Book-Tax Differences, Analysts' Forecast Errors, and Stock Returns

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Abstract: This paper addresses the question of whether financial analysts and investors efficiently incorporate the implications of differences in book and tax measures of income into their expectations of firms' future earnings. Results indicate that analysts' earnings forecasts are inefficient with respect to book-tax differences, in that their forecast errors are a function of prior period book-tax differences. Specifically, analysts' errors in predicting subsequent earnings are more optimistic for firm-years where book income is relatively high compared to tax income, consistent with failing to completely impound the information in this signal that is related to future earnings realizations. Further analysis indicates that the component of analysts' errors that is related to book-tax differences largely explains the association between book-tax differences and future stock returns documented in prior research, suggesting that analysts' systematic errors proxy for similar, though not directly observable, errors made by investors. These results lend support to claims in prior research that investors' misperceptions of the implications of book-tax differences for future earnings lead to mispricing and suggest that analysts' forecasting behavior plays a role.

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I. INTRODUCTION

This paper investigates whether financial analysts and investors utilize the information in book-tax differences (BTD) efficiently in forming their expectations of future earnings. Given that two distinct accounting systems are applied to the same set of underlying economic transactions for a given firm-year, the extent to which they differ may contain information useful for evaluating those transactions and their implications for future earnings performance. In this way, tax income may be a useful benchmark for evaluating financial reporting income.[1] Following this line of reasoning, prior research indicates that BTD contain information useful for evaluating the "quality" of current earnings and predicting future earnings (e.g., Hanlon 2005). Further, recent research reports that future stock returns are also systematically related to BTD and conjectures that market participants fail to fully impound the implications of current BTD into their expectations of future earnings (Lev and Nissim 2004). The issues of whether information intermediaries signal the implications of BTD to market participants efficiently and whether they play a role in the alleged mispricing remain largely unexplored areas.

Financial analysts are important information intermediaries in equity markets (Schipper 1991), and a long line of research suggests that market prices are affected by analysts' published earnings forecasts (e.g., Givoly and Lakonishok 1979; Stickel 1991). Thus the efficiency with which analysts' forecasts incorporate available information may have important pricing implications. This study addresses these issues first by investigating the relation between BTD and financial analysts' errors in forecasts of future earnings. The second stage of this research examines whether—and to what degree—the previously documented predictability of future returns based on BTD is explained by inefficiencies in analysts' earnings forecasts.

[1] Throughout the text I will use the term "financial reporting income" interchangeably with "book income" and "earnings."

The interpretation of predictable future returns as evidence of systematic BTD-related errors in investors' expectations of future earnings faces two related challenges. First, predictable future returns may be evidence of mispricing or simply artifacts of unknown specification errors in asset pricing models. The long-running debate over market efficiency illustrates the lack of consensus over, and elusive nature of, correctly-measured risk and expected stock returns. Second, investors' expectations of future earnings are not directly observable and therefore must be inferred through the lens of stock returns. This study largely avoids these issues by utilizing the published earnings expectations of financial analysts, who are typically thought of as relatively sophisticated and informed market participants. I first test whether analysts' earnings forecasts are efficient with respect to BTD. If the forecasts efficiently reflect the information in BTD that is related to future earnings realizations, then errors in forecasts of future earnings should not be systematically related to current period BTD. I then investigate the degree to which any BTD-related errors in analysts' earnings expectations represent similar errors in the expectations of investors. I examine this by testing whether analysts' errors explain the relation between current BTD and future stock returns.

This study contributes to several lines of existing research. First, recent research investigates links between BTD-related information in financial reports and future earnings realizations (Lev and Nissim 2004; Hanlon 2005). My study compliments this work by examining how one set of sophisticated financial statement users interprets this information, as reflected in their published earnings forecasts and should be of interest to those debating the required disclosure of additional tax-related information (e.g., Lenter, Shackelford, and Slemrod 2003). Second, a separate stream of inquiry investigates whether analysts' earnings forecasts reflect various types of prior information efficiently (e.g., Mendenhall 1991; Abarbanell and

Bushee 1997). I find that analysts' errors in predicting subsequent earnings are a function of current period BTD. Specifically, analysts' errors are more optimistic for firm-years where book income is high relative to tax income, which is consistent with analysts' forecasts failing to fully impound the information in BTD related to future earnings realizations. Third, other research seeks to link documented market anomalies with inefficiencies in analysts' forecasts (e.g., Bradshaw et al. 2001; Shane and Brous 2001; Teoh and Wong 2002). Similarly, my investigation is partially motivated by research reporting the predictability of future returns based on current BTD (Lev and Nissim 2004). My results indicate that analysts' errors largely explain investors' implied errors, as BTD no longer have incremental ability to predict future returns after controlling for analysts' forecast errors. These results lend support to claims in prior research that investors' misperceptions of the implications of BTD for future earnings lead to mispricing and also suggest that analysts' forecasts play a role.

The remainder of this paper is organized as follows. The next section relates relevant institutional details and reviews highlights of related literature. Section III develops the research questions and Section IV describes the sample I use in the empirical tests. Section V discusses the research design and primary results. Section VI presents additional analyses and sensitivity tests, and Section VII concludes.

II. INSTITUTIONAL BACKGROUND AND RELATED RESEARCH

Sources of Book-Tax Differences

Managers of U.S. public corporations compile financial records based on two different accounting systems, for purposes of financial reports and tax filings. While income differences under the two systems may be generated from many different types of transactions, on a conceptual level there are three primary sources. First, there are differences created simply by the unbiased implementation of two sets of accounting standards with differing rules. The rules of the two systems are different primarily because the objectives of GAAP and the tax code are different (Manzon and Plesko 2002; Plesko 2003). The purpose of GAAP is to facilitate the efficient allocation of resources by providing useful information to various decision makers about the performance and economic standing of the firm. The objectives of the tax code are to facilitate the equitable collection of government revenue and to provide incentives (or disincentives) to engage in certain activities. The different objectives have led to two systems of rules that often differ both in the timing and amount of revenue and expense recognition, thus generating BTD.

Second, firms may be managing their taxable income through tax planning and perhaps tax sheltering activities. Since the transactions used to facilitate these activities often lack economic substance (outside of tax considerations) or involve manipulating the timing of cash flows, it is probable that they will give rise to BTD since book income is unlikely to be affected in exactly the same manner.

Third, in accordance with its goal of providing useful information, GAAP frequently grants considerable discretion to managers on how to account for certain transactions. In contrast, the tax code largely eliminates this discretion, typically by either prescribing a detailed method of reporting (e.g., depreciation) or by postponing recognition until the reporting period when the underlying transaction is complete (e.g., contributions to post-retirement benefit funds). Thus, if firms are managing their *pre-tax* income accounts for financial reporting purposes, *pre-tax* book income is likely to diverge from taxable income, creating BTD (Phillips et al. 2003). Firms may further manage their *net* income by using the discretion allowed under GAAP to manipulate their reported income tax expense (Dhaliwal et al. 2004). In contrast, the actual tax that firms pay is based on pre-determined formulas involving taxable income and the corresponding tax rates. Therefore discretion used in determining the GAAP income tax expense amount may lead to further differences in *after-tax* measures of tax and book income. The next section discusses the various types of BTD, and their effects on both pre-tax and after-tax measures of income.

Types of Book-Tax Differences

BTD not only differ in their causes, but also in their nature. There are three primary types of BTD. The first type is known as a temporary difference. Temporary differences represent situations where the total amount of revenue or expense associated with a particular transaction is the same under both systems over the life of the firm, but the timing of recognition varies.[2] Therefore temporary differences cause income measures to diverge for particular accounting periods. An example of a common source of temporary differences is the reserve for uncollectible accounts.[3] Based on the matching principle, GAAP dictates that firms must estimate the total amount of current period sales that will not be collected and recognize a corresponding expense in the current period.[4] However, the tax code does not allow deductions for bad debts until the time period in which specific accounts are identified as uncollectible and written off. Thus, there will be differences in the timing of recognition of this expense under the two systems.

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[2] More precisely, under SFAS No. 109 (¶ 10), temporary differences are defined to include both standard timing differences and other differences in the tax bases of assets or liabilities and their reported amounts in the financial statements. An example of the latter is differences in the book and tax bases of assets acquired and liabilities assumed in a business combination. APB No. 11, which preceded SFAS No. 109, only considered timing differences (i.e., the first of the two types of temporary difference considered by SFAS No. 109). For ease of exposition, I focus my description of temporary differences on the more common timing differences. Differences between SFAS No. 109 and APB No. 11 are considered more fully below.
[3] More comprehensive discussions on specific book-tax differences can be found in Knott and Rosenfeld (2003a, 2003b).
[4] Under GAAP, firms may also take the alternative approach of basing the allowance for uncollectible accounts on the amount of gross receivables outstanding at the balance sheet date, and then recording the corresponding expense amount. For purposes of this example, either method of recognizing bad debt expense for financial reporting income will likely lead to temporary differences.

The distinguishing characteristic of temporary differences is that they eventually reverse. If a temporary difference causes income under one system to be comparably higher (lower) in the year it originates, it will make income under that same system comparably lower (higher) in the year it reverses. As temporary differences cause book and tax bases to diverge for balance sheet items, deferred tax liabilities (assets) and the corresponding deferred tax expense (benefit) are recorded in firms' financial statements under GAAP (SFAS No. 109 ¶6-¶25).

The second type of BTD is a permanent difference. Permanent differences represent situations where a revenue or expense item is recognized in the current period under one system but will never be recognized under the other system. Thus permanent differences do not reverse; accordingly, deferred taxes are not recognized. As an example, one potential source of permanent differences is goodwill. Since most goodwill that is recorded for financial statement purposes does not have tax basis, any amortization or write-downs for book purposes will create permanent differences as corresponding tax deductions will not be available (Scholes et al. 2005, 374).

The difference between *pre-tax* book income and taxable income can be represented by temporary and permanent differences:

$$\text{PTBI} = \text{Taxable Income} + \text{TEMP} + \text{PERM} \tag{1}$$

where PTBI represents pre-tax book income, TEMP represents temporary differences and PERM represents permanent differences. I will build upon this framework after discussing a third type of BTD, one which affects comparative *after-tax* measures of book and tax income.

In their measure of total BTD, Lev and Nissim (2004) consider a third type of divergence between book and tax income that they term tax accruals. The distinguishing features of tax accruals are that they are based on financial reporting decisions and only affect book income tax expense, and thus *net* book income. They do not affect either pre-tax book income or taxable income and therefore (1) still holds. Three examples of tax accruals are changes in permanently reinvested foreign subsidiary earnings, deferred tax valuation allowance, and tax cushion. These items are not BTD in a traditional sense, since they only represent a difference between *net* book income and *net* tax income (i.e., they are not a reconciling item between pre-tax book income and taxable income).[5] However, from a financial accounting perspective they are interesting items to consider because they require a significant degree of managerial judgment, are likely to involve substantial information asymmetry, and do not have tax consequences. Further, investors are likely to be concerned with after-tax measures of performance, and thus, to the extent that net tax income is a useful benchmark, it is interesting to consider tax accruals.

We can expand (1) to consider tax accruals by shifting the focus to after-tax measures of book and tax income as follows. First, net book income can be represented as[6]

$$\text{Net Book Income} = \text{PTBI} - \text{Income Tax Expense}$$
$$= \text{PTBI} - [(\text{PTBI} - \text{PERM})t - \text{TAXACC}] \quad (2)$$

where t represents the statutory tax rate and TAXACC represents tax accruals. Similarly, net tax income can be represented as

$$\text{Net Tax Income} = \text{Taxable Income} - \text{Tax Liability}$$
$$= \text{Taxable Income}(1 - t) \quad (3)$$

Subtracting (3) from (2), along with some simple algebraic manipulation, yields the following expression for total BTD (i.e., the difference between *net* book income and *net* tax income):

[5] Traditionally, the term "book-tax difference" has been used primarily in reference to differences in pre-tax measures of book and tax income. Presumably, this practice has its roots in the corporate tax form where historically Schedule M-1 was used to reconcile pre-tax financial reporting income with taxable income.
[6] For the sake of clarity, I abstract away certain features of the tax environment that add unnecessary complexity in the analysis that directly follows (e.g., differing foreign tax rates, tax credits). The analysis here is merely meant to aid in framing the discussion on the types of BTD, rather than to rigorously model all the technical nuances of the tax environment.

Total BTD = Net Book Income – Net Tax Income

$$= TEMP(1 - t) + PERM + TAXACC \qquad (4)$$

Equation (4) has the benefit of making explicit the role of each type of BTD in the total divergence between after-tax measures of income under GAAP and tax accounting rules.

Related Research

Lev and Nissim (2004) examine the earnings quality implications of BTD, using future earnings growth as an operational measure of earnings quality and the ratio of estimated *net* tax income to *net* book income as their "tax-based fundamental." This measure of BTD is comprehensive in that it encompasses all three types of differences discussed above (i.e., temporary differences, permanent differences, and tax accruals). They argue that this is important because different earnings management techniques may be employed simultaneously that have offsetting effects on the measurement of individual types of BTD.[7] They report that higher ratios of net tax income to net book income are associated with higher levels of future earnings growth. In additional analyses, they find that investors appear to underappreciate the value of this ratio as a signal of future performance in that it is also associated with future stock returns. My work seeks to determine whether the earnings forecasts of financial analysts also contain systematic errors related to BTD and whether they play a role in what appears to be mispricing.

Hanlon (2005) also examines the earnings quality implications of BTD, finding that large temporary differences are associated with less-persistent pre-tax earnings. An earlier version of her paper included some discussion of analysts' interpretation of temporary BTD. The focus of

[7] For example, temporary differences are typically estimated by grossing up deferred tax expense by the statutory tax rate, but this amount may contain a portion attributable to changes in the deferred tax valuation allowance (a "tax accrual"). If a firm manages pre-tax accruals in such a way that it is picked up in other deferred tax expense items, it may be obscured in the total measure of deferred tax expense if the firm also manages income tax expense by lowering the deferred tax valuation allowance (Phillips et al. 2004).

my work is different in that I consider total BTD, as opposed to just temporary BTD, perform formal multivariate analyses, and investigate the association between analysts' errors and future returns.

III. RESEARCH QUESTIONS

The first objective of this study is to evaluate how efficiently analysts impound information related to BTD into their forecasts. While prior research indicates that BTD contain information regarding the persistence and future growth of earnings, it also suggests that the implications of BTD may not be fully reflected in security prices. In particular, Lev and Nissim (2004) report that their tax-to-book variable (a measure of total BTD) predicts future returns after controlling for known risk factors.[8] If analysts' earnings forecasts are similarly inefficient with respect to BTD, their subsequent forecast errors (realized earnings less forecasted earnings) will be a function of current period BTD. Thus my first research question is whether analysts' errors in predicting future earnings are related to current book-tax differences.

To the extent that analysts' forecasts proxy for the market's expectations of earnings, a finding that BTD are related to subsequent forecast errors would lend support to Lev and Nissim's conclusion that during their sample period "not all of the forward-looking information in the tax fundamentals was captured in contemporaneous stock prices" (p. 1065), as opposed to their results being driven by some unknown risk factor or research design flaw. The second phase of my study examines this issue more directly.

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[8] Lev and Nissim split their sample into two time periods (1973-1992 and 1993-2000) corresponding to before and after the implementation of SFAS 109. Initially, they find that during the 1973-1992 time period firms with higher tax-to-book ratios earn higher returns over the subsequent year, but that this result is not significant for the 1993-2000 time period as a whole. However, further investigation reveals that the insignificance in the later time period is largely driven by the year corresponding to the height of the tech bubble (many of these technology firms were reporting little or no taxable income, thus perhaps inducing a negative correlation between the tax-to-book ratio and returns). In separate analyses, they also show that returns were significant in the 1993-2000 period after excluding 1) firms with small earnings-to-price ratios, and 2) firms with high long-term growth forecasts. They interpret the sum of this evidence as indicating that their tax-based fundamental continued to predict abnormal returns over the 1993-2000 period, with the exception of firms involved in the tech bubble.

While the initial research question addresses how the information contained in BTD is reflected in analysts' forecasts, the remainder of this study seeks to link any systematic BTD-related biases in analysts' errors more directly to the predictability of future returns. The goal of this analysis is to determine the extent to which errors in analysts' published earnings forecasts may account for (or reflect) similar errors in investors' expectations. Since investors' earnings expectations are not directly observable, they must be inferred from stock price movements, and my research design takes this into account. If investors do misinterpret the information in BTD that is relevant for predicting future earnings realizations and analysts' BTD-related forecast errors proxy for similar errors in investors' expectations, then BTD will begin to lose their predictive ability for returns once conditioned on analysts' forecast errors. Thus the second research question is whether systematic errors in analysts' earnings expectations explain the relation between current period BTD and future returns.

Comparing the magnitude of predictable future returns based on current BTD before and after controlling for analysts' forecast errors also supplies a measure of the degree to which analysts' errors represent similar (though unobservable) errors on behalf of investors. For inefficiencies in analysts' earnings forecasts to represent a full explanation of the market's apparent inefficiencies, two conditions must hold. First, analysts' forecasts must be inefficient, in that their errors have a systematic component that is related to BTD (the first research question examines this possibility). Second, in a regression of subsequent returns on current BTD and risk factors, BTD should no longer have incremental predictive power after controlling for the inefficiencies in analysts' forecasts. Conversely, if analysts' subsequent forecast errors fail to subsume current BTD in predicting future returns (i.e., current period BTD continue to be associated with future returns even after controlling for analysts' subsequent forecast errors), then analysts' and investors' expectations differ and analysts' behavior represents a less-than-complete explanation for the predictability of future returns documented in previous research.

IV. SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

The initial sample is drawn from all U.S. firm-years with the necessary information available in the Compustat files from 1984 to 2003 and with corresponding forecasts for the subsequent years' earnings available in the I/B/E/S Detail History files.[9] I use the I/B/E/S Detail file to create my own consensus forecasts, rather than using the I/B/E/S Summary file, as a way to avoid the problem of stale forecasts being included in the consensus (e.g., Ramnath et al. 2005). I create 30-day time periods anchored on the release of the base years' earnings information and calculate the consensus forecast as the median of all forecasts for that particular firm during that 30-day block. In cases where the same analyst has issued multiple forecasts for the same firm during the same 30-day block, I use only the latest forecast from that analyst in calculating the consensus. To mitigate the influence of data-coding errors and extreme observations, I eliminate any individual forecasts in the highest and lowest percentiles of price-scaled forecast errors prior to forming consensus forecasts. The initial sample contains 38,857 firm-years. I exclude financial services and utilities (2,556 firm-years) because these regulated firms face different reporting environments, and firms with non-positive earnings before extraordinary items (8,475 firm-years) in order to keep the ratio of tax income to book income meaningful. After applying these screens, the sample consists of 27,826 firm-years with at least one consensus forecast available for the subsequent year's earnings.

Sample observations are then partitioned based on BTD. Similar to Lev and Nissim (2004), I calculate TAX (a measure of total BTD) as the ratio of estimated net tax income to net

[9] Results are very similar using the "unadjusted" I/B/E/S data (Payne and Thomas 2003).

book income.[10] Firm-years are then ranked into quintiles, based on the value of the TAX ratio, by fiscal year. While estimates of taxable income from financial statement disclosures are subject to some known estimation errors (see, for example, Hanlon 2003 or McGill and Outslay 2002, 2004 for related discussions), from a forecasting or valuation perspective, these estimates are more appropriate than actual taxable income amounts because tax return information is not publicly available to market participants (Hanlon and Shevlin 2005). Nevertheless, in Section VI below I perform additional analyses aimed at ruling out the most common sources of measurement error in the estimate of taxable income as the drivers of my primary results.

Panel A of Table 1 presents descriptive statistics on various characteristics for sub-samples based on the TAX rankings, rTAX.[11] Observations in both the low and high rTAX quintiles tend to be less profitable (BI_t), smaller in terms of market value ($MKTCAP_t$), and have fewer analysts actively following them ($FOLLOW_t$) than observations in the middle rTAX groups. By construction, the values of the TAX_t ratio are increasing in the rTAX rankings, and inspection of the values for the lowest rTAX quintile reveals that a sizable portion of the sample observations have estimated tax income that is as low as ten percent of their book income. Notably, the change in book income from year t to year t+1 (ΔBI_{t+1}) is lowest for firm-years in the low rTAX quintile and highest for firm-years in the high rTAX quintile, consistent with the notion that BTD contain information related to future earnings realizations. Subsequent year

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[10] More precisely, net tax income is $\frac{CTE}{t} \times (1-t)$, where t is the U.S. statutory corporate tax rate and CTE is current tax expense. CTE is measured as the sum of current federal (Compustat #63) and foreign (#64) income taxes, or, when either of these amounts is missing, as total income tax expense (#16) less total deferred tax expense (#50). Net book income is earnings before extraordinary items (#18). Other recent research (e.g., Hanlon et al. 2005) has also estimated taxable income similarly (i.e., $\frac{CTE}{t}$).

[11] The variables presented here are winsorized at the top and bottom 1% of their respective distributions. For the regressions that are presented later in the paper where future stock returns are the dependent variable, I use unwinsorized returns, so as to avoid introducing hindsight bias.

returns (R_{t+1}) are monotonically increasing in the rTAX groupings, consistent with BTD also being related to future stock returns.

Panel B of Table 1 presents the results from estimating three simple regressions. While these results are intended only for descriptive purposes, they provide a useful first look at the associations between BTD from year t and the actual and forecasted changes in earnings per share from year t to year t+1. In each model rTAX, the quintile ranking based on TAX, scaled to range from zero to one, is the independent variable. The first model, with change in earnings per share scaled by price as the dependent variable, confirms that rTAX contains information regarding future earnings changes. In the second model, the dependent variable is the consensus analyst forecast of the change in earnings per share from year t to year t+1. The consensus is derived from forecasts made during the sixth month subsequent to the release of year t earnings, and this variable is also deflated by price. The results from this simple regression suggest analysts' forecasts of changes in future earnings, unlike actual changes in future earnings, are unrelated to rTAX. The third model summarizes the results from the first two by regressing analysts' price-scaled errors in forecasting future earnings on rTAX. The results from estimating this model are consistent with BTD-related inefficiencies in analysts' forecasts of future earnings as there is a positive and significant relation between rTAX from year t and errors in forecasts of year t+1 earnings. In sum, the results presented in Panel B suggest that, while BTD contain information related to future earnings realizations, analysts' forecasts do not appear to reflect use of this information, leading to predictable forecast errors.

V. RESEARCH DESIGN AND RESULTS

Book-Tax Differences and Subsequent Forecast Errors

In this section I present formal tests of the relation between BTD and errors in analysts' forecasts of subsequent earnings. For each firm-year I first form consensus forecasts of year t+1 earnings for each month during the forecast horizon, starting just after the release of year t earnings until the release of year t+1 earnings. The months represent the different 30-day blocks used to form the consensus forecasts, where the earlier months are closer to the year t earnings announcement.[12] Forecast errors are calculated as actual year t+1 earnings (as reported by I/B/E/S) minus the forecast of those earnings, scaled by the month 1 stock price (i.e., negative forecast errors represent optimistic forecasts), similar to Bradshaw et al. (2001).

To test the relation between BTD and subsequent forecast errors while controlling for other factors shown to be related to forecast errors in prior research, I employ the following regression model, which I estimate separately for each month in the forecast horizon:

$$FError_{i,t+1} = \alpha + \beta_1 rTAX_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 BM_{i,t} + \beta_4 rCFO_{i,t} + \sum_t \beta_{5,t} YEAR_t + \varepsilon_{i,t+1} \quad (5)$$

Where $FError_{i,t+1}$ = firm i's actual t+1 earnings minus the consensus forecast of those earnings, scaled by month 1 stock price.

$rTAX_{i,t}$ = firm i's quintile ranking based on the ratio of estimated net tax income to net book income from year t, scaled to range between [0, 1].

$SIZE_{i,t}$ = natural log of firm i's market capitalization at the end of year t.

$BM_{i,t}$ = ratio of book value of common equity to market capitalization for firm i at the end of year t.

$rCFO_{i,t}$ = firm i's quintile ranking based on the ratio of cash flows to net book income from year t, scaled to range between [0, 1].[13]

$YEAR_t$ = dummy variables that indicate the various base years within the sample (i.e., there is one YEAR variable corresponding to each of the years 1985-2003).

[12] For example, Month 1 (2) corresponds to consensus forecasts of year t+1 earnings formed from individual forecasts made between 1 (31) and 30 (60) days subsequent to the release of year t earnings.

[13] Similar to Lev and Nissim (2004), I measure cash flows as the difference between earnings before extraordinary items (Compustat #18) and accruals, where accruals = (ΔCurrent Assets - ΔCash) - (ΔCurrent Liabilities - ΔDebt included in current liabilities) - ΔDeferred Tax Liability – Depreciation = (Δ#4 - Δ#1) - (Δ#5 - Δ#34) - Δ#35 - #14.

Table 2 presents the results of estimating (5).[14] The estimated coefficients on rTAX are positive and highly statistically significant in each month, indicating that analysts' forecasts of subsequent earnings are relatively more optimistic for firms with lower ratios of tax to book income.[15] This is consistent with the possibility of BTD-related errors in expectations causing abnormal stock returns. The results in Table 2 indicate that the association between BTD and subsequent forecast errors slowly dissipates over the forecast horizon. This is consistent with intuition suggesting that as information relevant to predicting upcoming earnings is accumulated throughout the year, forecast inefficiencies stemming from the misuse of accounting information are gradually mitigated. Estimated coefficients for the control variables tend to manifest the expected signs. Consistent with prior research (e.g., Brown 1997; Teoh and Wong 2002; Richardson et al. 2004), the coefficients on SIZE are reliably positive, indicating that larger firms have less optimistic forecast errors. The coefficients on BM are negative throughout the forecasting horizon, consistent with Brown (2001) and Matsumoto (2002), who report that growth firms tend to have less negative earnings surprises. The coefficients on rCFO are positive, consistent with Bradshaw et al. (2001), who suggest that analysts' forecasts are inefficient with respect to the information in the accrual portion of book earnings.

To provide an economic interpretation for the Table 2 results, consider the typical sample firm has a price-to-earnings ratio of about 20. Using the estimated coefficient on rTAX for month 1 (0.0076), and the assumed price-to-earnings ratio of 20, the average forecast error for firms in the lowest rTAX group would be more optimistic than the corresponding forecast error for firms in the highest rTAX group by about 15.2% of earnings (0.0076×20).

[14] The number of observations varies across months in Table 2 because not every firm-year in the full sample has a corresponding consensus forecast available for each month of the forecasting horizon.
[15] While Table 2 indicates that the relation between forecast errors and rTAX is significant in every month during the forecast horizon, to keep the presentation manageable, except where otherwise noted all subsequent tabulations are based on forecasts from midyear (i.e., month 6).

In sum, I interpret the results in Table 2 as consistent with analysts' forecasts failing to efficiently reflect the implications of BTD for future earnings. The following section investigates whether the BTD-related errors in analysts' expectations proxy for similar errors on behalf of investors.

Do Inefficiencies in Analysts' Forecasts Explain the Relation Between Book-Tax Differences and Future Returns?

While my initial analyses are aimed at determining whether BTD-related inefficiencies in analysts' forecasts exist, the next step in my investigation examines whether my findings explain the predictable future returns related to BTD reported in Lev and Nissim (2004). The goal of this analysis is to determine the extent to which analysts' systematic errors represent similar errors in investors' expectations that are related to BTD, and thus shed some light on the issue of mispricing versus omitted risk factors.

For the tests in this section I adapt a method previously used by Abarbanell and Bernard (1992) and extended by Shane and Brous (2001). First, using market data available through CRSP, I regress future returns on rTAX and various control variables to obtain a baseline measure of this relation and to ensure that Lev and Nissim's results hold with my sample.[16] I estimate the following model cross-sectionally, by year, using only December year-end firms:

$$\begin{aligned} R_{i,t+1} = {} & \alpha + \beta_1 TAX^{dec}_{i,t} + \beta_2 SIZE^{dec}_{i,t} + \beta_3 BM^{dec}_{i,t} + \beta_4 EP^{dec}_{i,t} + \beta_5 BETA^{dec}_{i,t} + \beta_6 R^{dec}_{i,t} \\ & + \beta_7 CFO^{dec}_{i,t} + \varepsilon_{i,t+1} \end{aligned} \quad (6)$$

where $R_{i,t+1}$ is annual buy-hold return measured from May 1 of year t+1, $EP_{i,t}$ is the ratio of earnings before extraordinary items and market value of common equity, $BETA_{i,t}$ is a measure of systematic risk estimated using monthly stock returns and the CRSP value-weighted index returns (including distributions during the five years that end in April of year t+1) and all other

[16] The primary difference between Lev and Nissim's sample and mine is the fact that my sample is constrained to firm-years with earnings forecasts available from the I/B/E/S database.

variables are as previously defined.[17] The independent variables are each converted to decile rankings and scaled to range from zero to one.[18] This transformation allows the estimated coefficients to be interpreted as the return on a zero investment portfolio with a long position in firm-years in the highest decile and a short position in those in the lowest decile (Bernard and Thomas 1990).

The estimate of β_1 from (6) supplies a measure of future returns related to BTD. Reported coefficient estimates and *t*-statistics are calculated based on the time series distributions of the coefficients from the annual regressions (Fama and MacBeth 1973). As noted above, Lev and Nissim's pricing investigation is complicated by the technology bubble of the late-1990s. I follow them in removing base year 1998 (where the subsequent return period ranges from May 1 of 1999 to April 30 of 2000) from my tests as this represents the height of the bubble.

Next I measure how much of the inefficiency estimated from (6) (i.e., β_1) is explained after introducing analysts' published earnings forecasts into the model. If analysts' forecasting behavior represents a complete explanation for the apparent mispricing, then BTD should no longer have incremental ability to predict future returns. Intuitively, if the anomalous market behavior is caused by investors misinterpreting the implications of BTD for future earnings, and if analysts' predictable forecast errors are the same as investors', then the drift coefficient, β_1, will approach zero after controlling for analysts' forecast errors. If β_1 remains significantly positive, this would suggest that either BTD-related errors in investors' expectations are different from those of analysts, or that the anomalous pricing is not the result of errors in investors'

[17] For the firms that delist during the subsequent return period, proceeds from the issue are invested in the CRSP value-weighted index until the end of the holding period. This applies to a very small number of firms because the requirement of having analysts' forecasts and subsequent earnings realizations available ensures that sample firms are listed at least until the time that year t+1 earnings are announced.

[18] All independent variables are ranked by fiscal year, except TAX, which is ranked by fiscal year and industry (two-digit SIC), similar to Lev and Nissim (2004), to help control for any industry-level clustering.

expectations of t+1 earnings. To test this, I also estimate the following model that controls for analysts' forecast errors:

$$R_{i,t+1} = \alpha + \beta_1 TAX^{dec}_{i,t} + \beta_2 SIZE^{dec}_{i,t} + \beta_3 BM^{dec}_{i,t} + \beta_4 EP^{dec}_{i,t} + \beta_5 BETA^{dec}_{i,t} + \beta_6 R^{dec}_{i,t} + \beta_7 CFO^{dec}_{i,t} + \beta_8 FError^{May1}_{i,t+1} + \varepsilon_{i,t+1} \quad (7)$$

where $FError^{May1}$ is the price scaled forecast error based on the last individual forecast for that firm's year t+1 earnings that is issued prior to May 1 of the subsequent year. For firm-years with multiple forecasts issued on that same last day, I create a consensus forecast based on the median of all forecasts from that day. I utilize the cut-off date of May 1 because it is the beginning of the return period and is therefore the appropriate time to use in testing whether inefficient market expectations of earnings are reflected in inefficient analyst forecasts.

Results from estimating (6) are presented first in Table 3. Consistent with Lev and Nissim (2004), the first column indicates that, controlling for other factors, firms with higher TAX ratios have subsequent annual returns that are higher than those with lower TAX ratios. The third column of Table 3 presents the results of estimating model (7), after introducing a control for analysts' forecasts errors. The coefficient on TAX^{dec} becomes small and insignificantly different from zero after controlling for analysts' forecast errors, suggesting that inefficiencies in analyst's expectations with respect to information contained in BTD represent similar inefficiencies in the market's earnings expectations.[19]

I utilize the time series of differences between β_1 as estimated in (6) and (7) to test the statistical significance of the change in β_1 from before and after the inclusion of analysts' forecast errors in the model, similar to Shane and Brous (2001). This test indicates that the change is statistically significant (*t*-statistic of 5.41; untabled). These results are consistent with

[19] This is in contrast to the results for CFO^{dec}, which represents the accrual anomaly (Sloan 1996). Consistent with Elgers et al. (2003), inefficiencies in analysts' forecasts only represent a partial explanation for errors in investor expectations related to cash flows and accruals.

analysts' forecasting behavior leading to market inefficiencies, and at the very least they lend support to Lev and Nissim's conclusion that their results do represent systematic errors in investors' earnings expectations, as opposed to some unknown risk factor or research design flaw.

VI. ADDITIONAL ANALYSES

Estimates of Tax Income

As described above, I estimate tax income based on current income tax expense as reported in the financial statements and the U.S. statutory tax rate. Either one of these items could potentially introduce error into my measure of tax income. In this section I examine the sensitivity of my results to what I consider to be the two largest potential sources of error.

I first consider the issue of employee stock options. While most firms have not historically recorded financial statement expenses associated with stock options, tax deductions are granted under tax rules at the time options are exercised. Complicating matters for the estimation of tax income, under GAAP the tax benefit from option exercises is credited directly to stockholders' equity rather than the income tax expense account.[20] Therefore, to the extent that stock option deductions are present for a certain firm, using that firm's reported income tax expense to approximate their tax liability will result in errors. To address this issue I re-estimate model (5) after eliminating firms in industries with high propensities to use stock options (SIC codes 30-39 and 70-89; Huson et al. 2001). More specifically, I first eliminate observations from the indicated industries, then re-rank the remaining firms based on the TAX ratio and re-estimate (5). The results from this restricted sample (untabled) are very similar to those reported in Table

[20] Hanlon and Shevlin (2002) provide a detailed discussion on the financial reporting issues associated with employee stock options.

2, suggesting that estimation errors stemming from stock option deductions are unlikely to be driving the primary results.

I next turn to the issue of tax rates. U.S. multinational corporations are likely to face differing tax rates across the various jurisdictions in which they operate. Indeed, differing tax rates may be significant factors in where firms choose to invest, in their efforts to maximize the after-tax return on their investments (Krull 2004). In my primary research design I gross up current income tax expense, both domestic and foreign, at the U.S. statutory rate because the mix of tax rates that individual firms face is not directly observable from their financial reports. To the extent firms have significant foreign operations for which they face tax rates different from those in the U.S., measurement error will be induced in my estimate of tax income. To mitigate concerns about this measurement error contributing in any substantial way to my results, I perform the following additional analysis. First, I calculate the ratio of the absolute value of pre-tax foreign income to the sum of the absolute values of pre-tax foreign and domestic income. I then eliminate any observations for which this ratio is greater than 20%, re-rank the remaining observations in terms of the TAX ratio, and again re-estimate (5).[21] The results from this subsample (untabled) are also quite similar to those reported for the full sample in Table 2, and thus I conclude that tax rate considerations are also unlikely to have any significant impact on the primary results.

Alternate measures of forecast errors and book-tax differences

In this section I examine whether alternate definitions of key variables materially affect the primary results. First, I consider alternative deflators for forecast errors. Though deflating by price is common in the literature, Cohen and Lys (2003) argue that stock price is likely to be

[21] Results are qualitatively similar if I eliminate all firm-years which have non-zero amounts of foreign-source income.

correlated with other factors, suggesting the usefulness of testing other options. Accordingly, I re-evaluate my results using undeflated forecast errors, forecast errors deflated by the absolute value of realized t+1 earnings, and forecast errors deflated by the absolute value of the corresponding consensus forecast. Results for each of these specifications (untabled) are qualitatively similar to those reported in Table 2. Specifically, estimated coefficients on the rTAX variable are significantly positive for each of the three alternative definitions.

I also re-examine my measurement choice for BTD. In the primary analyses I measure total BTD using the ratio of net tax income to net book income, in order to facilitate comparability with results from prior research. However, use of a ratio may potentially lead to some undesirable consequences (e.g., small denominator problems). For this reason, I test the sensitivity of the results to an alternative definition of BTD. Specifically, I substitute $rTAX^{DIFF}$ for rTAX, where TAX^{DIFF} is defined as estimated net tax income minus net book income, scaled by average total assets, and I re-estimate model (5). The results, presented in the first column of Table 4, are consistent with those reported above based on rTAX. The estimated coefficient on $rTAX^{DIFF}$ is somewhat smaller than the corresponding value on rTAX from Table 2 (i.e., Month 6 in Table 2), but remains positive and statistically significant. This result suggests that the choice of using the ratio of tax income to book income as my primary measure of BTD is not the driving force behind the main results.

Analyst following and serial correlation in forecast errors

One potential explanation for my results with respect to the inefficiency of analysts' forecasts is that analysts prefer to cover firms that they believe have promising outlooks (McNichols and O'Brien 1997). Since firms with low TAX ratios tend to have lower future earnings, it is possible that some analysts anticipate this outcome and decide to discontinue their coverage, leaving only the more optimistic analysts to remain publishing forecasts and thus inducing an optimistic bias in the set of observable expectations. To examine whether my results are sensitive to this possibility, I include an additional variable aimed at capturing the effects of changes in analyst following. Specifically, ΔFOLLOW is measured as the number of unique analysts making earnings forecasts for firm i during year t+1 minus the corresponding number from year t, scaled by the number from year t.

Abarbanell and Bernard (1992) demonstrate a positive serial correlation in analysts' forecast errors. Accordingly, I also include an additional variable to control for this effect, $FError^{PY}$, that is defined as the year t forecast error for firm i, based on the consensus forecast from mid-year (month 6) of year t. In addition to controlling for the effect reported by Abarbanell and Bernard (1992), using the previous years' forecast error can also serve as an instrument for other unidentified factors potentially missing from the original analysis (Teoh and Wong 2002).

The results of re-estimating (5) with the additional variables are presented in the second and third columns of Table 4 (the second column uses rTAX as the BTD measure and the third column uses $rTAX^{DIFF}$). As expected, the coefficients on ΔFOLLOW are positive and significant, consistent with the notion that less optimistic analysts may opt to discontinue coverage rather than issue more pessimistic forecasts. Consistent with Abarbanell and Bernard (1992) and Teoh and Wong (2002), the coefficients on $FError^{PY}$ are also positive and highly significant. More importantly for the study at hand, the coefficients on rTAX and $rTAX^{DIFF}$ remain significantly positive after the inclusion of the additional variables, suggesting that the main results are not driven by analyst following considerations or serially correlated forecast errors.

Changes in GAAP for Income Taxes

The current GAAP standard governing the accounting for income taxes, SFAS No. 109, became effective for fiscal years beginning after December 15, 1992. The previous standard, APB No. 11, was established in 1967.[22] Thus my sample includes observations from time periods corresponding to each of the regimes. Since the advent of SFAS No. 109 had the potential of changing the information environment related to income taxes disclosures, in this section I examine the relation between BTD and forecast errors for both of the time periods separately.

The results from estimating model (5) separately for the pre- and post-SFAS 109 time periods are presented in the first and second columns of Table 5, respectively. In comparing the two columns of Table 5 to each other and to the results from the overall sample in Table 2, two noteworthy conclusions are reached. First, the general pattern of greater optimistic bias for firms with relatively low tax income exists in both periods. Second, the magnitude of this bias is greater in the pre-SFAS 109 period than in the post-109 period. This pattern, combined with the earlier result that analysts' forecast errors appear to proxy for similar errors on behalf of investors, is consistent with Lev and Nissim (2004), who report larger BTD-related abnormal returns in the pre-SFAS era.

Temporary differences

While the tests discussed above are aimed at the efficiency of analysts' earnings forecasts with respect to total BTD, this section examines temporary differences. Since much of the previous literature examining BTD and earnings attributes focuses on temporary differences, I

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[22] More precisely, SFAS No. 109 replaces both APB No. 11 and SFAS No. 96 (1987). SFAS No. 96 was originally slated to supercede APB No. 11, but adoption of SFAS No. 96 was never formally required and very few firms chose to voluntarily adopt it. Thus, I focus on the change between APB No. 11 and SFAS No. 109. A more detailed discussion of the major provisions that differed between SFAS No. 109 and APB No. 11 can be found in Ayers (1998).

separately consider the effects of temporary differences on analysts' forecasts of future earnings. To estimate temporary differences, I follow previous research (e.g., Hanlon 2005) and construct my measure by grossing up deferred tax expense at the U.S. statutory tax rate.[23] I take the negative of this amount and deflate it by average total assets to form DEF. I then form rDEF by ranking firm-years into quintiles based on this measure, where the ranking is performed by fiscal year and is scaled to range from zero to one.[24]

Table 6 presents the results of estimating a model similar to (5), but augmented with rDEF, representing temporary differences. The estimated coefficient on rTAX is slightly larger after including rDEF in the model, while the coefficient on rDEF is negative and significant. Since temporary differences are a component of total BTD, I interpret these results as evidence that other types of BTD (i.e., tax accruals and permanent differences) tend to have a stronger association with analysts' subsequent forecast errors than temporary differences. To the extent that analysts and investors share similar expectations, these findings are consistent with Hanlon (2005), who reports that market participants appear to utilize temporary BTD in evaluating the persistence of earnings.

VII. CONCLUSION

This paper investigates the effect of book-tax differences on financial analysts' and investors' expectations of future earnings. This work is motivated primarily by results from prior research that indicate that BTD contain information useful for predicting future earnings realizations, but that BTD also predict future stock returns, leading to the conjecture that market participants fail to efficiently impound this information into their expectations (Lev and Nissim

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[23] More precisely, deferred taxes are measured as the sum of deferred federal (Compustat #269) and foreign (#270) income tax expense, or, when either of these amounts is not available, as total deferred tax expense (#50).

[24] Since I use the negative of deferred tax expense (i.e., deferred tax expense amounts are negative, deferred tax benefits are positive), the rDEF measure is consistent with rTAX in that lower rankings represent firm-years with BTD that cause book income to be higher than tax income, all else equal.

2004). This conclusion, however, faces the challenge of whether the predictable future returns are evidence of mispricing, as alleged, or are simply the result of omitted risk factors or other unknown research design flaws. This study attempts to overcome these issues by utilizing the published earnings expectations of financial analysts, and linking them to the expectations of other market participants, as implied by prices.

My first primary finding is that analysts' earnings forecasts tend to be relatively more optimistic for firms whose tax income in the prior year was low compared to the corresponding amount of financial reporting income. That is, analysts' errors in forecasting future earnings are a function of current period BTD. I conclude from this evidence that analysts' forecasts fail to efficiently impound the information in BTD that is related to future earnings realizations. Further, given the outcome from prior research that firms with low tax income (relative to book income) have, on average, lower future earnings, my results are consistent with analysts tending to underweight this information in their forecasts.

The second phase of this study links the inefficiencies in analysts' forecasts more directly with the pricing results from prior research. I find that systematic BTD-related errors in analysts' expectations largely explain the predictable future returns associated with current period BTD. These results suggest that analysts' systematic errors reflect similar errors on behalf of investors, and I interpret these findings as lending support to the notion that investors also fail to use BTD-related information efficiently in forming their expectations of future earnings. These findings should be of interest to investors and financial analysts in general, and to those regulators involved in the debate over disclosure requirements related to income taxes.

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Table 1
Descriptive Statistics

Panel A: Sample Characteristics

Variable	Mean	Standard Deviation	Q1	Median	Q3
BI_t					
Low rTAX	***0.0655***	0.0597	0.0247	**0.0488**	0.0851
Middle rTAX	0.0929	0.0557	0.0535	0.0813	0.1198
High rTAX	***0.0617***	0.0534	0.0222	**0.0482**	0.0859
ΔBI_{t+1}					
Low rTAX	***-0.0256***	0.1068	-0.0525	***-0.0009***	0.0250
Middle rTAX	-0.0050	0.0720	-0.0221	0.0066	0.0250
High rTAX	***0.0030***	0.0748	-0.0152	***0.0114***	0.0350
$AVETA_t$					
Low rTAX	***1,059.8***	2,912.4	65.5	***205.6***	713.0
Middle rTAX	1,632.2	4,041.4	98.8	293.3	1,096.7
High rTAX	*1,730.7*	4,339.6	107.3	*304.4*	1,086.6
$MKTCAP_t$					
Low rTAX	***975.4***	3,093.0	69.7	***192.0***	650.0
Middle rTAX	2,380.1	6,387.5	129.9	416.5	1477.0
High rTAX	***1,953.4***	5,376.2	112.1	***359.8***	1,209.6
BM_t					
Low rTAX	***0.5987***	0.3939	0.3175	***0.5252***	0.7972
Middle rTAX	0.4873	0.3057	0.2725	0.4254	0.6299
High rTAX	***0.5631***	0.3619	0.3065	***0.4933***	0.7521
R_{t+1}					
Low rTAX	***0.1172***	0.5526	-0.2456	***0.0270***	0.3443
Middle rTAX	0.1353	0.4730	-0.1606	0.0769	0.3477
High rTAX	***0.1507***	0.5063	-0.1641	*0.0866*	0.3601
$FOLLOW_{t+1}$					
Low rTAX	***8.4593***	8.2224	3.0000	***6.0000***	11.0000
Middle rTAX	10.9667	9.5288	4.0000	8.0000	15.0000
High rTAX	***10.1753***	9.3238	3.0000	***7.0000***	14.0000
TAX_t					
Low rTAX	***0.0700***	0.3534	0.0000	***0.0664***	0.2783
Middle rTAX	0.8153	0.2319	0.6690	0.8500	0.9902
High rTAX	***1.9099***	1.3891	1.2073	***1.3868***	1.8396
CFO_t					
Low rTAX	**2.9205**	5.5068	0.7990	***1.7220***	3.2603
Middle rTAX	1.4813	2.0842	0.8232	1.3436	1.9587
High rTAX	**3.0746**	6.4151	0.7325	***1.6012***	2.9878

Table 1 (continued)

Panel B: Actual and Forecasted Changes in EPS

	Dependent Variable:		
	ΔEPS_{t+1}	**$F\Delta EPS_{t+1}$**	**$FError_{t+1}$**
	Est. Coefficient (*t*-statistic)	**Est. Coefficient (*t*-statistic)**	**Est. Coefficient (*t*-statistic)**
Intercept	-0.0058	0.0051	-0.0109
	(-7.11)	(7.08)	(-32.99)
$rTAX_t$	0.0058	0.0003	0.0055
	(4.41)	(0.29)	(10.34)

Notes to Table 1:
Sub-samples are partitioned based on the value of TAX, which is the ratio of estimated net tax income to net book income. Low, Middle, and High rTAX designations correspond to those observations in the lowest quintile, middle three quintiles, and highest quintile, respectively, based on TAX, where observations are ranked by fiscal year. BI is book income, measured as earnings before extraordinary items, scaled by average total assets. ΔBI is the change in book income from year t to year t+1, scaled by average total assets. AVETA is average total assets (in millions). MKTCAP is market capitalization at the end of year t (in millions). BM is the ratio of book value of common equity to market capitalization at the end of year t. R is the 12-month buy-and-hold return starting the fifth month of year t+1. FOLLOW is the number of unique analysts making earnings forecasts for firm i in year t+1. CFO is the ratio of cash flows to earnings before extraordinary items. In Panel A bold font denotes an amount is significantly different from the corresponding amount for the Middle rTAX group ($p < 0.05$), and italic font denotes significant differences between corresponding amounts for the Low rTAX and High rTAX groups ($p < 0.05$). In Panel B rTAX is the quintile ranking based on TAX, scaled to range between zero and one. ΔEPS_{t+1} is the change in earnings per share from year t to year t+1. $F\Delta EPS_{t+1}$ is the consensus forecasted change in earnings per share from year t to year t+1, based on forecasts made during the 6^{th} month subsequent to the release of year t earnings. $FError_{t+1}$ is actual t+1 earnings minus the consensus forecasts of those earnings. All earnings per share amounts in Panel B are as defined by I/B/E/S, and the dependent variable in each model is scaled by stock price from the first month subsequent to the release of year t earnings.

Table 2
Subsequent Forecast Error Regressions

$$FError_{i,t+1} = \alpha + \beta_1 rTAX_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 BM_{i,t} + \beta_4 rCFO_{i,t} + \sum_t \beta_{5,t} YEAR_t + \varepsilon_{i,t+1}$$

Month	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Intercept	-0.0400	-0.0416	-0.0365	-0.0327	-0.0299	-0.0255	-0.0223	-0.0175	-0.0135	-0.0104	-0.0103	-0.0088
	(-17.17)	(-16.98)	(-16.62)	(-14.94)	(-14.53)	(-14.10)	(-12.42)	(-10.39)	(-10.03)	(-8.41)	(-7.26)	(-4.89)
rTAX	0.0076	0.0085	0.0067	0.0071	0.0058	0.0048	0.0049	0.0028	0.0028	0.0026	0.0021	0.0018
	(9.65)	(9.98)	(9.21)	(9.51)	(7.75)	(7.99)	(8.09)	(4.77)	(6.29)	(5.82)	(4.52)	(3.79)
SIZE	0.0032	0.0032	0.0029	0.0025	0.0025	0.0019	0.0018	0.0015	0.0010	0.0009	0.0008	0.0006
	(19.66)	(17.47)	(18.77)	(16.78)	(16.03)	(15.04)	(14.10)	(12.50)	(10.61)	(9.27)	(7.91)	(5.60)
BM	-0.0229	-0.0205	-0.0185	-0.0181	-0.0173	-0.0129	-0.0109	-0.0094	-0.0054	-0.0049	-0.0037	-0.0035
	(-18.35)	(-15.07)	(-16.04)	(-14.16)	(-14.21)	(-13.04)	(-11.19)	(-9.60)	(-7.52)	(-6.40)	(-4.61)	(-4.17)
rCFO	0.0094	0.0085	0.0084	0.0071	0.0065	0.0052	0.0041	0.0029	0.0022	0.0015	0.0010	0.0010
	(10.99)	(9.16)	(10.51)	(8.62)	(7.89)	(7.94)	(6.32)	(4.47)	(4.50)	(2.97)	(1.88)	(1.97)
n	22,641	17,800	21,530	18,780	17,423	21,637	19,250	17,691	21,945	19,263	16,364	13,769
Adj. R-sq.	0.108	0.106	0.098	0.096	0.093	0.075	0.068	0.059	0.040	0.033	0.029	0.029

Notes to Table 2:
White *t*-statistics are provided in parentheses. FError is actual t+1 earnings minus the consensus forecasts of those earnings, scaled by month 1 stock price. rTAX is the quintile ranking based on the ratio of estimated net tax income to net book income from year t, scaled to range from [0,1]. SIZE is the natural log of market capitalization at the end of year t. BM is the ratio of book value of common equity to market capitalization at the end of year t. rCFO is the quintile ranking based on the ratio of cash flows to net book income from year t, scaled to range from [0,1]. The YEAR variables are dummy variables that indicate the various base years within the sample. The coefficients on the YEAR variables are omitted from the table.

Table 3
Subsequent Stock Return Regressions

$$R_{i,t+1} = \alpha + \beta_1 TAX^{dec}_{i,t} + \beta_2 SIZE^{dec}_{i,t} + \beta_3 BM^{dec}_{i,t} + \beta_4 EP^{dec}_{i,t} + \beta_5 BETA^{dec}_{i,t} + \beta_6 R^{dec}_{i,t} + \beta_7 CFO^{dec}_{i,t} + \varepsilon_{i,t+1} \quad (6)$$

$$R_{i,t+1} = \alpha + \beta_1 TAX^{dec}_{i,t} + \beta_2 SIZE^{dec}_{i,t} + \beta_3 BM^{dec}_{i,t} + \beta_4 EP^{dec}_{i,t} + \beta_5 BETA^{dec}_{i,t} + \beta_6 R^{dec}_{i,t} + \beta_7 CFO^{dec}_{i,t} + \beta_8 FError^{May1}_{i,t+1} + \varepsilon_{i,t+1} \quad (7)$$

	Model (6)		***Model (7)***	
	Mean Estimated Coefficient	***t*-statistic**	**Mean Estimated Coefficient**	***t*-statistic**
Intercept	0.035	(0.66)	0.171	(3.17)
TAX^{dec}	0.035	(4.14)	0.007	(0.75)
$SIZE^{dec}$	-0.013	(-0.31)	-0.083	(-1.83)
BM^{dec}	0.015	(0.56)	0.059	(2.23)
EP^{dec}	0.065	(4.19)	0.061	(3.54)
$BETA^{dec}$	-0.043	(-1.54)	-0.018	(-0.70)
R^{dec}	0.074	(3.09)	-0.039	(-1.55)
CFO^{dec}	0.067	(3.89)	0.047	(2.68)
$FError^{May1}$			4.269	(13.38)
Mean n	607		607	
Mean R-sq.	0.062		0.179	

Notes to Table 3:
Coefficient estimates and *t*-statistics are based on the time series distributions of coefficients from the annual cross-sectional regressions. All decile rankings are scaled to range from [0,1]. $R_{i,t+1}$ is the annual buy-hold return measured from May 1 of year t+1. TAX^{dec} is the decile ranking based on the ratio of estimated after-tax income to book income from year t. $SIZE^{dec}$ is the decile ranking based on the natural log of market capitalization at the end of year t. BM^{dec} is the decile ranking based on the ratio of book value of common equity to market capitalization at the end of year t. EP^{dec} is the decile ranking based on the ratio of earnings before extraordinary items to market value of common equity at fiscal year-end. $BETA^{dec}$ is the decile ranking based on a measure of systematic risk estimated using monthly stock returns and the CRSP value-weighted index returns (including distributions) during the five years that end in April of the subsequent year. R^{dec} is the decile ranking based on the annual buy-hold return measured from May 1 of year t. CFO^{dec} is the decile ranking based on the ratio of cash flows to net book income from year t. $FError^{May1}$ is year t+1 actual earnings minus the last forecast of those earnings issued prior to May 1, scaled by stock price.

Table 4
Alternate BTD Measure and Additional Control Variables

	Dependent variable: $FError_{t+1}$		
	Est. Coefficient (*t*-statistic)	Est. Coefficient (*t*-statistic)	Est. Coefficient (*t*-statistic)
Intercept	-0.0242 (-13.61)	-0.0239 (-11.53)	-0.0226 (-11.13)
rTAX		0.0046 (7.38)	
$rTAX^{DIFF}$	0.0025 (5.00)		0.0028 (5.37)
SIZE	0.0019 (15.38)	0.0015 (11.28)	0.0016 (11.49)
BM	-0.0133 (13.33)	-0.0097 (-8.74)	-0.0101 (-9.10)
rCFO	0.0048 (7.35)	0.0047 (6.81)	0.0043 (6.28)
ΔFOLLOW		0.0028 (5.86)	0.0027 (5.71)
$FError^{PY}$		0.2229 (11.54)	0.2247 (11.61)
n	21,637	17,330	17,330
Adj. R-sq.	0.072	0.101	0.099

Notes to Table 4:
White *t*-statistics are provided in parentheses. $FError_{t+1}$ is actual t+1 earnings minus the consensus forecast of those earnings from month 6, scaled by month 1 stock price. rTAX is the quintile ranking based on the ratio of estimated net tax income to net book income from year t, scaled to range from [0,1]. $rTAX^{DIFF}$ is the quintile ranking based on the difference between estimated net tax income and net book income from year t, deflated by average total assets, scaled to range from [0,1]. SIZE is the natural log of market capitalization at the end of year t. BM is the ratio of book value of common equity to market capitalization at the end of year t. rCFO is the quintile ranking based on the ratio of cash flows to net book income from year t, scaled to range from [0,1]. ΔFOLLOW is the change in the number of unique analysts making earnings forecasts for firm i from year t to year t+1, divided by the number from year t. $FError^{PY}$ is the actual year t earnings minus the consensus forecast of those earnings from month 6 of year t. YEAR dummy variables are also included in the regressions, but the corresponding coefficient estimates are omitted from the table.

Table 5
Pre- and Post-SFAS 109

Dependent variable: $FError_{t+1}$

	Pre-SFAS 109 Est. Coefficient (*t*-statistic)	Post-SFAS 109 Est. Coefficient (*t*-statistic)
Intercept	-0.0282 (-11.83)	-0.0122 (-8.41)
rTAX	0.0079 (6.86)	0.0030 (4.53)
SIZE	0.0025 (11.27)	0.0016 (10.61)
BM	-0.0177 (-10.13)	-0.0107 (-8.93)
rCFO	0.0067 (5.21)	0.0044 (6.07)
n	7,913	13,724
Adj. R-sq.	0.077	0.061

Notes to Table 5:
White *t*-statistics are provided in parentheses. $FError_{t+1}$ is actual t+1 earnings minus the consensus forecast of those earnings from month 6, scaled by month 1 stock price. rTAX is the quintile ranking based on the ratio of estimated net tax income to net book income from year t, scaled to range from [0,1]. SIZE is the natural log of market capitalization at the end of year t. BM is the ratio of book value of common equity to market capitalization at the end of year t. rCFO is the quintile ranking based on the ratio of cash flows to net book income from year t, scaled to range from [0,1]. YEAR dummy variables are also included in the regressions, but the corresponding coefficient estimates are omitted from the table.

Table 6
Total and Temporary BTD

	Dependent variable: $FError_{t+1}$	
	Est. Coefficient	***t*-statistic**
Intercept	-0.0251	(-13.97)
rTAX	0.0055	(7.45)
rDEF	-0.0013	(-2.01)
SIZE	0.0019	(14.94)
BM	-0.0130	(-13.05)
rCFO	0.0052	(7.84)
n	21,637	
Adj. R-sq.	0.075	

Notes to Table 6:
White *t*-statistics are provided in parentheses. $FError_{t+1}$ is actual t+1 earnings minus the consensus forecast of those earnings from month 6, scaled by month 1 stock price. rTAX is the quintile ranking based on the ratio of estimated net tax income to net book income from year t, scaled to range from [0,1]. rDEF is the quintile ranking based on the negative of deferred tax expense from year t, grossed up by the statutory rate and deflated by average total assets, scaled to range from [0,1]. SIZE is the natural log of market capitalization at the end of year t. BM is the ratio of book value of common equity to market capitalization at the end of year t. rCFO is the quintile ranking based on the ratio of cash flows to net book income from year t, scaled to range from [0,1]. YEAR dummy variables are also included in the regressions, but the corresponding coefficient estimates are omitted from the table.