Evidence of differing market responses to beating analysts' targets through tax expense decreases

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Abstract Returns are positive when firms meet or beat analysts' consensus forecasts, but negative when firms miss. Prior research finds little substantial discount for managing earnings to beat the forecasts via accruals generally. We consider whether the market reward for beating the forecast is smaller when firms use tax expense decreases, which are visible and transparent at the earnings announcement date, unlike accruals. When firms beat analysts' forecasts by decreasing their tax expense relative to the third-quarter rate, the market discounts the reward by an economically significant amount: approximately 86%. We document lower persistence of current-year tax changes for those firms that decrease tax expense to beat the target. The observed discount for beating the forecast only because of a third to fourth quarter tax decrease may reflect market perceptions of the lack of persistence of the decrease.

Keywords Earnings management · Effective tax rate · Earnings surprise

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1 Introduction

Prior research documents a market reward for beating analysts' forecasts and a significant penalty for missing the forecast (Skinner and Sloan 2002).[1] Bartov et al. (2002) find that the market reward for beating the forecast is smaller by a statistically significant, but "economically minor" amount when abnormal accruals were needed for the firm to meet or beat expectations. They speculate that one reason for the minor discount could be the power of models to identify abnormal accruals, their proxy for earnings management. Alternatively, limited information about balance sheet accounts in the earnings announcement probably limits investors' ability to determine the extent of accruals management prior to the 10-K filing (Balsam et al. 2002; Baber et al. 2006). We re-examine the market reaction to achieving the earnings per share forecast benchmark through possible earnings management by focusing on a context that is more visible to market participants at the earnings announcement date.

Dhaliwal et al. (2004) argue that tax expense is a specific account with useful features to examine earnings management to achieve a target. Tax expense is substantial for a broad sample of firms, increasing the generalizability of our results. Second, the large complex multinational corporations that represent most of the stock capitalization in the U.S. have discretion in estimating this account, and prior research provides evidence suggesting that firms use that discretion. Dhaliwal et al. (2004) find that, relative to firms that are beating the forecast, firms that would miss analysts' consensus forecast of annual earnings per share (EPS) are more likely to decrease tax expense to meet or beat the forecast.[2]

Third, accounting standards provide an expectation of tax expense, which we use to identify unexpected changes in tax expense. The expectation for tax expense derives from APB Opinion No. 28's requirement that firms estimate and report the "effective tax rate expected to be applicable for the full fiscal year." We first compute an expected annual tax expense, defined as annual pre-tax income multiplied by the cumulative third-quarter effective tax rate (ETR). We then subtract this amount from actual annual tax expense to arrive at the unexpected change in tax expense, which captures unintentional errors in estimating the annual ETR and tax planning as well as any fourth-quarter tax expense management intended to influence EPS.

Fourth, market participants can estimate the unexpected change in fourth-quarter tax expense using only the income statement information included in the third and fourth quarter earnings releases. Fewer than 41% of firms include the balance sheet and cash flow statement information needed to estimate abnormal accruals in their quarterly earnings announcements (Baber et al. 2006). In sum, tax expense provides a generalizable setting, permits substantial managerial discretion, and allows market participants to observe unexpected changes at the earnings announcement date.

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[1] Throughout the paper, including our sample selection and partitioning, we use "beat" to refer to "meet or beat."

[2] See also Krull (2004), Frank and Rego (2006), Schrand and Wong (2003), Blouin and Tuna (2007) for other papers that discuss opportunistic use of the tax expense.

Our sample consists of 6,080 firm-year observations with positive annual pretax income for firms that met or beat the *I/B/E/S* consensus forecast by no more than five cents from 1995 through 2004. We use the consensus because it is the most common benchmark the business press uses to evaluate whether reported earnings meet expectations. We limit our sample to firms where reported earnings are within five cents of the consensus because a decrease in tax expense is more likely to be sufficient to meet or beat earnings when firms are already close to the target.[3] We regress the cumulative abnormal return surrounding the annual earnings announcement on an indicator variable for firms that beat the forecast but would have missed it without a decrease in tax expense. We also control for scaled forecast error, firm-specific persistence of prior tax changes, abnormal accruals, book-to-market, firm size, and returns momentum.

We predict that the market reward for beating the forecast will be smaller if the firm only beat the forecast because it decreased tax expense. Market participants can observe a decrease in the ETR at the time of the annual earnings announcement, but tax footnote information is not available until the 10-K is filed. Even then, the complexity of tax accounting does not permit market participants to easily disentangle whether the current period decrease will persist. Market participants can, however, estimate how persistent a given firm's quarterly tax changes had previously been. In addition, they can see whether the firm would have missed the target absent a tax expense decrease and thus might interpret decreases necessary to beat the target as transitory.

In univariate tests, we observe a substantial discount to the market reward for beating the forecast for firms that would have missed the forecast without the tax expense decrease. This discount does not occur for decreases in tax expense generally. We confirm the univariate results in multiple regression tests. We adapt Schmidt (2006) to estimate and control for the firm-specific prior persistence of quarterly tax changes.[4] Thus, we test whether the market return is associated with the firm-specific prior persistence of tax changes, and whether this association is affected by the presence of a tax decrease that permits the firm to beat the target.

Consistent with our univariate tests, we find that decreasing tax expense to beat the forecast is associated with an 86% market discount of the positive market reaction for beating the forecast without any tax decrease. In untabulated tests, we also find that using tax expense decreases to beat the forecast results in an overall positive market reaction that significantly exceeds the negative market reaction to missing the forecast.

Our results are consistent with market participants using corporations' visible decrease of tax expense to beat the forecast as a heuristic for less persistent earnings. Looking forward, we find that, on average, tax expense decreases that are necessary to beat the forecast do not persist in the following year. We speculate that market

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[3] Our conclusions are unchanged if we include firms that beat the forecast by more than five cents.

[4] We estimate firm-specific prior persistence of tax changes for each year using the tax changes from the prior eight years. We require a minimum of five observations for each firm-year estimate. These constraints significantly reduce the sample used in our tests. The conclusions regarding the effect of tax decreases that permit firms to beat the forecast are unchanged when we use the full sample and exclude persistence measures.

participants interpret beating the forecast only because of a third to fourth quarter tax decrease as having negative implications for earnings quality compared to beating the forecast regardless of the change in tax expense. Because total effective tax rates reflect permanent rather than temporary differences between financial and tax reporting, our market discount results complement and extend Hanlon's (2005) findings that market participants recognize the transitory aspect of book-tax temporary differences.

Our results extend the tax-based earnings management literature by combining "last-chance" earnings management (Dhaliwal et al. 2004) with persistence tests (Schmidt 2006). Dhaliwal et al. (2004) provide evidence that fourth-quarter decreases in tax expense are used to meet annual earnings targets. We find that investors discount the reward for beating the forecast with decreases in tax expense. Schmidt (2006) provides evidence that earnings due to tax decreases are persistent, but less so than other earnings. We find that tax expense decreases necessary to beat earnings targets are not persistent. This could explain why Schmidt (2006) finds a market discount for the tax change component of earnings. More broadly, we contribute to the recent stream of evidence about the market reaction to achieving targets when the context of the unexpected income as of the earnings release suggests possible earnings management (Defond and Park 2001; Bartov et al. 2002; Baber et al. 2006).

2 Literature and hypothesis development

Prior research has not resolved what factors influence the extent of market reactions to beating benchmarks. Defond and Park (2001) provide evidence that the market reward for beating analysts' quarterly EPS forecasts is lower for firms in which working capital accruals increase income than for firms in which working capital accruals reduce income, although the response is incomplete at the earnings announcement. However, they do not consider whether the accrual increase was necessary to beat the forecast. Bartov et al. (2002) find that a significant but "economically minor" (p. 198) discount occurs when an increase in abnormal accruals enables the firm to beat expectations. Baber et al. (2006) find evidence consistent with a market discount for beating targets using abnormal accruals as a proxy for earnings management, when balance sheet and cash flow information accompanies the earnings announcement. Our research design uses an intercept shift framework that is more similar to Baber et al. than to the earnings response coefficient framework of Defond and Park and Bartov et al.

Baber et al. (2006) find that balance sheet and cash flow data are included in only 41% of quarterly earnings announcements. This suggests that shareholders may face difficulties in identifying abnormal accruals at the time of the earnings announcement. However, income statement information is generally included in earnings announcements, so market participants have the information available to determine whether the ETR decreased from the third to the fourth quarter. Thus, we suggest that tax expense changes represent a generalizable setting to provide additional evidence about market reactions to firms' use of flexible accounts to beat targets.

Investigating total tax expense, Dhaliwal et al. (2004) find that tax expense permits opportunistic reporting.[5] Tax expense requires complex computations and is difficult for analysts to understand and predict (Plumlee 2003). In addition, managers must exercise judgment to interpret the law and evaluate the facts of transactions. The combination of complexity and judgment creates information asymmetry between financial statement users and managers, as well as between auditors and managers, as evidenced by the frequency of material control weaknesses involving tax. Tax weaknesses were included in 30% of filings reporting material weaknesses (Federal Taxes Weekly Alert, 12/22/2005; Hanlon and Krishnan 2005).[6]

We describe three specific ways that managers' judgments related to tax expense present opportunities for discretionary reporting. First, SFAS 109 requires that managers record a valuation allowance against deferred tax assets if, given the weight of available evidence, it is likely that some (or all) of the deferred tax asset will not be realized. Frank and Rego (2006) provide evidence that firms use the valuation allowance to beat the consensus analyst forecast, although other evidence of earnings management is mixed (Visvanathan 1998; Miller and Skinner 1998; Schrand and Wong 2003).

Second, APB Opinion No. 23 permits managers to avoid recording U.S. deferred tax expense on foreign earnings if they designate those earnings as permanently reinvested. Krull (2004) finds evidence that changes in the amount of permanently reinvested earnings are related to firms' incentives to meet analysts' forecasts.[7]

Finally, firms use discretion in booking and releasing the reserve for tax loss contingencies, or "tax cushion" (Gleason and Mills 2002, 2006). Under SFAS No. 5, corporations must record probable and estimable contingent liabilities. Because the time-lags for settlement of IRS audits can be ten years for large firms (Gleason and Mills 2002), and because the loss probabilities are difficult to judge, estimating tax cushion provides an opportunity for substantial discretion as the reserve is built up and released. Blouin and Tuna (2006) find evidence that cushion is used to smooth earnings. Texas Instruments released cushion when it beat the consensus estimate for 2004 by two cents. Relative to the third quarter, Texas Instruments' annual ETR declined by three percent. Analysts at Deutsche Bank and Merrill Lynch noted that "without a tax benefit and other one-time adjustments, TI

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[5] Indirectly related, researchers use book-tax differences as a proxy for discretionary accruals to study pretax earnings management. Phillips et al. (2003) find that deferred tax expense is incrementally useful beyond accruals in detecting earnings management. Lev and Nissim (2004) and Hanlon (2005) find that firms with large book-tax differences have lower growth or less persistent earnings.

[6] In 2002, Karen Pincus (Auditing professor, University of Arkansas) related the following anecdote from her participation in training sessions for auditors serving as the "second partner reviewer." When asked what area of the financial statement these partners had the least comfort, they responded "the tax account" because there was no easy smell test for whether it was correct. Her observation is consistent with recent evidence that informal income tax expense procedures generated material control weaknesses post-Sarbanes-Oxley.

[7] In untabulated tests, we observe that nearly all of our firms report nonmissing foreign tax expense (Compustat #64) or foreign pretax income (Compustat #273), suggesting that foreign tax rates affect their ETRs. Our results are unaffected by repatriations of foreign earnings following the American Jobs Creation Act of 2004, because only a handful of firms repatriated in 2004 (our last sample year). Nearly all firms waited until 200. Fewer than ten repatriations occurred in 2004 in Albring et al.'s (2007) sample of approximately 300 repatriations.

would have missed the consensus earnings estimate for the fourth quarter" (Abramson 2005). Texas Instruments "benefited from a tax rate in the fourth quarter of 14 percent, lower than the previously expected [quarterly] rate of 21 percent due to resolution of several foreign tax items." The article implies that when the tax loss contingency settled favorably, TI opportunistically released enough cushion to just beat the earnings target. Recently, the Financial Accounting Standards Board (FASB) provided stricter guidance concerning the original recording of a tax benefit when the ultimate outcome is uncertain and requires additional disclosure that may increase the transparency of fourth quarter changes.[8]

This discussion describes how complexity, coupled with discretion, provides the opportunity for firms to manage earnings using tax expense. Consistent with this interpretation, Dhaliwal et al. (2004) find that firms that would otherwise miss the consensus forecast decrease tax expense to beat the target. We extend their results to investigate how the market reacts to firms decreasing tax expense to beat the forecast.

Defond and Park (2001) and Bartov et al. (2002) find that the stock market premium when firms beat EPS targets is lower when it appears those firms have lower quality earnings measured as abnormal accruals or an amount of abnormal accruals sufficient to beat the target.[9]

We examine the market reaction to beating analysts' consensus forecast when decreases in tax expense are necessary to beat the forecast. We predict that the market will discount the reward for beating the forecast. The decrease could be perceived as an indicator of lower earnings quality or lower persistence just because it permitted the firm to beat the forecast. We express this hypothesis in the null form as follows:

H1: The market reaction for firms that beat analysts' consensus forecasts by decreasing tax expense is not different from the reaction for firms that beat forecasts regardless of any change in tax expense.

Although not tested in prior research, the market discount of the reward for beating the forecast due to or in the presence of income-increasing accruals is

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[8] Starting in 2007, the FASB requires that corporations record the best estimate of the impact of a tax position only if that position is more likely than not of being sustained on [IRS] audit based solely on the technical merits of the position, thus reducing the flexibility that management judgment previously permitted. (Financial Interpretation No. 48, *Accounting for Uncertainty in Income Taxes:an Interpretation of FASB Statement No. 109*. Uncertain tax benefits became more of an issue following the perception that certain corporate tax shelters were increasing in use during our sample period (U.S. Treasury 1999). McGill and Outslay (2004) note that the ideal tax shelter would be a transaction that reduces taxable income without decreasing book income, generating an effective tax rate benefit. Evidence of firms releasing cushion prior to and as a result of adopting FIN 48 provides additional evidence that many large firms maintained excess reserves (Blouin et al. 2007).

[9] Managers will use tax expense to beat targets only if their incentives are aligned with after-tax income. Phillips (2003) finds that firms whose CEOs' bonuses are based on after-tax earnings report lower effective tax rates than do firms that base bonuses on pretax earnings. In addition, compensation plans in our time period are increasingly stock-based, and thus implicitly after-tax. Core et al. (2003) document that the average annual salary and bonus is only 30% of total CEO pay and the change in value of CEO equity holdings is more than eight times total CEO pay. This is consistent with the notion that net earnings play an important role in CEO motivation. Thus, although managers may prefer to manage pretax earnings first, they are still generally motivated to use tax expense if it represents their last chance to manage earnings (Dhaliwal et al. 2004).

consistent with prior evidence that abnormal accruals are less persistent than normal accruals and cash flows (Xie 2001; Sloan 1996). Prior evidence on the cross-sectional persistence of quarterly tax changes for future earnings (Schmidt 2006) indicates that tax changes include both transitory and persistent elements. We explicitly investigate the extent to which differences in the firm-specific prior persistence of tax changes explain any market discount. Our second null hypothesis is:

H2: The market reaction to the prior persistence is not different for firms that decrease tax expense by an amount necessary to beat the forecast.

We also look forward to see whether the future persistence of tax decreases necessary to beat the forecast differs from the persistence of other tax expense changes. Our final null hypothesis is:

H3: Tax decreases necessary to beat the forecast are as persistent as other tax expense changes.

3 Variable definitions and estimation equations

We test these hypotheses by estimating regressions of announcement returns on the analyst-forecast error, the prior persistence of the firm's tax changes, categorical variables for whether a firm beats analysts' consensus annual EPS forecast because of an unexpected tax decrease, and other controls for announcement returns.

3.1 Defining market and analyst forecast variables

The announcement period stock return equals the cumulative return for the firm over the three-day period centered on the announcement day (trading day -1 to day $+1$) less the return over the same period for the portfolio of firms in the same CRSP size decile. We focus on the earnings announcement date rather than the 10-K filing date because earnings information at the time of announcement includes sufficient information to compute the ETR.[10]

We measure expected earnings as the last *I/B/E/S* consensus forecast (*Forecast*) before the earnings announcement (Burgstahler and Eames 2003). We based our tabulated results on the consensus forecast because business press articles focus on the consensus forecast in describing whether earnings met or beat expectations.[11] We measure forecast errors (*AFE*) as earnings reported by *I/B/E/S* less *Forecast*. We

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[10] Some details concerning tax characteristics, like deferred tax and ETR reconciliation components, are likewise only available in the tax footnote in the annual report.

[11] We confirm that our results are qualitatively similar using the last forecast issued by an individual *I/B/E/S* analyst at least four trading-days prior to the annual earnings announcement. Our results are also robust to requiring that the consensus include at least five analysts and to eliminating the top and bottom deciles for the standard deviation of analyst forecasts. We use actual pretax earnings (Compustat data item 170) to calculate earnings prior to tax changes because the earnings reported by *I/B/E/S* differ from net income (Abarbanell and Lehavy 2002). Our results are robust to omitting firms with special items, extraordinary items or discontinued operations amounts, so we conclude that write-offs, often concentrated in the fourth quarter (Hayn and Watts 2002), do not affect our conclusions.

use the non-split-adjusted file to avoid misclassification induced by *I/B/E/S* split adjustments (Baber and Kang 2002; Payne and Thomas 2003). We deflate *AFE* by price at the end of the fiscal year, which is roughly 45 days before the fourth-quarter earnings announcement.

3.2 Defining tax decreases to beat the target

We measure expected earnings and tax decreases consistent with Dhaliwal et al. (2004). We use the third-quarter estimate of the annual ETR (*ETRq3*), computed as the accumulated tax expense from the first three quarters divided by the accumulated pre-tax income for the same period as reported in Compustat, to compute expected tax expense. APB No. 28 requires firms to use their estimate of the annual ETR in computing quarterly tax expense and thus after-tax earnings.[12] The third-quarter estimate of the annual ETR provides an expectation that is less noisy than annual estimates at quarters one and two.[13] By the time third-quarter earnings are released, there are only about two months left in the fiscal year. Most corporations should be able to anticipate the ETR effects of complex structured transactions like mergers (Nelson et al. 2002), corporate inversions to tax havens (Cloyd et al. 2003; Seida and Wempe 2004), securitizations (Shakespeare 2005; Mills and Newberry 2005) and corporate tax shelters (Graham and Tucker 2005) that will be concluded in the fourth quarter. Schmidt (2006, footnote 13) cites interviews with tax partners that maintain that among reasons for quarterly changes in the ETR after the initial estimate, "new tax planning is least likely to occur."

We determine whether the tax expense decrease was necessary to beat the forecast as follows. First, we calculate annual EPS with the expected tax expense as *Earnings_ETRq3* = [Compustat annual pretax income * (1 − ETRq3)] ÷ weighted average number of common shares outstanding.[14]

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[12] The integral method prescribed by APB No. 28 applies to other income statement accounts including cost of goods sold and selling, general, and administrative expenses. We focus on tax expense because the complexity and discretion in this account permit "last chance" earnings management.

[13] Comprix et al. (2006) find that firms also decrease ETRs in the second and third quarters to meet quarterly earnings targets, although tax rate changes vary less in those quarters. Our results are robust to including only those firms that had no tax rate change between the second and third quarters, eliminating any concern that earnings management during the third quarter could explain our results. Bauman and Shaw (2005) find that analysts appear to incorporate the third-quarter estimate of the annual ETR in forecasting annual earnings. Thus, our fourth quarter result should not be induced by analysts ignoring a third-quarter change. It is possible that analysts receive additional guidance about tax rates during the fourth quarter. Tasker (1998) documents that 20% of analyst questions in conference calls are focused on earnings guidance and include questions such as "What tax rate should we be using for fiscal '98?" Such guidance would reduce the earnings surprise on announcement. This effect would work against detecting a difference in the market's response to beating the forecast by decreasing tax expense.

[14] *I/B/E/S* earnings forecasts are reported on a basic or diluted basis based on the predominant EPS used by analysts. We obtain the primary/diluted indicator from the I/B/E/S detail file and use the corresponding denominator to compute *Earnings_ETRq3*. *I/B/E/S* earnings forecasts also frequently differ from EPS numbers reported in Compustat (Abarbanell and Lehavy 2002). Analysts forecast earnings without discontinued operations, extraordinary charges and other non-operating items. Our results are robust to omitting firms with special items, extraordinary items or discontinued operations amounts as reported by Compustat.

Next we subtract the expected tax expense from the actual annual tax expense to arrive at the fourth quarter tax change component. The tax change component captures intentional changes in tax expense to influence EPS as well as firm errors in estimating the annual ETR at the third quarter.[15] An unexpected tax decrease is responsible for achieving the forecast if firms beat the last *I/B/E/S* consensus forecast before the earnings announcement (*Forecast*), but would not have done so without the tax change component.[16]

We then create two indicator variables for whether firms did or did not need a tax decrease to beat the forecast (*Beat w/ Tax* and *Beat w/o Tax*): If actual *EPS ≥ Forecast* and if *Earnings_ETRq3 ≥ Forecast* then *Beat w/o Tax = 1, zero otherwise;* If actual *EPS ≥ Forecast* and if *Earnings_ETRq3 < Forecast*, then *Beat w/ Tax = 1, zero otherwise.*

3.3 Measuring persistence of tax changes

Next, we estimate the firm-specific prior persistence of quarterly tax changes. One explanation for a market discount for decreases in tax expense that permit a firm to beat the analysts' forecast is that the earnings effect of fourth-quarter changes in the ETR is less persistent than the pre-tax earnings and tax expense based on the third-quarter rate. Although some tax changes like earning more income in low-tax countries could have high persistence, other tax changes like receiving nontaxable life insurance proceeds are transitory. At the earnings release date market participants have knowledge about the prior persistence of a company's fourth quarter tax changes, but do not yet know the future persistence of the current year changes. Hence, we introduce a control for firm-specific prior persistence.

To estimate the prior persistence of the earnings effect of fourth-quarter changes in the ETR, we adapt Schmidt's (2006) model that estimates the persistence of changes in the tax component of earnings (*TCC*) between year *t* and year *t* + 1. This model estimates the relation between next period's net earnings and this period's

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[15] Our regression results are robust to including controls for unanticipated tax planning. We use tax return data available through 2002 in untabulated tests to control for the net amount of estimated tax overpayment as a proxy for unanticipated or late-year tax planning. We continue to find a significant market discount for tax decreases necessary to beat the forecast. This result suggests either that late-year ETR changes are unrelated to tax planning or that the stock market reacts unfavorably to ETR changes that appear opportunistic even in the presence of higher tax refunds. Our results are also robust to excluding the top and bottom deciles either of the third-quarter ETR or of the change in the ETR from the third to the fourth quarter, to control for extreme levels or changes.

[16] The change in the fourth quarter effective tax rate could be mechanical due to unexpected changes in pretax income adding more or fewer dollars of tax at the statutory rate to the overall effective tax rate. Our results are robust to including a control for the revision in analysts' consensus annual earnings forecasts from just prior to the third-quarter earnings announcement to the last consensus before the earnings announcement. We also use the estimate of 'induced tax change' developed in Dhaliwal et al. (2004) and refer readers there for a full discussion. Our results are robust to redefining our measures of tax changes to exclude the induced effect. Finally, the accumulated fourth quarter ETR does not always strictly equal the annual ETR. The ETRs are not statistically different, however and our results are robust to adding a constraint to require the ETRs to be equal.

earnings, partitioned into earnings with no tax change and the tax change component as follows:

$$EARN\_TA_{i,t+1} = \gamma_0 + \gamma_1 \ Earnings\_ETRq3\_TA_{i,t} + \gamma_2 \ TCC\_TA_{i,t} + \varepsilon_{i,t+1} \quad (1)$$

where $EARN\_TA_{i,t+1}$ is annual earnings [$EARN\_TA_{i,t+1} = PTE_{i,t+1}(1 - ETR_{i,t+1})$], PTE is pretax earnings and ETR is the effective tax rate. $Earnings\_ETRq3\_TA$ is earnings before any fourth quarter tax expense change [$PTE_{i,t} \ (1 - ETRQ3_{i,t})$]. TCC_TA is the amount of annual earnings that changed due to the third to fourth quarter effective tax rate changed [$PTE_{i,t} \ (ETRQ3_{i,t} - TRQ4_{i,t})$]. Following Schmidt (2006), we scale all tax change component variables by average total assets to control for differences in size across firms and over time. A coefficient of equal to, less than, or greater than zero, would suggest that TCC_TA is permanent, transitory, or growing, respectively.

We estimate firm-specific prior persistence ($Persistence = \gamma_2$) for each year using observations from the previous eight years (i.e. to estimate persistence for the years 2000, we use data from 1992 to 1999). We require a minimum of five observations per firm-year estimate. We winsorize observations in the top and bottom one percentile of $Persistence$.

3.4 Estimation equations

We test whether the market reaction around the earnings announcement differs for firms that beat the target by decreasing tax expense, controlling for the forecast error. Specifically, we estimate the following regression:

$$CAR_{i,t} = \beta_0 + \beta_1 Beat \ w/ \ Tax_{i,t} \ \beta_2 AFE_{i,t} + \beta_3 Persistence_{i,t} + \beta_4 \ Beat \ w/ \ Tax_{i,t}$$
$$* \ Persistence_{i,t} \ + \beta_5 BM_{i,t} + \beta_6 Size_{i,t} + \beta_7 Momentum_{i,t} + e_{i,t} \quad (2)$$

We expect the coefficient on *Beat w/ Tax* to be negative if the market discounts the reward for beating the forecast through a fourth-quarter decrease in the tax expense (Hypothesis 1). We expect the coefficient on the *AFE* to be positive, consistent with prior research that finds that positive returns accrue to positive surprises and negative returns accrue to negative surprises. Our model does not include an interaction of *Beat w/ Tax* and *AFE*. Consistent with Baber et al. (2006), we expect the intercept effect to predominate. In untabulated tests the coefficient on an interaction between *Beat w/ Tax* and *AFE* is not significant and our predicted intercept effect for *Beat w/ Tax* alone is unchanged.

We also test whether the prior persistence of tax changes explains the market reaction to beating the forecast with a tax decrease (Hypothesis 2) by including *Persistence*, measured as the estimated coefficient (γ_2) from Eq. 1. Prior research documents that more persistent earnings are associated with higher market values. However, we do not have an expectation for the coefficient for the main effect of *Persistence*, because the he prior persistence of tax changes does not incorporate information about whether those changes were increases or decreases. When *Beat w/Tax* = 1, firms have an increase in income due to a decrease in tax expense. Holding

past persistence constant, we expect the coefficient on the interaction between *Beat w/ Tax* and *Persistence* to be negative if the market expects decreases in tax expense to beat the forecast to be more transitory than prior years' tax changes (Hypothesis 2).

We include three control variables commonly related to returns in other finance and accounting capital market studies (e.g. Fama and French 1992; Jegadeesh and Titman 1993; Gleason and Lee 2003), the book-to-market ratio (*BM*), the natural log of total assets (*Size*) and cumulative size-adjusted returns for the six-months preceding the earnings announcement (*Momentum*). Consistent with prior research, we expect a negative association between *BM* and *Size* and announcement period returns. We include price momentum to control for any continuation of the market response to forecast revisions, earnings information leaks or other news prior to the earnings announcement. We do not have an expectation for the direction of the association between *Momentum* and the three-day announcement period return. We control for these variables to isolate the market response to earnings surprises and tax expense decreases incremental to these well documented effects.

To control for differences in pretax accruals management, we modify Eq. 2 to include abnormal total accruals (*Ab_Accruals*). *Ab_Accruals* is the residual from modified Jones model regressions including lagged ROA, estimated annually for the Fama-French 48 industries, where the residual is scaled by total assets at the beginning of the year (Kothari et al. 2005). Following prior research, we expect the coefficient on *Ab_Accruals* to be negative.[17]

Our stock-returns regressions pool cross-sectional data over a 10-year period. To compensate for potential serial dependence in the data, we report Huber-White robust standard errors (Rogers 1993, generalizing White 1980).[18] The maximum-likelihood estimation procedure assumes and estimates a common component of the variance and co-variance matrix for all observations from the same firm and the standard errors are robust to heteroskedasticity and serial correlation (StataCorp 1999, p. 257). Because we use this correction, we do not separately control for industry effects.

4 Sample selection and descriptive statistics

4.1 Sample

We use CRSP returns data, Compustat annual and quarterly financial statement data, and I/B/E/S analyst forecast data for fiscal years 1995–2004. We first identify

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[17] We also include net operating assets (NOA) as a control for balance sheet "slack" (Barton and Simko 2002). *NOA* is not significant in our regressions and the inferences regarding our variables of interest are unchanged.

[18] We also compute Fama-MacBeth *t*-statistics from 10 annual regressions. Our conclusions from these results are unchanged from those presented in the tables. Two significant regulatory changes that occur during our sample period are Regulation Fair Disclosure (Reg FD) and the Sarbanes-Oxley Act (SOX). Both of these events may have affected the ability of firms to beat earnings targets as well as the market response to beating. In our sample the percentage of firms beating the forecast increases from a low of 61% in 1995 to a high of 73% in 2002 and 2003. We estimate model 2 separately for the sub-periods prior to and after both the October 2000 implementation of Reg FD and the July 2002 passage of SOX. We find qualitatively similar results, allowing for some sensitivity to specification and sample selection.

58,444 firm-year observations on Compustat from 1987 to 2004 that have data for pretax income and tax expense on an annual and quarterly basis. We limit our sample to 40,591 observations with positive annual pretax income (following Hanlon 2005; Schmidt 2006) and positive annual tax expense to avoid difficulty in interpreting negative ETRs. We have return or delisting information to compute returns for the year following the earnings announcement for 38,045 observations. We then truncate observations in the top and bottom one-percent of forecast error, annual ETR and the change in the ETR from the third to the fourth quarter. A total of 35,174 observations possess the announcement period and one-year return, forecast error and tax change, size, book-to market ratio and momentum return variables. To reduce the effect of extreme outliers, we limit our sample to the 33,429 observations with a share price of at least five dollars as of the end of the fiscal year. Next, we restrict the sample to the 13,657 observations where the firm met or beat the last consensus forecast by no more than five cents. We focus on firms within five cents of the forecast because we believe firms close to the target are more likely to be able to manage tax expense by a sufficient amount to meet or beat the forecast. Dhaliwal et al. (2004) find that firms that decrease tax expense to beat the forecast do so by an average of 1.6 cents per share.

Our tabulated results are based on the 6,080 observations from 1995 to 2004 with sufficient information to compute firm-specific prior tax persistence. If we exclude *Persistence* from the regression, our conclusions with respect to *Beat w/ Tax* are unchanged for the larger sample of 13,657 observations that met or beat the last consensus by no more than five cents. In robustness tests we confirm that our results hold for the full sample of 21,307 firms that meet or beat the forecast.

4.2 Descriptive statistics

Table 1 reports descriptive statistics for the sample. The median firm's *Unscaled AFE* indicates the firm beats the forecast by one cent per share. The average firm beats the forecast by 1.7 cents per share, suggesting that the data is skewed to the right due to limiting the sample to firms that meet or beat the forecast.

We decompose the per share forecast error into the forecast error before fourth-quarter tax changes and the tax change component of the forecast error as follows:

$$AFE\ w/\ ETRq3 = Earnings\_ETRq3 - Forecast$$
$$TCC = Earnings - Earning\_ETRq3$$

The per share forecast error without a tax change (*AFE w/ ETRq3*) is −1.6 cents per share on average. Thus, the average firm would miss the forecast if it used the third-quarter estimate of the annual ETR to compute annual tax expense. The earnings effect of the tax change from the third to the fourth quarter (*TCC*) is 3.3 cents per share. On average, firms in our sample decrease tax expense from the third to the fourth quarter. We also report forecast errors scaled by the share price at the end of the fiscal year. We use the scaled forecast errors in the regressions.

The average change in ETRs (*ETR Change*) between the third and fourth quarters is a decrease of 0.1%; the median change is zero. The average and median firms earn positive cumulative size-adjusted returns around the earnings announcement. Positive returns are consistent with positive earnings surprises. Over the 12 months

Table 1 Sample Descriptive Statistics

Panel A: Full Sample (*N* = 6,080)

Variable[a]	*N*	Mean	Std. Dev.	Q1	Median	Q3
Unscaled AFE	6,080	0.017	0.014	0.000	0.010	0.030
Unscaled AFE w/ ETRq3	6,080	−0.016	0.536	−0.055	0.005	0.036
Unscaled TCC	6,080	0.033	0.536	−0.013	0.006	0.069
AFE	6,080	0.001	0.001	0.000	0.001	0.001
AFE w/ ETRq3	6,080	−0.001	0.022	−0.002	0.000	0.002
TCC	6,080	0.002	0.022	−0.001	0.000	0.003
EtrQ3	6,080	0.349	0.082	0.324	0.362	0.389
EtrQ4	6,080	0.348	0.085	0.319	0.360	0.387
ETR Change	6,080	−0.001	0.046	−0.006	0.000	0.001
BM	6,080	0.457	0.291	0.254	0.411	0.593
Size	6,080	7.037	1.831	5.756	6.864	8.189
Momentum	6,080	0.021	0.283	−0.137	−0.005	0.139
Ab_Accruals	4,189	0.007	0.070	−0.032	0.005	0.043
Persistence	6,080	−1.167	20.399	−4.661	0.147	4.400
Announcement CAR	6,080	0.008	0.068	−0.024	0.005	0.038
One-Year CAR	6,080	0.050	0.416	−0.199	0.007	0.230

Panel B: Mean values for *Beat w/ Tax* versus *Beat w/o Tax*

Variable[a]	*Beat w/ Tax* *N* = 2,761	*Beat w/o Tax* *N* = 3,319
Unscaled AFE	0.014	0.020*
Unscaled AFE w/ ETRq3	−0.213	0.147*
Unscaled TCC	0.227	−0.128*
AFE	0.001	0.001*
AFE w/ ETRq3	−0.008	0.006*
TCC	0.009	−0.005*
EtrQ3	0.355	0.345*
EtrQ4	0.352	0.346*
ETR Change	−0.004	0.001*
BM	0.458	0.456
Size	7.234	6.873*
Momentum	0.000	0.039*
Ab_Accruals (n = 1,947 and 2,242 respectively)	0.004	0.010*
Persistence	−1.159	−1.173
Announcement CAR	0.004	0.011*

Table 1 continued

Panel B: Mean values for *Beat w/ Tax* versus *Beat w/o Tax*		
Variable[a]	*Beat w/ Tax* $N = 2,761$	*Beat w/o Tax* $N = 3,319$
One-Year CAR	0.046	0.053

* Indicates that *Beat w/Tax* firms are significantly different from *Beat w/o Tax* firms at $p < 0.05$
[a] Variable definitions:

Unscaled AFE = Actual earnings per share, as reported by *I/B/E/S*, minus the last *I/B/E/S* consensus forecast. *Unscaled AFE w/ ETRq3* = Earnings per share without a tax change {Compustat pretax income * (1 − *EtrQ3*) * *I/B/E/S* split factor/weighted average number of common shares outstanding corresponding to primary/diluted basis used in *I/B/E/S*} minus the last *I/B/E/S* consensus forecast. *Unscaled TCC* = Per share earnings without a tax change {pretax income * (1 − *EtrQ3*) * *I/B/E/S* split factor/ weighted average number of common shares outstanding corresponding to primary/diluted basis used in *I/ B/E/S*} − Actual Income, as reported by *I/B/E/S*. *AFE* = Unscaled *AFE* deflated by market price at the end of the fiscal year. *AFE w/ ETRq3* = *Unscaled AFE w/ ETRq3* deflated by market price at the end of the fiscal year. *TCC* = *Unscaled TCC* deflated by market price at the end of the fiscal year. *EtrQ3* = the year-to-date tax expense accumulated for three quarters, divided by accumulated pretax income. *EtrQ4* = the year-to-date tax expense accumulated for four quarters, divided by accumulated pretax income. *ETR Change* = the fourth-quarter ETR (*EtrQ4*) less the third-quarter ETR (*EtrQ3*). *BM* = common shareholders equity/market value of common stock at the end of the fiscal year. *Size* = the natural log of total assets at the end of the fiscal year. *Momentum* = the cumulative size-adjusted returns for the six months prior to the earnings announcement, ending on day −3. *Ab_Accrual* = the residual from the regression of total accruals on the change in revenue and lagged return on assets, following Kothari et al. (2005). *Persistence* is the firm-specific prior period persistence of the fourth quarter tax component of earnings and equals the estimated coefficient γ_1 from $EARN\_TA_{t+1} = \gamma_0 + \gamma_1 Earnings\_ETRq3\_TA_t + \gamma_2 TCC\_TA_t + \varepsilon_{t+1}$ where $EARN\_TA_{t+1}$ represents the annual tax change component of earnings [$EARN\_TA_{t+1} = PTE_{t+1}(1 − ETR_{t+1})$] where *PTE* is pretax earnings and *ETR* is the effective tax rate. *Earnings_ETRq3_TA* is earnings before any fourth quarter tax expense change. *TCC_TA* is the amount of annual earnings that changed due to the third to fourth quarter effective tax rate changed [$PTE_t (ETRQ3_t − TRQ4_t)$]. Following Schmidt (2006), we scale all tax change component variables by average total assets. *Announcement CAR* = The cumulative return for the firm for the five trading-day window around the earnings announcement (day −2 to day +2) minus the cumulative return for an equal-weighted portfolio of firms in the same CRSP size decile. *One-Year CAR* is the size portfolio adjusted return accumulated from day +2 to day +252

following the earnings announcement, the average firm has positive cumulative size-adjusted returns (5.0%).

Panel B of Table 1 compares the means of analysis variables for *Beat w/ Tax* firms versus *Beat w/o Tax* firms. *Beat w/o Tax* firms have significantly larger forecast errors than *Beat w/ Tax* firms. *Beat w/ Tax* firms have a negative *AFE w/ ETRq3* and *Beat w/o Tax* firms have a positive *AFE w/ ETRq3* by construction.[19] The partitions differ with respect to *Size* and *Momentum*. The groups also differ with respect to *Ab_Accrual*. On average *Beat w/o Tax* firms have higher levels of abnormal accruals than *Beat w/ Tax* firms. In tabulated sensitivity tests reported later, we examine the robustness of our results to including *Ab_Accrual* in our regressions. However, there is no difference between the groups in prior persistence

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[19] The median values of *AFE w/ ETRq3* and *TCC* for *Beat w/ Tax* firms are −0.074 and 0.088, respectively. Median values for *Beat w/o Tax* firms are 0.032 and −0.009, respectively.

of annual tax expense changes. *Beat w/o Tax* firms have significantly larger cumulative size-adjusted returns than *Beat w/ Tax* firms around the announcement window consistent with rejecting the null of Hypothesis 1, but over the subsequent year, abnormal returns for the two groups are indistinguishable.

4.3 Correlations

Table 2 reports the Pearson correlation coefficients among the dependent and independent variables. The tax change component (*TCC*) and forecast error without a tax change (*AFE w/ ETRq3*) are significantly negatively correlated by construction. The cumulative size-adjusted return around the announcement is positively correlated with the forecast error (*AFE*) and the forecast error without a tax change (*AFE w/ ETRq3*) and negatively correlated with the earnings effect of the tax change from the third to the fourth quarter (*TCC*), consistent with viewing fourth quarter tax expense decreases as generally less persistent. The forecast error (*AFE*) is also positively correlated with the book to market ratio and the return over the year following the earnings announcement and negatively correlated with firm size and stock return momentum.

5 Results

5.1 Decreases in tax expense *necessary* to beat the forecast

The alternative form of Hypothesis 1 predicts that there will be a market discount to decreasing tax expense to beat the forecast. Consistent with that prediction, Table 3, model A indicates that the incremental intercept for firms that decreased tax expense to beat the forecast (*Beat w/ Tax* coeff $= -0.006$, $t = -3.44$) is significantly negative. Netting this increment against the intercept for other firms that beat the forecast (coeff $= 0.007$, $t = 1.53$) yields a market reward of 0.001 ($0.007 - 0.006$) for *Beat w/ Tax* firms. Unlike Bartov et al. (2002), the difference (-0.006) between the market responses to *Beat w/ Tax* firms and other firms that beat the target represents an economically significant discount of 86% of the reward for beating the forecast ($0.006/0.007 = 0.86$) and is statistically significant at $p < 0.001$.[20]

The forecast error (*AFE*) is significantly positively associated with the announcement period return after controlling for whether firms decreased tax

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[20] In untabulated tests, we include firms that missed the forecast in the regression. Firms missed the forecast by an average of two cents per share and had an average increase in income of four cents per share due to a decrease in tax expense during the fourth quarter. The intercept for firms that missed is significantly negative (-0.007, $p < 0.000$). Thus the 0.005 ($p = 0.035$) market reward for beating the forecast by decreasing tax expense is significantly higher than the penalty for failing to beat the forecast. The difference between firms that missed the forecast and firms that decreased tax expense to beat the forecast is insignificant for forecast errors smaller than three cents when the forecast is based on the consensus. This may be due to the presence of stale forecasts. When we use the last forecast, we continue to observe a market reward for beating the forecast by decreasing tax expense that is significantly higher than the penalty for failing to beat the forecast.

Table 2 Pearson correlation coefficients for dependent and independent variables in pooled sample

	AFE	AFE w/ ETRq3	TCC	ETR Change	BM	Size	Momentum	Ab_Accruals	Persist	Announce CAR	One-Year CAR
AFE	1.000	0.000	0.046***	−0.017	0.325***	−0.280***	−0.025*	0.006	0.015	0.088***	0.046***
AFE w/ ETRq3		1.000	−0.999***	0.070***	0.003	−0.018	0.061***	0.151***	−0.038**	0.039**	−0.008
TCC			1.000	−0.070***	0.012	0.005	−0.062***	−0.151***	0.039**	−0.035**	0.010
ETR Change				1.000	−0.023	0.025	0.025*	−0.013	0.003	0.010	0.005
BM					1.000	−0.110***	−0.178***	0.092***	0.012	0.037**	0.070***
Size						1.000	−0.022	−0.005	0.004	−0.025*	0.024
Momentum							1.000	−0.064***	0.007	−0.073***	−0.001
Ab_Accruals								1.000	−0.020	0.001	−0.085***
Persist									1.000	−0.009	0.015
Announce CAR										1.000	0.042**
One-Year CAR											1.000

Significant at *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

[a] See Table 1 for variable definitions

Table 3 Pooled, cross-sectional regressions of cumulative abnormal returns around the earnings announcement for firms that beat analysts' forecast target, controlling in Model B for firm-specific prior persistence of tax changes

$$Model\ A : CAR_{i,t} = \beta_0 + \beta_1 Beat\ w/\ Tax_{i,t} + \beta_2 AFE_{i,t} + \beta_3 Persistence_{i,t}$$
$$+ \beta_4 Beat\ w/\ Tax_{i,t} * Persistence_{i,t}$$
$$+ \beta_5 BM_{i,t} + \beta_6 Size_{i,t} + \beta_7 Momentum_{i,t} + e_{i,t}$$
$$Model\ B : CAR_{i,t} = \beta_0 + \beta_1 Beat\ w/\ Tax_{i,t} + \beta_2 AFE_{i,t} + \beta_3 Persistence_{i,t}$$
$$+ \beta_4 Beat\ w/\ Tax_{i,t} * Persistence_{i,t}$$
$$+ \beta_5 Ab\_Accruals + \beta_6 BM_{i,t} + \beta_7 Size_{i,t} + \beta_8 Momentum_{i,t} + e_{i,t}$$

Variable[a]	Predicted sign	Model A Coefficient (*t*-stat)	Model B Coefficient (*t*-stat)
Intercept		0.007	0.004
		(1.53)	(0.66)
Beat w/ Tax	−	−0.006***	−0.007**
		(−3.44)	(−2.98)
AFE	+	5.302**	6.355***
		(4.99)	(4.79)
Persistence	?	−0.000	0.000
		(−1.18)	(−1.20)
*Beat w/ Tax * Persistence*	−	0.000	0.000
		(−0.11)	(0.52)
Ab_Accruals	−		−0.006
			(−0.32)
BM	−	0.000	−0.001
		(−0.11)	(−0.19)
Size	−	−0.000	0.001
		(−0.01)	(0.77)
Momentum	?	−0.017***	−0.018***
		(−4.04)	(−3.41)
Observations		6,080	4,189
Adjusted *R*-squared		1.5%	1.7%

***,**,* Two-tailed *p*-value less than 0.001, 0.01, 0.05 respectively for *t*-statistic

The *t*-statistics are calculated using Huber–White standard errors. An econometric adjustment using a cluster option by firm produces correct standard errors even if the observations are correlated and heteroskedastic (see StataCorp 1999, p. 257)

[a] *Beat w/ Tax* = 1 if the forecast error without a tax change (*AFE w/ ETRq3*) is less than 1 and the actual forecast error (*AFE*) is greater than or equal to 1, and 0 otherwise. See Table 1 for other variable definitions

expense by an amount necessary to beat the target consistent with prior evidence (see for example Defond and Park 2001).

Firm-specific prior period persistence of tax changes is not significantly related to announcement period returns. Schmidt (2006) finds that the market reacts to the revised tax change component as if it were transitory. suggests that the stronger market reaction to revised tax changes than its persistence justifies could be due to

earnings management. However, does not explain why tax-related earnings management should cause a market discount. We speculate that because without the tax decrease, negative earnings surprises in pretax earnings would have caused the firm to miss the target, market participants infer bad news beyond the historically transitory portion of the tax change.[21]

Because *Beat w/ Tax* firms differed from other firms that beat target with respect to the level of abnormal accruals, we test the sensitivity of our inferences to including a control for abnormal accruals in the regression. In Model B, we include *Ab_Accruals*, which reduces the sample to 4,189 observations with sufficient the data to compute abnormal accruals. In Model B, the conclusion with respect to *Beat w/ Tax* is unchanged from Model A and the coefficient on *Ab_Accruals* is not significantly different from zero. In untabulated tests, we observe that when we do not include *Persistence* (sample size = 11,953), the coefficient on *Ab_Accruals* is significantly negative, consistent with prior studies. Importantly, the coefficients on our main variables of interest are unchanged. We continue to observe a market discount to the reward for beating the forecast when firms do so by decreasing tax expense during the fourth quarter.

5.2 Forward-looking persistence of current-year changes in tax expense

Hypothesis 3 predicts (in alternative form) that the market reward to beating the forecast through a tax decrease will be smaller if tax changes are actually less persistent in the future. Although the prior persistence of firms in our sample does not differ for firms that do or do not need a decrease in tax expense to beat the forecast, the persistence of the current year tax change may differ across our partitions. Table 4 reports the results of estimating the persistence of current year tax expense, adapting Schmidt (2006). Like , we estimate the persistence of tax changes into future aggregate net income. However, consistent with our focus on fourth quarter changes in tax expense, we measure the tax change component from the third to the fourth quarter. We make this adaptation because we want to know the implications of the fourth quarter tax change for future earnings.

In Model A, we provide a benchmark of the persistence of annual earnings (computed using actual pretax earnings and the third quarter effective tax rate) and the fourth quarter tax change component of earnings. Recalling that our sample is limited to firms with positive annual earnings and positive annual tax expense, we see that annual earnings (other than the fourth quarter tax change component) are strongly persistent in the full sample (coeff = 1.011). Untabulated F-tests indicate that the persistence of annual earnings is statistically indistinguishable from one ($F = 0.21$, $p = 0.65$). The persistence of the fourth quarter tax change component of earnings for the whole sample is not significant (coeff = 0.712, $t = 0.80$). Schmidt (2006) finds that the revised (second to fourth quarter) tax change components had some persistent and some transitory elements but were less

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[21] In robustness tests we use returns for the year following the earnings announcement (day +2 to day +252) as the dependent variable. We find no significant relation between *Beat w/ Tax* and long-window returns, indicating that the reaction to using tax expense to beat the forecast is complete at the earnings announcement.

Table 4 Estimated forward-looking persistence of tax change contribution to income

Model A : $EARN\_TA_{i,t+1} = \gamma_0 + \gamma_1\ Earnings\_ETRq3\_TA_{it} + \gamma_2\ TCC\_TA_{i,t} + \varepsilon_{t+1}$

Model B : $EARN\_TA_{i,t+1} = \gamma_0 + \gamma_1\ Earnings\_ETRq3\_TA_{i,t} + \gamma_2\ TCC\_TA_{i,t}$
$+ \gamma_3\ Beat\ w/\ Tax_{i,t} + \gamma_4\ Beat\ w/\ Tax_{i,t} * TCC\_TA_{i,t} + \varepsilon_{i,t+1}$

Variable[a]	Model A Coefficient (*t*-stat)	Model B Coefficient (*t*-stat)
Intercept	0.009***	0.007
	(6.34)	(4.47)
Earnings_ETRq3_TA$_t$	1.011***	1.021***
	(41.39)	(45.18)
TCC_TA$_t$	0.712	2.140
	(0.89)	(1.59)
Beat w/ Tax		0.004***
		(3.45)
Beat w/ Tax $\times$ TCC_TA$_t$		−2.577
		(−1.71)
Observations	5,172	5,172
Adjusted R^2	63.2%	64.3%

***,**,* Two-tailed *p*-value less than 0.001, 0.01, 0.05 respectively for *t*-statistic

[a] Variable definitions:

$EARN_{t+1} = PTE_{t+1}(1 − ETR_{t+1})$ scaled by average total assets. Where *PTE* is without-tax earnings and *ETR* is the annual effective tax rate. $Earnings\_ETRq3\_TA_t = PTE_t (1 − ETRQ3_t)$ and $TCC\_TA_t = PTE_t (ETRQ3_t − ETRQ4_t)$. *Beat w/ Tax* = 1 if the forecast error without a tax change (*AFE w/ ETRq3*) is less than 1 and the actual forecast error (*AFE*) is greater than or equal to 1, and 0 otherwise

The *t*-statistics are calculated using Huber–White standard errors. An econometric adjustment using a cluster option by firm produces correct standard errors even if the observations are correlated and heteroskedastic (see StataCorp 1999, p. 257)

persistent than the initial (first quarter) tax change component. We consider in Model B whether the apparent presence of earnings management (*Beat w/ Tax*) explains variation in the persistence of fourth quarter tax changes.

In Model B, the tax change component for firms that didn't decrease tax expense to beat the forecast is generally persistent, although weakly so (coeff = 2.140, *t* = 1.59). For firms that beat the forecast with a tax decrease, the tax change component is nonpersistent. Incrementally, the interaction coefficients are weakly negative (coeff = −2.577, *t* = −1.71). Untabulated *F*-tests indicate that the joint coefficient for persistence of the tax change component for *Beat w/ Tax* firms is not different from zero (*F* = 0.40, *p* > 0.526). Fourth quarter tax expense changes needed to beat the forecast are not persistent. Coupled with the market discount for firms that only beat the forecast because they decrease taxes, this finding that these decreases are nonpersistent suggests that the market infers at the time of the earnings announcement that decreases in tax expense to beat the forecast are nonpersistent. Other information about pre-tax earnings or tax expense in the earnings announcement or the accompanying conference call may aid the inference process.

5.3 Supplemental tests regarding tax decreases generally

We conduct supplemental tests to consider tax decreases generally. Schmidt (2006) provides evidence that increases in the ETR after the first quarter are more persistent than decreases. He suggests, but does not test, that the different persistence of increases and decreases could be due to earnings management. Although our interest is in market reactions to behavior that enabled firms to meet a target (specifically, decreasing tax expense to meet the annual analysts' consensus forecast), the observed market reaction could relate to tax decreases generally. We create an indicator variable for whether firms decreased their effective tax rate from the third to the fourth quarter (*Decrease*).

$$\text{If } ETRq3 \geq ETRq4 \text{ then } Decrease = 1, \; 0 \; otherwise.$$

In Table 5, we regress announcement window cumulative size-adjusted returns on *Decrease*, analyst forecast errors, and control variables.[22] The analysts' forecast error is positively associated with announcement period returns in both Model A and Model B. Firms that beat the forecast and decrease tax expense from the third to the fourth quarter (*Decrease*) do not have significantly different announcement period returns from firms that increase tax expense. Thus, we find no evidence that the market reacts to decreases in tax expense differently than to increases at the earnings announcement.

We find that firm-specific prior persistence of tax expense changes is not associated with higher earnings announcement period returns (Model A: coeff = -0.000, $t = -1.32$). We also find no difference in the market reaction to persistence for firms that decrease tax expense in the current year versus those that increase tax expense (coeff = -0.000, $t = 1.19$).

Finally, untabulated tests of forward-looking persistence also fail to find a significant difference between the persistence of tax changes for firms that decrease tax expense versus firms that increase tax expense. Overall, our results provide no evidence that the market generally discounts decreasing tax expense from the third to the fourth quarter. Instead, the context of the decrease to beat the target provides meaningful information.

6 Conclusions

This study expands research by Bartov et al. (2002) concerning the market's reaction to earnings management and to firms that beat analysts' forecasts. Our aim

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[22] In untabulated univariate comparisons of firms with tax expense decreases in the fourth quarter versus firms with tax expense increases, we confirm that there are no significant differences in *AFE*, abnormal accruals, prior persistence, book-to market ratio, momentum, announcement window returns or returns over the following year. Firms that decrease tax expense are larger on average than firms with tax expense increases, however our regressions include a control for size. By definition, firms that decrease their tax expense have lower per share forecast error without a tax change (*AFE w/ ETRq3*) and higher tax change components (*TCC*) relative to firms that increase tax expense. Firms that decrease tax expense also have higher ETRs in the third quarter and lower ETRs in the fourth quarter relative to increase firms.

Table 5 Pooled, cross-sectional regressions of cumulative abnormal returns around the earnings announcement for firms that beat analysts' forecast target

$Model\ A : CAR_{i,t} = \beta_0 + \beta_1 Decrease_{i,t} + \beta_2 AFE_{i,t} + \beta_3 Persistence_{i,t} + \beta_4 Decrease_{i,t} * Persistence_{i,t}$
$\qquad + \beta_5 BM_{i,t} + \beta_6 Size_{i,t} + \beta_7 Momentum_{i,t} + e_{i,t}$

$Model\ B : CAR_{i,t} = \beta_0 + \beta_1 Decrease_{i,t} + \beta_2 AFE_{i,t} + \beta_3 Persistence_{i,t} + \beta_4 Decrease_{i,t} * Persistence_{i,t}$
$\qquad + \beta_5 Ab\_Accruals + \beta_6 BM_{i,t} + \beta_7 Size_{i,t} + \beta_8 Momentum_{i,t} + e_{i,t}$

Variable[a]	Predicted sign	Model A Coefficient (t-stat)	Model B Coefficient (t-stat)
Intercept		0.006	0.003
		(1.26)	(0.47)
Decrease	−	−0.002	−0.001
		(−1.37)	(−0.66)
AFE	+	5.762***	6.921**
		(5.45)	(5.28)
Persistence	−	−0.000	−0.000
		(−1.33)	(−1.32)
*Decrease * Persistence*	+	0.000	0.000
		(1.19)	(0.68)
Ab_Accruals	−		−0.003
			(−0.17)
BM	−	−0.001	−0.002
		(−0.21)	(−0.40)
Size	−	0.000	0.000
		(−0.18)	(0.48)
Momentum	?	−0.017***	−0.018***
		(−3.92)	(−3.31)
Observations		6,080	4,189
Adjusted *R*-squared		1.4%	1.5%

***·**·* Two-tailed *p*-value less than 0.001, 0.01, 0.05 respectively for *t*-statistic

The *t*-statistics are calculated using Huber-White standard errors. An econometric adjustment using a cluster option by firm produces correct standard errors even if the observations are correlated and heteroskedastic (see StataCorp 1999, p. 257)

[a] *Decrease* $= 1$ if the firm decreased its *ETR* from the third to the fourth quarter and 0 otherwise. See Table 1 for other variable definitions

is to provide specific evidence about the market reaction to beating the forecast via decreases in tax expense. We use decreases in effective tax rates between the third and the fourth quarters in order to estimate unexpected tax expense decreases, following and extending research by Dhaliwal et al. (2004).

We find a smaller market reaction at the earnings announcements for firms that beat the forecast due to tax expense decreases. In contrast to the economically insignificant discount found in Bartov et al. (2002), the discount for using a tax decrease to beat the target is approximately 86%. This discount is robust to including a control for abnormal accruals.

Forward-looking tests of the persistence of tax expense decreases to beat the forecast indicate that these decreases to beat the forecast are less persistent than other fourth quarter tax changes extending Schmidt (2006). The observed discount for beating the forecast only because of a third to fourth quarter tax decrease may reflect market perceptions of the lack of persistence of the decrease.

Our results are robust to controlling for unanticipated tax changes or pretax income, removing extreme ETRs or analysts' forecasts, and requiring the second and third quarter ETRs be equal to eliminate potential third quarter earnings management.

Our research setting, which uses quarterly effective tax rates to measure earnings management, complements and extends related research, which contrasts accruals versus cash flows. Researchers often use the magnitude of accruals (or discretionary accruals) to partition firms into samples that are more or less likely to engage in earnings management, but this research seldom attempts to measure the amount of managed earnings in these settings or explicitly incorporate the persistence of such earnings increases. We believe that our test of a specific account provides additional evidence that the market distinguishes between managed and unmanaged earnings.

After Sarbanes-Oxley takes full effect, discretionary changes in tax expense may become more difficult because firms will be required to improve documentation for tax cushion and auditors will have to assess internal controls for risks, including tax risk. Further, in 2006 the FASB issued Financial Interpretation 48 (FIN 48), an interpretation of SFAS 109, requiring more disclosure concerning reserves for uncertain tax benefits, and stricter and more uniform rules related to accounting for such benefits. These recent standards highlight the substantial discretion in the tax accounts and introduce changes that potentially increase the transparency of tax expense and constrain management discretion. These regulatory changes present an opportunity for future research examining whether increased disclosure results in more information to investors.

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