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# The Persistence and Pricing of Earnings, Accruals, and Cash Flows When Firms Have Large Book-Tax Differences

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**ABSTRACT:** I investigate the role of book-tax differences in indicating the persistence of earnings, accruals, and cash flows for one-period-ahead earnings. I also examine whether the level of book-tax differences influences investors' assessments of future earnings persistence. I find that firm-years with large book-tax differences have earnings that are less persistent than firm-years with small book-tax differences. Further, the evidence is consistent with investors interpreting large positive book-tax differences (book income greater than taxable income) as a "red flag" and reducing their expectation of future earnings persistence for these firm-years. I then investigate potential sources of the lower persistence for firm-years with large book-tax differences. I find that special items contribute in part to the results but that firm-years with large book-tax differences continue to have lower persistence in earnings after controlling for the effect of the special items.

**Keywords:** *book-tax differences; earnings persistence; accruals; earnings expectations.*

## I. INTRODUCTION

I investigate the role of book-tax differences in indicating the persistence of earnings, accruals, and cash flows for one-period-ahead earnings. I also examine whether the level of book-tax differences influences investors' assessments of future earnings persistence. Financial accounting texts claim that the difference between pre-tax financial reporting earnings and taxable income (i.e., book-tax differences) can provide information about current earnings. The underlying maintained hypothesis is that because less discretion is allowed in the computation of taxable income, book-tax differences can be informative about management discretion in the accruals process. For example, Revsine et al. (1999, 638) suggest the ratio of pre-tax book income to taxable income can be used as a measure

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of accounting conservatism or aggressiveness. Palepu et al. (2000, 3–11) point out that an increasing gap between a firm's reported income and its taxable income is a potential "red flag." Penman (2001, 612) includes the difference between book income and taxable income as a diagnostic to detect manipulation of core expenses. He states "if a firm is using estimates to generate higher GAAP income, it must recognize more deferred taxes."<sup>1</sup>

In the wake of recent accounting scandals, some are wondering whether the large differences between book and taxable incomes should have been an indicator of low-quality financial reporting earnings. For example, Seida (2002) in his analysis of Enron's tax disclosures calculates that Enron's taxable income over the years 1996–1999 was \$5.8 billion below financial reporting income. He asks whether taxable income is a useful alternative measure of income, or at least a benchmark to evaluate book income. Whether book-tax differences provide information about the quality of earnings has attracted the attention of policy makers as well.<sup>2</sup> For example, Senator Charles Grassley wrote a letter to President Bush on October 7, 2002 calling for additional disclosure of book-tax differences because "the minimal disclosure is a breeding ground for the manipulation of financial statements and abusive tax shelter schemes." Further, Representative Lloyd Doggett has stated, "When investors hear only of rosy earnings while at tax time Uncle Sam only hears of regrets and red ink, something is very wrong. A corporate culture of creative accounting and reporting abuses weakens our economy" (Weisman 2002, A01). The press has also taken note of the potential association of book-tax differences with earnings quality. For example, a *CFO Magazine* article claims that the recent scandals have shifted the focus of the book-tax reconciliation discussion from rooting out tax shelters to rooting out financial fraud (Reason 2002).

Recent academic literature investigates book-tax differences as an indicator of earnings management. Mills and Newberry (2001) report evidence consistent with the magnitude of book-tax differences being positively associated with financial reporting incentives such as prior earnings patterns, financial distress, and bonus thresholds. Phillips et al. (2003) extend this research and report that firm-years with small earnings increases have a larger average deferred tax expense (indicative of book income in excess of taxable income) than firm-years with small earnings decreases and conclude that the deferred tax expense is informative about firms' earnings management activities. Joos et al. (2000) report that the earnings-return relation is weaker when book-tax differences (in absolute value) are large and interpret this as evidence that firms with large book-tax differences have opportunistically managed earnings and investors recognize these actions and attach a lower weight to earnings. Finally, in concurrent research, Lev and Nissim (2004) find that the ratio of taxable income to book income predicts subsequent five-year earnings growth and is strongly (weakly) related to future returns in the pre- (post-) 1993 sample period (i.e., before and after the implementation of the Statement of Financial Accounting Standards No. 109, *Accounting for Income Taxes*) (SFAS No. 109, FASB 1992).

My examination contributes to two lines of research. First, I extend the literature that examines the information in book-tax differences. Though recent research reports that earnings management incentives and lower earnings response coefficients are associated with

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<sup>1</sup> These statements do not imply that taxable income is a better measure of economic performance of the firm than is financial reporting income. Rather, the statements suggest that in contexts where the divergence between tax and financial reporting income is large, earnings management is more likely and additional scrutiny is warranted.

<sup>2</sup> I discuss the link between quality of earnings and earnings persistence below.

book-tax differences, there is no direct evidence that large book-tax differences are indicative of earnings that are less persistent. I also examine whether large book-tax differences are associated with less persistent accruals or cash flows. Prior accounting research reports evidence consistent with accrual earnings being more relevant in reflecting firm performance as compared to cash flows (Dechow 1994; Dechow et al. 1998). However, research also reports evidence consistent with the accrual component of earnings being less persistent for future earnings than the cash flow component (Sloan 1996). Because discretionary accruals are less persistent than nondiscretionary accruals (Xie 2001), if book-tax differences indicate discretion in the accruals process, firm-years with large book-tax differences will have less persistent accruals than firm-years with small book-tax differences.

Second, I contribute to the literature that investigates investors' assessments of the persistence of earnings (e.g., Sloan 1996; Xie 2001; Barth and Hutton 2004). I examine whether large book-tax differences influence investors' expectations about the persistence of earnings and its components. Prior studies such as Joos et al. (2000) and Chaney and Jeter (1994) report that returns are less associated with earnings when the firm's book-tax differences are large or highly variable.<sup>3</sup> These tests implicitly assume that earnings are of lower quality when book-tax differences are large and that the market prices the shares accordingly. I extend this analysis and more directly test this link by investigating whether the market's assessment of earnings persistence for firm-years with large book-tax differences is consistent with the observed persistence in earnings.

My results indicate that for firm-years with large positive book-tax differences (i.e., book income in excess of taxable income), pre-tax financial reporting income and the accruals component of earnings are less persistent for one-year-ahead earnings as compared to firm-years with small book-tax differences.<sup>4</sup> In addition, the cash flow component is also less persistent for these firm-years, suggesting that book-tax differences contain information about the underlying cash flow stream as well as accruals.<sup>5</sup> These results are consistent with the conjecture that large book-tax differences are associated with lower earnings persistence. When I investigate investor expectations of future earnings for firm-years with large positive book-tax differences, the evidence suggests that investors reduce the expectation of the persistence of earnings resulting in the accruals component of earnings being priced in a manner consistent with its lower persistence. However, investors reduce the expectation of the persistence of cash flows in excess of that required, thus underestimating the persistence of total earnings for these firm-years.

For firm-years with large negative book-tax differences (i.e., book income less than taxable income), again I find evidence consistent with the accrual and cash flow components of earnings being less persistent for one-year-ahead earnings relative to firm-years with small book-tax differences. Thus, while most claims regarding the information in book-tax differences focus on firms that have book income in excess of taxable income, my results indicate that book-tax differences where book income is less than taxable income also provide information about the persistence of earnings. When I investigate investors' expectations of persistence for these firm-years, I find evidence consistent with prior research; the persistence of accruals is overestimated. Thus, large differences between book and

<sup>3</sup> Chaney and Jeter's (1994) study is pre-SFAS No. 109 when only deferred tax liabilities (not deferred tax assets) were required to be recorded.

<sup>4</sup> In my sample, the scaled deferred tax expense and scaled total accruals are not highly correlated (correlation of  $-0.008$ ); thus, the deferred tax expense does not simply equal accruals but rather a subset of total accruals.

<sup>5</sup> I discuss the possible implications of the cash flow results below.

taxable incomes for these firm-years do not appear to aid investors in estimating accruals persistence.

I perform several additional analyses. First, I investigate the effect of special items on my results. I assume that all special items create a book-tax difference and remove the special items from my measures of book-tax differences, earnings, and accruals. I find that while the results are somewhat weaker, firm-years with large book-tax differences still have significantly lower persistence in both accruals and cash flows.

Second, I investigate whether the book-tax differences have lower persistence for one-year-ahead earnings than accruals excluding the book-tax differences. Specifically, I partition total pre-tax accruals into the book-tax differences (a proxy for discretionary accruals) and the remaining portion of accruals (a proxy for nondiscretionary accruals) and include both of these separately in the regression of future earnings on current cash flows and accruals. I find that the book-tax differences are less persistent for future earnings than are accruals excluding the book-tax differences. Thus, using the book-tax differences as a proxy for discretionary accruals, as in Phillips et al. (2003), I find that the discretionary accruals have lower persistence than nondiscretionary accruals, consistent with Xie (2001).

The rest of the paper proceeds as follows. The next section provides institutional detail about book-tax differences. The third section contains common arguments both for and against the book-tax differences containing information about earnings persistence and a statement of my hypotheses. The fourth section provides a description of the sample selection and data used for the tests, and the fifth explains the empirical methods used. The sixth section describes the results and discusses sensitivity tests and additional analyses, and the final section concludes.

## II. BOOK-TAX DIFFERENCES

Management calculates corporate income for two purposes each year. The first is for financial reporting purposes under Generally Accepted Accounting Principles (GAAP) and the second is done in accordance with the Internal Revenue Code (IRC) to determine the corporation's tax liabilities. IRC Section 446(a) states, "Taxable income shall be computed under the method of accounting on the basis of which the taxpayer regularly computes his income in keeping his books." Thus, for most corporations, taxable income is computed on the accrual basis rather than the cash method.<sup>6</sup>

Despite both book and taxable income being prepared on an accrual basis, differences between book and taxable incomes can be large. Some differences, known as permanent differences, are items included in one measure of income but never included in the other.<sup>7</sup> I do not incorporate permanent differences into my primary analysis for several reasons. First, permanent differences are extremely difficult to measure. For example, permanent book-tax differences are generally inferred from the current tax expense and the effective tax rate (total tax expense divided by pre-tax financial accounting earnings). However, tax rate differences (for foreign-sourced earnings or state income taxes) and tax credits are mixed with permanent differences in the calculation of the effective tax rate and current

<sup>6</sup> In fact, some prior studies rely on the consistencies in tax and book accruals to formulate empirical tests. For examples, see Guenther (1994), Manzon (1992), Maydew (1997), and Guenther et al. (1997). An exception to the requirement of accrual tax accounting is in IRC Section 448, which provides that a corporation with average annual gross receipts of \$5 million or less for its three most recent taxable years may use the cash method for tax purposes.

<sup>7</sup> Technically, the term "permanent difference" is not used in SFAS No. 109. The concept of permanent differences under SFAS No. 109 is limited to events recognized in the financial statements that do not have tax consequences, such as tax-exempt interest. This type of permanent difference continues to impact the calculation of current tax expense under SFAS No. 109 (KPMG 1992).

income tax expense.<sup>8</sup> In addition, statutory tax breaks (e.g., tax-exempt interest and the dividend received deduction) are often included in these calculations and are not indicative of earnings quality related to the accruals process.<sup>9</sup> Thus, due to the difficulty in measuring true permanent book-tax differences and the financial-accounting textbook suggestions to exclude the effects of permanent differences I do not examine the relation between permanent differences and earnings persistence.

The remaining book-tax differences are temporary differences and constitute the focus of this study. SFAS No. 109 uses a balance sheet approach. Temporary differences between book and taxable incomes each year are changes in the firm's book-basis balance sheet relative to its tax-basis balance sheet. Basis differences arise because of differing requirements for the timing of recognition of income and expense items. For book purposes, revenue is recognized when earned and expense recognition is either matched against the related revenue or recorded in the accounting period in which the expense is incurred. However, GAAP provides managers with considerable discretion in their choice of accounting procedures (Watts and Zimmerman 1986, 215). Managers may choose between different accounting methods, use varying periods and estimates for cost amortization (e.g., for depreciation and goodwill) and exercise judgment with respect to recording reserve allowances (e.g., bad debt allowances, warranty reserves, accrued compensation, etc.) (Mills and Newberry 2001).

For tax purposes, however, firms must "clearly reflect income."<sup>10</sup> Revenue is generally recorded when cash is received; thus, deferred (or unearned) revenue does not exist under the IRC. In addition, for tax purposes conservatism is not an objective (for the Treasury) and thus an item may not be deducted until more stringent conditions are satisfied, reducing the level of discretion in the calculation of taxable income.<sup>11</sup>

Temporary book-tax differences include future taxable and future deductible amounts. Future taxable amounts create or increase deferred tax liabilities and require recognition of a deferred tax expense. In contrast, future deductible amounts create or increase deferred tax assets and require the recognition of a deferred tax benefit (credit to deferred tax expense). All else equal, an increase in deferred tax liabilities is consistent with a firm currently recognizing revenue and/or deferring expense for book purposes relative to its tax reporting (book income in excess of taxable income). All else equal, an increase in deferred tax assets is consistent with a firm currently recognizing expense and/or deferring

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<sup>8</sup> See Hanlon (2003) for a more detailed discussion of problems using the rate reconciliation or effective tax rate to infer total book-tax differences or taxable income.

<sup>9</sup> Revsine et al. (1999, 638) also advocate excluding the effect of permanent differences because these are "unrelated to quality-of-earnings choices." There are notable exceptions, however, where permanent differences are indicative of earnings quality. One such example is nondeductible in-process research and development (IPRD) in acquisitions. For financial reporting purposes this amount is often written off immediately (perhaps to provide for higher reporting of future earnings); however, for tax purposes, the amount is not deductible if no tax basis exists. Thus, it generally constitutes a permanent difference that is potentially indicative of pre-tax earnings persistence since the write-off of the IPRD is presumably transitory in nature. There are other permanent type differences that may be indicative of earnings quality, but due to the measurement problems I discuss above, I exclude these from my tests. However, I perform a sensitivity analysis using an estimate of total book-tax differences below. In addition, I note that despite these concerns, Schmidt (2003) and Lev and Nissim (2004) investigate information in total book-tax differences using the effective tax rate and the ratio of estimated taxable income to book income, respectively.

<sup>10</sup> IRC Section 446 (b).

<sup>11</sup> First, under the "all events" test, all of the events that determine the taxpayer's liability for the expense must have occurred and, second, the amount of the taxpayer's liability must be determined with reasonable accuracy. Third, before an item of expense may be accrued for tax purposes, "economic performance" must have occurred. In the case of a liability of a taxpayer that requires a payment for property or services, economic performance is deemed to occur as the property or services are provided to the taxpayer (Guenther 1994).

revenue for book relative to tax income (book income less than taxable income) (Phillips et al. 2003).

### III. HYPOTHESIS DEVELOPMENT

While the persistence of earnings is likely not a complete definition of earnings quality, it is often considered a qualitative characteristic of earnings.<sup>12</sup> For example, FASB's *Qualitative Characteristics of Financial Information* includes the predictive value of earnings as a component of relevance. Jonas and Blanchet (2000) specifically add earnings persistence as a descriptor of the predictive value of earnings in their proposed framework for determining earnings quality. Further, earnings persistence is a value-relevant characteristic of earnings as made explicit in the Ohlson (1995) valuation model (Barth and Hutton 2004). Thus, because persistence is a value-relevant characteristic of earnings, any information provided in the level of book-tax differences about the persistence of earnings may assist investors in assessing firm value.

Arguments can be made both for and against book-tax differences reflecting information about the persistence of current earnings. First, many textbooks claim that management's income-increasing accrual choices are evidenced by large differences between book and taxable incomes. For example, Revsine et al. (1999, 633) state that increases in deferred tax liability balances (which reflect book income in excess of taxable income) "might be an indication of deteriorating earnings quality." Revsine et al. (1999, 634) also suggest that shrinkage in deferred tax asset balances should be investigated because the changes in the related balance sheet accounts may be used as "a way to artificially increase earnings." Because the sum of a firm's income over all years must equal the sum of its cash flows, managers must eventually reverse any "excessive" earnings-increasing (or decreasing) accruals made in the past (Jones 1991). As a result, if large book-tax differences are evidence of income-increasing accrual choices, the accruals for these firms should exhibit greater future reversals, on average, and thus a lower persistence in accruals and earnings.

However, book-tax differences do not simply reflect discretion in financial reporting. Financial accounting accruals are intended to overcome measurement problems over finite intervals and provide a signal of managers' private information about firm performance (Dechow 1994). In contrast, the objectives of the IRC are to provide a framework for efficient and equitable determination of tax liabilities and the subsequent collection of revenue, and to provide incentives for firms to engage in particular activities (Scholes et al. 2002; Manzon and Plesko 2002). Thus, differences between book and taxable incomes may not be informative about earnings management or cross-sectional variation in earnings persistence.

In addition, book-tax differences can be generated by tax-planning strategies. An implicit assumption when using book-tax differences to infer earnings quality is that there is cross-sectional variation in the ability of firm managers to manipulate financial reporting income, but that there is not cross-sectional variation in managers' ability to manipulate taxable income. The recent debate surrounding corporate tax shelters suggests otherwise.<sup>13</sup>

<sup>12</sup> Schipper and Vincent (2002, 2) state "Although the phrase 'earnings quality' is widely used in the financial press, in analyst reports, in documents issued by regulators, and in accounting research, there is neither an agreed-upon meaning assigned to the phrase nor a generally accepted approach to measuring earnings quality."

<sup>13</sup> Corporate tax shelters of the 1990s were very aggressive strategies that conformed to the letter of the tax law but not the intent. Some of the shelters have been overturned in the courts and broad legislation has been enacted in order to eliminate their use. For more information on tax shelters see Novack and Saunders (1998) and U.S. Treasury (1999). However, not all firms engaged in these aggressive transactions, indicating cross-sectional variation in tax aggressiveness.

Q #6

Consistent with book-tax differences representing aggressive tax reporting, Mills (1998) reports that the larger the book-tax differences the greater the likelihood of IRS audit and adjustment. Aggressive tax reporting decreases taxable income relative to financial reporting income (assuming firms do not conform financial reporting to tax reporting) and, unless done using strategies that create permanent differences, is reflected in a larger deferred tax expense, all else constant.<sup>14</sup>

Therefore, because there are a variety of sources of book-tax differences, whether large book-tax differences are indicative of lower persistence in (pre-tax) earnings is not clear. In the accounting texts the primary focus is on book-tax differences where book income is greater than taxable income. However, recent studies (e.g., Joos et al. 2000) conjecture that firm-years with large book-tax differences in either direction are suspected of having lower-quality earnings. To allow for differences across positive and negative book-tax differences, I investigate the implications of large book-tax differences on the persistence of earnings by partitioning my sample into three subsamples. The first is comprised of firm-years in the highest quintile of all firms, each year ranked by temporary book-tax differences (the calculation of which is described below) scaled by average total assets. I label this group LPBTD (large positive book-tax differences—book income in excess of taxable income). The second group consists of firm-years in the lowest quintile of all firms, each year ranked by scaled temporary book-tax differences. I label this group LNBTD (large negative book-tax differences—book income less than taxable income). The final group consists of the remaining firm-years—those with relatively small scaled book-tax differences—which I label SmallBTD. Using three subsamples allows tests of: (1) whether both large book-tax difference groups have lower earnings persistence relative to firm-years with small book-tax differences, and (2) whether the persistence of earnings is the same between the two groups with large book-tax differences. My first hypothesis in the alternative form is:

**H1:** Pre-tax earnings persistence for firm-years with large negative or large positive book-tax differences is lower than pre-tax earnings persistence for firm-years with small book-tax differences.

As discussed above, the initial maintained hypothesis in accounting texts and recent research assumes large book-tax differences indicate low-earnings quality because of more subjectivity in the accruals process for financial reporting purposes as compared to tax reporting purposes. If book-tax differences are indicative of subjectivity in the financial reporting accruals process, firm-years with large book-tax differences will have an accruals component of earnings that is less persistent than firm-years with relatively small book-tax differences. This leads to my second hypothesis, stated in alternative form:

**H2:** The persistence of the accruals component of earnings for future earnings is lower for firm-years with large negative or large positive book-tax differences relative to firm-years with small book-tax differences.

My final hypothesis investigates whether stock prices reflect different investor expectations about future earnings based on the level of book-tax differences. Sloan (1996)

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<sup>14</sup> In general, these differences created by aggressive tax planning should not be associated with lower persistence in financial reporting accruals because, by definition, the accrual for tax is not the same as the accrual for book when a book-tax difference is created. I note though that this cannot be specifically tested because one cannot separate the differences caused by aggressive tax planning from those motivated by aggressive earnings recognition.

reports evidence consistent with investors not incorporating accurately the persistence of accruals into their expectations of earnings. Joos et al. (2000, 21) report lower-earnings-response coefficients for firm-years with large book-tax differences and conclude that “large differences between book and tax earnings suggest that management has used different accruals to account for the same underlying transactions, introducing the possibility that management’s reporting discretion is being used opportunistically.” The authors interpret the lower earnings-return relation as evidence that investors recognize this possibility and attach a lower weight to earnings. Because of these two findings, I investigate investor expectations of the persistence of the accrual and cash flow components of earnings as reflected in share prices for firm-years with large book-tax differences to determine whether the information in book-tax differences affects investors’ assessments of accrual and cash flow persistence. Though Sloan (1996) provides evidence consistent with investors not correctly understanding the persistence in accruals and cash flows, if investors use the level of book-tax differences as information about the persistence of accruals then they may not misprice accruals in firm-years with large book-tax differences. This leads to my third hypothesis:

**H3:** The expectation of pre-tax earnings persistence reflected in stock prices for the accrual component of pre-tax earnings is consistent with the observed persistence of accruals for firm-years with relatively large book-tax differences.

#### IV. SAMPLE SELECTION

I begin with a sample of firm-years from 1994–2000 in the intersection of CRSP and Compustat databases, that are incorporated in the U.S., are in industries other than financial services and utilities, and have nonmissing asset data (47,507 observations).<sup>15</sup> I use 1994 as a starting point because the accounting for income taxes changed significantly with the implementation of SFAS No. 109 effective in 1993, and thus using firm-years after the accounting change provides consistent accounting over the sample period. To be included in the final sample, the observation must not have missing variables used in the regressions (22,242 observations excluded), a reported pre-tax financial reporting loss (6,447 observations excluded), a negative current tax expense (1,518 observations excluded), or a net operating loss identified on Compustat (3,194 observations excluded). The reason for these screens is that tax losses can be carried forward and thus become deferred tax assets, changes in which can obscure the effects of “true” book-tax differences in the deferred tax expense account.<sup>16</sup> My final sample consists of 14,106 firm-years (4,048 firms). I partition this sample as described above into three subsamples: LPBTD (2,823 firm-years consisting

<sup>15</sup> I exclude observations with a foreign incorporation code because of different tax reporting in foreign countries. I exclude financial services and utility industry firm-years because of different reporting requirements (tax and book) and the lack of Compustat disclosure of the deferred tax accounts for financial institutions.

<sup>16</sup> Assuming no deferred tax asset valuation allowance is placed on the net operating loss (NOL), the creation of an NOL will reduce deferred tax expense. For example, suppose a firm generates an NOL with a temporary difference, say depreciation. The tax effects of the depreciation book-tax difference will be a debit to the deferred tax expense (credit to deferred tax liability) and the NOL will be recorded as a credit to the deferred tax expense (debit to deferred tax asset), thus reflecting a lower (or possibly zero) deferred tax expense when there is a true book-tax difference for depreciation. Though I cannot eliminate firms that have a valuation allowance established against deferred tax assets, a change in which may also obscure the information in the deferred tax expense account, eliminating firms with NOLs should mitigate the effect of the valuation allowance because the NOL is a common deferred tax asset to which the valuation allowance is applied. I also eliminate firms with a negative current tax expense as an additional screen to help mitigate the coding errors (Mills et al. 2003).



of 1,663 firms), LNBTD (2,823 firm-years consisting of 1,751 firms), and small book-tax differences (8,460 firm-years consisting of 3,236 firms).<sup>17</sup>

## V. RESEARCH DESIGN

### Hypotheses 1 and 2: Earnings Persistence

I estimate the persistence of pre-tax earnings using the following equation:

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTBI_t + v_{t+1} \quad (1)$$

where *PTBI* is pre-tax book income (Compustat data item #170).<sup>18</sup> As in Sloan (1996), I scale all variables by average total assets to allow for cross-sectional comparability. To test whether firm-years with large negative (positive) book-tax differences have lower earnings persistence, I estimate Equation (2), which permits the coefficient on earnings to vary depending on the level of the book-tax differences by introducing an indicator variable for each of the large book-tax difference subsamples.

$$PTBI_{t+1} = \gamma_0 + \gamma_1 LNBTD_t + \gamma_2 LPBTD_t + \gamma_3 PTBI_t + \gamma_4 PTBI_t * LNBTD_t + \gamma_5 PTBI_t * LPBTD_t + \varepsilon_{t+1}. \quad (2)$$

In Equation (2), *LNBTD* is an indicator variable equal to 1 for firm-years with scaled temporary book-tax differences in the lowest quintile of firms in each year (large negative book-tax differences), and 0 otherwise; *LPBTD* is an indicator variable equal to 1 for firm-years with scaled temporary book-tax differences in the highest quintile each year (large positive book-tax differences), and 0 otherwise.<sup>19</sup> All other variables are as defined previously. If firm-years having large negative (positive) book-tax differences have lower earnings persistence than firm-years with small book-tax differences, then  $\gamma_4 < 0$  ( $\gamma_5 < 0$ ), consistent with H1.

In order to more directly test the claims that book-tax differences indicate lower earnings persistence because of discretion in accruals, I partition earnings into pre-tax accruals and pre-tax cash flows and estimate the following equations which are analogous to Equations (1) and (2):

<sup>17</sup> Note the total number of firms in the subsamples exceeds the number of firms in the total sample because firms move from being in one subsample to another subsample from year to year. For example, approximately 76 percent of the firms in the SmallBTD group are in either or both the LPBTD and LNBTD groups in at least one year of the sample period. Thus, the same firms are not included in the same subsample in each year that controls for any time-series stationary correlated omitted variables.

<sup>18</sup> I use pre-tax book income because it is the difference between pre-tax book income and taxable income that constitutes book-tax differences. In contrast, Sloan (1996) uses operating income after depreciation (item #178) and Xie (2001) uses income before extraordinary items (item #18). For firm-years with a minority interest, I calculate pre-tax book income as data item #170 less minority interest (item #49) to obtain the pre-tax book income on which the tax provision is calculated.

<sup>19</sup> To calculate the deferred tax expense (benefit) I use the sum of federal and foreign deferred tax expense (item #269 and item #270, respectively) and where missing I use total deferred taxes (item #50). I include foreign as well as U.S. deferred taxes because pre-tax financial reporting income includes income of foreign entities. However, I exclude state-deferred taxes since these are taxes on the same income as federal deferred taxes. I gross up the deferred tax expense by the statutory tax rate during the sample period (35 percent) in order to convert the number into an estimate of the firm's temporary book-tax differences rather than the tax effect of the differences.

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTCF_t + \gamma_2 PTACC_t + \xi_{t+1} \quad (3)$$

$$\begin{aligned} PTBI_{t+1} = & \gamma_0 + \gamma_1 LNBTD_t + \gamma_2 LPBTD_t + \gamma_3 PTCF_t + \gamma_4 PTCF_t * LNBTD_t \\ & + \gamma_5 PTCF_t * LPBTD_t + \gamma_6 PTACC_t + \gamma_7 PTACC_t * LNBTD_t \\ & + \gamma_8 PTACC_t * LPBTD_t + \varepsilon_{t+1} \end{aligned} \quad (4)$$

where  $PTACC_t$  is pre-tax accruals,  $PTCF_t$  represents pre-tax cash flows, and all other variables are as defined above. I calculate the earnings component amounts as pre-tax to be consistent with the dependent variable measure. I calculate pre-tax cash flows as total operating cash flow (item #308) less cash flow due to extraordinary items (item #124) plus taxes paid in cash (item #317).<sup>20</sup> I calculate pre-tax accruals as pre-tax book income less pre-tax cash flows.<sup>21</sup>

In Equation (4),  $\gamma_6$  reflects the persistence of accruals for firm-years with small book-tax differences and  $\gamma_7$  ( $\gamma_8$ ) reflects the difference, if any, in the persistence of accruals for firm-years with large negative (positive) book-tax differences. If the large book-tax differences are associated with less persistent accruals, then  $\gamma_7 < 0$  and  $\gamma_8 < 0$ , consistent with H2. The coefficient  $\gamma_3$  reflects the persistence of cash flows. Based on prior research I expect  $\gamma_6 < \gamma_3$  (Sloan 1996). The coefficient  $\gamma_4$  ( $\gamma_5$ ) reflects the difference, if any, in the persistence of cash flows for firm-years with large negative (positive) book-tax differences. While I have no prediction for  $\gamma_4$  or  $\gamma_5$ , these coefficients may be significant if firm-years with large book-tax differences have more (or less) transitory cash flow components.

### Hypothesis 3: Tests of Market Pricing

To address H3, I investigate the expectations of future earnings embedded in stock prices using the Mishkin (1983) methodology employed by Sloan (1996), Barth and Hutton (2004), Bradshaw et al. (2001), Xie (2001), Burgstahler et al. (2002), and others. Specifically, I jointly estimate the following systems of equations, for each subsample.

Market rationality with respect to total earnings:

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTBI_t + v_{t+1}; \quad (1)$$

$$SAR_{t+1} = \alpha + \beta_1 (PTBI_{t+1} - \gamma_0 - \gamma_1^* PTBI_t) + \varepsilon_{t+1}. \quad (5)$$

Market rationality with respect to earnings components (H3):

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTCF_t + \gamma_2 PTACC_t + \xi_{t+1}, \quad (3)$$

$$SAR_{t+1} = \alpha + \beta_1 (PTBI_{t+1} - \gamma_0 - \gamma_1^* PTCF_t - \gamma_2^* PTACC_t) + \varepsilon_{t+1}, \quad (6)$$

<sup>20</sup> I adjust the cash flow number by the taxes paid in cash rather than the current tax expense on the income statement due to the accounting for the tax benefit of stock options. Although the option expense/deduction is recorded differently for book and tax purposes, it is not reflected as a book-tax difference in calculating the income tax expense for financial reporting. If I use the current tax expense from the income statement rather than the taxes paid in cash, cash flow would be overstated (because the tax benefits of the options would be added back to cash flow twice) and the accruals component understated by this amount. See Hanlon and Shevlin (2002) for additional details regarding the accounting for tax benefits of stock options. In addition, because during my sample period almost all firms elected the intrinsic value method of valuing stock options, the expense for financial accounting is 0 and thus there are no accruals related to stock option expensing.

<sup>21</sup> This methodology is consistent with the suggestions in Collins and Hribar (2002) to use the statement of cash flow data where possible rather than balance sheet data due to measurement error in the balance sheet data from merger and acquisition activity. Also, because I utilize pre-tax measures in my tests, the tax benefits of stock options, if any, will not cause measurement error in the accruals component of earnings when using this method.

where  $SAR_{t+1}$  is the annual size-adjusted abnormal return, inclusive of dividends, calculated as the raw buy-and-hold return for the security minus the buy-and-hold return for the same size decile portfolio of firms. The return accumulation period begins four months after the end of the fiscal year to allow financial statement information to be disseminated. If a security delists during a particular year, I include the CRSP delisting return in the buy-and-hold annual return, and the proceeds are reinvested in the CRSP size-matched decile for the remainder of the year.<sup>22</sup> All other variables are as defined above.

I estimate the system separately for each subsample to control for variation across the subsamples in the persistence of the accruals and cash flows. If share prices correctly reflect the persistence of earnings and the cash flow and accruals components, then  $\gamma_1^* = \gamma_1$  in Equations (1) and (5), and  $\gamma_1^* = \gamma_1$  and  $\gamma_2^* = \gamma_2$  in Equations (3) and (6). I use a likelihood ratio statistic to test the restrictions that  $\gamma_1^* = \gamma_1$  and  $\gamma_2^* = \gamma_2$  (Mishkin 1983). The statistic is distributed as a  $\chi^2(q)$  where  $q$  is the number of restrictions tested. If large book-tax differences facilitate the accurate pricing of accruals then  $\gamma_2^*$  will be closer to  $\gamma_2$  in the system of Equations (3) and (6) for firm-years with large book-tax differences.

### Return Regression Tests

I supplement the Mishkin (1983) tests by estimating hedge portfolio returns using annual return regressions (Fama and MacBeth 1973).<sup>23</sup> The use of the return regressions (i.e., examining returns to trading strategies) allows an assessment of the economic significance of any deviations from market efficiency implied by the Mishkin (1983) analysis. Estimating the regression annually mitigates any potential foresight bias in the Mishkin (1983) analysis from pooling observations over years (Wahlen 2002), although the seven-year sample limits the power of this test. I estimate the relation between future returns and the portfolio rank of accruals and other control factors over the entire sample and over the subsamples of firms using the following equation.

$$SAR_{t+1} = \beta_0 + \beta_1 PTACC_t^{dec} + \beta_2 \ln MVE_t^{dec} + \beta_3 \ln BM_t^{dec} + \beta_4 Beta_t^{dec} + \beta_5 EP_t^{dec} + \beta_6 SAR_t^{dec} + \epsilon_{t+1}. \quad (7)$$

$PTACC_t$  represents pre-tax accruals,  $\ln MVE$  is the natural logarithm of market value of equity,  $\ln BM$  is the natural logarithm of the book-to-market ratio,  $Beta$  is the common stock beta (calculated as the systematic risk estimated from a regression of monthly raw returns on the value-weighted portfolio return over a 60-month period prior to the abnormal return accumulation period) (Fama and French 1992),  $EP$  is the earnings-to-price ratio (Basu 1977),  $SAR_t$  is the size-adjusted security returns for the preceding year to control for short-run return trends (Jegadeesh and Titman 1993). Each variable is converted to a rank variable scaled to range from 0 to 1. This scaling permits the interpretation of the variables' respective coefficients as the return to a 0 investment portfolio with a long position in stocks of the firm-years with positive weights and a short position in the stocks of the firm-years

<sup>22</sup> Firms that were delisted due to poor performance (delisting codes 500 and 520–584) frequently have missing delisting returns. I correct for this, as recommended in Shumway (1997) and Shumway and Walther (1999), by using delisting returns of –35 percent for NYSE/AMEX firms and –55 percent for NASDAQ firms for these delisting codes.

<sup>23</sup> I note that while the Mishkin (1983) test of market rationality has been used extensively in accounting research, the Mishkin framework as employed in the accounting literature has recently come under scrutiny. For example, Kraft et al. (2001) examine the use of the Mishkin (1983) framework and find evidence consistent with specification problems when applying the Mishkin (1983) framework to data similar to that in accounting studies. However, they state they view their results as preliminary.

with negative weights (Bernard and Thomas 1990; Dechow and Sloan 1997; Frankel and Lee 1998). To enable interpretation of the coefficients as 0 investment portfolio returns, the returns used in the regressions must all be for the same time period and the accounting information used as independent variables must be available to the market at the time the return accumulation period begins. To address this issue, I estimate the regressions using only the December year-end firm-years from my sample ( $n = 7,497$ ). Thus, I estimate Equation (7) annually for December year-end firm-years and report the average coefficient over the years. I test significance by calculating the standard error from the distribution of annual coefficients ( $n = 7$ ). If investors overweight the accrual component of earnings in each subsample of firm-years, then  $\beta_1 < 0$ . If book-tax differences facilitate the assessment of the persistence of accruals, then  $\beta_1$  should not be significant for firm-years with large book-tax differences, consistent with H3.

## VI. RESULTS

### Descriptive Statistics

Table 1 presents descriptive statistics and variable correlations for the entire sample. All financial statement variables are winsorized (reset) at the 1st and 99th percentiles. The mean and median accruals are negative, consistent with prior research (Dechow 1994), primarily reflecting the depreciation accrual.

Panel B presents univariate correlations. Scaled pre-tax accruals and scaled deferred tax expense are correlated at only  $-0.008$  ( $p = 0.3227$ ), suggesting that the two measures are not merely substitutes for each other. Cash flows and accruals are significantly negatively correlated consistent with prior studies (Dechow 1994).

Table 2 provides descriptive statistics for the three subsamples of firm-years. The table reveals several characteristics of the subsamples. For example, firm-years with large negative book-tax differences are smaller in terms of total assets, but not significantly different in terms of market value of equity than the other two subsamples. In addition, these firm-years appear to be higher growth firms as sales growth and net operating asset growth are larger for this set of firm-years relative to the other two groups. The LPBTD subsample appears to obtain at least part of the high book-tax differences through tax planning as evidenced by the lower current effective tax rate (current tax expense divided by pre-tax income).

In untabulated data, I find no industry clustering within the groups. Industry composition is similar across the subsamples with no one industry comprising more than 17 percent of any subsample and industries that are more highly represented in one subsample are also more highly represented in the others. As a result, industry controls are not used in the following tests.

### Tests of Hypotheses 1 and 2: Earnings Persistence

Panels A and B of Table 3 present the results from estimating Equations (1) and (2). Panel A indicates that firm-years in my sample have mean reverting earnings performance consistent with previous findings in Sloan (1996) and Xie (2001).

Panel B reveals that firm-years with large book-tax differences have lower persistence in pre-tax earnings than firm-years with small book-tax differences. Firm-years with large negative and large positive book-tax differences have significantly less persistent earnings than firm-years with small book-tax differences ( $\gamma_4 = -0.100$  and  $\gamma_5 = -0.212$ , two-tailed  $p$ -value of 0.0001), consistent with the alternative hypothesis stated in H1.

**TABLE 1**  
**Descriptive Statistics and Correlations among Selected Variables**  
**(14,106 firm-years, 1994–2000)**

**Panel A: Descriptive Statistics**

<b>Variable</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>25%</b>	<b>Median</b>	<b>75%</b>
$PTBI_{t+1}$	0.093	0.121	0.0368	0.093	0.157
$PTBI_t$	0.132	0.092	0.066	0.113	0.176
$PTCF_t$	0.143	0.114	0.073	0.136	0.207
$PTACC_t$	-0.010	0.094	-0.065	-0.023	0.030
$DTE_t$	0.001	0.037	-0.014	0.001	0.018
$AVETA_t$	1,726	10,938	55.25	168.59	617.89
$SAR_{t+1}$	-0.026	0.343	0.000	0.000	0.000

**Panel B: Contemporaneous Pearson (Spearman) Correlations on the Lower (Upper) Diagonal**

	$PTBI_{t+1}$	$PTBI_t$	$PTCF_t$	$PTACC_t$	$DTE_t$
$PTBI_{t+1}$		0.5942 (0.0001)	0.5011 (0.0001)	-0.0376 (0.0)	-0.0884 (0.0001)
$PTBI_t$	0.5164 (0.0001)		0.5846 (0.0001)	0.1967 (0.0001)	-0.0255 (0.0001)
$PTCF_t$	0.4747 (0.0001)	0.5880 (0.0001)		-0.6009 (0.0001)	-0.0311 (0.0000)
$PTACC_t$	-0.0681 (0.0001)	0.2441 (0.0001)	-0.6285 (0.0001)		-0.0074 (0.3809)
$DTE_t$	-0.0609 (0.0001)	-0.0286 (0.0001)	-0.0357 (0.0001)	-0.0083 (0.3227)	

Q #3

Variable Definitions (Compustat data item or method of calculation in parenthesis):

- $PTBI_{t+1}$  = pre-tax book income one-year-ahead (item #170);  
 $PTBI_t$  = pre-tax book income in the current year (item #170);  
 $PTCF_t$  = pre-tax cash flow for the current year (item #308 + item #317 - item #124);  
 $PTACC_t$  = pre-tax accruals for the current year ( $PTBI - PTCF$ );  
 $DTE_t$  = deferred tax expense in the current year grossed up by statutory tax rate [(sum of items #269 and #270 and where missing item #50) divided by 35 percent];  
 $AVETA_t$  = average total assets for the firm (item #6); and  
 $SAR_{t+1}$  = size-adjusted return calculated as the buy-and-hold return of the security starting in the fourth month after the fiscal year-end of the current year less the buy-and-hold return of a size-matched portfolio.  
All variables except  $AVETA$  and  $SAR$  are scaled by average total assets.

I next decompose earnings into cash flow and accruals to test H2. Panels A and B of Table 4 present the results of estimating Equations (3) and (4), respectively. Consistent with prior research, I find that the accruals component of earnings is significantly less persistent than the cash flow component with coefficient weightings of 0.49 and 0.75, respectively.<sup>24</sup> The results in Panel B are consistent with the accruals component of earnings being significantly less persistent for both the LNBTD and LPBTD subsamples as compared to firm-years with small book-tax differences ( $\gamma_7 = -0.115$  and  $\gamma_8 = -0.187$ ). In addition, the

<sup>24</sup> An F-test reveals that these coefficients are significantly different at the 0.0001 level.

**TABLE 2**  
**Descriptive Statistics for Subsamples of Firm-Years Partitioned Based on Level of Temporary Book-Tax Differences**

Variable	LNBTD n = 2,823 <sup>a</sup>					SmallBTD n = 8,460 <sup>a</sup>					LPBTD n = 2,823 <sup>a</sup>				
	Mean	St. Dev.	25%	Median	75%	Mean	St. Dev.	25%	Median	75%	Mean	St. Dev.	25%	Median	75%
<i>PTBI</i> <sub>t+1</sub>	<b>0.112</b>	0.140	0.041	<b>0.114</b>	0.195	0.088	0.115	0.036	0.089	0.150	0.087	0.112	0.037	0.088	0.144
<i>PTBI</i> <sub>t</sub>	<b>0.153</b>	0.110	0.069	<b>0.131</b>	0.210	0.123	0.086	0.059	0.106	0.167	<b>0.138</b>	0.083	0.080	<b>0.118</b>	0.172
<i>PTCF</i> <sub>t</sub>	<b>0.165</b>	0.130	0.085	<b>0.156</b>	0.243	0.132	0.109	0.067	0.128	0.194	<b>0.150</b>	0.108	0.087	<b>0.143</b>	0.211
<i>PTACC</i> <sub>t</sub>	-0.011	0.110	-0.081	<b>-0.026</b>	0.046	-0.009	0.088	-0.060	-0.022	0.027	<b>-0.013</b>	0.092	-0.066	<b>-0.025</b>	0.027
<i>DTE</i> <sub>t</sub>	<b>-0.050</b>	0.033	-0.061	<b>-0.037</b>	-0.026	0.002	0.011	-0.007	0.000	0.010	<b>0.049</b>	0.025	0.030	<b>0.040</b>	0.059
<i>AVETA</i> <sub>t</sub>	<b>1,069</b>	6,233	42.18	<b>114.56</b>	383.29	1,891	12,905	57.65	176.07	642.02	1,888	7,709	68.73	<b>213.65</b>	835.48
<i>ROE</i> <sub>t</sub>	<b>0.179</b>	0.136	0.086	<b>0.158</b>	0.239	0.150	0.108	0.081	0.135	0.195	<b>0.178</b>	0.124	0.106	<b>0.153</b>	0.215
<i>MVE</i> <sub>t</sub>	3,051	20,759	64.84	215.13	855.34	2,535	15,023	59.93	198.35	793.20	2,356	9,810	78.18	<b>273.94</b>	989.67
<i>BM</i> <sub>t</sub>	<b>0.470</b>	0.486	0.209	<b>0.362</b>	0.605	0.608	0.557	0.301	0.492	0.778	<b>0.536</b>	0.430	0.283	<b>0.465</b>	0.690
<i>SAR</i> <sub>t</sub>	<b>0.046</b>	0.485	0.000	0.000	0.000	0.000	0.335	0.000	0.000	0.000	-0.001	0.295	0.000	0.000	0.000
<i>SAR</i> <sub>t+1</sub>	-0.018	0.435	0.000	0.000	0.000	-0.029	0.317	0.000	0.000	0.000	-0.024	0.310	0.000	0.000	0.000
<i>Beta</i> <sub>t</sub>	<b>1.150</b>	0.796	0.709	<b>1.000</b>	1.536	0.956	0.696	0.559	0.942	1.268	0.973	0.694	0.588	<b>1.000</b>	1.290
<i>ETR</i> <sub>t</sub>	0.403	7.241	0.285	<b>0.365</b>	0.400	0.432	2.059	0.339	0.377	0.400	0.399	0.411	0.350	<b>0.379</b>	0.400
<i>CETR</i> <sub>t</sub>	<b>0.802</b>	0.790	0.350	<b>0.400</b>	0.510	0.399	2.318	0.269	0.316	0.354	<b>0.194</b>	0.225	0.117	<b>0.195</b>	0.252
<i>Tax Paid</i> <sub>t</sub>	0.053	0.047	0.019	0.042	0.074	0.040	0.034	0.015	0.032	0.060	0.031	0.030	0.010	0.023	0.043
<i>Sales</i> <sub>t</sub>	<b>1,246</b>	6,497	58.56	<b>162.82</b>	557.97	1,883	8,669	78.99	242.44	856.98	1,916	6,900	84.68	253.31	950.78
<i>SalesGrow</i> <sub>t</sub>	<b>0.365</b>	0.779	0.074	<b>0.210</b>	0.438	0.298	1.981	0.046	0.137	0.285	0.285	0.853	0.056	<b>0.163</b>	0.340
<i>NOAGrow</i> <sub>t</sub>	<b>1.465</b>	0.879	1.019	<b>1.209</b>	1.606	1.349	0.755	1.019	1.142	1.389	1.363	0.727	1.041	<b>1.175</b>	1.431
<i>Leverage</i> <sub>t</sub>	<b>0.046</b>	15.289	0.001	<b>0.108</b>	0.490	0.634	2.334	0.042	0.338	0.810	0.588	0.345	0.095	<b>0.431</b>	0.874
<i>SpecialItems</i> <sub>t</sub>	<b>-0.013</b>	0.044	0.000	<b>0.000</b>	0.000	-0.001	0.039	0.000	0.000	0.000	<b>0.004</b>	0.053	0.000	<b>0.000</b>	0.000
<i>TI</i> <sub>t</sub>	<b>0.169</b>	0.112	0.085	<b>0.151</b>	0.233	0.108	0.082	0.047	0.092	0.151	<b>0.080</b>	0.071	0.028	<b>0.062</b>	0.111
<i>BTD-total</i> <sub>t</sub>	<b>-0.016</b>	0.052	-0.041	<b>0.030</b>	0.002	0.014	0.030	-0.001	0.011	0.023	<b>0.056</b>	0.040	0.033	<b>0.047</b>	0.069

(continued on next page)

will become "buy-and-hold" during final corrections

TABLE 2 (continued)

<sup>a</sup> Sample size varies because some data necessary to compute the variables that are not included in the regressions are not available for all firm-years. Bold font indicates that the amount is significantly different from the amount for the SmallBTD group. Italic font indicates statistical significance in the difference between the LPBTD group and the LNBTD group. All significance levels are at  $p = 0.05$  or smaller.

$PTBI_{t+1}$  = pre-tax book income one-year-ahead (item #170);

$PTBI_t$  = pre-tax book income in the current year (item #170);

$PTCF_t$  = pre-tax cash flow for the current year (item #308 + item #317 - item #124);

$PTACC_t$  = pre-tax accruals for the current year ( $PTBI - PTCF$ );

$DTE_t$  = deferred tax expense in the current year grossed up by statutory tax rate ((sum of items #269 and #270 and where missing item #50)/35 percent); (each of the above are shown scaled by average total assets and winsorized (reset) at the 1 percent and 99 percent);

$AVETA_t$  = average total assets for the firm (item #6) (in millions);

$ROE_t$  = earnings (item #18)/average shareholders' equity (item #216);

$MVE_t$  = market value of equity at fiscal-year end of year  $t$  (item #199 \* item #25) (in millions);

$BM_t$  = ratio of the firm's book value of equity to its market value of equity at time  $t$  (item #60/ $MVE$ );

$SAR_t$  = size-adjusted return calculated as the buy and hold return of the security less the buy-and-hold return of a size-matched portfolio; return accumulation begins in the fourth month of fiscal year-end  $t$  to allow the dissemination of financial reports;

$SAR_{t+1}$  = size-adjusted return calculated as the buy-and-hold return of the security less the buy-and-hold return of a size-matched portfolio; return accumulation begins in the fourth month after the fiscal year-end of  $t$  to allow the dissemination of financial reports;

$Beta_t$  = systematic risk estimated from regression of monthly raw returns on the return to a value-weighted market portfolio over a 60-month return period prior to the abnormal return accumulation period. Fifteen months of return data are required to calculate beta;

$ETR_t$  = effective tax rate in year  $t$  (total tax/pre-tax book income (item #16/item #170));

$CETR_t$  = current effective tax rate (current tax expense/pre-tax book income ((item #16 - item #50)/item #170));

$Sales_t$  = sales in year  $t$  (item #12) (scaled by average total assets);

$SalesGrow_t$  = growth in sales from year  $t-1$  to  $t$  ((item #12 in year  $t$  - item #12 in year  $t-1$ )/(item #12 in year  $t-1$ ));

$NOAGrow_t$  = net operating assets in year  $t$ /net operating assets in year  $t-1$  (item #2 + item #3 + item #68 + item #8 + item #33 + item #69 - item #70 - item #72 - item #75);

$Leverage_t$  = debt-to-equity ratio (item #34 + item #9/item #216);

$SpecItems_t$  = special items scaled by average total assets (item #17/average total assets);

$TI_t$  = estimate of taxable income calculated as current tax expense grossed up by statutory tax rate; and

$BTD - total_t$  = estimate of total difference between book and taxable incomes ( $ptbi - ti$ ), scaled by average total assets.

LPBTD (LNBTD) represents the group of firm-years with a deferred tax expense, positive book-tax differences, (deferred tax benefit, negative book-tax differences) in the top (bottom) quintile of firm-years in the sample. SmallBTD represents the group of firm-years not included in the groups LPBTD and LNBTD (i.e., firm-years with relatively small book-tax differences).

Q #4

**TABLE 3**  
**Regression Results: OLS Regressions of Future Pre-Tax Earnings Performance on Current Pre-Tax Earnings Performance**  
**(n = 14,106)**

**Panel A: Earnings Forecasting Equation**

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTBI_t + v_{t+1} \quad (1)$$

Variables	$\gamma_0$	$\gamma_1$	Adj. R <sup>2</sup>
Estimate	0.003	0.678	0.267
t-stat	2.120**	71.620*	

**Panel B: Earnings Forecasting Equation with Coefficients Allowed to Vary for Firm-Years with Large Book-Tax Differences**

$$PTBI_{t+1} = \gamma_0 + \gamma_1 LNBTD_t + \gamma_2 LPBTD_t + \gamma_3 PTBI_t + \gamma_4 PTBI_t * LNBTD_t + \gamma_5 PTBI_t * LPBTD_t + \varepsilon_{t+1} \quad (2)$$

Variables	$\gamma_0$	$\gamma_1$	$\gamma_2$	$\gamma_3$	$\gamma_4$	$\gamma_5$	Adj. R <sup>2</sup>
Estimate	-0.003	0.017	0.017	0.742	-0.100	-0.212	0.272
t-stat	-1.620	4.430*	4.000*	57.350*	-4.560*	-7.990*	

F-test of  $\gamma_4 = \gamma_5$ : 15.01 (p = 0.0001)

\*, \*\*, \*\*\* Denotes significance at the .01, .05 and .10 levels, respectively, using a two-tailed test. All variables are defined as in Table 2.

"Figure 1" will become "Figure 1," before "Panel A" and "Panel B"

coefficients representing the difference in the persistence of cash flows for both the large book-tax difference groups are significantly different from zero ( $\gamma_4 < 0$  and  $\gamma_5 < 0$ ). Thus, although I had no prediction for the cash flow interaction terms, it appears the firm-years with large book-tax differences have less persistent cash flows.<sup>25</sup>

Figure 1 shows the pre-tax earnings and accruals patterns for the sample firm-years with data available for the two years prior to the current year (where current year is the year used to rank the firm-years and place them into subsamples) and two years after the current year. Figure 1 Panel A shows that the LPBTD group has a larger increase and subsequent decrease in mean-scaled pre-tax earnings than do the other two groups of firm-years. Figure 1 Panel B provides even more striking results for pre-tax accruals. The subsample with large positive book-tax differences has a sharp increase in pre-tax accruals in the current year and a sharp decrease in pre-tax accruals in the following year.

In sum, the results for the H1 and H2 tests indicate that firm-years with large book-tax differences have lower earnings and accrual persistence consistent with these firm-years having a higher level of discretionary accruals that subsequently reverse. In supplemental tests described below, I investigate potential sources of this lower persistence.

The lower persistence in the cash flow component of earnings for the firm-years with large book-tax differences warrants further discussion. Although the information about earnings quality in temporary book-tax differences, if any, is not generally thought to be about the quality or persistence of cash flows, there are potential explanations *ex post* of why book-tax differences and the persistence of cash flows are associated. For example, firms likely manage earnings by managing cash flows in addition to managing accruals. Managing

<sup>25</sup> I discuss this finding more fully below.



**TABLE 4**  
**Regression Results: OLS Regressions of Future Pre-Tax Earnings Performance on the Accrual and Cash Flow Components of Current Pre-Tax Earnings Performance**  
**(n = 14,106)**

**Panel A: Earnings Forecasting Equation with Accrual and Cash Flow Components as Independent Variables**

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTCF_t + \gamma_2 PTACC_t + \xi_{t+1} \quad (3)$$

Variables	$\gamma_0$	$\gamma_1$	$\gamma_2$	Adj. R <sup>2</sup>
Estimate	-0.010	0.752	0.490	0.313
t-stat	-6.280*	79.550*	42.400*	

F-test of  $\gamma_1 = \gamma_2$ : 799.69 (p = 0.0001)

**Panel B: Earnings Forecasting Equation with the Coefficients on the Accrual and Cash Flow Components of Current Earnings Performance Allowed to Vary for Firm-Years with Large Book-Tax Differences**

$$PTBI_{t+1} = \gamma_0 + \gamma_1 LNBTD_t + \gamma_2 LPBTD_t + \gamma_3 PTCF_t + \gamma_4 PTCF_t * LNBTD_t + \gamma_5 PTCF_t * LPBTD_t + \gamma_6 PTACC_t + \gamma_7 PTACC_t * LNBTD_t + \gamma_8 PTACC_t * LPBTD_t + \varepsilon_{t+1} \quad (4)$$

Variables	$\gamma_0$	$\gamma_1$	$\gamma_2$	$\gamma_3$	$\gamma_4$	$\gamma_5$	$\gamma_6$	$\gamma_7$	$\gamma_8$	Adj. R <sup>2</sup>
Estimate	-0.014	0.011	0.009	0.806	-0.083	-0.167	0.557	-0.115	-0.187	0.317
t-stat	-6.990*	2.880*	2.120**	62.510*	-3.790*	-6.200*	34.720*	-4.360*	-5.810*	

F-test of  $\gamma_4 = \gamma_5$ : 8.11 (p = 0.0044)

F-test of  $\gamma_7 = \gamma_8$ : 4.25 (p = 0.0393)

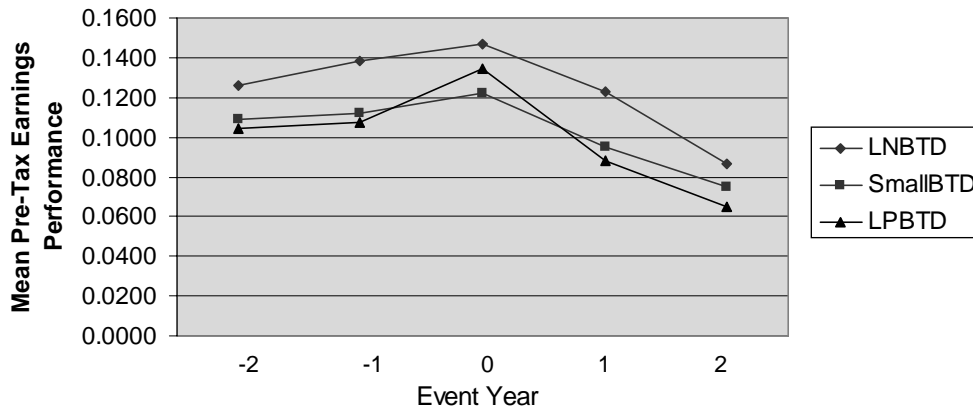
\*, \*\*, \*\*\* Denotes significance at the .01, .05 and .10 levels, respectively.

All variables are as defined in Table 2.

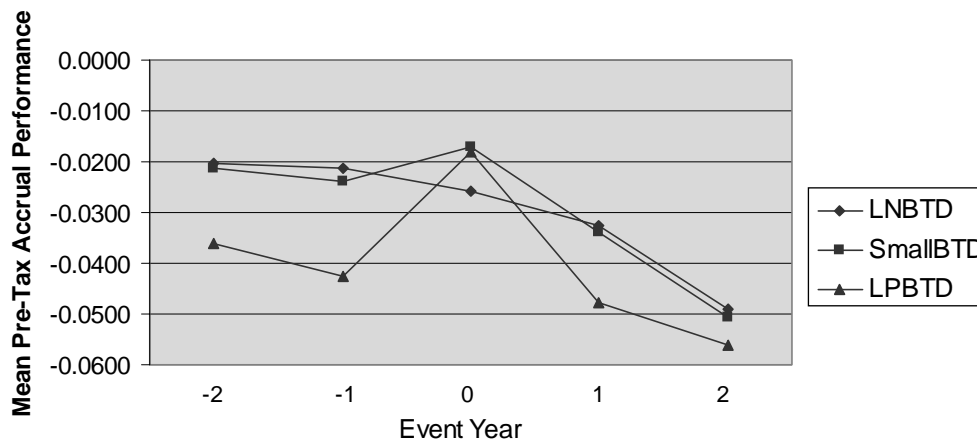
Q #5

**FIGURE 1**  
**Graph of Pre-Tax Earnings Performance and Pre-Tax Accrual Performance**  
**for Each Subsample Based on the Level of Temporary Book-Tax Differences**

**Panel A**



**Panel B**



Sample included in the figure are firm-years in the sample for the regressions that have nonmissing data for two years prior to the current year and two years after the current year (9,560 firm-year observations).

Pre-tax earnings is pre-tax book income (item #170) scaled by average total assets (item #6).

Pre-tax accruals is measured as pre-tax book income less pre-tax cash flow (item #108 – item #124 + item #317). LPBTD is the subsample of firm-years with large positive book-tax differences, LNBTD is the subsample of firm-years with large negative book-tax differences, and SmallBTD is the subsample of firm-years with relatively small book-tax differences.

cash flows would avoid the scrutiny of auditors and regulators more than accrual management. Burgstahler and Dichev (1997) present evidence on how firms accomplish earnings management around the 0 earnings level. They plot the 25th, 50th, and 75th percentiles of cash flows from operations (CFO) for each earnings interval and find that the distribution of CFO shifts upward in the first interval to the right of 0. They argue that this is evidence

that firms manage the cash flow component of earnings upward to report small profits instead of losses. They also find similar evidence with accruals. Thus, there is evidence that firms manage both cash flows and the accruals components making both potentially less persistent when book-tax differences are large.<sup>26</sup>

Further, Graham et al. (2004) using survey responses from 401 financial executives provide evidence consistent with executives claiming that earnings are often managed through cash flows. For example, they find that 80 percent of survey participants report that they would decrease discretionary spending on research and development, advertising, and maintenance and more than half say they would delay starting a new project to meet earnings targets even if such a delay entails a small sacrifice in value. Thus, their findings provide further evidence that cash flows are also managed to achieve earnings goals.

Thus, while book-tax differences reflect discrepancies in the calculation of accruals between book and tax methods, high levels of book-tax differences will likely be associated with the persistence of cash flows as well because firms managing earnings through accruals are likely also managing cash flows. However, because the link between book-tax differences and accruals is more direct and because the claims in financial accounting textbooks, recent academic literature, and the press focus on the persistence (quality) of accruals, I base my *ex ante* predictions and tests on accruals rather than cash flows.

### Tests of Hypotheses 3: Market Pricing When Book-Tax Differences Are Large

Table 5 presents the results of testing H3. I first present results of tests of the pricing of *total* pre-tax book income. The tests are performed using the Mishkin (1983) methodology. Panel A shows that investors appear to reduce their expectation of earnings persistence for firm-years in the LPBTD group. In fact, for this subsample, investors have an expectation of earnings persistence lower than the actual persistence of earnings ( $(\gamma_1^*/\gamma_1) < 1$ ). Thus, when there are large positive book-tax differences, investors appear to recognize that these firm-years will not have persistent earnings and lower their expectation of earnings persistence. For the LNBTD group, investors have an expectation of the persistence of total pre-tax earnings that is consistent with the actual persistence. For the SmallBTD group, I find that total earnings persistence is underestimated.

Next I estimate the system of Equations (3) and (6) to allow the coefficients on the accruals and cash flow components to vary. The equations are again estimated using the nonlinear generalized least squares approach. Table 5, Panel B presents the results. The evidence is consistent with prior research (e.g., Sloan 1996; Xie 2001) for the full sample and for firm-years with small book-tax differences; investors appear to overestimate the persistence of the accrual component of earnings ( $\gamma_2^* > \gamma_2$ ) and underestimate the cash flow component of earnings ( $\gamma_1^* < \gamma_1$ ). For firm-years with large positive book-tax differences (book income in excess of taxable income), however, I find evidence consistent with the accrual component of earnings being priced rationally ( $\chi^2 = 0.00$ ,  $p = 1.00$ ), consistent with H3, and the persistence of the cash flow component of earnings being underestimated ( $\chi^2$  statistic of 8.69, significant at  $p = 0.0032$ ). For the sample of firm-years with large negative book-tax differences, investors overestimate the persistence of accruals, consistent

<sup>26</sup> Roychowdhury (2003) investigates how firms accomplish the cash flow management when reporting small annual profits. He finds evidence consistent with firms avoiding losses by offering price discounts to temporarily increase sales, by overproduction to reduce reported cost of goods sold, and by reducing discretionary expenses to report higher margins.

**TABLE 5**  
**Regression Results: Nonlinear Generalized Least Squares Estimation (The Mishkin Test) of the Market Pricing of Pre-Tax Earnings with Respect to Its Implications for One-Year-Ahead Pre-Tax Earnings**

**Panel A: Market Pricing of Pre-Tax Earnings with Respect to Its Implications for One-Year-Ahead Pre-Tax Earnings**

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTBI_t + v_{t+1} \tag{1}$$

$$SAR_{t+1} = \alpha + \beta_1 (PTBI_{t+1} - \gamma_0 - \gamma_1^* PTBI_t) + \epsilon_{t+1} \tag{5}$$

Parameter	LNBDT (book income < tax income)		SmallBDT		LPBDT (book income > tax income)	
	Estimate	Asymptotic Standard Error	Estimate	Asymptotic Standard Error	Estimate	Asymptotic Standard Error
$\beta_1$	0.581	0.067	0.681	0.035	0.562	0.055
$\gamma_1^*$ (PTBI)	0.699	0.127	0.533	0.058	0.272	0.125
$\gamma_1$ (PTBI)	0.642	0.021	0.742	0.012	0.530	0.023
Ratio ( $\gamma_1^*/\gamma_1$ )	1.088		0.718		0.513	

Tests of Rational Pricing of Pre-Tax Earnings

Null Hypothesis	Likelihood Ratio Statistic	Marginal Significance Level	Likelihood Ratio Statistic	Marginal Significance Level	Likelihood Ratio Statistic	Marginal Significance Level
$\gamma_1^* = \gamma_1$	0.542	0.4617	13.558	0.0002	4.330	0.0375

(continued on next page)

TABLE 5 (continued)

## Panel B: Market Pricing of Earnings Components with Respect to Their Implications for One-Year-Ahead Pre-Tax Earnings

$$PTBI_{t+1} = \gamma_0 + \gamma_1 PTCF_t + \gamma_2 PTACC_t + \xi_{t+1} \quad (3)$$

$$SAR_{t+1} = \alpha + \beta_1 (PTBI_{t+1} - \gamma_0 - \gamma_1^* PTCF_t - \gamma_2^* PTACC_t) + \varepsilon_{t+1} \quad (6)$$

Parameter	Full Sample		LNBTD		SmallBTD		LPBTD	
	Estimate	Asymptotic Stand. Error	Estimate	Asymptotic Stand. Error	Estimate	Asymptotic Stand. Error	Estimate	Asymptotic Stand. Error
$\beta_1$	0.606	0.282	0.545	0.069	0.669	0.036	0.545	0.057
$\gamma_1^*$ (PTCF)	0.482	0.054	0.589	0.141	0.521	0.062	0.231	0.139
$\gamma_1$ (PTCF)	0.752	0.009	0.723	0.021	0.806	0.012	0.639	0.024
Ratio ( $\gamma_1^*/\gamma_1$ )	0.641		0.815		0.646		0.362	
$\gamma_2^*$ (PTACC)	0.700	0.065	0.831	0.173	0.726	0.075	0.416	0.156
$\gamma_2$ (PTACC)	0.490	0.012	0.442	0.025	0.557	0.015	0.371	0.028
Ratio ( $\gamma_2^*/\gamma_2$ )	1.429		1.880		1.303		1.121	

## Tests of Rational Pricing of Earnings Components

Null Hypothesis	Likelihood Ratio Statistic	Marginal Significance Level	Likelihood Ratio Statistic	Marginal Significance Level	Likelihood Ratio Statistic	Marginal Significance Level	Likelihood Ratio Statistic	Marginal Significance Level
PTCF: $\gamma_1^* = \gamma_1$	25.84	0.0001	1.073	0.3003	22.099	0.0001	8.693	0.0032
PTACC: $\gamma_2^* = \gamma_2$	10.69	0.0011	5.450	0.0196	5.260	0.0218	0.000	1.000
All $\gamma^* = \gamma$	93.43	0.0001	13.620	0.0011	68.308	0.0001	19.540	0.0001

Equations (1) and (5) and (3) and (6) are estimated using iterative generalized nonlinear least squares estimation procedure based on 14,106 observations during 1994–2000.

All variables are defined as in Table 2.

with Sloan (1996) but inconsistent with H3, and appear to price cash flows rationally ( $\gamma_1 = \gamma_1^*$ ).<sup>27</sup>

Overall, the results suggest that for firm-years with large positive book-tax differences either investors use the book-tax differences to infer lower persistence in accruals or the type of accruals that the book-tax differences are associated with are easily identified and priced by the market. However, the evidence also indicates that investors underestimate the persistence of the cash flow component for these firm-years suggesting that investors overweight the information in the book-tax differences. Conversely, for firm-years with large negative book-tax differences, the results indicate that investors overestimate the persistence of the accrual component of earnings, consistent with prior research examining broad cross-sections of firm-years (e.g., Sloan 1996).

### Abnormal Returns Regressions

Table 6 presents the results of the annual return regression tests intended to complement the Mishkin (1983) tests of market rationality. As noted previously, I use only December year-end firms and estimate the regressions annually in order to estimate the returns to an implementable hedge portfolio strategy. I find that for the entire sample the abnormal return to an accrual-based strategy is 4 percent ( $p = 0.046$ ). For firm-years with large negative book-tax differences, the return to an accrual investment strategy is marginally significant at the 0.10 level. Consistent with my Mishkin tests, I find that for firm-years with relatively large positive book-tax differences, an investment strategy based on the accrual component of earnings does not earn a significant return ( $p = 0.16$ ). Thus, overall the regression tests support the results from the Mishkin (1983) test: in firm-years with large positive book-tax differences investors appear to price accruals rationally. This evidence is consistent with the large positive book-tax differences providing additional information to investors about the persistence of accruals.

### Additional Analysis

#### *An Investigation of the Specific Sources of Lower Persistence*

**The effect of special items.** I examine the effect of special items on my results to determine if the persistence differences I find reflect aggressive reporting in current operating accruals or if the persistence differences are largely driven by transitory items below operating income (i.e., special items). Specifically, I perform the persistence tests in Equation (4) using the definitions of earnings, accruals, and cash flows as in Sloan (1996). Sloan (1996) defines earnings as operating earnings after depreciation (data item #178), which excludes the effects of special items. In my original tests I use total pre-tax earnings, which includes the effects of special items because the deferred tax expense number is related to the total pre-tax earnings number.

There is no way to separate the book-tax differences related to special items.<sup>28</sup> As a result, I assume that all special items create a book-tax difference and subtract the amount of special items for each observation from the amount of book-tax differences. I then use this adjusted measure of book-tax differences to partition the firm-years into subsamples

<sup>27</sup> I have no explanation for why cash flows are priced correctly for this group of firms. However, the results are similar to those in recent studies. For example, in Bradshaw et al. (2001) the ratio of investor implied to observed persistence in cash flows is 0.97 (significance not reported) and Barth and Hutton (2004) report a ratio of 0.95 ( $p = 0.362$ ) for one subsample of firms (those with consistent accrual and forecast revision signals) in their study.

<sup>28</sup> Hand collection would not reliably accomplish this task either as only material deferred tax assets and liabilities are required to be reported and changes in these are often affected by mergers and acquisitions and the taxes related to extraordinary items.

**TABLE 6**  
**Summary Regression Statistics of the Relation between Abnormal Stock Returns and Scaled Deciles of Accruals, Cash Flows, and Control Factors**  
**December Year-End Firm-Years Only**  
**(n = 7,497)**

$$SAR_{t+1} = \beta_0 + \beta_1 PTACC_t^{dec} + \beta_2 \ln MVE_t^{dec} + \beta_3 \ln BM_t^{dec} + \beta_4 Beta_t^{dec} + \beta_5 EP_t^{dec} + \beta_6 SAR_t^{dec} + \varepsilon_{t+1}$$

"Over" will become "over"

(Prepositions not capped here)<sup>(7)</sup>

The Persistence and Pricing of Earnings, Accruals, and Cash Flows

N	Parameter	Pred. Sign	Full Sample 7,497		LNBTD 1,401		Small BTD 4,432		LPBTD 1,664	
			Mean Over the Years (n = 7)	Number of Years +/-	Mean Over the Years (n = 7)	Number of Years +/-	Mean Over the Years (n = 7)	Number of Years +/-	Mean Over the Years (n = 7)	Number of Years +/-
	Intercept	?	-0.071		-0.663		-0.475		-0.123	
		t-stat	-1.410	3/4	-1.182	2/5	-0.957	3/4	-1.733	0/7
		p-val	(0.207)		(0.282)		(0.378)		(0.134)	
	$PTACC_t^{dec}$	-	-0.038		-0.035		-0.038		-0.041	
		t-stat	-2.496	2/5	-1.927	2/5	-2.182	2/5	-1.607	2/5
		p-val	(0.046)		(0.102)		(0.072)		(0.159)	
	$\ln MVE_t^{dec}$	-	0.039		0.020		0.026		0.058	
		t-stat	1.023	4/3	0.394	5/2	0.741	5/2	1.069	4/3
		p-val	(0.346)		(0.707)		(0.487)		(0.326)	
	$\ln BM_t^{dec}$	+	-0.015		-0.001		-0.046		0.033	
		t-stat	-1.210	3/4	-0.019	4/3	-2.713	2/5	1.497	3/4
		p-val	(0.272)		(0.986)		(0.035)		(0.185)	
	$Beta_t^{dec}$	+	-0.004		0.005		-0.015		0.014	
		t-stat	-0.288	2/5	0.131	3/4	-1.100	3/4	0.553	3/4
		p-val	(0.783)		(0.901)		(0.313)		(0.600)	
	$EP_t^{dec}$	+	0.416		0.050		0.039		0.053	
		t-stat	4.159	7/0	1.832	5/2	1.751	5/2	1.714	5/2
		p-val	(0.006)		(0.116)		(0.131)		(0.137)	
	$SAR_t^{dec}$	+	0.064		0.033		0.074		0.079	
		t-stat	1.158	6/1	0.626	5/2	1.247	5/2	1.338	5/2
		p-val	(0.291)		(0.554)		(0.259)		(0.229)	

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TABLE 6 (continued)

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t-statistic (second number) is computed as the ratio of the mean of the annual coefficients to the standard error calculated from the distribution of annual coefficients. p-values are in parentheses.

## Variable Definitions:

- $SAR_{t+1}$  = size-adjusted return calculated as the buy-and-hold return of the security less the buy-and-hold return of a size-matched portfolio. Return accumulation begins in the fourth month after the fiscal year-end of  $t$  to allow the dissemination of financial reports;
- $PTACC_t^{dec}$  = pre-tax accruals divided by average total assets, transformed to a scaled-decile variable with values ranging from 0 to 1;
- $\ln MVE_t^{dec}$  = the natural logarithm of the market value of common equity, transformed to a scaled-decile variable with values ranging from 0 to 1;
- $\ln BM_t^{dec}$  = the natural logarithm of the book to market ratio, transformed to a scaled-decile variable with values ranging from 0 to 1;
- $Beta_t^{dec}$  = systematic risk estimated from regression of monthly raw returns on the return to a value-weighted market portfolio over a 60-month return period prior to the abnormal return accumulation period, transformed to a scaled-decile variable with values ranging from 0 to 1. Fifteen months of return data are required to calculate beta;
- $EP_t^{dec}$  = earnings-to-price ratio, transformed to a scaled-decile variable with values ranging from 0 to 1; and
- $SAR_t^{dec}$  = annual buy-and-hold raw return for the security less the buy-and-hold return to a size-matched portfolio of firms, for the year prior to the abnormal return accumulation period transformed to a scaled-decile variable with values ranging from 0 to 1.
-



and perform tests similar to those above. Although some of the results are weakened by excluding the effects of special items, I continue to find results consistent with firm-years with large book-tax differences having lower persistence in earnings, accruals, and cash flows. More specifically, I find in a regression analogous to Equation (4), but excluding special items from the variable computations, that firm-years with both large negative and large positive book-tax differences have a lower persistence in accruals relative to firm-years with small book-tax differences ( $\gamma_7 = -0.096$  and  $\gamma_8 = -0.075$ ). Both groups of large book-tax difference firm-years also have significantly lower persistence in cash flows as well ( $\gamma_4 = -0.068$  and  $\gamma_5 = -0.100$ ). Thus, while the results of this test appear to be somewhat weaker (i.e., the coefficients are smaller) indicating that the special items do have an effect, overall they are robust to the adjustment for special items.<sup>29</sup>

**Examination of the disclosure of changes in deferred tax assets and liabilities.** I hand-collect the changes in deferred tax assets and liabilities for a small subsample of firm-years in both the large book-tax differences groups to examine what types of book-tax differences are generating the deferred tax expense for these groups of firms. However, I provide a caveat to the examination of these data. One reason I use the deferred tax expense (income statement) number rather than the change in the deferred tax assets and liabilities in the formal tests above is that the change in the deferred tax assets and liabilities listed in the tax footnote does not always tie out to the deferred tax expense as one might expect. The changes in the deferred tax asset and liabilities in the notes to the financial statements can include changes resulting from merger and acquisition activity and changes related to deferred taxes attributed to income or losses from discontinued operations or extraordinary items. Thus, it is very difficult to identify the actual “components” of the deferred tax expense (income statement number) even when hand-collecting the data.<sup>30</sup> In the sample I have hand-collected, I find that in only 27 out of the 60 firm-years collected does the deferred tax expense tie out exactly to the change in the deferred tax assets and liabilities.

This caveat notwithstanding, I find that most of the change in the deferred tax assets and liabilities for firm-years with large positive book-tax differences is from the depreciation book-tax difference (or other differences that affect property, plant, and equipment) with the next largest categories including bad debt reserve, pensions and postretirement benefits, the category labeled “other,” and investments in affiliates, partnerships, and unrealized security gains.

For firm-years with large negative book-tax differences the largest categories of change are reserves and accruals (both individually labeled and those called “miscellaneous” accruals), the line item labeled “other,” and depreciation differences. The largest category, reserves and accruals, includes the accounts that are generally suspected of earnings management in the texts (warranty expense, miscellaneous reserves, etc.). This is consistent

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<sup>29</sup> I also perform another analysis to examine the effects of special items. I use the same definitions of earnings, accruals, and cash flows as in the original tests, but I use a sample that excludes all firm-years with material special items (defined as those firm-years with special items that are larger in absolute value than one percent of average total assets). I find that all the results are qualitatively similar to those found in the original tests with the exception of firm-years with large positive book-tax differences not having lower persistence in accruals relative to firm-years with small book-tax differences. Specifically, when I estimate Equation (4) over the subsample of firm-years without material special items, I find that the coefficient on the interaction of accruals and the indicator variable *LPBTD* is  $-0.040$  ( $p = 0.274$ ). Thus, this test would indicate a stronger effect of special items on the results. However, a caveat to this test is that it excludes approximately 2,900 observations and it may be the case that these observations with large special items are firms that manage earnings in other accounts as well.

<sup>30</sup> For further explanation see Revsine et al. (1999) and Hanlon (2003).

with this subsample's accruals having a lower persistence for future earnings as compared to the accruals for firm-years with small book-tax differences.<sup>31</sup>

### **Scaler**

My two research questions are (1) whether firm-years with larger book-tax differences have less persistent earnings and (2) whether the large book-tax differences influence investors' assessment of persistence. In looking at the first question, I follow prior research in using earnings performance (return on assets). However, recent research by Fairfield et al. (2003) argues that the persistence effect documented by Sloan (1996) is partially attributable to growth in operating assets (i.e., growth in the denominator rather than reversals in the numerator generate the results in the forecasting regressions). As a result, I re-estimate the above forecasting Equation (4) using total assets in year  $t-1$  as the common scale for all variables in the regression. I find that the coefficient on the accrual interaction term for the LPBTD group continues to be negative and significant but that the coefficient on the accrual interaction term for the LNBTD group is not statistically significant. In order to further investigate this issue, I re-estimate the tests that use lagged assets as the common scaler in ranks and find that firm-years with both large positive and large negative book-tax differences have lower persistence in earnings and accruals as found in the original tests. Thus, these rank results suggest that the lagged asset deflator is a noisier measure of scale than average total assets and that the inferences of the original tests above are robust to the alternative scaler measure.<sup>32</sup>

### **Return on Equity as a Correlated Omitted Variable**

I also investigate return on equity (ROE) as an omitted correlated variable in the earnings forecasting equation because firms with relatively high and low levels of return on equity are known to have less persistent earnings (Freeman et al. 1982). I include an interaction term of ROE times the scaled earnings variable in Equation (2). The coefficient for this interaction term is significantly negative ( $-0.428$ ) consistent with higher ROE firms having more mean reverting income. However, the inferences with regard to the other variables are qualitatively similar suggesting the results are not caused by different levels of ROE.<sup>33</sup>

### **Book-Tax Differences as a Proxy for Discretionary Accruals**

To further investigate the information in book-tax differences about future earnings, I separate my accruals measure into two variables—financial accounting accruals *excluding* book-tax differences and the temporary book-tax differences—and include both as independent variables in a regression of one-year-ahead earnings on accruals and cash flows. This regression uses book-tax differences as a proxy for discretionary accruals, in the spirit of Phillips et al. (2003), and then conducts a test similar to Xie (2001) of the relative persistence of nondiscretionary accruals as compared to discretionary accruals.

<sup>31</sup> See Phillips et al. (2004) for further tests of hand-collected components of the temporary book-tax differences as they relate to earnings management, proxied in their tests by firms that just avoid an earnings decline.

<sup>32</sup> I thank Maureen McNichols for suggesting the rank regression tests in this case.

<sup>33</sup> I also conduct a sensitivity test including loss firms (i.e., both book and tax loss firms) and using an estimate of total book-tax differences (although this estimate is likely subject to much more measurement error as discussed previously in the manuscript). I estimate total book-tax differences by grossing up the current tax expense by the statutory tax rate (35 percent). The sample with available data consists of 29,101 firm-years. When annual return regressions are estimated there is not a significant association between abnormal returns and the book-tax differences consistent with investors realizing that income that is different between book and tax is less persistent.

In untabulated results I find that the coefficient on cash flows is 0.747, the coefficient on accruals *excluding* the book-tax differences is 0.481 (significantly different from the coefficient on cash flows, p-value on an F-test of 0.0001), and the coefficient on the book-tax differences is 0.402 (significantly different than the coefficient on accruals *excluding* book-tax differences, p-value of an F-test of 0.0005). Thus, these results are consistent with book-tax differences having lower persistence for one-year-ahead earnings than accruals *excluding* the book-tax differences, consistent with the book-tax differences proxying for discretion.

## VII. CONCLUSIONS AND LIMITATIONS

The objective of my study is to investigate the role of temporary book-tax differences in: (1) indicating the persistence of earnings, accruals, and cash flows, and (2) influencing investors' assessments of the persistence of earnings and earnings components.

My results indicate that firm-years with large positive book-tax differences have lower earnings persistence than firm-years with small book-tax differences. This result is consistent with the common conjecture that when book income is far in excess of taxable income, earnings are of lower quality, if one accepts the definition of quality as persistence. Additional analysis suggests the results are robust to controlling for the effects of special (transitory) items.

My results also indicate that firm-years with large negative book-tax differences have significantly less persistent earnings, accruals, and cash flows. This lower earnings persistence is also robust to the adjustment for special items and, from the results of additional analyses, appears to be due to these firms having accruals of the type that are easily managed (e.g., warranty expense, miscellaneous reserves, etc.). Thus, even though negative book-tax differences are not the focus of textbook claims about using tax disclosures to assess earnings quality, large negative book-tax differences are associated with accruals that have lower persistence for future earnings.

Finally, I investigate the markets' use of book-tax differences in assessing the persistence of earnings. Although the evidence is somewhat mixed, I find results consistent with the market assessing a lower expectation of earnings persistence for firm-years that have large positive book-tax differences, suggesting that investors interpret this information as a "red flag" about current earnings quality or can more easily price the type of accruals common to these firm-years. Investors appear to correctly assess the persistence of the accruals component of earnings for these firm-years, but underestimate the persistence of cash flows. For firm-years with small book-tax differences and large negative book-tax differences, investors appear to overestimate the persistence in the accruals component of earnings, consistent with prior research. Overall, it appears that book-tax differences influence investors' perceptions of earnings persistence, but large book-tax differences do not fully aid investors in their assessment of the persistence of earnings or its components because for each group of firm-years (i.e., firm-years with large positive book-tax differences, firm-years with large negative book-tax differences, and firm-years with small book-tax differences) return inefficiencies remain.

There are several limitations and caveats to this study. First, the limited sample size and time period inhibits generalizing the results to other samples and time periods. However, the limitation in time is necessary so that the accounting for income taxes is consistent over the sample period. The limitation on sample size (omission of loss firms) is necessary as well in order to obtain a deferred tax number that can be interpreted as representing true book-tax differences. The results of the market rationality tests should be considered in light of my sample selection process.

Second, for the main tests, I partition the sample based on the level of temporary book-tax differences and investigate the relative earnings persistence between groups. To the extent there are omitted correlated variables that cause the firm-years to be partitioned similarly, these other factors could be contributing to my results. However, tests of industry, scale (growth), and return on equity indicate that the results are robust to these controls.

My findings lend support to the case being made by some in Congress for requiring additional tax disclosure by firms. Large book-tax differences as disclosed in the financial statements appear to provide information about the persistence of current earnings performance and have predictive power for future earnings. In addition, it appears that investors assess different persistence expectations for firm-years with large book-tax differences. More complete disclosure of the book-tax differences (such as more detailed disclosure of the components of the change in deferred tax assets and liabilities and a reconciliation of the total change to the deferred tax expense) would likely provide additional information that would help investors assess the information in book-tax differences.

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