

NEW EVIDENCE ON THE IMPORTANCE OF DEFERRED TAX ASSETS AND LIABILITIES
AND ON MANAGERIAL MANIPULATION OF TAX EXPENSE

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ABSTRACT

We collect data from the tax footnotes of a sample of large U.S. corporations between 1994 and 2004 and use these data to investigate two issues concerning financial accounting for taxes. We document the importance of deferred tax assets and liabilities for our sample firms and demonstrate the substantial heterogeneity in firm tax positions. In 2004, 47 firms in our sample of 71 reported net deferred tax assets and 24 reported net deferred tax liabilities. In our sample, total deferred tax assets for firms with such assets in 2004 were \$57.6 billion, while total deferred tax liabilities for firms with such liabilities were \$212.8 billion. This implies that a five percentage point decline in the federal statutory corporate tax rate would reduce net income by roughly \$8.2 billion at our sample firms with net deferred tax assets, since these assets would decline in value and this would in turn reduce net income. Firms differ substantially in the composition of deferred tax assets and liabilities. We demonstrate this by disaggregating deferred tax accounts for our sample firms. We also explore the role of managerial discretion in reporting tax expense. We find evidence of tax management when firms will otherwise miss earnings targets, and we extend prior research by analyzing which components of tax expense are most likely to be used for earnings management.

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Economic research on corporate tax policy has historically ignored the financial accounting rules that link tax liabilities and payments to reported earnings. In contrast, research in accounting such as the work surveyed in Shackelford and Shevlin (2001) has long recognized the potential impact of accounting rules not just on reported earnings but more generally on firm behavior. Recent disparities between book and tax earnings, noted for example in Desai (2005) and Hanlon and Shevlin (2005), have drawn attention to accounting issues that involve corporate taxes. This paper examines two issues involving financial accounting for taxes.

The first concerns the importance of deferred tax assets (DTAs) and deferred tax liabilities (DTLs) on corporate balance sheets. We present new information on the aggregate value of both DTAs and DTLs, and on the potential impact of statutory corporate tax rate changes on these balance sheet items and on net earnings. We also discuss several non-tax policies that could have an important impact on deferred tax positions. Employee benefits and post-retirement benefits are a large portion of the deferred assets in our sample; changes in federal social insurance policies would negatively affect firms with these positions. As GAAP increases its reliance on fair-value accounting over transaction-driving cash-basis accounting, deferred tax positions are likely to increase. SFAS 115, which changed the accounting principles governing investments in debt and equity instruments, illustrates how firms have begun to exploit these principles.

The second issue that we explore is the role of tax management by executives who are trying to meet earnings targets. We test whether firms reduce their reported tax expense when they are close to analysts' consensus earnings forecast, but might miss that forecast if they applied their historical effective tax rate to their pretax earnings. We find evidence of target-driven tax expense adjustments. We study the components of tax expense and find that these adjustments occur primarily in domestic and deferred taxes.

This paper is divided into six sections. The first explains how temporary differences between book and tax accounting generate deferred tax assets and liabilities. It also places this study in

context and briefly summarizes previous research that has examined accounting for income taxes. The second section describes the data set that we have assembled from a sample of firms' SEC filings. It reports summary statistics on the number of firms in our sample with DTAs and DTLs, along with information on the total value of these balance sheet positions. Section three extrapolates our sample total of DTAs and DTLs to calculate the aggregate effect on net income of a statutory rate change. The fourth section presents a much more detailed breakdown of DTAs and DTLs and explores the relative importance of difference types of temporary book-tax differences, such as those associated with depreciation of property plant and equipment, retiree health costs, and accounting for leases. This section also describes a number of policy changes, such as reform of the federal corporate income tax, shifts toward fair-value accounting for GAAP, and changes in federal health insurance policy, which could generate important revaluations of deferred tax assets and liabilities. Section five studies the use of tax expense in managing corporate earnings, and disaggregates taxes into foreign and domestic components, as well as into current and deferred components. There is a brief conclusion.

1. Temporary Differences Between Book and Tax Earnings

A firm's total tax expense, an accounting concept, equals its statutory corporate tax rate times its taxable book income. Taxable book income, which corresponds to income earned today that will be taxed at some point in time, equals pre-tax book income less permanent differences between book and tax income. Permanent differences arise when accounting rules and tax rules treat components of income or expenses in different ways. Examples of permanent differences are the treatment of municipal bond income, which is not included in taxable income but is included in book income, or the reporting of fines and penalties, which are not deductible for tax purposes but are deductible in computing book earnings. Permanent book-tax differences do not generate deferred tax assets or liabilities; their impact on the firm's accounting earnings are fully reflected when they accrue.

Temporary book-tax differences arise when accounting rules and tax rules differ on when a component of income is recognized. One example is the recognition of compensation expenses such as bonuses. Accounting standards attempt to match effort with accomplishment and so accrue expenses incurred but not yet paid. The tax code, which tries to limit the number of assumptions used to compute taxable income, more closely matches cash basis accounting for expenses.

Current tax expense is an estimate of the firm's taxes to be reported on its current year tax returns. Temporary book-tax differences generate a disparity between a firm's current tax expense and its total tax expense. This is a deferred tax expense.

$$(1) \quad \text{Deferred Tax Expense} = \tau * \text{Temporary Differences} \\ = \text{Total Tax Expense} - \text{Current Tax Expense}.$$

This statement holds in the absence of tax rate changes, which require deferred tax revaluations.¹

Temporary differences can arise from many sources, including differences between depreciation schedules for book and tax purposes, differences in accounting and tax rules governing the accrual of expenses for retiree health benefits, and differences in the book and tax treatment of leases.

A firm's deferred tax asset or liability is defined as the current statutory corporate tax rate times the historical sum of the firm's temporary differences:

$$(2) \quad \text{Deferred Tax Liability} = \tau_t * (\sum_i \text{Temporary Differences}_{t-i}).$$

A firm with a positive sum of temporary differences, one for which the cumulated total tax expense exceeds the cumulated current tax expense, has a deferred tax liability (DTL). This indicates that the firm owes the taxing authority taxes; the firm has not yet paid taxes on income that has been booked for accounting purposes. Firms with taxable income in excess of book income for an extended period will, in contrast, have a deferred tax asset (DTA). Firms with DTAs are owed future tax relief; they have already paid taxes on income that has not yet been reported for accounting purposes. A DTA might arise, for example, if a firm has a net operating loss carryforward.

SFAS 109 prescribes the current rules governing deferred tax assets and liabilities. It took effect for fiscal years beginning after December 15, 1991. For some firms, FY 1993 was the first year when their financial statements were prepared in accordance with this regulation. This is the reason our sample begins with FY 1993. Three features of SFAS 109 are particularly important for our analysis. First, it requires firms to report both deferred tax assets and deferred tax liabilities, not just a net deferred tax position. Second, it requires firms to adjust their reported DTAs and DTLs when laws change. Changes in statutory corporate tax rates, for example, must be reflected in a firm's DTAs or DTLs. This can create a linkage between tax policy changes and reported earnings that goes beyond the tax treatment of current income. A reduction in statutory corporate tax rates, for example, would reduce the value of DTAs and lead firms with DTAs to report lower earnings. Third, SFAS 109 requires firms to report a valuation allowance that indicates the probability of realizing deferred tax assets and liabilities. This information permits investors to more accurately value the tax cost or benefit associated with a DTA or DTL.²

A number of previous studies have examined how analysts process information on deferred taxes, and how the capital market values firms with deferred tax assets and liabilities. Chen and Schoderbek (2000) study how analysts reacted to changes in deferred tax assets that were triggered by the corporate tax rate increase of 1993. They test whether analysts recognized that such changes were transitory and that they had little or no predictive power for future earnings. At least for firms that disclose enough detailed information about DTAs and DTLs for analysts to estimate the impact of the rate change, this component of earnings was apparently recognized as transitory.

Schmidt (2006) examines a related issue concerning the tax component of earnings and its role in forecasting. He distinguishes initial and revised tax change components and rejects the null hypothesis that ETR-related changes in earnings are transitory shocks with no long-run effects on earnings. The initial tax change component appears to be persistent and to contain information that helps forecast future earnings.

The valuation of deferred tax positions has attracted both conceptual and empirical research. Guenther and Sansing (2000) develop an analytical model for valuation of a firm with a deferred tax asset or liability. Givoly and Hayn (1992) focus on empirical evidence of valuation effects by studying how firm share prices evolved around the passage of the 1986 Tax Reform Act. They find that investors viewed DTLs as true liabilities, and that legislative changes that reduced the likelihood of paying these taxes had a favorable effect on share prices. Amir, Kirschenheiter, and Willard (1997) present related empirical findings on the market value of deferred tax components. They focus on Fortune 500 companies in fiscal years 1992-1994, and disaggregate the components of deferred tax accounts to test the hypothesis that different components have different valuation effects. Their results suggest that market participants do perform some disaggregate analysis. The DTLs associated with depreciation and amortization, for example, have virtually no impact on share prices, while other components do have market impact.

Our study of deferred tax assets and liabilities adopts the perspective of a public policy analyst rather than that of a corporate analyst. To understand the potential consequences of changes in corporate tax rates or other tax policy proposals, policymakers need to understand the significance and make-up of deferred tax assets and liabilities. Our study of deferred tax balance sheets aims to provide such background information and to offer statistics on how deferred tax balances have changed in the period since implementation of SFAS 109.

2. Data Collection and Summary Findings

Publicly-available data sources such as COMPUSTAT do not contain sufficient detail on corporate tax expenses to permit analysis of temporary book-tax differences. They do not disaggregate the components of tax expense. We therefore collect data from firms' 10-K filings. This section describes the sample of firms that we examine and presents summary statistics with regard to DTAs and DTLs for these firms.

2.1 Sample Construction

We collect data from the tax footnote in 10-K filings for fiscal years between 1993 and 2004. We collect information on firms in the FORTUNE 50 for each year – the fifty largest firms ranked by gross revenue.³ Our sample includes both financial and non-financial firms. Since we are interested in tracking firm DTAs and DTLs over time, we use the annual FORTUNE 50 lists to construct a panel data set on firm tax information. We collect data on any firm in the FORTUNE 50 in any year in our sample for the entire sample period, even if the firm was not in the FORTUNE 50 in all of our sample years. There is moderate turnover in the FORTUNE 50. Only 25 of the firms in the 1995 FORTUNE 50 were in the 2004 FORTUNE 50. Nine of the 50 firms in the 1995 sample had been acquired by 2004. In a typical year, five firms leave the FORTUNE 50 for various reasons.

A total of 100 firms appear in the FORTUNE 50 at least once during our twelve year sample. We drop nine of these firms for data limitation reasons. Chrysler and Amoco are acquired by foreign firms and do not have adequate disclosure after they are acquired, State Farm Insurance and TIAA-CREF are private companies who are not required to file a 10-K, Motorola provides extremely limited tax disclosures, McKesson and Allstate disclose only in proxy statements which we are unable to locate, and Fannie Mae and Freddie Mac are government-sponsored entities which may have different reporting incentives than private companies. Our remaining sample includes 91 firms.

In tracing firms forward, or backward, we encounter many corporate control transactions in which FORTUNE 50 firms acquire other firms, or in some cases are acquired. When this occurs we expand our sample to include the acquired firm in earlier years. To preserve data comparability over time, we create a “super-firm” by combining the distinct accounts of two firms that subsequently consolidated. Because most of the companies acquired by FORTUNE 50 firms are companies that are not part of the FORTUNE 50, we collect data on many smaller firms as well as on the large firms in the FORTUNE 50. Collecting data on acquisition targets substantially increases the number of firms in our sample: 204 firms are included in our data base for at least one year. These firms

generate 74 “super-firms.” Due to both limited availability of electronic filings in the early years of our sample and some firms not becoming publicly traded until later in our sample, our sample size is significantly less than 74 during the early years; there are 62 “super-firms” in the first year of our sample (1993), and 71 in the final year. We exclude two “super firms,” Cardinal Health and MCI Worldcom, from our sample because they engage in substantial private merger and acquisition activity which makes them difficult to track in all sample years, which brings the number of Fortune 50 firms included in our sample to 89. Appendix A lists our sample firms. In our analysis of deferred tax positions, we use “super-firms” rather than individual companies as our units of observation to preserve comparability in our statistics from year to year.

We collect three data items from each firm’s tax footnote: the deferred tax balance sheet, the tax summary, and the rate reconciliation. Where this information is presented in text, we convert it to tabular format. There is substantial variation across firms in the level of detail presented in the footnote, although most firms follow a stable reporting policy from year to year. We assign the components of the deferred tax balance sheet and the tax summary to various sub-categories. Appendix B describes the various categories that we apply to the tax information. There are twenty categories for the deferred tax balance sheet, seven for the tax summary, and eighteen for the rate reconciliation. While variables in the deferred tax balance and the rate reconciliation are assigned to one and only one category, variables in the tax summary may be assigned to up to three categories. For example, Federal Deferred Tax is part of the Federal, Domestic, and Deferred categories.⁴

After we collect the tax footnote information, we match the observations for each firm-year with electronically available financial data. Each firm-year is matched with COMPUSTAT data based on firm name and year, and validated using total assets and net income.⁵ After confirming this match, firm-years are matched with I/B/E/S summary analyst data using CUSIP.⁶ Of the 1459 firm-years in our sample, 1340 have a consensus analyst estimate that is less than 90 days old.

There are several potential difficulties with the measures of deferred tax assets and liabilities

that we collect from 10-K filings. First, they consolidate both foreign and domestic tax accounts. This makes it difficult to determine how changes in U.S. statutory tax rates alone would impact DTA or DTL for an individual firm. For some firms with substantial multinational operations, this may be an important limitation. A second, and related, problem is the consolidation of the state, local, and federal tax accounts within the United States. The same problem, the inability to identify the impact of federal tax policy on the firm, arises in this case. Finally, firms may make different auxiliary assumptions in computing the value of DTAs and DTLs. These differences may lead a statutory tax change or another shock to the policy environment to have different impacts on different firms. We do not have any data on the detailed calculations underlying the tax footnotes.

2.2 Summary Findings

Table 1 presents summary information on our sample, including the number of firms in the data set for each year, and the market value of equity for these firms. The last four columns show the number of firms in each sample-year that report deferred tax assets, the number reporting deferred tax liabilities, and the total value of these deferred tax items. The data clearly demonstrate the heterogeneity in firm tax positions, as well as how these positions have changed over time. At the beginning of our sample, in 1993, 29 “super-firms” report net deferred tax assets valued at \$46.3 billion, while 33 report net deferred tax liabilities valued at \$64.8 billion. The proportion of net DTL firms increases through our sample period, and in the last year for which we collect data, 2004, 24 of the 71 sample “super-firms” report net DTAs, while 47 report net DTLs. The aggregate value of the net DTLs for firms with net DTLs, \$212.8 billion, is also substantially greater than the aggregate value of net DTAs for firms with net DTAs, \$57.6 billion, in 2004.

Table 2 presents more detailed information on the composition of deferred tax positions. It disaggregates both DTAs and DTLs into their constituent components, and indicates the sources of the most important temporary book-tax differences. Average firm amounts are presented to facilitate comparison across years with different sample sizes. Appendix B provides a list of the sub-

categories to which we assign deferred positions; in Table 2, the small categories Foreign Tax Carryforwards, Inventory, and State have been included with Carryforwards, with Other Assets, and with Other Liabilities, respectively.

The results in Table 2 display some variation in the key sources of deferred tax positions even within our twelve year sample. At the start of our sample, the most important source of deferred tax assets, other than unclassifiable deferred tax positions, was Other Post-Employment Benefits (OPEB), which is primarily retiree health and pension, when it is not separately stated. The most important source of deferred tax liabilities was Property, Plant and Equipment (PPE). Other major factors in deferred tax assets were Carryforwards, including carryforwards relating to net operating losses (NOL), foreign tax credits, investment tax credits, and research and development credits, and Employee Benefits, including deferred and accrued compensation, accrued vacation, stock-based compensation, accrued employee medical, and OPEB and Pension when they are not separately stated. Other significant contributors to deferred tax liabilities were related to Leases and Mark-to-Market, which generates unrealized security and derivative gains for financial purposes.

While the overall ranking of the categories does not change dramatically during our sample, the magnitude of certain categories does change. DTA Carryforwards increase 285 percent from \$314 to \$896 million. Valuation Allowances do not increase in tandem with the Carryforward increase. The rise in Carryforwards can be partly explained by the increase in the NOL carryforward period implemented with the Taxpayer Relief Act of 1997. There are also dramatic changes to the categories relating to employee or post-employment benefits. DTA Employee Benefits more than double from \$265 to \$531 million, the DTA component for OPEB falls by half, and the DTL for Pensions increases from \$18 to \$233 million. Changes to accounting for other post-retirement benefits and pensions were implemented concurrently with SFAS 109 at the beginning of our sample and so do not explain the deviation. One possible explanation is that firms have changed the way they disclose these amounts. Together, OPEB, Pension, and Employee Benefits in 2004 are two

thirds of their nominal value in 1993, and the 2004 sum of OPEB and Employee Benefits is virtually equal to the nominal 1993 amount. A change in disclosure appears to explain these patterns.

Table 2 also shows that the magnitude of certain DTL category changes. The DTLs for Leases and PPE nearly double and Subsidiary Positions and Intangibles increase even more dramatically. Possible explanations for the changes in PPE and Intangibles are new FASB pronouncements during the sample period which allow asset impairments and reserves for obligations at retirement and special tax depreciation rules implemented after 09/11. The Mark-to-Market DTL rises and falls with the general market trend. In 2004, the most significant source of DTAs was Carryforwards, and the most important source of deferred tax liabilities remained PPE.

The entries in Table 2 show that there is substantial variation from year to year in the relative importance of various DTA and DTL components. Unfortunately, in making comparisons across years we always face the concern that there may be changes in our sample that confound our analysis. While we try to control for this by analyzing deferred positions at the “super-firm” level, we can not eliminate this concern, especially since merger and acquisition activity can itself lead to additional deferred positions.

Tables 3 and 4 provide some context for evaluating the significance of deferred tax positions on corporate balance sheets. Table 3 reports the distribution of the ratio of net deferred tax assets or liabilities as a share of firm assets, and Table 4 reports a similar distribution in which net deferred tax assets (DTA – DTL) is divided by the firm’s market value of outstanding equity. Both tables suggest a similar message. There are a substantial number of firms for which the absolute value of DTA or DTL is at least five percent of the firm’s assets or market value. In 2002, for example, 41 percent of the “superfirms” in our sample reported either net DTA or net DTL in excess of five percent of assets. We further disaggregated the information on firms in this category, and found that roughly ten percent of our sample firms had a DTA or DTL valued at more than ten percent of assets.

3. Extrapolating Sample Values to Economy-Wide Aggregates

Our sample firms account for a substantial fraction of aggregate economic activity in the United States, yet they represent a tiny fraction of U.S. firms. To investigate the aggregate importance of deferred tax assets and liabilities, we extrapolate our summary statistics using procedures that are based on the assets, sales, and market values of the firms in our sample. In each case our procedure is the same. We illustrate it for an asset-based extrapolation. Represent the deferred tax position of firm i in year t by D_{it} , and denote the firm's net assets as A_{it} . Denote total deferred tax assets of firms in our sample by $D_{*t} = \sum_i D_{it}$ and their total assets by $A_{*t} = \sum_i A_{it}$. We make the strong assumption that deferred tax assets as a share of corporate net assets are similar for firms at different points in the firm size distribution. We use COMPUSTAT to compute the aggregate assets of U.S. firms in year t ; denote this by $A_{tot,t}$. We then estimate the total stock of deferred tax assets ($D_{tot,t}^*$) as

$$(3) \quad D_{tot,t}^* = (A_{tot,t}/A_{*t}) * D_{*t}.$$

We apply this simple procedure using assets, sales, and the market value as scaling variables.

There are a number of potential pitfalls with this procedure, most importantly the possibility that the large firms in our sample are not representative of the smaller firms in the corporate population. This could occur if the industries that are represented among the large firms, for example, are different from those in the economy at large. It is also possible that large firms are more diversified than smaller ones, making it more likely that positive temporary book-tax differences in one line of business cancel negative differences in another. These are issues we hope to explore as we enlarge our data base.

Table 5 shows the results of our extrapolation procedure using the approach described in equation (3). The results suggest that aggregate deferred tax positions are substantial and that policy changes that affect the value of these positions could have non-trivial effects on corporate earnings. In 1993, the extrapolation based on our sample firms suggests modest net deferred tax liabilities for

the corporate sector, but substantial offsetting gross positions. The gross deferred tax liabilities of our sample firms in 1993 totaled \$150 billion, while gross deferred tax assets totaled \$132 billion. The net position for our sample firms was a net deferred tax liability of \$18 billion. This value also emerges from Table 1, where we show that the aggregate net DTL for firms with DTLs was \$64.8 billion, and the aggregate DTA for firms with DTAs was \$46.3 billion.

Table 5 presents our estimates using assets, market value, and sales to extrapolate our sample statistics to the entire U.S. corporate sector. The implicit “multipliers” in our extrapolation procedure are approximately three for 2004, and they are similar across assets, sales, and market value. Earlier in the sample, it seems that the multipliers are somewhat larger. There is clearly substantial imprecision in our estimates of the aggregate stock of DTAs and DTLs, but the results suggest that it is likely that for the corporate sector as a whole, net DTLs exceed \$400 billion in 2004. The gross value of deferred tax assets may exceed \$600 billion. One shortcoming of the results in Table 5 is that they do not recognize inter-industry differences in net DTA or DTL positions. Our firm-level data reveal disparities, for example, between financial and non-financial firms. We plan to extend our extrapolation algorithm to recognize these differences and to present more disaggregate estimates of DTAs and DTLs at the industry level.

Table 5 shows that for each year in our sample, the aggregate value of deferred tax liabilities for our sample firms exceeds our estimate of deferred tax assets. The disparity between gross DTAs and gross DTLs rises through the years spanned by our sample, and by 2004, we estimate gross deferred tax liabilities that are nearly eighty percent larger than gross deferred tax assets. The rise in deferred tax liabilities is in part due to the growth of accelerated tax depreciation starting in 2003. Recall that Table 2 showed a rising DTL component from depreciation of PP&E between 2000 and 2004, in part due to the introduction of “bonus depreciation” in 2003.

4. Policy Changes that Affect Deferred Tax Assets and Liabilities

Our data collection exercise provides information on the current stock of DTAs and DTLs. This stock is a function of the prevailing policy environment, and one of our reasons for examining this stock is to understand how it might react to substantial policy changes. We first illustrate this by considering a change in the corporate tax rate, and then discuss other potential policy shocks.

Our estimates of the gross value of DTAs and DTLs on an economy-wide basis permit us to hazard a guess regarding the potential impact of a change in statutory corporate tax rates on the aggregate earnings of U.S. corporations. We will focus on our most conservative extrapolation, which yields an economy-wide estimate of corporate deferred tax assets of \$554 billion. If all of the DTAs were proportional to the statutory corporate tax rate, then a five percentage point drop in that rate from 35 to 30 percent would reduce the DTA by \$79 billion. That would reduce earnings at the time when the tax rate change was enacted. There would be a corresponding favorable effect on firms with deferred tax liabilities, and the estimates in Table 5 suggest that this effect would be larger than the adverse effect on firms with DTAs. These estimates focus on the stock of deferred tax assets at firms with net DTAs and net DTLs, and generate larger revaluations than our earlier estimates based on firms' net positions. The earlier estimates were also limited to our sample firms.

The foregoing statistics make clear that the firms with DTAs are distinct from those with DTLs. This may be important for understanding the political economy of corporate tax reform. Neubig (2006) points out that firms are very sensitive to the impact of tax reform on their reported earnings. The links between tax reform and the revaluation of DTAs and DTLs is therefore one margin that must be recognized.

The decline in reported earnings that could accompany a reduction in statutory tax rates could be an important concern for some firms, and it represents one of the transition costs of tax reform. At least one recent tax reform, the phase-out of Ohio's corporate income tax, recognized this and provided three measures of transition relief to affected firms. First, firms operating in Ohio under the

income tax regime were encouraged to schedule the reversal of their temporary differences during the phase-out of the corporate income tax. To the extent that any temporary items would not reverse by the end of the phase-out, an adjustment for the estimated deferred tax position at the end of the transition period was recognized in income in the period in which the phase-out began. Second, certain deferred tax assets, primarily research and development tax credits, were converted in to credits under the new activity tax regime; these will not be recorded as assets on the financial books of the firm, however, because SFAS 109 applies only to taxes on income. Finally, Ohio provided for a transitional tax credit aimed at those firms with large NOL carryforwards. These firms with deferred tax assets will lose the ability to use these assets under the new taxing regime. In planning the income tax phase-out, Ohio created policies to smooth the transition for those most negatively impacted by the phase-out—those with deferred tax assets who were ‘owed’ tax relief in the future under the income tax regime and who would lose that future relief under the activity tax regime.

A second example of a policy change that could have an important impact on deferred tax assets and liabilities is a reform of federal health insurance policies, particularly those for the elderly. If Medicare expanded to provide coverage for retirees that reduced the expected cost of firms’ existing retiree health benefits, then firms would experience a reduction in deferred tax liabilities and an increase in current earnings.

An example of a GAAP change that could have an important impact on deferred tax assets and liabilities is the current push towards fair value accounting. Proponents of this initiative believe the relevance of the fair value market-traded assets to decision-makers is greater than the lower reliability introduced by replacing historic cost-based values with market values. The federal government has not followed this move, instead staying with a cash-basis, transaction-driven system for tax purposes. Deferred tax liabilities based on SFAS 115, which allows marking-to-market for actively traded securities depending on the firm’s intentions for those securities, nearly tripled between 1993 and 2004.

5. Tax Expense and Earnings Management

The tax account is the last component of a firm's earnings that is finalized prior to an earnings disclosure. Dhaliwal, Gleason, and Mills (2004) suggest that this makes tax expense a strong candidate for manipulation by managers who are attempting to meet earnings targets, and they find evidence that tax expense is unexpectedly lower for firms that would have been close to, but missed, earnings targets without the unexpectedly low tax charge. Managers may also have other objectives when they report taxes. Tax managers may aim for a consistent or trending ETR because they believe this is important to investors. ETRs in our sample are relatively smooth: the average annual change is about -1.7 percentage points, relative to an average ETR of 50.5 percent. The median annual change is -0.1 percentage points, relative to a 35.2 percent median ETR. Our sample includes a small number of very large positive ETRs. There are 23 firm-years for which the ETR exceeds 100 percent, and four firm-years for which it exceeds 500 percent.

We expand on previous research by examining how various components of tax expense respond to pressure to meet earnings targets. We disaggregate tax expense into several common categories, such as U.S. federal vs. U.S. state/local, domestic vs. international, and current vs. deferred tax. We are particularly interested in whether opportunistic changes in tax expense are concentrated in less transparent components of the tax account and in components which have a long settlement period.

Total tax expense is calculated as book Earnings Before Tax less permanent book-tax differences, multiplied by the statutory rate. If firms, realizing they are very close to, but just short of, making their net income estimate, review all their assumptions and choices to try to minimize their tax expense, we hypothesize that they will appeal to components that are larger or that are more difficult to estimate using publicly-available data. Federal expense is much larger than state expense; because of the higher disclosure level required, more time goes in to its estimation.⁷ While domestic

expense is not more significant than foreign expense, many U.S. firms invest a great deal more effort in estimating their domestic tax expense and instead rely on historical trends to estimate their foreign tax expense.⁸ Thus, we hypothesize that firms attempting to adjust justifiable assumptions in order to meet their earnings estimate will manage their federal expense instead of their state expense and their domestic expense instead of their foreign expense.

If some firms calculate tax expense as the amount they charge as an expense subject to meeting their net income estimate based on Earnings Before Tax, we hypothesize that they will try to “hide” the unexpected short-fall in earnings in less transparent components of the tax account. State tax expenses are likely to be less transparent than federal expenses, and foreign expense is likely to be less transparent than domestic expense, based on the lower level of disclosure of items related to these jurisdictions as well as their complex, multi-jurisdictional nature. Therefore, we hypothesize that firms intending to conceal changes to their tax expense will manage their state expense instead of their federal expense and their foreign expense instead of their domestic expense.

Finally, regardless of whether managers are attempting to minimize taxes by changing assumptions or by simply choosing the number they need to meet their earnings target, we hypothesize that firms will be more likely to use tax expenses with a long settlement period, rather than current taxes, to minimize their tax expense. Deferred taxes require many more assumptions than current taxes, and those assumptions can be revisited to adjust the tax expense. Deferred taxes are also a more convenient place to conceal a change in tax expense—a reported current tax figure that is substantially different from the amount due at the time of the return filing may be detected much sooner than an adjustment to a deferred tax expense, which is also confounded by the fact that portions of the deferred tax expense may be settled in different years. We hypothesize that firms will adjust their deferred tax expense instead of their current tax expense when they are close to, but in danger of missing, an earnings target.⁹

We test these hypotheses by examining changes in effective tax rates (ETRs) when firms miss earnings targets. The annual change in the ETR is our measure of earnings management using the tax expense. We consider six partially-overlapping components of the ETR: Federal Tax Expense, State and Local Tax Expense, Domestic Tax Expense, Foreign Tax Expense, Current Tax Expense, and Deferred Tax Expense. Table 6 provides summary data on these categories. For these tests, unlike the calculations in the previous sections, we do not aggregate firms in to “super-firms.” We are interested in behavior at the firm level; our regression sample is 204 separate reporting firms. As expected, the Federal ETR is higher than the State ETR. Our classification design results in a large “Other ETR” for the Federal/State regression because any disclosed foreign tax expense will be categorized as “Other.” Mean Foreign ETR is higher than mean Federal ETR, but the median Federal ETR is much larger than the median Foreign ETR as the firms in our sample are US-based. Deferred ETR is the only ETR category with a negative mean, but it has a positive median. Large negative outliers appear to affect the calculation of the mean.

We analyze tax manipulation by estimating the following model for changes in various categories of the ETR. The categories are denoted by subscript j , firms by subscript i , and years by subscript t :

$$(4) \quad \Delta ETR_{j,i,t} = \alpha_{j,t} + \beta_{j1} * MISS_{i,t} + \beta_{j2} * MISSAMOUNT_{i,t} + \beta_{j3} * MISS_{i,t} * MISSAMOUNT_{i,t} + \varepsilon_{j,i,t}.$$

In this expression, MISSAMOUNT is the earnings surprise, per share, calculated under the assumption that the firm’s ETR remains fixed at its value for the previous year:

$$(5) \quad MISSAMOUNT = \text{Consensus EPS} - \text{Actual EPS} -$$

$$\Delta ETR * \text{Income Before Taxes/Shares Outstanding}.$$

MISSAMOUNT quantifies the firm’s incentives to manage earnings. Consensus EPS and Actual EPS are drawn from the I/B/E/S database. MISS is an indicator variable set equal to unity if MISSAMOUNT is less than zero. To limit our sample to firms that are reasonably close to their earnings target, we remove firms whose unadjusted earnings surprise scaled by fiscal year-end price

is outside one standard deviation from the sample mean. Our regressions include both year and industry fixed effects.

Other studies that have examined changes in ETR include additional control variables that we omit. For example, Dhaliwal, Gleason, and Mills (2004) include a variable called “Induced Change in ETR.” This variable assumes that permanent items are fixed, rather than related to Earnings Before Tax. It controls for the change in ETR that arises from changes of the ratio of permanent items to Earnings Before Tax. We assume permanent items are proportional to Earnings Before Tax and so omit this control. Dhaliwal, Gleason, and Mills (2004) also include a variable for “Tax Owed” as a control for mis-estimation. We assume that mis-estimation is random and that it will bias us against finding statistically significant results. We therefore omit this control.

Our variables of interest are MISSAMOUNT and MISS*MISSAMOUNT. We hypothesize that firms will reduce their ETR when they would have missed the consensus forecast. Therefore, we expect a negative coefficient for both MISSAMOUNT and MISS*MISSAMOUNT. Tables 7 and 8 present the results of estimating equation (4) with the firm’s overall ETR, as well as various components of the ETR, as dependent variables. The results using the overall ETR suggest that managers do report lower tax expense when they are close to missing an earnings target. In general we find statistically significant effects of the MISS*MISSAMOUNT variable, while the coefficient estimates for the MISSAMOUNT variable are statistically indistinguishable from zero. Our results indicate that firms decrease their ETR by 0.06 percent for each cent they miss the earnings target, although the imprecision of the estimates of β_2 suggest a wide range around this value.

Our first sets of regressions, reported in Table 7, separate the ETR by jurisdiction. The results for our regressions of Federal Expense, State Expense, and Other Expense not classified as Federal or State Expense indicate that firms reduce both their Federal and State Expense when they are close to an earnings target. While the coefficient on Federal Expense is larger, Federal ETR is a larger component of ETR. Normalizing by mean Federal or State ETR, the regression results

indicate that firms reduce their Federal or State ETR by roughly 0.2 percent of their respective means. Given that both Federal and State Expense are managed downward, it is not surprising to find that Domestic Expense is also a source of adjustment. The results from our regressions of Domestic Expense, Foreign, Expense, and Other Expense not classified as Domestic or Foreign Expense indicate that Foreign Expenses are not managed around earnings targets. Taken together, these two regressions weakly support the hypothesis that firms attempt to meet an earnings target by managing justifiable assumptions, and they provide little support for the view that firms attempt to conceal tax management in more complicated tax components.

Our second set of regressions, reported in Table 8, separate ETR into various components that differ in the timing of settlement. The results from our regressions of Current Expense, Deferred, Expense, and Other Expense not classified as Current or Deferred Expense indicate that Current Expenses are not managed around earnings targets. This supports our hypothesis that firms will manage taxes which have a longer settlement period, but does not distinguish whether this is because the assumptions in Deferred Expense are easier to adjust or whether the Deferred Expense is a more convenient place to conceal management of the tax expense.

Our results provide modest support for the view that managers use tax expense to attempt to meet earnings targets. We provide evidence that firms decrease components which have a longer settlement and which are more rigorously estimated. We interpret this as firms maximizing within the rules by adjusting assumptions. However, we are unable to rule out the alternative explanation that firms are decreasing tax components that are more complicated to estimate and are therefore a more convenient place to conceal manipulation.

6. Conclusion

This paper explores the substantive importance of deferred tax assets and deferred tax liabilities for large U.S. corporations. It finds that there is substantial heterogeneity across firms in

their deferred tax positions. In 2004, however, more than forty percent of the firms in our sample reported either deferred tax assets or deferred tax liabilities that were valued at more than five percent of corporate assets. The significance of these deferred tax accounts suggests that the revaluation of deferred tax items associated with changes in tax policy or with other changes in the economic environment could have non-trivial effects on some corporations' earnings.

We also explore the use of tax expense as a discretionary accounting entry that managers may manipulate in trying to meet earnings targets. Previous research has demonstrated that managers exercise their discretion to bring reported earnings in line with market expectations, and there has been some evidence on the use of tax expenses in this setting. By collecting data from tax footnotes in 10-K filings, we can disaggregate the components of tax expense and explore whether particular types of tax expense are particularly affected by earnings management. Our results suggest that firms manage domestic and deferred tax expense over foreign or current tax expense.

Our findings on both the significance of deferred tax accounts, and on the use of tax expense for earnings management, are necessarily limited by the modest sample of firms that we analyze. Because the tax footnote information for firms is not publicly available in electronic form, the possibility of a database that includes detailed information for all publicly traded firms seems remote. Nevertheless, we are continuing to expand our sample, and we hope to be able to improve the precision of our findings.

The detailed information on tax accounts that we have collected may also provide a starting point for other studies of the interplay between financial accounting for taxes and various aspects of corporate behavior. Data on the components of deferred tax assets and liabilities, for example, offer valuable insights into some of the firm's activities, such as the importance of investments in assets that qualify for more favorable tax than book depreciation and the significance of accruals for post-retirement employee benefits. We hope to explore some of these issues in future work.

References

- Amir, Eli, Michael Kirschenheiter, and Kristen Willard, 1997, "The Valuation of Deferred Taxes," Contemporary Accounting Research 14, 597-622.
- Chen, Kevin C. W. and Michael P. Schoderbek, 2000, "The 1993 Tax Rate Increase and Deferred Tax Adjustments: A Test of Functional Fixation," Journal of Accounting Research 38, 23-44.
- Desai, Mihir, 2005, "The Degradation of Corporate Profits," Journal of Economic Perspectives 19, 171-192.
- Dhaliwal, Dan, Cristi Gleason, and Lillian Mills, 2004, "Last Chance Earnings Management" Using the Tax Expense to Meet Analysts' Forecasts," Contemporary Accounting Review 21, 421-459.
- Givoly, Dan and Carla Hayn, 1992, "The Valuation of Deferred Tax Liability: Evidence from the Stock Market," Accounting Review 67, 394-410.
- Guenther, David A. and Richard C. Sansing, 2000, "Valuation of the Firm in the Presence of Temporary Book-Tax Differences: The Role of Deferred Tax Assets and Liabilities," The Accounting Review 75, 1-12.
- Hanlon, Michelle, Edward L. Maydew, and Terry Shevlin, 2006, 'Book Tax Conformity and the Information Content of Earnings,' mimeo, University of Michigan.
- Hanlon, Michelle and Terry Shevlin, 2005, "Book-Tax Conformity for Corporate Income: An Introduction to the Issues," in J. Poterba, ed., Tax Policy and the Economy, Volume 19 (Cambridge: MIT Press).
- Miller, Gregory S. and Douglas J. Skinner, 1998, "Determinants of the Valuation Allowance for Deferred Tax Assets Under SFAS No. 109," The Accounting Review 73, 213-233.
- Neubig, Thomas, 2006, "Where's the Applause? Why Most Corporations Prefer a Lower Tax Rate," Tax Notes April 24, 483-486.
- Phillips, J., M. Pincus and S. Rego, 2003, "Earnings Management: New Evidence Based on Deferred Tax Expense," The Accounting Review 78, 491-521.
- Schmidt, Andrew P., 2006, "The Persistence, Forecasting, and Valuation Implications for the Tax Change Component of Earnings," The Accounting Review 81, 589-616.
- Shackelford, Douglas A. and Terry Shevlin, 2001, "Empirical Tax Research in Accounting," Journal of Accounting and Economics 31, 321-387.
- State and Local Tax Alert. June 30, 2005. "Analysis of Ohio Tax Reform Legislation".

Table 1: Sample Characteristics by Year

Year	Number of “Super Firms” in Sample	Market Capitalization of Sample Firms (\$T)	Firms with Net DTA > 0		Firms with Net DTL > 0	
			Number	Aggregate Value (\$B)	Number	Aggregate Value (\$B)
1993	62	2.92	29	46.3	33	-64.8
1994	67	4.90	30	46.1	37	-70.7
1995	67	6.99	27	37.3	40	-76.1
1996	69	8.98	26	37.7	43	-89.2
1997	69	11.71	25	40.5	44	-99.3
1998	69	9.78	28	47.3	41	-98.4
1999	70	9.95	28	41.4	42	-135.3
2000	71	8.80	27	47.6	44	-160.8
2001	71	8.02	29	55.0	42	-168.5
2002	71	6.31	27	76.9	44	-179.4
2003	71	6.83	23	53.8	48	-216.8
2004	71	7.11	24	57.6	47	-212.8

Source: Authors' calculations as described in the text.

Table 2: Components of Net Deferred Tax Assets and Liabilities, Average Per "Superfirm" (\$Millions), 1993-2004

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Number of "Super Firms" in Sample	62	67	67	69	69	69	70	71	71	71	71	71
<u>DTA Components:</u>												
Employee Benefits	265	255	246	300	359	404	422	369	426	477	485	531
Allowance for Doubtful Accounts	139	134	131	138	149	151	137	147	199	207	177	176
Other (Non-Pension) Post-Employment Benefits	497	510	509	473	450	433	364	391	377	543	275	197
Oil & Gas, Environmental	-7	-1	9	5	-6	0	-4	-1	23	26	43	47
Other Assets	937	900	925	905	943	1025	966	1065	1319	1383	1371	1431
Carryforwards	314	329	331	312	309	343	424	460	508	713	781	896
Valuation Allowance	-209	-239	-244	-230	-224	-158	-192	-211	-184	-423	-478	-475
<u>DTL Components:</u>												
Plant, Property & Equipment	-1367	-1412	-1380	-1379	-1429	-1498	-1572	-1624	-1739	-2171	-2251	-2332
Leases	-354	-358	-385	-445	-492	-526	-550	-599	-631	-654	-644	-597
Intangible Assets	-64	-73	-121	-168	-161	-117	-292	-396	-412	-156	-360	-307
Subsidiary-Related Items	-8	3	-10	-9	-11	-29	-196	-328	-302	-270	-335	-324
Pensions	-18	-43	-47	-85	-87	-87	-134	-137	-178	-131	-189	-233
Merger & Acquisition-Related	-38	-38	-49	-56	-51	-52	-41	-15	-228	-216	-223	-213
Mark-to-Market Adjustments	-108	-40	-175	-168	-237	-239	-277	-218	-156	-169	-254	-263
Revenue-Related	-1	11	15	36	42	-10	-8	-36	-27	-14	4	36
Regulated Deferrals	-4	-16	-18	-21	-26	-27	-34	-37	-38	-43	-44	-48
International Activity-Related	-5	-3	3	6	15	21	32	32	56	51	-25	-60
Other Liabilities	-277	-296	-326	-359	-389	-375	-381	-456	-608	-595	-624	-642

Source: Authors' tabulations from 10-K filings of firms in Fortune 50.

Table 3: Distribution of Net Deferred Tax Assets as a Share of Firm Assets, 1993-2004

Year	Sample Size	Firms with Net Deferred Tax Liabilities			Firms with Net Deferred Tax Assets		
		< -5 %	-3 to -5 %	0 to -3 %	0 to 3 %	3 to 5 %	> 5 %
1993	62	15	4	14	19	2	8
1994	67	18	4	15	22	6	2
1995	67	14	10	16	19	5	3
1996	69	17	5	21	16	8	2
1997	69	17	5	22	17	6	2
1998	69	16	7	18	20	3	5
1999	70	22	3	17	20	3	5
2000	71	20	3	22	18	3	5
2001	71	19	2	22	16	6	6
2002	71	18	5	22	14	1	11
2003	71	21	4	23	12	4	7
2004	71	21	6	21	11	6	6

Source: Authors' tabulations using data from FORTUNE 50 firms over 1993-2004 sample.

Table 4: Distribution of Net Deferred Tax Assets as a Share of Firm Market Value, 1993-2004

Year	Sample Size	Firms with Net Deferred Tax Liabilities			Firms with Net Deferred Tax Assets		
		< -5 %	-3 to -5 %	0 to -3 %	0 to 3 %	3 to 5 %	> 5 %
1993	62	11	7	14	18	0	12
1994	67	13	3	20	18	1	12
1995	67	8	6	25	17	2	9
1996	69	9	5	28	15	5	7
1997	69	8	6	29	16	3	7
1998	69	10	3	27	19	2	8
1999	70	12	6	23	17	4	8
2000	71	12	10	22	13	6	8
2001	71	18	6	19	13	2	13
2002	71	23	4	18	10	3	13
2003	71	21	7	20	9	5	9
2004	71	20	7	21	12	2	9

Source: Authors' tabulations using data from FORTUNE 50 firms over 1993-2004 sample.

Table 5: Estimates of Aggregate Deferred Tax Assets and Deferred Tax Liabilities by Year (\$Billions), 1993-2004

Year	Deferred Tax Assets					Deferred Tax Liabilities				
	Total DTA for Sample Firms	Economy-wide Estimate Based on:				Total DTL for Sample Firms	Economy-wide Estimate Based on:			
		Assets	Market Value	Sales	Market Index Level ^b		Assets	Market Value	Sales	Market Index Level ^b
1993	132	508	444	460	455	-150	-580	-506	-525	-519
1994	141	513	435	467	447	-166	-602	-511	-548	-525
1995	142	548	433	484	445	-181	-697	-551	-616	-567
1996	143	554	421	486	439	-195	-753	-572	-661	-597
1997	149	583	420	508	433	-208	-813	-586	-709	-605
1998	155	679	381	560	408	-206	-903	-507	-744	-542
1999	140	564	371	491	406	-234	-943	-620	-821	-679
2000	139	543	374	477	374	-252	-984	-678	-865	-678
2001	170	619	481	569	442	-284	-1,032	-801	-949	-737
2002	212	749	542	693	569	-314	-1,112	-804	-1,028	-845
2003	183	634	506	596	548	-346	-1,197	-957	-1,125	-1036
2004	191	597	554	628	607	-346	-1,082	-1,005	-1,138	-1100

^a Market Value is calculated as the fiscal year-end market value of equity for all Compustat firms with a U.S. or Puerto Rico domicile.

^b Market Index Level is calculated using the CRSP calendar year-end market value of equity for the three primary U.S. exchanges, less the market value of all foreign or ADR listings.

Note: Entries differ in the scaling variable that is used to extrapolate the deferred tax assets or liabilities for individual sample firms to an economy-wide aggregate. See text for further description

Table 6: Summary Statistics for Tax Summary Aggregates and Effective Tax Rate Changes

	Median	Mean	Standard Deviation	Minimum	Maximum
Effective Tax Rate by Federal vs. State/Local (Sample = 1141 Firm Years)					
Total Effective Tax Rate (ETR)	0.352	0.51	3.3	-6.5	71.5
Change in Total ETR	-0.001	-0.02	3.3	-71.5	610
Effective Tax Rate by Federal vs. State/Local (Sample = 947 Firm Years)					
Total Effective Tax Rate (ETR)	0.360	0.55	3.6	-6.5	71.5
Federal ETR	0.272	0.19	3.0	-62.5	46.9
State and Local ETR	0.033	0.07	0.7	-2.1	14.1
Non-Federal, Non-State ETR	0.030	0.30	4.1	-8.9	111.5
Change in Total ETR	-0.002	-0.03	3.6	-71.5	61.0
Change in Federal ETR	-0.001	-0.02	3.3	-62.3	39.3
Change in State and Local ETR	-0.001	-0.01	0.9	-14.1	13.5
Change in Non-Federal, Non-State ETR	0.000	0.00	4.6	-58.0	109.8
Effective Tax Rate by Foreign vs. Domestic (Sample = 715 Firm Years)					
Total Effective Tax Rate (ETR)	0.340	0.63	4.2	-6.5	71.5
Domestic ETR	0.247	0.22	3.4	-48.5	61.0
Foreign ETR	0.071	0.41	4.7	-4.1	111.5
Non-Domestic, Non-Foreign ETR	0.000	0.00	0.1	-0.2	3.4
Change in Total ETR	-0.003	-0.03	4.2	-71.5	61.0
Change in Domestic ETR	-0.005	-0.02	3.8	-60.9	35.0
Change in Foreign ETR	0.000	-0.01	5.3	-58.0	109.8
Change in Non-Domestic, Non-Foreign ETR	0.000	0.00	0.1	-1.1	3.6
Effective Tax Rate by Timing of Settlement (Sample = 1090 Firm Years)					
Total Effective Tax Rate (ETR)	0.355	0.53	3.4	-6.5	71.5
Current ETR	0.298	0.57	5.9	-6.5	167.5
Deferred ETR	0.040	-0.04	4.0	-104.5	54.1
Non-Current, Non-Deferred ETR	0.000	0.00	0.1	-3.2	3.4
Change in Total ETR	-0.002	-0.02	3.4	-71.5	61.0
Change in Current ETR	-0.001	-0.04	6.2	-91.7	163.7
Change in Deferred ETR	0.004	0.01	4.4	-102.7	52.3
Change in Non-Current, Non-Deferred ETR	0.000	0.01	0.4	-3.7	11.6

Table 7: Changes in Tax Expense by Jurisdiction When Firms Are Near Earnings Targets

	Change in Total ETR	Federal vs. State ETR Changes			Domestic vs. Foreign ETR Changes		
		Change in Federal ETR	Change in State and Local ETR	Change in Non-Federal, Non-State ETR	Domestic ETR	Foreign ETR	Non-Domestic, Non-Foreign ETR
EARNINGS MISS	0.0542 [0.36]	0.0854 [0.43]	-0.0189 [-0.39]	-0.0390 [-0.12]	0.1185 [0.51]	0.4252 [-0.29]	-0.0129 [-1.08]
MISS AMOUNT	0.0015 [0.44]	0.0014 [0.34]	0.0004 [0.36]	0.0003 [0.04]	0.0024 [0.56]	0.0001 [0.01]	0.0000 [-0.21]
(EARNINGS MISS)*(MISS AMOUNT)	-0.0604 [-15.52]	-0.0397 [-8.29]	-0.0120 [-10.4]	-0.0092 [-1.22]	-0.0526 [-10.92]	-0.0088 [-0.99]	0.0001 [0.24]
Observations	1140	947	947	947	715	715	715

Note: For each panel the sample is limited to firm-years that report tax summary data classified as both jurisdictions of interest. The sample is also restricted to those firms for whom EPS deviations as a fraction of share price is within one standard deviation of the sample. Controls include the number of analysts following the firm as well as year and two-digit industry controls. T-statistics are reported in brackets.

Table 8: Changes in Tax Expense When Firms Are Near Earnings Targets, Effective Tax Rate by Timing of Settlement

	Change in Total ETR	Current vs. Deferred ETR Changes		
		Change in Federal ETR	Change in State and Local ETR	Change in Non-Federal, Non-State ETR
EARNINGS MISS	0.0542 [0.36]	-0.0230 [-0.06]	0.0395 [0.15]	0.0259 [1.06]
MISS AMOUNT	0.0015 [0.44]	0.0008 [0.09]	0.0006 [0.1]	0.0001 [0.25]
(EARNINGS MISS)*(MISS AMOUNT)	-0.0604 [-15.52]	-0.0135 [-1.32]	-0.0447 [-6.76]	-0.0023 [-3.64]
Observations	1140	1090	1090	1090

Note: For each panel the sample is limited to firm-years that report tax summary data classified as both current tax expense and deferred tax expense. The sample is also restricted to those firms for whom EPS deviations as a fraction of share price is within one standard deviation of the sample. Controls include the number of analysts following the firm as well as year and industry controls. T-statistics are in brackets.

Endnotes

1. If a change in statutory tax rates or a change in tax position requires revaluing gross temporary differences at new rates, deferred taxes will be calculated as the difference between last period's reported net DTA (DTL) and the net DTA (DTL) required this period after applying the new rates to this period's cumulative gross temporary items. Total tax expense would then be calculated as current taxes plus deferred taxes.
2. SFAS 96 also required firms to report the asset and liability detail of their net deferred tax position as well as revalue their deferred tax position for changes in enacted rates or laws. Under SFAS 96 however, the probability of realizing an asset was incorporated in to the value of the asset, rather than separately stated as a valuation allowance.
3. Prior to 1995, Fortune rankings included only manufacturing firms. To avoid including firms who are only included in the Fortune 50 due to the exclusion of non-manufacturing firms, we formed our sample using the Fortune rankings from 1995-2004.
4. Because our regressions which use the tax summary categories are specified in pairs, this does not lead to double-counting. Appendix B provides a clarifying example.
5. We collected tax information from the first 10-K or annual report filing for a fiscal year. Restatements may cause differences between the total assets and net income numbers we collected from the 10-K and the reported number in COMPUSTAT. We hand-check the 35 firm-years where neither DATA6 nor DATA172 tie to our hand-collected total assets and net income numbers. The majority of the differences were due to restatements. We drop thirteen firm-years for which Compustat did not have data or a stub year caused a mis-match.
6. CUSIP is created using CNUM and CIC from Compustat. M&A activity and changes in firm names lead to CUSIP changes. To minimize mistakes with the match, firm name is checked between Compustat and I/B/E/S; CUSIPs are hand-collected based on firm name, when the CUSIP match is incorrect or blank.
7. A firm may decrease their federal tax expense without affecting state tax expense or Earnings Before Tax by increasing federal permanent items, decreasing the estimated valuation allowance, increasing the estimated tax depreciation for new assets, etc. A firm may decrease their state tax expense without affecting federal tax expense or Earnings Before Tax by decreasing the rate at which they record tax liabilities or increasing the rate at which they record tax assets (many firms apply an effective state rate to all state deferred items rather than tracking the deferred items on a state by state basis), decreasing the estimated valuation allowance, changing estimates about which revenue items will be taxed in which states, etc.
8. Domestic expense is federal expense plus state expense. Firms may decrease their domestic tax expense without affecting foreign tax expense or Earnings Before Tax by increasing federal permanent items, decreasing estimated valuation allowances, opportunistically adjusting the rate at which they record state deferred items, etc. They may decrease foreign tax expense without affecting domestic tax expense or Earnings Before Tax by estimating higher amounts of permanently reinvested foreign earnings or opportunistically adjusting the rate at which they record foreign deferred items.

9. Firms may decrease their current tax expense without affecting deferred tax expense or Earnings Before Tax by estimating increased permanent items, decreasing the effective state or foreign rate, changing estimates about which revenue items will be taxed in which jurisdiction, etc. Firms may decrease their deferred tax expense without affecting current tax expense or Earnings Before Tax by decreasing estimated valuation allowances, decreasing the rate at which state and/or foreign deferred liabilities are recorded, or increasing the rate at which state and/or foreign deferred assets are recorded.

Appendix A: Sample Firms and Years in Sample

Our sample was constructed based on Fortune magazine's annual sales-based ranking of US firms. The top 50 firms for each year from 1995 until 2004 were included in the sample. To mitigate the effects of changes in firm size for each Fortune50 firm in the net deferred tax analysis, the tax notes for all firms acquired or sold by Fortune50 firms during the sample period were also included. For example, Berkshire Hathaway acquired General Re Corp in 1998, so the tax note information for General Re Corp was added for years 1993-1997. Similarly, AMR Corp spun off Sabre in 2000, so going forward, tax note details for Sabre were added for years 2000-2004. We use online firm histories and their 10-Ks to research merger and acquisition information. Two firms were dropped from the sample due to excessive private acquisitions. Nine firms were dropped due to insufficient disclosures; these instances are detailed below.

For the net deferred tax descriptive analysis the main Fortune50 firm and all of its acquired and divested were combined into a single aggregate firm observation, summing over the deferred tax and liability categories as well as total assets and market values. In the effective tax rate analysis each individual firm-year observation was considered an independent observation since the earnings management decisions examined operate at the firm level.

The following 11 Fortune 50 firms are dropped from our sample:

- Allstate Corporation
- Amoco
- Cardinal Health
- Chrysler
- Fannie Mae
- Freddie Mac
- MCI Worldcom
- McKesson Corp
- Motorola Inc
- State Farm
- TIAA-CREF

The following 74 Fortune 50 "super-firms" are included in our sample:

- Aetna Inc
- Albertsons Inc
- Altria Group
- American Electric Power Company
- American International Group Inc
- AmerisourceBergen Corporation
- AMR Corp
- AOL Time Warner Inc
- Aquila Inc
- AT&T Corp
- Bank of America Corp
- BellSouth Corp
- Berkshire Hathaway Inc
- CenterPoint Energy Inc
- Chevron Texaco Corporation
- Cigna Corp
- Citigroup Inc
- Coca-Cola Co
- Columbia/HCA Health
- ConAgra Foods Inc
- ConocoPhillips
- Costco Wholesale Corporation
- Dell Computer Corp
- Do1 Chemical Co
- Duke Energy Co
- Dynegy Inc
- Eastman Kodak
- El Paso Corporation
- Enron Corp
- Exxon Mobil Corp
- Ford Motor Co
- General Electric Co
- General Motors Corp
- Goldman Sachs Group Inc.
- Hewlett Packard Company
- Home Depot Inc
- Ingram Micro Inc.
- Intel Corp
- International Paper Co
- International Business Machines

- ITT Industries Inc
- J C Penney Corp Inc
- J P Morgan Chase & Co
- Johnson & Johnson
- Kmart Holding Corporation
- Kroger Co.
- Lockheed Martin Corp
- Loews Corporation
- Lowe's
- Marathon Oil Corp
- Merck & Co Inc
- Merrill Lynch & Co Inc
- MetLife Inc
- Microsoft Corp
- Morgan Stanley
- PepsiCo Inc
- Pfizer Inc
- Procter and Gamble Co
- Prudential Financial Inc
- Safeway Inc
- Sara Lee Corp
- SBC Communications Inc
- Sears Roebuck Co
- Supervalu Inc
- Target Corporation
- The Boeing Company
- United Parcel Service Inc
- United Technologies
- Valero Energy Corp
- Verizon Communications Inc
- Walgreen Co
- Walmart
- Wells Fargo & Co
- Xerox Corp

The following 15 firms are included in our sample as part of another "super-firm":

- American Stores, included with Albertsons Inc
- Bank One, included with J.P. Morgan Chase & Co
- BankAmerica, included with Bank of America
- Bell Atlantic, included with Verizon
- Chase Manhattan Corp, included with J.P. Morgan Chase & Co
- Citicorp, included with Citigroup Inc
- Compaq Computer, included with Hewlett Packard Company
- Conoco, included with ConocoPhillips
- DuPont E I De Nemours & Co, included with ConocoPhillips
- GTE, included with Verizon
- Lucent, included with AT&T
- Medco Health, included with Merck & Co Inc
- Mobil, included with ExxonMobil
- Prudential Insurance, included with Prudential Financial Inc
- Texaco, included with Chevron Texaco Corporation

Appendix B: Sub-Categories Into Which Tax Aggregates are Classified

Every deferred tax asset or liability category listed in a firm's 10-K tax footnote is classified into one of the following aggregate categories:

- Allowances for doubtful accounts
- Employee benefits
- U.S. carryforwards
- Foreign carryforwards
- Oil & Gas-related
- Intangible assets
- International activity-related
- Inventory
- Leasing
- Merger & acquisition-related
- Mark-to-market securities and derivatives
- Pensions
- Other (non-pension) post-employment benefits
- Plant, property and equipment
- Regulated deferrals
- Revenue-related
- State tax
- Subsidiary-related

Items that did not naturally fall into one of the above categories were classified as Other assets and Other liabilities depending on the sign of the entry. Valuation allowances where applicable were considered a separate category.

We attempt to classify every tax expense category listed in a firm's 10-K tax footnote into at least one of the following categories:

- Federal
- State
- Domestic (includes Federal and State, plus some additional categories)
- Foreign
- Current
- Deferred

We use these data in pair-wise regressions: Federal/State, Domestic/Foreign, Current/Deferred. When a firm has both a Federal and State expense disclosed, it qualifies for our Federal/State regression; any expense not classified as Federal or State will be classified as Other for the purposes of this regression. Depending on how the firm's disclosure matches with our categories, each disclosed category may be assigned up to three categories.