Last-Chance Earnings Management: Using the Tax Expense to Meet Analysts' Forecasts[*]

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Abstract

We assert that the tax expense is a powerful context in which to study earnings management, because it is one of the last accounts closed prior to earnings announcements. Although many pre-tax accruals must be posted in the year-end general ledger, managers estimate and negotiate tax expense with their auditors immediately prior to earnings announcements. We hypothesize that changes from third- to fourth-quarter effective tax rates (ETRs) are negatively related to whether and how much a firm's earnings absent tax expense management miss analysts' consensus forecast, a proxy for target earnings. We measure earnings absent tax expense management as actual pre-tax earnings adjusted for the annual ETR reported at the third quarter.

We provide robust evidence that firms lower their projected ETRs when they miss the consensus forecast, which is consistent with firms decreasing their tax expense if non-tax sources of earnings management are insufficient to achieve targets. We also find that firms that exceed earnings targets increase their ETR, but this effect is less significant. By studying the tax expense in total, rather than narrow components of deferred tax expense, our results provide general evidence that reported taxes are used to manage earnings.

Keywords   Earnings management; Target earnings; Tax expense

JEL Descriptors   H25, M41

L'ultime instrument de gestion des résultats : l'utilisation de la charge d'impôts pour concrétiser les prévisions des analystes

Condensé

Utilise-t-on régulièrement la charge d'impôts de l'exercice pour parvenir aux résultats ciblés ? La chronologie de la préparation des états financiers et de la vérification indépendante porte à croire qu'il serait logique d'axer sur la charge d'impôts l'étude de la gestion des résultats dans le but d'atteindre des résultats ciblés.

Compte tenu de la complexité de l'estimation de la charge d'impôts et du moment de la constatation des impôts préalablement à l'annonce des résultats, les auteurs croient que la charge d'impôts est riche et trop peu explorée dans l'étude de la gestion des résultats. Lorsque les gestionnaires sont encouragés à atteindre des résultats cibles déterminés, le compte de la charge d'impôts offre une possibilité ultime de gestion des résultats. La charge d'impôts est l'un des derniers comptes à être fermé avant l'annonce des résultats, étant donné que les autres changements liés aux bénéfices ont une incidence sur les comptes d'impôt.

La charge d'impôts de l'exercice respecte également les conditions que Schipper (1989) juge nécessaires à la gestion des résultats. Selon elle, en effet, pour que les gestionnaires puissent « gérer les résultats », l'asymétrie de l'information entre gestionnaires et actionnaires doit persister. La charge d'impôts de l'exercice est difficile à estimer dans les grandes sociétés, en raison de la complexité de l'information que doivent recueillir les gestionnaires entre la fin de l'exercice et la date de l'annonce des résultats. Les éléments de la charge d'impôts totale qui présentent cette complexité et offrent la possibilité de planifier le taux d'imposition englobent la planification du taux d'imposition étranger, les crédits d'impôt, la planification du taux d'imposition des différents échelons de gouvernement, les mesures fiscales d'encouragement à l'exportation, et la capitalisation de la survaleur et son amortissement subséquent. Certes, les gestionnaires recueillent de l'information plus complète avant de produire leurs déclarations fiscales, mais leurs estimations à la date de l'annonce des résultats sont encore imprécises.

L'estimation de la charge d'impôts suppose également une importante latitude, à cause des éventualités fiscales, des provisions pour moins-value et des bénéfices étrangers perpétuellement réinvestis. Gleason et Mills (2002) relèvent des éléments indiquant que les grandes sociétés comptabilisent d'importantes sommes au titre des éventualités fiscales. Selon le *Statement of Financial Accounting Standards* (FAS) 5, les sociétés jouissent d'une marge de manœuvre considérable dans l'estimation de la probabilité et du montant des pertes. En outre, les gestionnaires ne peuvent faire connaître les sommes qu'ils ont constatées sans courir le risque que le fisc utilise cette information pour réclamer davantage.

Les preuves de gestion des résultats recueillies par les chercheurs précédents ne sont pas très convaincantes, en raison de la discrétion dont jouissaient les gestionnaires dans la détermination des provisions pour moins-value, en vertu du FAS 109, et des bénéfices étrangers perpétuellement réinvestis, en vertu de l'*Accounting Principles Board* (APB) *Opinion* 23. Le coussin fiscal, les provisions pour moins-value et les bénéfices réinvestis ne sont que trois exemples tirés de la panoplie des réserves liées à l'impôt décrites par Arthur Levitt (1998) dans son exposé au NYU Center for Law and Business. Selon les auteurs, la combinaison du jugement dans l'estimation des réserves et de règles fiscales complexes rend plus ardue la tâche des utilisateurs des états financiers qui veulent évaluer les constatations

discrétionnaires des gestionnaires en ce qui a trait à la charge d'impôts. Comparativement aux actionnaires et aux analystes, les vérificateurs, avec l'aide de leur propre service de fiscalité, peuvent évaluer le caractère raisonnable de la constatation fiscale d'une manière non pas parfaite, mais plus efficace.

Les fiscalistes ont depuis longtemps reconnu le potentiel d'utilisation de la charge d'impôts pour augmenter le bénéfice par action. Les experts conseils mettent en marché, à l'intention des gestionnaires, des séminaires sur la « gestion du taux d'imposition effectif de l'entreprise dans son ensemble », dans lesquels le Council for International Tax Education fait valoir ainsi les avantages du séminaire : « voyez comment, dans l'évaluation des actions d'une entreprise, les analystes financiers envisagent le taux d'imposition effectif — que le marché aime bas »*.

Les analystes financiers commencent à examiner de près la charge d'impôts comme instrument de gestion des résultats. Herb Greenberg, chroniqueur en ligne, s'est penché sur les annonces de résultats d'Electronic Data Systems (EDS) Corporation, déclarant « Des nouvelles d'EDS : un taux d'imposition plus faible que prévu ; s'il était demeuré inchangé, la diminution de son résultat aurait été négligeable[…] »*. Un autre exemple d'examen d'analystes est celui de Tyco. Évoquant « l'inquiétude du marché au sujet des méthodes de tenue des livres » de Tyco, le *Wall Street Journal* (Maremont, 2002) a décrit comment la société avait ramené son taux d'imposition effectif annuel de 24,7 pour cent au cours des neuf premiers mois de l'exercice (ou de 24,2 pour cent au cours de l'exercice précédent) à 19,2 pour cent en 2001. « Si Tyco avait appliqué au trimestre le taux d'imposition de l'exercice précédent, son bénéfice avant éléments [exceptionnels] aurait été inférieur de cinq cents[…] »*. Tyco affiche un bénéfice supérieur de deux cents au bénéfice prévu, mais qui aurait été en deçà des prévisions n'eût été de la réduction de la charge d'impôts. Même si les analystes sont en mesure d'observer les changements que subit le taux d'imposition effectif, la complexité de la charge d'impôts fait en sorte qu'il est difficile de départager dans ces changements planification fiscale et gestion des résultats. Les auteurs se demandent dans quelle mesure les entreprises utilisent la charge d'impôts pour concrétiser les prévisions des analystes, compte tenu du fait que le contexte les encourage fortement à gérer les résultats.

Les auteurs cherchent à déterminer si les entreprises gèrent la charge d'impôts pour parvenir à des résultats ciblés. Ils quantifient la gestion des résultats en mesurant l'écart entre le taux d'imposition effectif annuel à la fin de l'exercice et le taux d'imposition effectif annuel estimatif au troisième trimestre. Puisque le taux d'imposition effectif au troisième trimestre est une estimation annuelle qui englobe déjà la planification fiscale effectuée pour le quatrième trimestre, il s'agit, de l'avis des auteurs, d'un substitut approprié au taux d'imposition effectif non géré. L'*APB Opinion* 28 exige qu'une société « produise sa meilleure estimation du taux d'imposition effectif pour l'ensemble de l'exercice. Le taux ainsi déterminé doit être appliqué pour établir les impôts auxquels seront assujettis les bénéfices du trimestre »*.

Le substitut des résultats ciblés qu'utilisent les auteurs est la dernière prévision consensuelle d'I/B/E/S avant l'annonce des résultats annuels. Ce substitut, si l'on suppose l'absence de gestion de la charge d'impôts, équivaut aux résultats que l'entreprise déclarerait si elle utilisait ses bénéfices avant impôts réels et son taux d'imposition effectif non géré (le taux d'imposition effectif annuel au troisième trimestre). Afin de soumettre la gestion des résultats à un test plus puissant, les auteurs ne s'intéressent qu'aux sociétés qui

ont presque réalisé ou ont excédé de peu (à cinq cents près) la dernière prévision consensuelle, en se concentrant sur les sociétés qu'ils estiment les plus susceptibles de gérer les résultats. Leurs tests de sensibilité révèlent que les résultats obtenus résistent à des intervalles plus grands par rapport à zéro. Ils contrôlent également d'autres facteurs susceptibles d'expliquer la gestion des résultats ou les variations de la charge d'impôts.

Les auteurs notent que les sociétés diminuent leur taux d'imposition effectif annuel entre les troisième et quatrième trimestres, lorsque les résultats, en l'absence de gestion de la charge d'impôts, se révèlent inférieurs à la prévision consensuelle. La diminution du taux d'imposition effectif est plus importante que l'augmentation correspondante du taux d'imposition effectif (par exemple pour constituer des réserves) lorsque les sociétés excéde-raient les prévisions sans gérer la charge d'impôts. Cette constatation confirme l'hypothèse selon laquelle les sociétés utilisent la charge d'impôts pour gérer les résultats lorsque la gestion des constatations avant impôts ne leur permet pas d'atteindre les résultats ciblés. Les auteurs utilisent les données contenues dans les déclarations fiscales pour contrôler les changements survenus dans le taux d'imposition effectif du quatrième trimestre attribuables à des changements dans la planification fiscale ou à des changements dans les résultats. Ils contrôlent également les changements mécaniques survenus dans le taux d'imposition effectif annuel, induits par des changements imprévus du bénéfice avant impôts. Des tests complémentaires donnent à penser que les sociétés qui sont prêtes à gérer les résultats à l'aide des constatations sont également disposées à utiliser la charge d'impôts. Les auteurs concluent que les faits recueillis confirment les efforts déployés en fin d'exercice par les sociétés pour respecter les attentes en matière de résultats. Si les sociétés soit avaient réussi à orienter les prévisions, soit n'avaient pas géré la charge d'impôts après le troisième trimestre, les tests des auteurs n'auraient pas permis de déceler la relation négative entre le changement survenu dans les taux d'imposition effectifs annuels et un bénéfice en deçà des prévisions.

Les auteurs contribuent aux travaux relatifs à la gestion des résultats en faisant la preuve de l'utilisation d'une constatation précise pour gérer les résultats. Healy et Wahlen (1999) font remarquer que « les normalisateurs sont susceptibles d'être intéressés par des faits […] attestant l'utilisation de constatations précises et de méthodes comptables pour gérer les résultats […] »*. Les auteurs montrent que les sociétés gèrent la charge d'impôts pour atteindre des résultats ciblés. Leurs observations sur la charge d'impôts se prêtent davantage à la généralisation que les résultats des recherches précédentes sur les provisions pour moins-value ou les bénéfices étrangers perpétuellement réinvestis.

* Traduction.

1. Introduction

Is income tax expense regularly used to achieve earnings targets? The chronology of financial statement preparation and the independent audit suggests that the tax expense is a logical context in which to study earnings management as it is used to achieve earnings targets.

When we consider the complexity of estimating tax expense and the timing of the tax accrual prior to earnings announcements, we believe that tax expense is a powerful and underexplored context for studying earnings management. When managers have an incentive to achieve a particular earnings target, the tax expense account provides a final opportunity for earnings management. Tax expense is one

of the last accounts closed before earnings are announced because other income-related changes affect the tax accounts.

Tax expense also meets Schipper's 1989 necessary condition for earnings management. She asserts that for managers to manage earnings, information asymmetry between managers and shareholders must persist. Tax expense is difficult to estimate for large firms because of the complex information that managers must collect between the end of the fiscal year and the earnings announcement date. Components of total tax expense that involve complexity and opportunities for tax rate planning include foreign tax rate planning, tax credits, state and local tax rate planning, export tax incentives, and goodwill capitalization and subsequent amortization. Although managers gather more complete information before the tax return is filed, the estimates at the earnings announcement date are imprecise.[1]

Estimating tax expense also involves substantial discretion due to tax contingencies, valuation allowances, and permanently reinvested foreign earnings. Gleason and Mills (2002) provide evidence of material accruals for tax contingencies among large firms. Under *Statement of Financial Accounting Standards* (*SFAS*) *No. 5*, firms have considerable discretion in estimating the likelihood and amount of loss. Further, managers cannot costlessly disclose the accrual because the tax authority could use that information to pursue additional claims.

Prior research finds mixed evidence of earnings management due to management discretion in determining valuation allowances under *SFAS No. 109* and permanently reinvested foreign earnings under *Accounting Principles Board* (*APB*) *Opinion No. 23*.[2] Tax cushion, valuation allowances, and reinvested earnings are just three examples of tax-related cookie jar reserves as described by Levitt 1998 in his address at New York University's Center for Law and Business. We assert that the combination of judgement in estimating reserves and complex tax rules makes it difficult for financial statement users to evaluate managers' discretionary accruals for tax expense. Auditors, with the assistance of their own tax departments, can better, but not perfectly, evaluate the reasonableness of the tax accrual than can shareholders and analysts.[3]

Tax professionals have long recognized the potential for using tax expense to increase earnings per share. Consultants market seminars to managers on "Managing the Global Corporate Effective Tax Rate", in which the Council for International Tax Education touts the following seminar benefit: "[F]ind out how financial analysts view the effective tax rate (ETR) in valuing a firm's stock — the market loves a low ETR."[4]

Financial analysts are beginning to scrutinize tax expense as a source of earnings management. Herb Greenberg, an online columnist, reviewed Electronic Data Systems (EDS) Corporation's earnings announcement, saying, "More on EDS: Tax rate was lower than expected; had it been unchanged EDS would've been a penny light."[5] Another example of analyst scrutiny is Tyco. Citing market "wariness about [Tyco's] bookkeeping" practices, the *Wall Street Journal* (Maremont 2002, C1) describes how Tyco lowered its annual ETR in 2001 to 19.2 percent from 24.7 percent in the first nine months or from 24.2 percent in the prior year: "Had Tyco used last year's tax rate in the quarter, its earnings before [special] items would

have been five cents lower." Tyco beat the forecast by two cents but would have missed the forecast absent the tax expense decrease. Although analysts can observe changes in the ETR, the complexity of tax expense makes it difficult to distinguish tax planning from earnings management.[6] Our study investigates how widely tax expense is used to achieve analysts' targets, a setting in which firms face strong incentives for earnings management.

We examine whether firms manage tax expense to reach earnings targets. We measure earnings management as the difference between the annual ETR at year-end and the estimated annual ETR at the third quarter. Because the third quarter ETR is an annual estimate that already incorporates tax planning anticipated for the fourth quarter, we assert that it is a reasonable proxy for the unmanaged ETR. *APB Opinion No. 28* (para. 19) requires a firm to "make its best estimate of the effective tax rate expected to be applicable for the full fiscal year. The rate so determined should be used in providing for income taxes on a current year-to-date basis."

Our proxy for the earnings target is the last Institutional Brokers Estimate System (I/B/E/S) consensus forecast prior to the annual earnings announcement. Our proxy for earnings absent tax expense management is the earnings the firm would report if it used actual pre-tax earnings and the unmanaged ETR (annual ETR at the third quarter). We examine only firms that nearly miss or beat (within five cents) the last consensus forecast to construct a more powerful test of earnings management, focusing on firms we believe are most likely to manage earnings. In sensitivity tests, we find that our results are robust to wider ranges around zero. We also control for other factors that could explain earnings management or changes in tax expense.

We find that firms decrease their annual ETR from the third to the fourth quarter as earnings absent tax expense management fall short of the consensus forecast. The decrease in ETR is larger than the corresponding increase in ETR (for example, to build reserves) when firms would beat the forecast without managing tax expense. This finding is consistent with firms using tax expense to manage earnings when management of pre-tax accruals fails to achieve the target. We use tax-return data to control for changes in the fourth-quarter ETR due to changes in tax planning or earnings changes. We also control for mechanical changes in annual ETRs induced by unexpected changes in pre-tax income. Supplemental tests suggest that firms willing to manage earnings with accruals are also willing to use tax expense. We conclude that our evidence is consistent with year-end efforts to meet earnings expectations. If firms were either guiding forecasts successfully or not managing tax expense after the third quarter, our tests would not detect the negative relationship between the change in annual ETRs and missing the forecast.

We contribute to research in earnings management by providing evidence on a specific accrual used to manage earnings. Healy and Wahlen (1999, 367) note that "standard setters are likely to be interested in evidence on … specific accruals and accounting methods used to manage earnings". We show that firms manage tax expense to reach an earnings target. Our tax expense findings are more generalizable than the results of prior research on valuation allowances or permanently reinvested foreign earnings.

Section 2 reviews existing literature on earnings management and taxes and develops arguments for our hypothesis. Section 3 proposes specific tests. Section 4 describes the available data and presents results, and section 5 provides a summary of our conclusions.

2. Background and hypothesis

In their commentary on earnings management, Dechow and Skinner (2000, 248) conclude that "managers have strong incentives to 'beat benchmarks', implying that firms just beating benchmarks are potentially more likely to be engaging in earnings management". These benchmarks are losses, earnings decreases, and missing analyst expectations (Degeorge, Patel, and Zeckhauser 1999). Brown and Caylor (2003) show that beginning in the mid-1990s managers shifted their focus from avoiding losses or earnings decreases to meeting or beating analyst expectations. They also show that firms receive more positive valuations from meeting or beating analyst expectations than from avoiding losses or earnings decreases.[7] Abarbanell and Lehavy (2003) report that firms receiving buy recommendations from analysts are more likely to engage in earnings management to meet or just beat analysts' forecasts. Thus, firms with earnings near analyst expectations likely have incentives to manage earnings to beat the benchmark.[8]

To date, researchers have examined a number of specific accruals to test for earnings management, including bad debt expense (Teoh, Wong, and Rao 1998), loan loss provisions (Beaver, Eger, Ryan, and Wolfson 1989; Wahlen 1994), and claim loss reserves (Petroni 1992; Beaver and McNichols 1998; Beatty, Ke, and Petroni 2002; Nelson 2000), as discussed by Healy and Wahlen 1999. Much of this literature investigates accounts unique to particular industries. We consider tax expense because this account is material for a broad set of firms and because it contains the necessary discretion to generate information asymmetry between managers and investors or analysts. Some earnings management literature examines specific tax contexts that apply only to subsets of the population, including valuation allowances (Miller and Skinner 1998; Visvanathan 1998; Schrand and Wong 2003; Burgstahler, Elliott, and Hanlon 2003; Frank and Rego 2004) and permanently reinvested foreign earnings (Collins, Hand, and Shackelford 2000; Krull 2004).[9] Gleason and Mills (2002) suggest that their evidence on the existence of an accrual for contingent tax liabilities (tax cushion) indicates the potential for earnings management that would be available to a broader population of firms.

The complexity of tax expense computations and the discretion in estimating tax accruals allow information asymmetry between managers and both auditors and shareholders to persist. We assert that the combination of judgement, discretion, information asymmetry, and time pressure creates a situation in which the company can use tax expense as its last chance to achieve earnings targets. Tax expense is one of the last accounts finalized prior to earnings release because it depends on various information contained in pre-tax earnings, which can be affected by audit adjustments. Thus, while we acknowledge that many other pre-tax accruals exist for earnings management, we view tax expense as a final tool that managers have at their disposal to achieve earnings targets.

We propose the following hypothesis, stated in alternative form:

> HYPOTHESIS. *All else equal, changes in tax expense are negatively related to whether and by how much a firm's earnings absent tax expense management miss the firm's target earnings.*

3. Research design

We estimate the following model to test our hypothesis that changes in the tax expense are related to whether a firm misses its target earnings:

$$Etr4\_Etr3_{i,t} = \alpha_0 + \alpha_1 Miss_{i,t} + \alpha_2 Miss\_Amount_{i,t} + \alpha_3 Miss_{i,t}*Miss\_Amount_{i,t}$$
$$+ \alpha_4 Induced\_Chg\_ETR_{i,t} + \alpha_5 Tax\_Owed_{i,t} + \alpha_6 EtrQ3_{i,t}$$
$$+ \alpha_7 - \alpha_{19} Year_{i87\text{-}99} + e_{i,t}$$

where

Etr4_Etr3	= the fourth-quarter ETR (*EtrQ4*) less the third-quarter ETR (*EtrQ3*), where the ETR is defined as year-to-date tax expense (COMPUSTAT quarterly data item #6) divided by accumulated pre-tax income (COMPUSTAT quarterly data item #23).[10]
Miss	= a dummy variable that equals 1 if *Miss_Amount* > 0, and 0 otherwise.
Miss_Amount	= the I/B/E/S consensus forecast estimate less earnings absent tax expense management [pre-tax income (COMPUSTAT annual data item #170) × (1 − *EtrQ3*)*I/B/E/S split factor/ common shares to compute basic EPS (COMPUSTAT annual data item #54)].[11]
Induced_Chg_Etr	= induced tax change/pre-tax income (COMPUSTAT annual item #170), where induced tax change equals (the statutory tax rate less *EtrQ3*) × unexpected pre-tax income. We estimate the unexpected pre-tax income as (the difference between I/B/E/S actual versus consensus forecast per share) × I/B/E/S split factor × common shares (COMPUSTAT annual data item #54)/(1 − the statutory tax rate).
Tax_Owed	= total tax on the return minus estimated payments (from confidential tax return data), scaled by pre-tax income (COMPUSTAT annual data item #170).

The above regression incorporates our proxy for tax expense management (*Etr4_Etr3*) and the difference (*Miss_Amount*) between target earnings (analysts' consensus forecast) and earnings absent tax expense management (pre-tax earnings adjusted for *EtrQ3*), as discussed below.

Like all studies of earnings management, we must develop a reasonable proxy for earnings management. A unique feature of the tax expense component of earnings is that *APB Opinion No. 28* requires firms to use their estimate of the annual ETR in quarterly reports. Thus, the annual ETR at the third quarter provides a proxy for the firm's unmanaged annual ETR. We understand (from practice experience and conversations with auditors and corporate controllers) that the company bases its informed estimate of the annual ETR at the third quarter on year-to-date information and projected fourth-quarter events. We define *Etr4_Etr3* as the change in annual ETR from quarter three to quarter four and use this as our measure of tax expense management.

Many tax-planning techniques that have real cash flow benefits also decrease total tax expense. We acknowledge that managers respond jointly to tax-planning and earnings-management incentives, so it is difficult to distinguish tax reduction from earnings management objectives. However, we believe that the attractive feature of the *Etr4_Etr3* design is that it measures unanticipated changes in ETRs.[12]

To measure incentives to manage earnings, we assert that a firm has such an incentive if it would have missed its earnings target based on unmanaged earnings (earnings absent tax expense management). We use the I/B/E/S consensus forecast as our proxy for target earnings, following Burgstahler and Eames 2002.[13] We construct earnings absent tax expense management using actual pre-tax earnings less our proxy for unmanaged tax expense: actual pre-tax earnings times one minus the annual ETR reported at the third quarter. Thus, our measure of a firm's incentive to manage earnings is the consensus analyst forecast less earnings absent tax expense management (*Miss_Amount*).

Consistent with our hypothesis, we expect *Etr4_Etr3* to be negatively related to how much the firm would have missed the consensus forecast (*Miss_Amount*). We further predict that the interaction coefficient on *Miss*Miss_Amount* (α_3) will be negative because firms have a greater incentive to avoid missing the target. Failing to meet the consensus forecast generates negative stock market reactions, particularly for growth firms (Dreman and Berry 1995; Skinner and Sloan 2002). In contrast, the incentive to increase their ETR if they already exceed the target — that is, to build a tax cookie jar — is less clear. We also include *Miss*, the dummy variable for whether earnings absent tax expense management misses the target, because the regression includes the interaction term.

Note that if we limit our test to a simpler specification using only the dummy variable, *Miss*, we expect that this intercept would be negative because firms that are below the target will decrease their ETRs to reach the target. We consider this alternative specification in robustness tests because the dummy alone may be a more powerful proxy for the incentive to manage tax expense.

Managers have incentives to reach target earnings at each quarter, so the annual ETR at the third quarter is likely to already incorporate anticipated tax management for year-end. Further, managers attempt to guide analysts' forecasts (Matsumoto 2002; Schwartz 2003). However, these effects work against our hypothesis. If managers have done all their management of tax expense as of the third quarter or if they have guided the forecasts, then there should be no association

between the change in the annual ETR and the amount by which firms meet or beat forecasts.

We control for changes in the ETR due to exogenous factors such as unanticipated earnings surprise and misestimation. Unanticipated changes in pre-tax earnings will result in an induced change in the annual ETR because the change in earnings alters the proportion of permanent differences in pre-tax financial income, as well as the tax effect of income relative to tax credits. We control for how much of the ETR change could have been induced using the amount by which the actual pre-tax income beats or misses the implied pre-tax forecast.[14]

Estimating this induced effect requires several steps. First, we compare the I/B/E/S actual and forecasted earnings per share to measure unexpected earnings. We use the I/B/E/S actual earnings instead of COMPUSTAT actual earnings because I/B/E/S adjusts earnings for special items not included in the analyst forecast. This provides the most precise measure of unexpected earnings that affect the firm's ability to meet the analysts' target. We then convert the difference per share to total dollars and gross it up using the applicable U.S. statutory tax rate (our estimate of the marginal tax rate for our sample of profitable firms) to obtain an estimate of unexpected pre-tax earnings. Next, we multiply this estimate by the difference between the *EtrQ3* and the statutory tax rate to obtain the unexpected tax. Finally, we divide the unexpected tax by actual pre-tax earnings to obtain the induced change in ETR from the third to the fourth quarter (*Induced_Chg_Etr*). See the appendix for a detailed example.

We also include a control for unexpected changes in ETR due to fourth-quarter misestimation. We use tax return data to measure the extent of over- or underpayment of estimated taxes (*Tax_Owed*).[15] We assume that misestimation in prior quarters would affect both the estimated annual ETR and the estimated tax payments. We predict that *Etr4_Etr3* will be positively related to *Tax_Owed*. If the firm owes more tax than the prepayments, then it is more likely to show an increase in the ETR. Conversely, if the firm's tax return indicates that total tax is less than the prepayments, it is more likely to show a decrease in the ETR, absent earnings management.

We include the firms' annual ETR at the third quarter (*EtrQ3*) to control for the amount by which the firm could decrease its ETR. It will also pick up any underlying mean reversion (that is, extreme third-quarter ETRs become more central at year-end). In supplemental tests we find that our results do not depend on including this variable.

We include a control for the year to take into account any macroeconomic effects that caused systematic over- or underestimation of annual ETRs. We use Huber-White robust standard errors (Rogers 1993, generalizing White 1980), which assume and estimate a common component of the variance and covariance matrix for all observations from the same firm and are robust to heteroscedasticity and serial correlation (StataCorp 1999, 257). Because we use this correction, we do not separately control for industry effects.

4. Sample and results

Sample

Our sample consists of firms in the Large and Mid-Size Business (LMSB) Program of the Internal Revenue Service (IRS) from 1986 to 1999. We use tax return data, COMPUSTAT annual and quarterly financial statement data, and I/B/E/S analyst forecast data. We match firm-years between COMPUSTAT and I/B/E/S by Committee on Uniform Security Identification Procedures (CUSIP) and between COMPUSTAT and tax return data using employer identification numbers. The sample of matched observations is 19,402 firm-years that have data for pre-tax income and tax expense on an annual and a quarterly basis. We limit our sample to 14,942 observations with positive pre-tax income and positive effective tax rates, which are more easily interpreted. Of these, 14,938 have all analysis variables.

We then impose screens related to the research design. Analysts' reports, news stories, and Brown (2001) describe earnings surprises in terms of how many cents per share a company beat or missed an earnings target. We select the 8,911 observations whose difference between the I/B/E/S consensus forecast and the actual earnings per share (called *Miss_Forecast*) is within five cents per share to study firms that are sensitive to earnings-management incentives, because Brown's 2001 frequency distribution of earnings surprises shows a concentration within five cents. We also delete firm-year observations in the top and bottom 1 percent of the distributions of *EtrQ3*, *Chg_Etr*, and *Induced_Chg_Etr*, leaving a sample of 8,432 observations. Similar to the screen that limits our data to firms whose actual earnings are near the consensus forecast, we also limit our tests to the 4,656 observations whose earnings absent tax expense management are within five cents per share of the consensus forecast (*Miss_Amount*). Our results are generally robust to widening the screen, and we discuss this in sensitivity tests.

Our sample crosses multiple industries, so our results are generalizable across large profitable firms. Three percent of the sample (149 observations) is in mining and construction (SIC 1). Nearly 40 percent of the sample is in manufacturing, including 706 observations in SIC 2 and 1,298 in SIC 3. Six percent of the sample (283 observations) is in transportation (SIC 4). Sixteen percent of the sample (750) is in trade (SIC 5), 15 percent (701) is in finance (SIC 6), 16 percent (747) is in services (SIC 7 and SIC 8), and the remainder of less than 1 percent is in food (SIC 0) or other (SIC 9).

Table 1 shows univariate statistics for the 4,656 firm-year observations in our sample. Panel A shows that the change in ETR from the third to the fourth quarter (mean −0.003) is significantly different from zero. Firms beat the forecast on average by a half-cent per share (mean *Miss_Forecast* −0.005).

When we use the third-quarter ETR to estimate the earnings absent tax expense management, we see that *Miss_Amount* is also significantly negative, indicating that firms beat their forecast on average, even when using the third-quarter ETR. About 44 percent of firms would miss the forecast (*Miss*), so about 56 percent beat the forecast with the earnings absent tax expense management.

TABLE 1
Univariate statistics for sample observations and variable definitions

Panel A: Description of sample

Variable*	$n^\dagger$	Mean	s.d.	Q1	Median	Q3
Etr4_Etr3	4,656	−0.003	0.017	−0.006	−0.0003	0.0006
Miss_Forecast	4,656	−0.005	0.022	−0.02	0	0.01
Miss_Amount	4,656	−0.003	0.024	−0.021	−0.004	0.014
Miss	4,656	0.438	0.496	0	0	1
Induced_Chg_Etr	4,656	−0.00001	0.002	−0.0005	0	0.0002
Tax_Owed	4,656	−0.002	0.141	−0.030	−0.004	0.019
EtrQ3	4,656	0.363	0.057	0.343	0.374	0.395
EtrQ4	4,656	0.360	0.059	0.340	0.371	0.394
Accruals	3,978	−0.173	1.945	−0.498	−0.146	0.189
Deferred_tax	4,059	0.033	0.201	−0.025	0.009	0.071
Pre-tax income	4,656	134.704	500.704	10.147	25.391	78.041
Assets	4,656	1,799.511	9,771.417	99.390	265.163	871.765

TABLE 1 (Continued)

Panel B: Pearson correlation coefficients for regression variables*

	Etr4_Etr3	Miss	Miss_Amount	Induced Chg_Etr	Tax_Owed	EtrQ3	Accrual
Etr4_Etr3	1						
n = 4,656†							
Miss	−0.148	1					
n = 4,656	0						
Miss_Amount	−0.171	0.829	1				
n = 4,656	0	0					
Induced_Chg_Etr	0.038	0.090	0.101	1			
n = 4,656	0.01	0	0				
Tax_Owed	0.094	0.001	−0.006	−0.001	1		
n = 4,656	0	0.92	0.68	0.90			
EtrQ3	−0.029	0.015	0.017	−0.184	0.006	1	
n = 4,656	0.04	0.30	0.24	0	0.66		
Accruals	0.010	−0.036	−0.025	−0.056	−0.132	−0.015	1
n = 3,978	0	0.02	0.12	0.0004	0	0.34	
Deferred_tax	0.150	0.008	0.011	−0.011	0.329	0.048	0.220
n = 4,059	0	0.61	0.23	0.49	0	0.002	0

TABLE 1 (Continued)

Notes:

*   Variables are defined as follows:

Etr4_Etr3	= the fourth-quarter ETR (*EtrQ4*) less the third-quarter ETR (*EtrQ3*), where the ETR is defined as accumulated (through quarters four or three) year-to-date tax divided by accumulated pre-tax income;
Miss_Forecast	= the last I/B/E/S consensus forecast less fiscal year actual income per share, rounded to the nearest cent per share;
Miss_Amount	= the last I/B/E/S consensus forecast less pre-tax income*(1 − *EtrQ3*)*I/B/E/S split factor/common shares to compute basic EPS;
Miss	= a dummy variable that equals 1 if *Miss_Amount* > 0, and 0 otherwise;
Induced_Chg_Etr	= induced tax change/pre-tax income, where induced tax change equals (the statutory tax rate less *EtrQ3*) × unexpected pre-tax income; we estimate the unexpected pretax income as (I/B/E/S actual − I/B/E/S consensus forecast per share) × I/B/E/S split factor x common shares/(1 − the statutory tax rate); see the appendix for details;
Tax_Owed	= total tax after credits on the return less estimated payments and prior-year credited overpayment, scaled by pre-tax book income;
Accruals	= total accruals, scaled by pre-tax book income; where data permit, we measure total accruals using data from the statement of cash flows (Hribar and Collins 2002); where data are missing, we use Sloan's 1996 measure;
Deferred_tax	= deferred tax expense scaled by pre-tax income;
Pretax income	= pre-tax income, in millions of dollars; and
Assets	= assets, in millions of dollars.

Significance levels are shown in italics.

[†]   Firm-years from 1986 to 1999 with COMPUSTAT, I/B/E/S, and tax return data. The sample is limited as follows: firms with positive pre-tax income and positive *EtrQ4*, whose actual income is within five cents per share of the forecast, trimming the highest and lowest 1 percent of firms by ETR, and whose premanaged earnings are within five cents per share of the forecast.

Although it appears that our sample firms overpay their estimated taxes, the mean is not significantly different from zero. Annual ETRs reported at the third and fourth quarter both average approximately 36 percent, close to the current U.S. statutory rate of 35 percent. Average total accruals (available for only 3,978 firm-year observations) are negative, consistent with Sloan 1996, equaling −0.17.

We have a wide range of firm sizes, as indicated by the standard deviation of pre-tax income and assets. Recall that we limited the sample to firm-year observations, where pre-tax income was positive to facilitate the interpretation of ETRs.

Table 1, panel B shows Pearson correlation coefficients between our test variables. The change in ETR (*Etr4_Etr3*) is negatively correlated with whether unmanaged earnings miss the forecast (*Miss*, $\rho = -0.15$) and the amount by which firms miss the target (*Miss_Amount*, $\rho = -0.17$).

Etr4_Etr3 is weakly negatively correlated with *EtrQ3* ($p = -0.029$). *Etr4_Etr3* is slightly positively correlated with *Accruals*, consistent with income-increasing accruals as well as increasing effective tax rates. The continuous variable *Miss_Amount* is strongly correlated with the dummy variable *Miss* by construction.

Results

Table 2 results are consistent with our hypothesis. *Etr4_Etr3* is negatively related (coefficient $= -0.04$, $t = -1.87$) to the amount by which firms beat the forecast (*Miss_Amount*). The coefficient on the interaction term indicates that for firms that miss the forecast, the slope is even more negative (incremental coefficient $= -0.147$, $t = -3.69$). If we omit both *Miss_Amount* and the interaction term, the dummy alone is significantly negative ($t < -6.0$).

As predicted, *Etr4_Etr3* is positively related to both control variables, *Induced_Chg_Etr* and *Tax_Owed*. In untabulated results, we determine that our results are not sensitive to including these controls. Because we have controlled for induced changes and tax-planning effects, we interpret the negative relationship between missing the forecast and decreasing the effective tax rate as evidence of earnings management.

Interpretation

We conclude that when firms would have missed their earnings target using the annual ETR at the third quarter, firms decrease their annual ETR from the third to the fourth quarter by 0.191 percent for each cent they miss the target (0.191 percent = sum of coefficients $(0.044 + 0.147) \times 0.01$). This is evidence that managers use tax expense to achieve earnings targets.

Although the above results are consistent with the hypothesis that firms who miss analysts' forecasts will manage earnings, we have not yet provided evidence that such management is successful. Table 3 presents *t*-tests that show that firms' decreases in ETRs are associated with actual earnings beating the forecast. We examine only those firms who would have missed the forecast using the estimated annual ETR at the third quarter (*Miss* = 1). Firms whose reported earnings beat the forecast (*Miss_Forecast* ≤ 0) have a significantly more negative change in ETR than firms whose reported earnings continue to miss the forecast. This suggests that the decrease in the effective tax rate assists in meeting the forecast. We also examined the change in ETR adjusted for the induced change in ETR (*Etr4_Etr3* less *Induced_Chg_Etr*) and find that it is also significantly more negative when firms actually beat the forecast.

To understand why firms fail to decrease their ETR sufficiently to beat the target, we examine the amount by which they missed the target absent tax expense management (*Miss_Amount*). Firms that eventually beat the forecast (*Miss_Forecast* ≤ 0) only needed to increase earnings by 1.6 cents per share on average, while firms that

eventually missed the forecast (*Miss_Forecast* > 0) needed to increase earnings by 2.5 cents per share on average. The difference of approximately 1 cent per share is significant (*p*-value = 0).[16]

Figure 1 shows the frequency of firms actually missing or beating the forecast and reinforces the point that firms close to the target were more frequently successful at beating the target. When earnings absent tax expense management are within

TABLE 2

Regression of change in ETR from third to fourth quarter on incentive to manage tax expense

$$Etr4\_Etr3_{i,t} = \alpha_0 + \alpha_1 Miss_{i,t} + \alpha_2 Miss\_Amount_{i,t} + \alpha_3 Miss_{i,t}*Miss\_Amount_{i,t}$$
$$+ \alpha_4 Induced\_Chg\_ETR_{i,t} + \alpha_5 Tax\_Owed_{i,t} + \alpha_6 EtrQ3_{i,t} + \alpha_7 - \alpha_{19}Year_{i87\text{-}99} + e_{i,t}$$

Variable§	Pred. sign	Etr4_Etr3 (*t*-statistics)#
Miss	−	−0.0006
		(−0.499)
Miss_Amount	−	−0.044†
		(−1.87)
*Miss*Miss_Amount*	−	−0.147‡
		(−3.69)
Induced_Chg_Etr	+	0.464†
		(1.86)
Tax_Owed	+	0.012
		(1.27)
EtrQ3	−	−0.005
		(−0.66)
Intercept-year dummies		Not reported
R^2		4.8%
Observations**		4,656

Notes:

*   Significant at the 0.10 level (one-tailed).

†   Significant at the 0.05 level (one-tailed).

‡   Significant at the 0.01 level (one-tailed).

§   Variables are as defined in Table 1.

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

**   Firm-years from 1986 to 1999 with COMPUSTAT, I/B/E/S, and tax return data. The sample is limited as follows: firms with positive pre-tax income and positive *EtrQ4*, whose actual income is within five cents per share of the forecast, trimming the highest and lowest 1 percent of firms by ETR, and whose premanaged earnings are within five cents per share of the forecast.

two cents below the target, more firms beat the target than miss the target. This pattern reverses away from the target; as the distance from the target increases, more firms miss and fewer firms beat the target.

Additional tests

In Table 4, we report the results of testing a variation of the basic model to control for other variables that might be associated with tax and non-tax earnings management. Because we define our earnings-management incentive variable (*Miss_Amount*) based on actual pre-tax income, we have already conditioned on all earnings management other than tax expense management. Thus, including pre-tax earnings management variables as explanatory variables does not test whether firms that failed to achieve targets with pre-tax management will use tax expense to do so. Rather, it tests whether firms that exhibit a willingness to manage earnings through other accounts will also use tax expense. Because we have already conditioned on actual pre-tax earnings, any earnings management that generates temporary differences, such as many discretionary accruals, only affects the relative amounts of deferred and current tax expense, but not the total tax expense. To use tax expense to increase earnings, firms must lower total tax expense through items that would affect the total effective tax rate.

We include total accruals (or deferred tax expense) scaled by income as a measure of pre-tax earnings management.[17] We interact accruals (or deferred tax expense) with *Miss* because we expect that higher levels of accruals or deferred tax expense are associated with decreases in effective tax rates when firms miss the forecast. With respect to the main effect, we do not have a strong prediction. To the extent that accruals or deferred tax expense represent unexpected earnings, we might observe a positive coefficient similar to that expected on *Induced_Chg_Etr*.

TABLE 3

Tests of change in effective tax rate by whether firms beat the forecast with reported earnings, for the subsample of firms where premanaged income would have missed the forecast*

| Miss_Forecast[†]	Etr4_Etr3	Miss_Amount
> 0	−0.003[‡]	0.0246[‡]
≤ 0	−0.008[‡]	0.0159[‡]
t-statistic	6.32[‡]	14.60[‡]

Notes:

Variables are as defined in Table 1.

*   The sample is limited to firms whose after-tax earnings would have missed the forecast using actual pre-tax earnings and the annual ETR as of the third quarter (*n* = 2,039).

†   *Miss_Forecast* is positive for firms whose actual earnings miss the forecast.

‡   Significant at the 0.01 level (one-tailed).

Figure 1   Frequency of firms actually missing or beating forecast
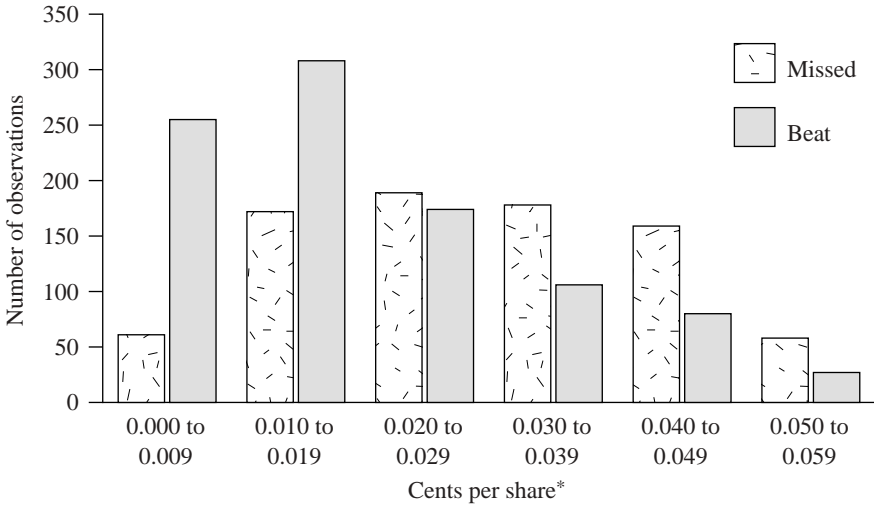
Note:

*   Amount the firm would have missed the forecast using *EtrQ3*.

Table 4, model A indicates that, although other results are similar to those reported in Table 2, we do not find that firms with high levels of accruals are more likely to manage earnings. In both model A (accruals) and model B (deferred tax expense), the coefficient on the interaction term is negative, as expected. Firms that would miss the forecast absent tax expense management are more likely to decrease their effective tax rates and have higher accruals or deferred tax expense relative to firms that beat the forecast, consistent with firms that are already willing to book discretionary income being more willing to use tax expense for earnings management.

Sensitivity tests

Our results are robust to a number of specifications. Because the tax return data we use to estimate *Tax_Owed* are not widely available, we also consider other proxies for unexpected tax planning based solely on financial statement data. Although we performed our initial data screens based on availability of tax return data, we found that the I/B/E/S forecast data imposed a greater sample constraint than the tax return data.

First, we substitute taxes payable net of refunds (*Tax_Payable* (COMPUSTAT data item #71 to item #161), scaled by pre-tax income), which is correlated 59 percent with *Tax_Owed*. Although our test results are unchanged, *Tax_Payable* is not significant in the Table 2 model. We also compute (*Tax_Owed_FS*) based on financial statement data, measured as the difference between current tax expense (item #16 to item #50) and taxes paid from the statement of cash flows (item #317). Our regression results are unchanged, although *Tax_Owed_FS* is insignificant. Note

that these measures of taxes owing are polluted by different book and tax treatment of stock options, a problem that has grown throughout the 1990s (Hanlon and Shevlin 2002). Thus, we are unable to find a workable substitute for *Tax_Owed* based solely on financial statement variables. On the basis of the correlations with *Tax_Owed*, we believe *Tax_Payable* ($\rho = 0.57$) is superior to *Tax_Owed_FS* ($\rho = -0.05$) if researchers needed a public data proxy for taxes owed. Regardless, our results are robust to dropping our control for overpayment of estimated tax, *Tax_Owed*.

TABLE 4

Regression of change in ETR on incentives to manage tax expense, controlling for accruals management

$$Etr4\_Etr3_{i,t} = \alpha_0 + \alpha_1 Miss_{i,t} + \alpha_2 Miss\_Amount_{i,t} + \alpha_3 Miss_{i,t} * Miss\_Amount_{i,t}$$
$$+ \alpha_4 Induced\_Chg\_ETR_{i,t} + \alpha_5 Tax\_Owed_{i,t} + \alpha_6 EtrQ3_{i,t}$$
$$+ \alpha_7 Accruals \text{ (or } Deferred\_tax)_{i,t} + \alpha_8 Accruals$$
$$\text{(or } Deferred\_tax)_{i,t} * Miss\_Amount_{i,t} + \alpha_9 - \alpha_{21} Year_{i87-99} + e_{i,t}$$

Variable[§]	Pred. sign	Model A Etr4_Etr3 (*t*-statistics)[†]	Model B Etr4_Etr3 (*t*-statistics)[#]
Miss	–	−0.0000 (−0.04)	0.0001 (0.09)
Miss_Amount	–	−0.062[‡] (−2.463)	−0.046[*] (−1.81)
Miss*Miss_Amount	–	−0.167[‡] (−3.889)	−0.178[‡] (−4.15)
Induced_Chg_Etr	+	0.587[‡] (2.54)	0.748[‡] (3.03)
Tax_Owed	+	0.014[‡] (2.97)	0.001 (0.14)
EtrQ3	–	0.0001 (0.02)	0.001 (0.12)
Accruals	?	0.0018[†] (2.21)	
Miss*Accruals	–	−0.0019[†] (−2.25)	
Deferred_tax	?		0.018[†] (2.21)
Miss*Deferred_tax	–		−0.018[†] (−1.86)
Intercept-year dummies		Not reported	Not reported
R^2		8.4%	8.0%
Observations[**]		3,978	4,059

(The table is continued on the next page.)

TABLE 4 (Continued)

Notes:

*   Significant at the 0.10 level (one-tailed).

†   Significant at the 0.05 level (one-tailed).

‡   Significant at the 0.01 level (one-tailed).

§   Variables are as defined in Table 1.

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

**   Firm-years from 1986 to 1999 with COMPUSTAT, I/B/E/S, and tax return data. The sample is limited as follows: firms with positive pre-tax income and positive *EtrQ4*, whose actual income is within five cents per share of the forecast, trimming the highest and lowest 1 percent of firms by ETR, and whose premanaged earnings are within five cents per share of the forecast.

Our results are unchanged if we include size or foreign income (scaled by pre-tax income), variables that proxy for whether the firm has the sophistication or complex international structure to permit more tax-planning flexibility. We also partition our sample according to whether foreign pre-tax income exists (1,359 observations) or is missing (3,297) observations. Results are unchanged in the larger subsample with no foreign income. In the foreign income subsample, results are weak. Missing the forecast (*Miss*) is significantly associated with decreasing the effective tax rate (*Chg_Etr*), but the amount by which the firm misses the forecast is unrelated, and the interaction term (*Miss*Miss_Amount*) is only significant at 10 percent, one-tailed.

Our sample period (1986 to 1999) spans two financial reporting regimes for taxes: *APB Opinion No. 11* (effective through 1992) and *SFAS No. 109* (effective starting in 1993).[18] When we partition our sample into these two periods, our test variable for *Miss_Amount* is significantly negative in the *APB Opinion No. 11* period, and our test variable for the interaction of *Miss*Miss_Amount* is significantly negative in the *SFAS No. 109* period. Neither period generates the negative relationship for both the missed forecast variable and the interaction term that we report for the pooled sample. However, if we include only *Miss_Amount* in both subperiods, it is significantly negative in both (*APB Opinion No. 11* period coefficient −0.14, *t* = 5.7; *SFAS No. 109* coefficient −0.12, *t* = 8.4), suggesting that the reporting regime does not substantially affect the use of tax expense for earnings management when the target will be missed, but that the cookie jar phenomenon seems to be present only in the earlier period.

When we estimate annual regressions rather than include a year dummy control, we find that there are sufficient observations to estimate the regression from 1990 through 1999 (10 years). If we only include *Miss* as our measure of earnings-management incentive, it is significantly negative in 8 of 10 years (5 percent

one-tailed). The average coefficient of -0.005 is significantly negative ($t = -4.17$). *Miss_Amount* is significant in 6 of 10 years when we add it to the model, and the average coefficient of -0.108 is significantly negative ($t = -5.37$). However, the annual models are not robust to adding the interaction term.

Our main tests are limited to firms whose actual and unmanaged earnings are within five cents of the consensus forecast. A concern with earnings further from the forecast is noise. The consensus forecast is likely to be a poor proxy for the target when firms beat or miss it by large amounts. We also have a problem with high levels of earnings per share where firms miss by a large number of cents per share, but a relatively small percentage of earnings per share. In sensitivity tests, our results are robust to different screens related to how near the unmanaged earnings are to the forecast. If we expand the sample to include firms whose unmanaged earnings (*Miss_Amount*) are within 10 or 15 cents of the forecast, our results are unchanged. The results are somewhat sensitive, however, to expanding the sample to include firms whose actual earnings are more than five cents different from the forecast (*Miss_Forecast*). For the sample of firms whose actual and unmanaged earnings are within 10 or 15 cents of the forecast, the coefficient on *Miss_Amount* remains significantly negative, but the significance of the coefficient on the interaction term is reduced and intermittently insignificant.

We evaluated the effect of defining our earnings target using the mean of forecasts made after the fiscal year-end rather than the consensus forecast. We exclude firms with no forecasts between the fiscal year-end and the earnings announcement. As above, we alternatively base the sample on beating or missing the final forecast by less or no more than 5, 10, or 15 cents per share, using either the earnings before tax expense management or the earnings after tax expense management. We find that *Miss_Amount* is significantly negative across a wide range of sample cuts. The interaction term of *Miss*Miss_Amount* is only significant in the narrow samples inside five cents per share of actual earnings beating the last forecast and earnings before tax expense management being within either 10 cents or 5 cents per share of the last forecast. These results are consistent with the consensus forecast result presented in Tables 2, 3, and 4. Thus, we conclude that our results do not depend on the way we define the analyst target.

Finally, we estimate the regression in the tails by using a subsample of firms that either beat or missed the target by at least 15 cents per share. Whether we define beat or missed using actual earnings or earnings before tax expense management, the estimated coefficients on *Miss_Amount* and the interaction term are insignificant. This nonresult provides assurance that the results are not spurious due to imperfect controls for any induced effect. The *Induced_Chg* is positive and significant in the tails, as expected by construction.

5. Conclusions

We investigate whether income tax expense is regularly used to achieve earnings targets. Tax expense provides a final opportunity to meet earnings targets after the firm has agreed to any pre-tax adjusting entries required by the independent auditors. Tax expense also contains the complexity and discretion necessary for information

asymmetry to persist. Thus, tax expense is a powerful setting in which to examine earnings management among a wide range of firms.

We examine whether firms manage tax expense to reach analysts' earnings targets. We find that firms decrease their annual ETR from the third to the fourth quarter as earnings absent tax expense management fall short of the consensus forecast. This decrease is larger than the corresponding increase in ETR (for example, to build reserves) when firms beat the forecast. Our results are consistent with firms using tax expense as a cookie jar reserve to manage earnings when other pretax accruals fail to achieve the target. Supplemental tests suggest that firms with higher accruals are more likely to use tax expense to manage earnings.

Our findings contribute to the evidence that firms manage earnings to reach benchmarks. Our results are based on a broad sample of large firms, which allows for more generalizability than many prior studies. Evidence on the tools used to manage earnings is useful to financial statement users and policymakers because the extent of tax expense management has not been thoroughly documented.

Appendix

The following example illustrates the construction of *Induced_Chg_ETR*:

	Third-quarter projection	Actual fourth-quarter unexpected decrease	Actual fourth-quarter unexpected increase
Pre-tax financial income	$90	$80	$100
Permanent differences*	$10	$10	$10
Taxable income	$100	$90	$110
Tax expense	$35	$31.50	$38.50
ETR	38.89%	39.38%	38.5%
Induced change calculation			
1. Unexpected income		−$10	$10
2. Tax effect = unexpected income × (35%† − 38.89%)		0.39	−0.39
2. Induced change = tax effect/pre-tax income		0.49%	−0.39%

Notes:

Step 1: Unexpected decrease in pre-tax income.

Step 2: Multiply decrease in income by difference between statutory rate[†] and *EtrQ3*.

Step 3: Divide by pre-tax income to get induced change in ETR.

[*]   We construct this example using positive permanent differences. Thus, the effective tax rate is higher than the statutory rate. As a result, increasing pre-tax income lowers the effective tax rate because the positive permanent differences constitute a lower proportion of taxable income. Likewise, decreasing pre-tax income increases the effective tax rate because the positive permanent differences constitute a larger proportion of taxable income.

   If, conversely, permanent differences were negative or credits were present, the direction of the induced change would reverse, because the proportion of pre-tax income subject to a lower tax rate would increase for unexpected earnings increases and decrease for unexpected earnings decreases.

[†]   We use the U.S. statutory rate applicable to each sample year to calculate *Induced_Chg_Etr*. This computation assumes that the marginal rate of tax that applies to unexpected income is the U.S. statutory rate, because our sample consists of large, publicly traded, and profitable U.S. taxpayers. We do not expect the marginal tax rate to differ systematically between firms that would have beaten or missed the target using the third-quarter estimate of the annual ETR.

Endnotes

1. To minimize estimation errors and facilitate the information collection, some multinationals choose a fiscal year-end for their foreign subsidiaries prior to the fiscal year-end of the U.S. parent. Nevertheless, consolidated accounting and worldwide tax estimation requires complex estimates between year-end and the earnings announcement date, typically less than two months after the fiscal year-end. Large corporations usually file their tax returns at the extended due date, which is the fifteenth day of the ninth month after the fiscal year-end. Corrections to estimates are recorded when discovered under *APB Opinion No. 20*. Most such estimation errors would be revealed when the tax return is filed in the third quarter of the following year. Thus, a third quarter ETR should fully incorporate any prior year correction for estimation error.

2. See Miller and Skinner 1998, Visvanathan 1998, Schrand and Wong 2003, Frank and Rego 2004, and Krull 2004.

3. Plumlee (2003) finds that while statutory rate changes are easy to forecast, foreign tax credits, the alternative minimum tax, and other aspects of taxation are difficult for analysts to predict.

    Karen Pincus (University of Arkansas auditing professor) relates the following anecdote consistent with auditor information asymmetry. She attended a training session for "second partner review", in which the partners were asked whether there were any accounts for which they had no "smell test". These partners, who are usually chosen as second partners because of their industry expertise or because they are the former engagement partners on the clients, all responded, "the tax accounts, especially deferred taxes".

4. See http://www.fdta-cite.org/etr.html.

5. See http://www.thestreet.com/p/dps/cc/columnistconversation1.html, April 22, 2002.

6. We discuss this point at greater length in the hypothesis section. Parallel to but outside the scope of our study, various authors find mixed evidence concerning how the market reacts to ETR changes (Lev and Thiagarajan 1993; Abarbanell and Bushee 1997; Guenther and Jones 2003). Guenther and Jones find that positive stock return response to ETR changes depends on the nature of the ETR change, with changes related to foreign earnings having larger stock price responses. On average, the stock price response for ETR changes is less than that for pre-tax earnings. Schmidt (2003) finds that first-quarter ETR changes are more persistent than ETR changes in the remainder of the year, consistent with earnings management occurring later in the year. Chaney and Jeter (1994) also find that market returns are negatively associated with deferred tax expenses.

7. Other studies examining benchmarks include the following. Barth, Elliott, and Finn (1999) and Kasznik and McNichols (2002) find that firms are rewarded for reporting a consistent string of earnings increases or meeting analysts' forecasts. Hayn (1995) and Burgstahler and Dichev (1997) find evidence that losses and earnings declines are statistically less frequent than a normal distribution would predict, suggesting that managers avoid them. Burgstahler and Eames (2002) find evidence that firms are more likely to meet or just beat analysts' forecasted earnings than they are to just miss

analysts forecasted earnings. Brown (2001) and Matsumoto (2002) show that the frequency of firms just beating the forecast has increased in the 1990s.

8. We do not examine the avoid loss or earnings decrease benchmarks. Myers and Skinner (2002) find that firms with long strings of avoiding quarterly earnings decreases use effective tax rates to smooth reported earnings per share. We do not investigate earnings management to avoid a loss, because Beaver, McNichols, and Nelson (2003) argue that much of the discontinuity around zero is related to asymmetric treatment of income taxes and special items.

9. Valuation allowances must be recorded, unless a firm believes that the realization of deferred tax assets are "more likely than not". The judgement required to forecast future earnings permits managers to manage earnings through the valuation allowance. Under *APB Opinion No. 23*, managers need not record incremental U.S. deferred tax on foreign subsidiary earnings if they declare such earnings "permanently reinvested". Krull (2004) argues that because managers' intent is the primary factor in the declaration, firms can increase earnings by designating foreign earnings in low-tax countries as permanently reinvested, thereby avoiding booking tax expense for the eventual U.S. repatriation tax.

10. This measure uses COMPUSTAT data only, which provides consistency from quarter three to quarter four, although we acknowledge that the computed ETR does not always agree with the tax footnote disclosure.

11. Baber and Kang (2002) show that rounding induced by I/B/E/S split adjustments can result in misclassifying whether a firm just beats or just misses the consensus analysts' forecasts. See also Payne and Thomas forthcoming. Our results are robust to estimating our regressions (Table 2) or evaluating differences in means (Table 3) using the subsample of firms (2,680 observations) that have no split adjustments.

12. Tax planning often involves complex transactions that have earnings management effects. Auditors indicate in survey results (Nelson, Elliott, and Tarpley 2002) that firms deliberately structure transactions to manage earnings. Although Nelson et al. do not report structured transactions in the tax area (see their Table 2, 185–6), they do report structured transactions that have tax effects, including consolidations, business combinations, and leases.

    A recent example of a structured transaction with large tax and earnings effects is the decision to expatriate the corporation to a tax haven (Desai and Hines 2002). This transaction could be implemented at year-end, although like other tax-motivated mergers and acquisitions activity, it requires careful and sometimes lengthy planning. Four of 19 known inversions were completed during the same quarter they were announced (Cloyd, Mills, and Weaver 2003, Table 1, 44).

13. Abarbanell and Lehavy (2002) point out that I/B/E/S earnings forecasts frequently differ from net income. I/B/E/S notes, "With very few exceptions analysts make their earnings forecasts on a continuing operations basis. This means that I/B/E/S receives an analyst's forecast after discontinued operations, extraordinary charges, and other non-operating items have been backed out." We replicate our tests for the sample of 3,358 observations that report neither special items (COMPUSTAT item #17) nor extraordinary and discontinued operations (COMPUSTAT item #48). Our results are

unchanged, suggesting the possible differences in income definition between generally accepted accounting principles and I/B/E/S forecasts are not driving our results.

14. Our results are robust to substituting or adding a simpler control equal to the percentage change in pre-tax income from the third to the fourth quarter.

15. Under Internal Revenue Code section 6655, corporations must prepay 100 percent of the tax reported on the corporation's return for that year to avoid penalty. The payments are due quarterly in the fourth, sixth, ninth, and twelfth months. Our measure of estimated payments includes both actual estimated payments made and overpayments credited from the prior year.

16. We examined those firms whose earnings absent tax expense management would have equaled or beat the analyst consensus forecast and found no significant change in ETR (*Etr4_Etr3*), or change in ETR adjusted for the induced change in ETR (*Etr4_Etr3* less *Induced_Etr4_Etr3*).

17. Where data are available, we estimate total accruals from the statement of cash flows (Hribar and Collins 2002); where data are missing, we use a balance sheet approach (Sloan 1996). Phillips, Pincus, and Rego (2003) use deferred tax expense as an alternative proxy for abnormal accruals to study pre-tax earnings management. Joos, Pratt, and Young (2003) find that extreme deferred tax expenses are associated with transitory accruals. Our paper differs from Phillips et al. and Joos et al. because we investigate direct tax expense management, controlling for pre-tax earnings management.

18. Although the theoretical bases for the standards differ (*APB Opinion No. 11* takes an income approach and *SFAS No. 109* takes a liability approach), the overall effect as it relates to our research question is similar. To use tax expense to increase earnings, firms must lower total tax expense through items that would affect the total effective tax rate. *SFAS No. 109* does introduce more discretion in the judgement necessary to record deferred tax assets and the associated valuation allowance. See Ayers 1998 for the market effects of differing disclosures under *APB Opinion No. 11* versus *SFAS No. 109*, as well as additional institutional detail regarding the differences in rules.

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