms. Consistent with the descriptive statistics in Table 3, we observe significant and negative Pearson correlations between the private firm indicator variable (*PRIVATE*) and both *CONFORM_TAX* (ρ = -0.35) and *CASH_ETR* (ρ = -0.052). Interestingly, we also observe a strong positive correlation between *CONFORM_TAX* and *CASH ETR* (ρ = 0.271). This result suggests that conforming and nonconforming tax avoidance strategies may not be substitutes. In fact, it suggests the same firms that engage in significant amounts of conforming tax avoidance also use nonconforming tax strategies to reduce their income taxes.[22] With respect to the correlations between *PRIVATE* and specific expense variables, the correlations are generally consistent with the descriptive statistics in Table 3 (e.g., quasi-private firms report more interest expense but less R&D and SG&A expenditures). None of the correlations between the expense variables are large enough to raise concerns for multicollinearity in our regression analyses.

[INSERT TABLE 4 HERE]

Panel B of Table 4 presents the results of our regression analyses examining whether quasi-private firms engage in more conforming tax avoidance than similar public firms and the mechanisms through which that avoidance is achieved. Consistent with the descriptive statistics in Table 3, in column 1 we find the coefficient on *PRIVATE* is negative and significant, indicating that private firms engage in more conforming tax avoidance even after controlling for firm size and the ratio of sales-to-net operating assets. In column 2 we add proxies for possible mechanisms to achieve more conforming tax avoidance and interact those variables with our *PRIVATE* firm indicator. The coefficients on *INT_EXP*, *ADV_EXP*, *SGA_EXP*, and *SPEC_ITEMS* are all negative and significant, indicating that higher levels of these items are associated with more conforming tax avoidance. With respect to the interactions of *PRIVATE*

[22] In untabulated analysis we regress *CONFORM_TAX* on *CASH_ETR* while controlling for pretax ROA. The conditional correlation between *CONFORM_TAX* and *CASH_ETR* after controlling for pretax profitability is reduced from 0.271 to 0.042. Thus, pretax profitability accounts for the large positive correlation between *CONFORM_TAX* and *CASH_ETR*.

with the expense variables in column 2, we observe significant and negative coefficients on *ADV_EXP×PRIVATE*, *SGA_EXP×PRIVATE*, and *LIFO_DUMM×PRIVATE*. These results indicate that the associations between conforming tax avoidance and advertising and SG&A expenditures and the LIFO inventory method, respectively, are more negative for quasi-private firms than public firms, consistent with these items being used as mechanisms for conforming tax avoidance. In contrast, the coefficients for the interest expense, R&D, and special items interaction terms are not as predicted.

In column 3 we include measures of real earnings management and interact those measures with our private firm indicator variable. The results are mixed. As expected, we find a significant and positive coefficient on *DISCR_CFO*, indicating that decreases in discretionary cash flow from operations are associated with higher levels of conforming tax avoidance. Also consistent with expectations, we find significant negative coefficients on both *DISCR_PROD* and *DISCR_EXP* indicating that discretionary changes in production and discretionary expenditures are both associated with more conforming tax avoidance. Although the coefficients on the interactions of *PRIVATE* and *DISCR_CFO* and *DISCR_PROD* are both contrary to expectations, the coefficient on *DISCR_EXP×PRIVATE* is negative and significant, as predicted. We interpret these results as indicating that managers at quasi-private firms use their discretion over advertising, R&D, and SG&A expenditures (which are the basis for *DISCR_EXP*) to reduce cash tax payments in a book-tax conforming manner more than managers at similar public firms. We also note that the results in column (3) are similar to those in column (2) based on the significant coefficients on the interactions of *PRIVATE* with *ADV_EXP* and *SGA*, respectively. Overall, the results in Table 4 provide support for our prediction that private firms engage in more conforming tax avoidance than similar public firms, and they appear to use advertising, R&D, and SG&A expenditures to reduce their income taxes.

Table 5 provides descriptive statistics for our comparison of pure-private firms and matched public firms. Similar to the results for quasi-private and public firms in Table 3, pure-private firms exhibit significantly lower mean and median *TAXESPAID_TO_ASSETS*, *CONFORM_TAX*, and *CASH_ETR* than matched public firms. Thus, consistent with Table 3, these statistics suggest that pure-private firms engage in more overall, conforming, and nonconforming tax avoidance than public firms. However, as before we view these findings as primarily descriptive because they do not control for other firm characteristics.

Table 5 also contains descriptive statistics for basic firm characteristics and potential mechanisms for conforming tax avoidance. Note that Sageworks provides far fewer data items than Compustat for our sample of pure-private firms. Thus, the analyses in Tables 5 and 6 exclude the R&D, LIFO, and special items variables that were included in Tables 3 and 4. The mean and median statistics in Table 5 indicate the pure-private and public firms are similar in size based on total assets (*ASSETS*), which suggests the matching procedure was effective. However, the pure-private firms exhibit significantly higher mean and median net sales (*SALES*) and *SALES_TO_NOA*, but lower pre- and after-tax rates of profitability (*PTROA* and *ATROA*) than similar public firms. The results also indicate that pure-private firms report higher levels of SG&A expenditures (*SGA_EXP*), greater discretionary changes in production (*DISCR_PROD*), but lower discretionary expenses (*DISCR_EXP*). The last result is contrary to expectation. In sum, the results in Table 5 are consistent with pure-private firms engaging in more conforming tax avoidance than similar public firms, but they provide few insights as to *how* the pure-private firms achieve lower values of *CONFORM_TAX*.

[INSERT TABLE 5 HERE]

Table 6, Panel A provides the correlation coefficients between the private firm indicator variable (*PRIVATE*), *CONFORM_TAX*, *CASH_ETR*, and potential mechanisms for conforming tax avoidance. Similar to Table 4, we find negative correlations between *PRIVATE* and *CONFORM_TAX* (ρ = -0.100) and *CASH_ETR* (ρ = -0.070), respectively. The results also indicate that *CONFORM_TAX* and *CASH_ETR* are positively correlated (ρ = 0.511) based on our sample of pure-private and matched public firms.[23]

[INSERT TABLE 6 HERE]

Panel B presents the results for regression analyses examining whether pure-private firms engage in more conforming tax avoidance than a matched sample of public firms. Consistent with the Table 5 descriptive statistics, in column 1 we find the coefficient on *PRIVATE* is negative and significant, indicating that pure-private firms engage in more conforming tax avoidance than similar public firms, even after controlling for firm size and the ratio of sales-to-net operating assets. In column 2 we add proxies for possible mechanisms to achieve more conforming tax avoidance and interact those variables with our *PRIVATE* firm indicator. The coefficients on *INT_EXP*, *ADV_EXP*, and *SGA_EXP* are all negative and significant, consistent with higher levels of these expenditures being associated with more conforming tax avoidance. The coefficients on the interactions of *PRIVATE* with *INT_EXP* and *SGA_EXP*, respectively, are negative and significant. However, the interaction of *PRIVATE* and *ADV_EXP* is not significant.

In column 3 we include the proxies for real earnings management and interact these measures with our private firm indicator variable. As expected, we find a significant and

[23] In untabulated analysis we regress *CONFORM_TAX* on *CASH_ETR* while controlling for pretax ROA. The conditional correlation between *CONFORM_TAX* and *CASH_ETR* after controlling for pretax profitability is reduced from 0.511 to 0.034. Thus, pretax profitability accounts for the large positive correlation between *CONFORM_TAX* and *CASH_ETR*.

positive coefficient on *DISCR_CFO*, indicating that decreases in discretionary cash flow from operations are associated with higher levels of conforming tax avoidance. Also consistent with expectations, we find a significant and negative coefficient on *DISCR_PROD*, consistent with discretionary changes in production leading to more conforming tax avoidance. The coefficient on *DISC_EXP*, while negative is not significant. Coefficients on two of the three interactions of *PRIVATE* with the proxies for real earnings management are in the expected direction. Specifically, the coefficient on *DISCR_CFO×PRIVATE* (*DISC_EXP×PRIVATE*) is positive (negative) and significant. We interpret these results as indicating that managers at quasi-private firms use their discretion over cash flow from operations, and also over advertising, R&D, and SG&A expenditures (the components of *DISCR_EXP*) to reduce cash income tax payments in a book-tax conforming manner. These results are similar to those for quasi-private firms in Table 4. Taken together, the results in Tables 2, 4, and 6 indicate that *CONFORM_TAX* captures conforming tax avoidance and private firms appear to rely on expenses that are subject to greater managerial discretion (e.g., advertising, R&D, and SG&A) to avoid income taxes in a book-tax conforming manner.

4.3 Results for Conforming and Nonconforming Tax Avoidance at Public Firms

Tables 7 and 8 present results for tests of H1a and H1b. These hypotheses predict that conforming (nonconforming) tax avoidance is decreasing (increasing) in capital market pressure at public firms. The analyses in Tables 7 and 8 are based on all public firms with requisite data in fiscal years 1990 through 2010, and thus is a much larger sample than those in Tables 3 and 5. Table 7, Panel A provides descriptive statistics for *CONFORM_TAX*, *CASH_ETR3*, and the four proxies for capital market pressure, including analyst following (*AF*), stock issuances (*ST_ISSUE*), sales growth (*SALES_GR*), and discretionary accruals (*DACC*). These statistics reveal that the average public firm is followed by sell-side analysts (*AF*), does not issue equity securities (*ST_ISSUE*), experiences 14.2 percent sales growth (*SALES_GR*), and has small positive abnormal accruals (*DACC*).

[INSERT TABLE 7 HERE]

Panel B presents results for univariate comparisons of conforming (*CONFORM_TAX*) and nonconforming (*CASH_ETR3*) tax avoidance at public firms that are subject to high versus low capital market pressure, based on four separate proxies for capital market pressure. Specifically, high (low) capital market pressure is proxied by: 1) analyst following, *AF* = 1 (vs. no analyst following, *AF* = 0); 2) stock issuance during the three-year period starting in year *t*, *ST_ISSUE* = 1 (vs. no stock issuance over the same period, *ST_ISSUE* = 0); 3) top (vs. bottom) 25th percentile of sales growth (*SALES_GR*); and 4) the top (vs. bottom) 25th percentile of discretionary accruals (*DACC*). In the latter two comparisons, observations in the second and third quartiles of *SALES_GR* and *DACC* are excluded. H1a (H1b) predicts that conforming (nonconforming) tax avoidance is decreasing (increasing) in capital market pressure at public firms. Consistent with H1a, we find public firms that are subject to *low* capital market pressure – as proxied by no analyst following (*AF*), no stock issuances (*ST_ISSUE*), low sales growth (*SALES_GR*), and low discretionary accruals (*DACC*) – engage in more conforming tax avoidance (*CONFORM_TAX*) than public firms subject to high capital market pressure. Consistent with H1b, we find public firms that are subject to *high* capital market pressure – as proxied by analyst following (*AF*), stock issuances (*ST_ISSUE*), high sales growth (*SALES_GR*), and high discretionary accruals (*DACC*) – engage in more nonconforming tax avoidance (*CASH_ETR*) than public firms subject to low capital market pressure. Thus, the univariate comparisons in Table 7 provide preliminary evidence in support of H1a and H1b and suggest that firms' tax avoidance choices vary based on the level of capital market pressures to which they are subject.[24]

Table 8 provides results for regressions of conforming tax avoidance (*CONFORM_TAX*, column 1) and nonconforming tax avoidance (*CASH_ETR3*, column 2) on proxies for capital market pressure [equations (3) and (4)]. In each regression we include the four proxies for capital market pressure, along with controls for firm size (*LOG_ASSETS*) and operating efficiency (*SALES_TO_NOA*). Consistent with Table 7, Panel B, the results for *CONFORM_TAX* in Table 8, column 1 indicate public firms that are subject to *lower* capital market pressure – as proxied by no analyst following, no stock issuances, lower sales growth, and lower discretionary accruals – engage in more conforming tax avoidance than public firms subject to higher capital market pressure. These results are consistent with H1a.

[INSERT TABLE 8 HERE]

Next we examine the association between capital market pressure and nonconforming tax avoidance, as measured by the *CASH_ETR3*. The results in column 2 indicate public firms that are subject to *higher* capital market pressure – as proxied by analyst following, stock issuances, higher sales growth, and more positive discretionary accruals – engage in more *non*conforming tax avoidance than public firms subject to lower capital market pressure. These results are consistent with H1b. In sum, the results in Tables 7 and 8 are consistent with each other and support our predictions that conforming tax avoidance is decreasing in capital market pressure, while nonconforming tax avoidance is increasing in capital market pressure, at public firms.

[24] We also utilized managerial stock ownership and dual class stock as proxies for capital market pressure. Although we found some evidence that firms with high managerial stock ownership (which we view as subject to less capital market pressure) engaged in more conforming tax avoidance than firms with low managerial stock ownership, we found no difference in *CONFORM_TAX* at firms with / without dual class stock ownership. Given the data constraints imposed by these alternative proxies, the results are not included in Tables 7 and 8.

4.4 Robustness Tests

Our measure of conforming tax avoidance is based on the ratio of cash taxes paid to lagged total assets. In untabulated supplemental tests we instead start with the ratio of cash taxes paid to cash flow from operations, as mentioned in Hanlon and Heitzman (2010). We then orthogonalize it exactly as described in Section 3 and re-estimate all of our empirical tests based on this alternative measure of conforming tax avoidance. Results are largely similar to those tabulated in this paper. However, because the ratio of cash taxes paid to cash flow from operations does not capture all forms of conforming tax avoidance, we consider it inferior to the ratio of cash taxes paid to lagged total assets.

Although the computation of *CASH_ETR3* requires a firm to have positive cash taxes paid and adjusted pretax income over a 3-year time period, our computation of *CONFORM_TAX* does *not* impose any profitability requirements. Consequently, some firm-year observations included in Tables 1-6 report negative cash taxes paid or negative pretax income (approximately 20 and 10 percent, respectively, of the quasi-private / matched public and pure-private / matched public firm samples). To evaluate whether our results are robust to the exclusion of loss observations, we re-estimate all tests after excluding firm-years with negative cash taxes paid or negative pretax income. The results (untabulated) are qualitatively similar to those shown in Tables 1-6. We conclude that our findings are not driven by loss firms.

Given the positive correlation between *CONFORM_TAX* and *CASH_ETR*, the error terms in equations (3) and (4) are likely correlated. Thus, in untabulated robustness tests we re-estimate equations (3) and (4) using SUR estimation procedures, which account for cross-equation error correlation. To have a fully-identified system of equation, we require one unique variable in each equation. Thus, we remove *SALES_TO_NOA* from equation (4), since that variable is primarily a control variable for equation (3). We then add gross property, plant, and equipment (*PPE*) to equation (4), since *PPE* generates book-tax differences and thus should be correlated with *CASH_ETR*. The untabulated results from the SUR estimation procedure are of similar sign and significance level to those in Table 8.

5. Conclusions

Recent tax research essentially disregards the existence of tax planning strategies that reduce *both* book and taxable incomes, which we refer to as *conforming tax avoidance*. This disregard for conforming tax avoidance is likely the product of two factors: 1) extant empirical research focuses on large, public firms that are subject to greater capital market pressure and thus primarily use nonconforming tax strategies, and 2) the lack of an empirical proxy specifically designed to capture conforming tax avoidance. We expand the accounting literature first, by developing and validating a measure of conforming tax avoidance, and second, by investigating the extent to which conforming and nonconforming tax avoidance at public firms varies with the amount of capital market pressure to which the firm is subject.

We develop our measure of nonconforming tax avoidance based on the ratio of cash taxes paid to lagged total assets. This ratio excludes tax accruals, which can distort a firm's current tax expense but captures both conforming and nonconforming tax strategies. To remove the impact of nonconforming tax avoidance from the ratio, we orthogonalize it to total book-tax differences. That is, we regress the ratio of cash taxes paid to lagged total assets on total book-tax differences, by industry and fiscal year combinations, and keep the residual as our measure of conforming tax avoidance. The residual captures variation in the ratio of cash taxes paid to lagged total assets that is unrelated to book-tax differences and also excludes the average value of the ratio when book-tax differences are zero for a particular industry-fiscal year combination.

In short, it captures abnormal values of cash taxes paid for a particular industry-fiscal year combination, after removing nonconforming tax strategies.

We then validate our measure of conforming tax avoidance through a series of tests. First, we use a sample of firms that convert from the first-in-first-out (FIFO) inventory method to the last-in-first-out (LIFO) inventory method (and vice versa) to test whether our measure of conforming tax avoidance captures predictable changes in book-tax conformity. FIFO-to-LIFO conversions should increase book-tax conforming tax avoidance and thus cause our measure of conforming tax avoidance to decrease after the change in accounting method. Our results are consistent with expectations. We then use two different samples of private firms to examine whether private firms engage in more conforming tax avoidance than similar public firms, consistent with results in prior accounting research. Results from both of our matched-pair samples of private and public firms confirm that private firms engage in more conforming tax avoidance than public firms, and also reveal that private firms rely on expenditures that are subject to greater managerial discretion, such as advertising, SG&A, and R&D, to reduce their tax liabilities.

Finally, we predict that a public firm's decision to adopt book-tax conforming vs. nonconforming tax strategies varies with the amount of capital market pressure to which the firm is subject. We predict that firms subject to greater (lower) capital market pressure will engage in more nonconforming (conforming) tax avoidance. We measure capital market pressure through a variety of empirical proxies, including: analyst following, stock issuances, sales growth, and discretionary accruals. Our results are as predicted across all of our proxies for capital market pressure.

Our research makes two important contributions to the accounting literature. We develop a measure of conforming tax avoidance that can be used in future research to obtain a deeper understanding of the tax strategies adopted by a variety of firms. We particularly expect our measure to provide new insights into the tax planning at smaller companies that are subject to less capital market pressure than larger firms. Our study also explicitly examines how conforming and nonconforming tax avoidance varies at large, public companies, with a specific focus on how capital market pressure influences tax choices. Our study differs from prior research that focuses on specific transactions that reduce both book and taxable income, and from research that examines how capital market pressure affects nonconforming tax avoidance at public and private firms.

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APPENDIX A
Variable Definitions

ADV_EXP	= Firm *i*'s advertising expense (XAD) divided by total assets at the beginning of year *t*.
AF	= 1 if firm *i* has analyst coverage (*IBES*) and 0 otherwise.
ASSETS	= Total assets (AT) for firm *i*, at the end of year *t*.
ATROA	= Firm *i*'s net income (NI) divided by total assets at the beginning of year *t*.
BTD	= Firm *i*'s book-tax differences, which equal book income less taxable income scaled by lagged total assets. Book income is pre-tax income (PI) in year *t*. Taxable income is calculated by summing current federal tax expense (TXFED) and current foreign tax expense (TXFO) and dividing by the statutory tax rate (*STR*) and then subtracting the change in NOL carryforwards (#52) in year *t*. If current federal tax expense is missing, total current tax expense is calculated by subtracting deferred taxes (TXDI), state income taxes (TXS) and other income taxes (TXO) from total income taxes (TXT) in year *t.* Because we do not have the tax and NOL data items listed above for pure-private firms, we calculate *BTD* for pure-private firms as pre-tax income less cash taxes paid divided by 35 percent. We scale this difference by lagged total assets.
CASH_ETR	= Firm *i*'s cash effective tax rate, which equals cash taxes paid (TXPD) in year t, divided by pretax net income (PI) in year t. *CASH_ETR* is set to missing when the denominator is zero or negative and we winsorize *CASH_ETR* to the range[0,1]
CASH_ETR3	= Firm *i*'s cash effective tax rate, which equals cash taxes paid (TXPD), over years *t-2* to *t*, divided by the sum of pretax net income (PI) in years *t-2* to *t*. *CASH_ETR3* is set to missing when the denominator is zero or negative and we winsorize *CASH_ETR3* to the range[0,1]
CFO	= Firm *i*'s cash flow from operation (OANCF) divided by total assets at the beginning of year *t*.
CONFORM_TAX	= Firm *i*'s conforming tax avoidance in year t derived from regressing the ratio of cash taxes paid (CTP) to lagged total assets (AT) on total book-tax differences (*BTD*), by 3-digit NAICS industry and fiscal year: See above for the definition of *BTD*. To estimate the model annually by three digit NAICS industry and year, we require that at least 10 observations be available. Specifically, $TAXESPAID\_TO\_ASSETS_{it} = \beta_0 + \beta_1\ BTD_{it} + \varepsilon_{it}$. We extract the residual (ε) from the equation as our measure of conforming tax avoidance.
DACC	= Firm *i*'s discretionary accruals in year *t* derived from the modified cross-sectional Jones (1991) model. To estimate the model annually by three digit NAICS code, we require that at least 10 observations be available. The regression is: $TACC_{j,t} / TAj,_{\ t-1} = a_1*[1 / TA_{j,\ t-1}] + a_2*[(\Delta REV_{j,\ t} - \Delta TR_{j,\ t})/TAj,_{\ t-1}] + a_3*[PPE_{j,\ t} / TAj,_{\ t-1}]$ where: *TACC* is total accruals for firm *j* in year *t*, which is defined as income before extraordinary items (IBC) minus net cash flow from operating activities, adjusted to extraordinary items and discontinued operations OANCF – XIDOC). *TA* is the beginning-of-the-year total assets (lagged AT). *ΔREV* is the change in sales in year t (SALE), *PPE* is gross property, plant, and equipment in year *t* (PPEGT), and *ΔTR* is the change in trade receivables in year *t* (RECTR).
DISCR_CFO	= Firm *i*'s discretionary cash flow from operations in year t derived from the cross-sectional Roychowdhury (2006) model. To estimate the model annually by three digit NAICS code, we require that at least 10 observations be available.

	The regression is: $CFO_{j,t} / TAj,_{t-1} = a_1*[1 / TA_{j,t-1}] + a_2*[(S_{j,t})/TAj,_{t-1}] + a_3*[\Delta S_{,t} / TAj,_{t-1}]$ where: *CFO* is cash flow from operations (OANCF) for firm *j* in year *t*, *TA* is the beginning-of-the-year total assets (lagged AT). *S* is sales in year *t* (SALE), *ΔS* is change in sales in year *t*. For every firm-year, *DISCR_CFO* is the actual CFO minus the "normal" CFO calculated using estimated coefficients from the model and the firm-year's sales and lagged assets.
DISCR_EXP	= Firm i's discretionary expenditures in year t derived from the cross-sectional Roychowdhury (2006) model. To estimate the model annually by three digit NAICS code, we require that at least 10 observations be available. The regression is: $DISEXP_{j,t} / TAj,_{t-1} = a_1*[1 / TA_{j,t-1}] + a_2*[(S_{j,t-1})/TAj,_{t-1}]$ where: *DISEXP* is discretionary expenditures in period *t* and is the sum of advertising expense (XAD), research and development expense (XRD) and selling, general, and administrative expense (XSGA), *TA* is the beginning-of-the-year total assets (lagged AT). *S* is sales in year *t-1* (lagged SALE).
DISCR_PROD	= Firm i's discretionary production costs in year t derived from the cross-sectional Roychowdhury (2006) model. To estimate the model annually by three digit NAICS code, we require that at least 10 observations be available. Following Roychowdhury we first estimate a model for "normal" COGS by estimating the following regression: $COGS_{j,t} / TAj,_{t-1} = a_1*[1 / TA_{j,t-1}] + a_2*[(S_{j,t})/TAj,_{t-1}]$ *wh*ere COGS is the cost of goods sold (COGS); TA is total assets (AT), and S is sales (SALE). Next we first estimate a model for "normal" inventory growth by estimating the following regression: $\Delta INV_{j,t} / TAj,_{t-1} = a_1*[1 / TA_{j,t-1}] + a_2*[(\Delta S_{j,t})/TAj,_{t-1}] + a_3*[\Delta S_{,t-1} / TAj,_{t-1}]$ *wh*ere *ΔINV* is the change in inventory in year t. Production cost (PROD) is then cost of goods sold (COGS) plus change in inventory (*INV)* for firm *j* in year *t*. Using the COGS and *ΔINV* equations we estimate normal production costs from the following year-3 digit NAICS industry regression: $PROD_{j,t} / TAj,_{t-1} = a_1*[1 / TA_{j,t-1}] + a_2*[(S_{j,t})/TAj,_{t-1}] + a_3*[\Delta S_{,t-1} / TAj,_{t-1}]$ where *TA* is the beginning-of-the-year total assets (lagged AT). *S* is sales in year *t* (SALE), *ΔS* is change in sales in year *t-1*.
Δ*NOLCF*	= Change in firm *i*'s net operating loss carryforwards (TLCF) available at the beginning of year *t*, scaled by total assets at the beginning of year *t*.
FOROPER	= 1 if firm *i*'s foreign pre-tax income (PIFO) or foreign income taxes (TXFO) is positive or negative and 0 otherwise.
INT_EXP	= Firm *i*'s interest expense (XINT) divided by total assets at the beginning of year *t*.
LIFO_DUMM	= 1 if the primary inventory valuation method (INVALCD) is LIFO.
LOG_ASSETS	= Natural logarithm of the total assets (AT) for firm *i*, at the end of year *t*.
LTDEBT	= Firm *i*'s leverage in year *t*, measured as total long-term debt (DLTT) divided by total assets.
NOL_DUMM	= 1 if firm *i* has net operating loss carryforwards (TLCF) available at the beginning of year *t*, and 0 otherwise.
PRIVATE	= 1 if the firm does not have publicly traded securities (debt, equity, or both).
PTROA	= Firm i's pre-tax net income (PI) divided by total assets at the beginning of year *t*.
R&D	= Firm *i*'s research and development expense (XRD) divided by total assets at the beginning of year *t*.
SALES	= Firm *i* 's sales (SALE) at the end of year t divided by total assets at the beginning of year t.

SALES_GR	= Firm *i*'s sales growth, where sales growth is sales (SALE) at the end of year *t* less sales at the beginning of year *t* divided by sales at the beginning of year *t*.
SALES_TO_NOA	= Sales (SALE) at the end of year *t* divided by net operating assets (SEQ-CHE+DLC+DLTT) at the end of year *t*.
SGA_EXP	= Firm *i*'s selling, general and administrative expense (XSGA) divided by total assets at the beginning of year *t*.
SPEC_ITEMS	= -1 × (firm *i*'s special items (SPI) divided by total assets at the beginning of year *t*).
ST_ISSUE	= 1 if shares outstanding in year *t* is greater than 110 percent of shares outstanding in year *t-1*.
TAXESPAID_TO_ASSETS	= Firm *i*'s cash taxes paid (CTP) divided by total assets at the beginning of year *t*.

APPENDIX B
Examples of Book-Tax Conforming Tax Strategies[25]

1) *Timing of discretionary expense recognition*. Managers can accelerate certain expenditures to the current time period, or to high-tax rate years. Expenses over which managers have relatively greater discretion include R&D, advertising, selling, general, and administrative expenditures, and production costs.

2) *Timing of losses recognized on the sale of assets*. Managers can accelerate sales of assets with built-in losses to the current time period, or to high-tax rate years. The assets could be capital or ordinary, depending on the presence of capital or ordinary income against which the losses can be offset. For example, the sale of an operating division that has been unprofitable or the sale of investment property whose fair market value is substantially below its adjusted tax basis. In some cases these losses will be categorized as special items in the financial statements.

3) *Timing of restructuring charges recognized for both book and tax*. Similar to #2 above. Suppose a firm announces a significant corporate restructuring that involves the termination of a large number of employees. Firms can accelerate the tax deductions related to the restructuring by accelerating the payment of severance compensation (or other restructuring-related expenses) to the current tax year. In some cases these losses will be categorized as special items in the financial statements.

4) *Losses related to sale-and-leasebacks transactions*. Managers can structure sale-and-leaseback transactions to generate a loss for both book and tax purposes. These transactions would be beneficial provided the taxpayer can use the tax loss on the current year tax return.

5) *Prepayment of financing costs*. Firms can structure debt contracts such that financing costs must be paid up front, which accelerates the recognition of financing costs on a firm's tax return. In contrast, interest expense must be deducted ratably over the contract period.

6) *Recurring item exceptions*. In some circumstances, taxpayers can deduct accrued expenses even though economic performance has not yet occurred (i.e., the goods or services have not been provided). To deduct accrued expenses under this exception, the recurring expenses must be immaterial in amount or current expensing better matches with revenue recognition.

7) *Shorter Useful Life for Depreciable Assets.* For tax purposes firms typically adopt useful lives for depreciable assets according to the Modified Accelerated Cost Recovery System (MACRS). In contrast managers have more discretion in choosing useful lives for financial reporting purposes. Shorter (longer) useful lives accelerate (decelerate) depreciation expense recognition and reduce (increase) net income. Adopting short useful lives for both book and tax purposes would reduce book-tax differences and possibly scrutiny by tax authorities.

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[25] These examples are based on the authors' own professional experiences and from conversations they have had with tax partners at large public accounting firms.

TABLE 1
Descriptive Statistics for Estimation of Conforming Tax Avoidance Measure (*CONFORM_TAX*)

Panel A: Descriptive Statistics for *CASH_ETR* and Input Variables for Estimation of *CONFORM_TAX*

	N	Mean	Standard Dev	Q1	Q2	Q3
TAXESPAID_TO_ASSETS	59,242	0.031	0.034	0.005	0.020	0.045
BTD	59,242	0.010	0.077	-0.018	0.012	0.043

Panel B: Descriptive Statistics from Regressions that Estimate *CONFORM_TAX*

Dependent Variable =	Estimation of *CONFORM_TAX* (N = 1,294)					
TAXESPAID_TO_ASSETS	Mean	Standard Dev	Q1	Q2	Q3	Percent > 0
Intercept	0.031	0.014	0.020	0.030	0.040	100.00%
Coefficients on *BTD*	0.007	0.149	-0.055	0.005	0.062	52.94%
Adjusted R^2	0.058	0.084	0.005	0.023	0.075	
Residual (= *CONFORM_TAX*)	0.000	0.031	-0.020	-0.007	0.012	

All variables are as defined in Appendix A.

TABLE 2
Conforming Tax Avoidance Statistics for Public Firms that Transition between LIFO and FIFO Inventory Methods

Panel A: Firms that Transition from LIFO (in Year *t-1*) to FIFO (in Year *t* and *t+1*)

	N	Mean	Standard Dev	Q1	Q2	Q3
(1) *CONFORM_TAX_t-1*	121	-0.0045	0.0200	-0.0226	-0.0075	0.0085
(2) *CONFORM_TAX_t*	121	0.0007	0.0286	-0.0196	-0.0045	0.0131
(3) *CONFORM_TAX_t+1*	121	0.0017	0.0193	-0.0185	-0.0067	0.0137
Difference (3) – (1)		0.0062*			0.0009	

Panel B: Firms that Transition from FIFO (in Year *t-1*) to LIFO (in Year *t* and *t+1*)

	N	Mean	Standard Dev	Q1	Q2	Q3
(1) *CONFORM_TAX_t-1*	46	0.0029	0.0199	-0.0111	-0.0032	0.0170
(2) *CONFORM_TAX_t*	46	-0.0019	0.0222	-0.0154	-0.0054	0.0068
(3) *CONFORM_TAX_t+1*	46	-0.0041	0.0193	-0.0148	-0.0059	0.0082
Difference (3) – (1)		-0.0070*			-0.0027	

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. Differences between means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test. All variables are as defined in Appendix A.

TABLE 3
Descriptive Statistics for Matched Samples of Quasi-Private and Public Firm-Years

	Private Firm-Years			Public Firm-Years			Differences between:	
	N	Mean	Median	N	Mean	Median	Means	Medians
Tax-Related Variables:								
TAXESPAID_TO_ASSETS	1,096	0.016	0.007	1,096	0.036	0.030	-0.019***	-0.022***
CASH_ETR	793	0.288	0.236	1,004	0.312	0.301	-0.025**	-0.065***
CONFORM_TAX	1,096	-0.012	-0.017	1,096	0.006	0.000	-0.019***	-0.017***
Basic Firm Characteristics:								
ASSETS	1,096	1,062	2,399	1,096	945	1,711	117.06	688.36
SALES	1,096	1.510	0.923	1,096	1.544	0.892	-0.034	0.031
PTROA	1,096	0.043	0.073	1,096	0.120	0.098	-0.077***	-0.025***
ATROA	1,096	0.017	0.060	1,096	0.072	0.072	-0.055***	-0.012***
CFO	1,096	0.093	0.068	1,096	0.126	0.084	-0.033***	-0.016***
LTDEBT	1,096	0.628	0.316	1,096	0.227	0.237	0.401***	0.079***
SALES_TO_NOA	1,096	0.027	0.025	1,096	0.026	0.023	0.001	0.002
Proxies for Book-Tax Conforming Expenses:								
LIFO_DUMM	1,096	0.078	0.268	1,096	0.073	0.260	0.005	0.007
INT_EXP	1,096	0.072	0.040	1,096	0.021	0.022	0.051***	0.018*
R&D_EXP	1,096	0.006	0.021	1,096	0.014	0.035	-0.009***	-0.013***
SGA_EXP	1,096	0.261	0.243	1,096	0.282	0.252	-0.021**	-0.009*
ADV_EXP	1,096	0.016	0.034	1,096	0.015	0.034	0.000	0.000
SPEC_ITEMS	1,096	0.009	0.028	1,096	0.007	0.026	0.001	0.002
DISCR_CFO	1,096	-0.024	0.060	1,096	0.000	0.067	-0.024***	-0.007***
DISCR_PROD	1,096	0.008	0.150	1,096	-0.005	0.157	0.012*	-0.006
DISCR_EXP	1,096	-0.028	0.176	1,096	-0.005	0.178	-0.023***	-0.002***

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. Differences between means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test. All variables are as defined in Appendix A.

TABLE 4
Conforming Tax Avoidance Analyses Based on Matched Samples of Quasi-Private and Public Firm-Years

Panel A: Spearman Correlations

	CONFORM_ TAX	*CASH_ETR*	*INT_EXP*	*ADV_EXP*	*R&D_EXP*	*SGA_EXP*	*SPEC_ ITEMS*	*DISCR_ CFO*	*DISCR_ PROD*	*DISCR_ EXP*
PRIVATE	**-0.350**	**-0.052**	**0.622**	0.003	**-0.148**	**-0.042**	0.025	**-0.188**	0.040	**-0.065**
CONFORM_TAX		**0.271**	**-0.383**	**0.059**	**0.109**	**0.190**	**-0.053**	**0.456**	**-0.232**	**0.136**
CASH_ETR			**-0.042**	-0.014	0.003	**0.041**	**-0.043**	-0.111	0.010	-0.023
INT_EXP				**0.084**	**-0.089**	-0.002	**0.084**	**-0.232**	-0.046	0.030
ADV_EXP					**-0.089**	**0.321**	0.024	**0.062**	**-0.215**	**0.391**
R&D_EXP						**0.125**	0.037	**0.097**	**-0.102**	**0.182**
SGA_EXP							**0.042**	**0.120**	**-0.475**	**0.634**
SPEC_ITEMS								**-0.095**	-0.024	**0.055**
DISCR_CFO									**-0.333**	**0.149**
DISCR_PROD										**-0.694**

Bold indicates significance at the greater than 10% level based on a two-tailed t-test. All variables are as defined in Appendix A.

Panel B: Results for Regressions of *CONFORM_TAX* on Proxies for Book-Tax Conforming Expenses

	Predicted Sign	Dep. Var. = *CONFORM_TAX* Coefficient	T-Statistic	Dep. Var. = *CONFORM_TAX* Coefficient	T-Statistic	Dep. Var. = *CONFORM_TAX* Coefficient	T-Statistic
Intercept		0.005	1.428	0.010***	2.776	-0.006***	-5.101
PRIVATE	-	-0.019***	-18.19	-0.012***	-4.532	-0.005***	-4.864
INT_EXP	-			-0.248***	-5.182		
ADV_EXP	-			-0.099**	-2.130		
R&D_EXP	-			0.016	0.502		
SGA_EXP	-			-0.009**	-2.579		
SPEC_ITEMS	-			-0.085***	-2.914		
LIFO_DUMM	-			0.004	1.209		
INT_EXP×PRIVATE	-			0.098	1.866		
ADV_EXP×PRIVATE	-			-0.135***	-3.425		
R&D_EXP×PRIVATE	-			0.065	1.156		
SGA_EXP×PRIVATE	-			-0.006*	-1.896		
SPEC_ITEMS×PRIVATE	-			0.082**	2.016		
LIFO_DUMM×PRIVATE	-			-0.005	-1.452		

DISCR_CFO	+					0.148***	10.303
DISCR_PROD	-					-0.032***	-3.524
DISCR_EXP	-					-0.013	-1.593
DISCR_CFO×PRIVATE	+					-0.010	-0.472
DISCR_PROD×PRIVATE	-					0.026	1.296
DISCR_EXP×PRIVATE	-					-0.015**	-2.364
SALES_TO_NOA	?	0.226***	7.557	0.142***	4.307	0.184***	6.542
LOG_ASSETS	?	0.001	1.421	-0.001**	-2.003	-0.001	-1.550
Adjusted R^2		16.71%		23.26%		32.20%	
N		2,192		2,192		2,192	

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. The t-statistics have been adjusted to control for clustering by multiple firm observations. All variables are as defined in Appendix A.

TABLE 5
Descriptive Statistics for Samples of Matched Pure-Private and Public Firm-Year Observations

	Private Firm-Years			Public Firm-Years			Differences between:	
	N	Mean	Median	N	Mean	Median	Means	Medians
Tax-Related Variables:								
TAXESPAID_TO_ASSETS	1,570	0.020	0.001	1,570	0.028	0.011	-0.008^{***}	-0.010^{***}
BTD	1,570	0.027	0.005	1,570	0.048	0.022	-0.020^{**}	-0.017^{*}
CONFORM_TAX	1,570	-0.003	-0.012	1,570	0.003	-0.007	-0.006^{***}	-0.004^{***}
CASH_ETR	1,398	0.182	0.046	1,387	0.209	0.204	-0.027^{***}	-0.158^{***}
Basic Firm Characteristics:								
ASSETS	1,570	237	17	1,570	202	20	35.2	-2.8
SALES	1,570	2.392	1.991	1,570	1.746	1.572	0.646^{***}	0.419^{***}
PTROA	1,570	0.101	0.079	1,570	0.128	0.107	-0.026^{***}	-0.028^{***}
ATROA	1,570	0.097	0.069	1,570	0.107	0.074	-0.011^{**}	-0.006^{*}
CFO	1,570	0.154	0.114	1,570	0.145	0.121	0.009	-0.007
LTDEBT	1,570	0.064	0.000	1,570	0.103	0.007	-0.039^{***}	-0.007
SALES_TO_NOA	1,570	0.049	0.040	1,570	0.034	0.026	0.015^{***}	0.014^{***}
Proxies for Book-Tax Conforming Expenses:								
INT_EXP	1,570	0.017	0.010	1,570	0.015	0.005	0.001	0.005
SGA_EXP	1,570	0.435	0.330	1,570	0.395	0.310	0.040^{***}	0.020^{**}
ADV_EXP	1,570	0.006	0.000	1,570	0.010	0.000	-0.005^{***}	0.000
DISCR_CFO	1,570	0.001	-0.022	1,570	0.000	-0.013	0.002	-0.009
DISCR_PROD	1,570	0.005	0.004	1,570	-0.035	-0.006	0.040^{***}	0.009^{*}
DISCR_EXP	1,570	-0.024	-0.047	1,570	0.079	0.027	-0.103^{***}	-0.074^{***}

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. Differences between means are tested for significance using a two-tailed t-test; differences in medians are tested for significance using a two-tailed Wilcoxon signed rank test. All variables are as defined in Appendix A.

TABLE 6
Conforming Tax Avoidance Analyses Based on Matched Samples of Pure-Private and Public Firm-Year Observations

Panel A: Spearman Correlations

	CONFORM_TAX	*CASH_ETR*	*INT_EXP*	*ADV_EXP*	*SGA_EXP*	*DISCR_CFO*	*DISCR_PROD*	*DISCR_EXP*
PRIVATE	**-0.100**	**-0.070**	0.023	**-0.091**	**0.053**	**-0.185**	0.008	**0.081**
CONFORM_TAX		**0.511**	**-0.186**	-0.003	**0.083**	**0.156**	**0.235**	**-0.261**
CASH_ETR			-0.009	**-0.044**	0.020	**0.110**	**-0.146**	**-0.104**
INT_EXP				**-0.034**	**0.044**	0.028	**-0.058**	-0.028
ADV_EXP					**0.183**	**0.265**	-0.012	**-0.086**
SGA_EXP						**0.749**	-0.022	**-0.515**
DISCR_CFO							-0.027	**-0.673**
DISCR_PROD								**-0.141**

Bold indicates significance at the greater than 10% level based on a two-tailed t-test. All variables are as defined in Appendix A.

Panel B: Results for Regressions of *CONFORM_TAX* on Proxies for Book-Tax Conforming Expenses

	Predicted	Dep. Var. = *CONFORM_TAX*		Dep. Var. = *CONFORM_TAX*		Dep. Var. = *CONFORM_TAX*	
	Sign	Coefficient	T-Statistic	Coefficient	T-Statistic	Coefficient	T-Statistic
Intercept		-0.005***	-4.150	-0.011***	-6.712	-0.006***	-5.101
PRIVATE	-	-0.006***	-5.757	-0.005*	-1.888	-0.005***	-4.864
INT_EXP	-			-0.210***	-8.798		
ADV_EXP	-			-0.074***	-2.739		
SGA_EXP	-			-0.019***	-7.866		
INT_EXP×PRIVATE	-			-0.036*	-1.855		
ADV_EXP×PRIVATE	-			0.046	1.067		
SGA_EXP×PRIVATE	-			-0.014***	-4.675		
DISCR_CFO	+					0.100***	8.943
DISCR_PROD	-					-0.040***	-7.929
DISCR_EXP	-					-0.001	-1.577
DISCR_CFO×PRIVATE	+					0.062***	4.714
DISCR_PROD×PRIVATE	-					0.020***	3.103
DISCR_EXP×PRIVATE	-					-0.011*	-1.755
SALES_TO_NOA	?	0.016***	3.895	0.012	1.000	0.017***	4.142
LOG_ASSETS	?	0.003***	7.295	0.003***	9.626	0.002***	7.376
Adjusted R^2		3.57%		9.39%		14.96%	
N		3,140		3,140		3,140	

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. The t-statistics have been adjusted to control for clustering by multiple firm observations. All variables are as defined in Appendix A.

TABLE 7
Univariate Analyses Based on the Sample of Public Firms

Panel A: Descriptive Statistics

	N	Mean	Std. Dev.	Q1	Q2	Q3
Tax Variables:						
CONFORM_TAX	54,666	0.000	0.031	-0.020	-0.007	0.013
CASH_ETR3	52,154	0.313	0.299	0.166	0.279	0.371
Capital Market Pressure Variables:						
AF	54,666	0.514	0.500	0	1	1
ST_ISSUE	54,666	0.170	0.375	0	0	0
SALES_GR	54,666	0.142	0.276	0.001	0.090	0.219
DACC	54,666	0.013	0.070	-0.019	0.010	0.048

All variables are as defined in Appendix A.

Panel B: Univariate Comparisons of Tax Avoidance Measures for Public Firms that Are Subject to High vs. Low Capital Market Pressure

	Analyst Following (*AF*)			
	AF = 1	*AF* = 0	Mean Difference	Predicted Sign
CONFORM_TAX	0.004	-0.003	0.007***	+
CASH_ETR3	0.298	0.329	-0.030***	-

	Stock Issuance (*ST_ISSUE*)			
	ST_ISSUE = 1	*ST_ISSUE* = 0	Mean Difference	Predicted Sign
CONFORM_TAX	0.003	0.000	0.003***	+
CASH_ETR3	0.262	0.323	-0.061***	-

	Sales Growth (*SALES_GR*)			
	Top 25% of *SALES_GR*	Bottom 25% of *SALES_GR*	Mean Difference	Predicted Sign
CONFORM_TAX	0.008	-0.008	0.015***	+
CASH_ETR3	0.269	0.363	-0.094***	-

	Discretionary Accruals (*DACC*)			
	Top 25% of *DACC*	Bottom 25% of *DACC*	Mean Difference	Predicted Sign
CONFORM_TAX	0.015	-0.009	0.024***	+
CASH_ETR3	0.294	0.345	-0.051***	-

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. All variables are as defined in Appendix A.

TABLE 8
Results for OLS Regressions of Tax Avoidance Measures on Proxies for Capital Market Pressure

	Predicted Sign	(1) Dependent Variable = *CONFORM_TAX* Coefficient	T-Statistic	Predicted Sign	(2) Dependent Variable = *CASH_ETR3* Coefficient	T-Statistic
Intercept		-0.006^{***}	-4.889		0.361^{***}	27.038
SALES_GR	+	0.017^{***}	23.304	-	-0.091^{***}	-15.196
AF	+	0.008^{***}	14.689	-	-0.019^{***}	-4.490
ST_ISSUE	+	0.001^{**}	2.517	-	-0.023^{***}	-4.925
DACC	+	0.128^{***}	40.892	-	-0.282^{***}	-11.449
SALES_TO_NOA	?	0.176^{***}	15.692	?	0.279^{***}	3.693
LOG_ASSETS	?	0.000^{***}	-3.268	?	-0.003^{**}	-2.439
Industry FE?		Yes			Yes	
Year FE?		Yes			Yes	
Adjusted R^2		15.00%			3.89%	
N		54,666			52,154	

*,**,*** indicate significance at the 10%, 5%, and 1% level using a two-tailed t-test, respectively. The t-statistics have been adjusted to control for clustering by multiple firm observations. All variables are as defined in Appendix A.