

## **Earnings Management Strategies: To Conform or Not To Conform?**

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## **Earnings Management Strategies: To Conform Or Not To Conform?**

**ABSTRACT:** Prior research has examined pretax earnings management activities that have current income tax consequences (book-tax ‘conforming earnings management’) and earnings management activities that do not have current income tax consequences (book-tax ‘nonconforming earnings management’). Our study investigates the prevalence of, and firm-specific characteristics that impact the choice between, these earnings management strategies. This investigation leads to a better understanding of the book-tax trade-offs managers face when managing earnings upward.

We utilize a sample of firms that restated their earnings downward due to accounting irregularities and thus can be presumed to have managed their earnings upward. Restatements not only involve pretax earnings, but also the related current and/or deferred tax accounts, and we use the differences between originally reported and restated income tax account balances to reveal the types of earnings management employed. We find that nonconforming earnings management is more prevalent than conforming earnings management. Moreover, we predict and find that firms trade off the net present value of tax benefits against the net expected detection costs associated with nonconforming earnings management. In particular, the presence of NOL carryforwards, high free cash flow, a Big 4/5/6 auditor, or fraud mitigate the general reliance on nonconforming earnings management strategies.

**Keywords:** Earnings management; book-tax differences; earnings restatements; deferred tax expense; current tax expense.

## I. INTRODUCTION

This study examines the tax implications of pretax earnings management. A number of papers, e.g., Scholes et al. (1990), Matsunaga et al. (1992), Dhaliwal et al. (1994), and Erickson et al. (2004), investigate accounting choices and earnings management activities that have current tax consequences, which we refer to as book-tax *conforming* earnings management. Other papers, including Mills and Newberry (2001), Joos et al. (2003), Phillips et al. (2003), and Phillips et al. (2004), consider earnings management that does not affect current taxable income (i.e., *nonconforming* earnings management). Utilizing a sample of firms that restated their earnings due to accounting irregularities, we extend these prior studies in two ways. First, we provide evidence concerning the prevalence of book-tax conforming and nonconforming earnings management. Second, we investigate which firm-specific characteristics impact the choice between conforming and nonconforming earnings management strategies.<sup>1</sup>

This study is important for at least two reasons. First, it provides a better understanding not only of the tax effects associated with pretax earnings management, but also the choices firms make in managing earnings. Our research thus responds to Healy and Wahlen's (1999, 379) call for a better “understanding of the steps that firms take to increase reported earnings.” Second, our evidence contributes to the debate concerning book-tax conformity. Finding that firms are generally able to manage book earnings upward in ways that do not affect current taxable income suggests that imposing book-tax conformity on tax and financial accounting rules would discourage such earnings management activity (e.g., Hanlon and Shevlin 2005).<sup>2</sup>

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<sup>1</sup> We are concerned with pretax earnings management (i.e., managing revenue and expense accruals that affect pretax income) and how it is reflected in income tax accounts. Dhaliwal et al. (2004), Krull (2004), and Frank and Rego (2006) focus on managing the income tax accrual, which affects after-tax net income.

<sup>2</sup> It is beyond the scope of this paper to address whether the costs of book-tax conformity (e.g., likely lower information content of financial accounting information) would be less than the benefits of book-tax conformity (e.g., possibly reduced self-serving earnings management). See Hanlon et al. (2005) or Hanlon et al. (2006) for detailed analyses of potential costs of book-tax conformity.

However, the results also provide additional evidence consistent with book-tax differences serving as an indicator of earnings management, which would be lost under book-tax conformity.

We identify firms that restated their financial results (hereinafter, misstatement firms) to measure the tax effects of pretax earnings management. These misstatements reflect accounting irregularities and provide an interesting context in which to study earnings management. While much prior research explores settings where incentives to manage earnings likely exist, there is greater uncertainty as to whether earnings management actually occurs in those settings. In contrast, it is very likely that our misstatement firms managed earnings (e.g., Richardson et al. 2002; Palmrose et al. 2004; Collins and Wan 2005; Badertscher et al. 2007).

Book-tax conforming and nonconforming earnings management choices have unique, predictable effects on the originally reported and restated current and deferred income tax accounts. Consistent with Erickson et al. (2004), income-increasing conforming earnings management results in a downward restatement of current tax expense as well as pretax income. Consistent with Phillips et al. (2003), income-increasing *nonconforming* earnings management results in a downward restatement of deferred tax expense and pretax income.<sup>3,4</sup> Hence, restatements of income tax accounts reveal the type of pretax earnings management (i.e., book-tax conforming or nonconforming) that managers employed.

Using the restatement setting to reveal earnings management choices also allows us to avoid much of the measurement error inherent in using tax accounts to estimate taxable income.

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<sup>3</sup> Restatement firms that managed pretax earnings upward in ways that create permanent book-tax differences would restate pretax income downward, but not restate either current or deferred tax expense. By definition, firms that manage earnings in such a manner do not incur any current or deferred income tax costs related to the earnings management. We measure this type of pretax earnings management by our misstatement firms and find (in untabulated results) little evidence of such activity, consistent with firms having limited opportunities to engage in this type of earnings management. Accordingly, we focus on nonconforming earnings management that creates temporary book-tax differences and thus greater deferred tax expense.

<sup>4</sup> Net operating loss carryforwards and deferred tax asset valuation allowance accounts complicate the interpretation of restated current and deferred tax expense. We adjust for these in our empirical analysis (see Section III).

While using publicly available financial statement data to estimate taxable income is typically necessary, it is also problematic (e.g., Hanlon 2003). For example, tax credits and changes in tax reserves affect current tax expense without having an effect on taxable income, making it difficult to use current tax expense grossed-up by the statutory tax rate as a proxy for taxable income. Instead, we utilize the differences between originally reported and restated data that we hand-collect from misstatement firms' financial reports to more accurately measure the tax effects of pretax earnings measurement. Isolating restatement-induced *changes* in current tax expense holds the effect of tax credits and other such items constant, enabling us to measure the resulting *changes* in current taxable income resulting from conforming earnings management. Likewise, *changes* in deferred tax expense allow us to measure changes in book-tax differences from nonconforming earnings management.

Our initial analysis examines the prevalence of conforming versus nonconforming earnings management. Consistent with Phillips et al. (2003), we expect that firms engage in more nonconforming earnings management to minimize the impact of upward earnings management on current taxable income. Tests of differences in means and medians based on misstatement firms that managed earnings upward indicate that nonconforming earnings management accounts for the larger proportion of their total earnings management.

We next develop a framework in which firms trade off the net present value of tax benefits from nonconforming earnings management against the corresponding increase in expected detection costs associated with such strategies (hereinafter, net expected detection costs). This framework builds on results in Mills (1998), Mills and Sansing (2000), and Hanlon and Krishnan (2005), which suggest that large book-tax differences trigger increased scrutiny by regulators and external auditors. We hypothesize that the lower the net present value of tax

benefits and the higher the net expected detection costs associated with nonconforming earnings management, the less firms will rely on nonconforming strategies.

We consider firm-specific characteristics that should impact the net present value of tax benefits and/or the net expected detection costs associated with nonconforming earnings management. First, we predict that firms with net operating loss (NOL) carryforwards should have a lower net present value of tax benefits associated with nonconforming earnings management and thus engage in more conforming earnings management than firms without NOLs. Second, firms with high free cash flow available to pay the current tax costs associated with upward conforming earnings management likely place a lower value on the tax benefits associated with nonconforming earnings management. Hence, we predict that such firms are also likely to engage in more conforming earnings management. Third, we predict firms that use high quality external auditors, have greater analyst following, or engage in accounting fraud have higher net expected detection costs associated with nonconforming earnings management, and thus engage in more conforming earnings management.

Using the Heckman (1979) two-step estimation approach to control for sample selection bias, we find that firms with NOL carryforwards, high free cash flow, a Big 4/5/6 auditor, or that engaged in accounting fraud rely on significantly less nonconforming earnings management strategies. Finally, results from the first-step of the Heckman estimation approach also show that deferred tax expense has incremental explanatory power beyond abnormal accruals in predicting earnings restatements. This result extends Phillips et al. (2003), who find that deferred tax expense is incrementally useful beyond accrual-based measures in detecting upward earnings management to avoid reporting an earnings decline or reporting a loss.

Our research makes several contributions. First, our study documents that book-tax nonconforming earnings management accounts for a larger proportion of income-increasing pretax earnings management than conforming strategies among misstatement firms. Second, our study investigates to what extent managers draw from a portfolio of accounting tools (i.e., conforming and nonconforming accruals) and choose to manage earnings upward in ways that systematically reflect differences in the costs and benefits of using such tools. Hence, researchers seeking to explain managerial behavior with regard to upward earnings management should find our evidence on the choice between conforming and nonconforming pretax earnings management relevant to their research. Finally, we provide a comprehensive framework for understanding how income tax accounts reveal different types of pretax earnings management.

Our paper proceeds as follows. Section II develops our predictions and Section III discusses the research design. We describe our sample in Section IV and present the empirical results in Section V. We conclude in Section VI.

## **II. PRIOR RESEARCH AND PREDICTIONS**

### **Background**

We utilize data from financial statements and accompanying income tax footnotes to investigate the extent to which pretax earnings management affects current taxable income. Our study builds upon several streams of research, including studies that investigate earnings management accomplished via book-tax conforming and nonconforming strategies and studies that consider earnings restatements as evidence of earnings management activity.

One stream of research focuses on book-tax conforming upward earnings management, which increases both financial and taxable incomes and thus has current tax consequences (e.g., Scholes et al. 1990; Matsunaga et al. 1992; Dhaliwal et al. 1994). That is, conforming earnings

management includes any transaction that has the same impact on the current period's financial and taxable incomes. Common examples of conforming earnings management include accelerating revenue recognition by recording receivables sooner than justified (e.g., channel-stuffing) and postponing inventory purchases under LIFO. An example of a firm from our sample that primarily engaged in conforming earnings management is Versatility Inc., which determined that certain revenue had been inappropriately recognized (i.e., accelerated), the related receivables had been improperly recorded, and certain costs had not been accrued. We estimate that approximately 86.4 percent of Versatility's earnings management was conforming.<sup>5</sup>

In contrast, other studies focus on nonconforming upward earnings management, which increases financial accounting income but has no current tax consequences (e.g., Mills and Newberry 2001; Joos et al. 2003; Phillips et al. 2003; Phillips et al. 2004). This type of earnings management includes transactions that accelerate revenue recognition or defer expense recognition for financial reporting purposes, relative to tax purposes, such as aggressively recognizing unearned revenue, extending the useful lives of depreciable assets, or reducing the provision for doubtful accounts for financial reporting purposes. These transactions, which have no effect on current taxable income, lead to more positive temporary book-tax differences. An example of a firm from our sample that primarily engaged in nonconforming earnings management is Pre-Paid Legal Services Inc., which announced it had overstated revenue and understated expenses. We determine that approximately 96.9 percent of Pre-Paid Legal

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<sup>5</sup> Erickson et al. (2004) document 15 of 27 firms that fraudulently overstated their financial accounting income paid, on average, 20 cents of current income tax for every dollar of overstated pretax income, consistent with some firms being willing to incur the tax costs associated with upward conforming earnings management to avoid the financial reporting costs of reporting lower earnings. Our focus is not on cash taxes paid but instead considers how income tax accounts disclosed in firms' financial reports can be used to determine how firms manage their earnings.

Services' earnings management was book-tax nonconforming.<sup>6</sup> Note in both of the above examples that the firms' misstatements involve several accounts and reflect a mix of book-tax conforming and nonconforming earnings management, suggesting that the firms had a portfolio of earnings management strategies available to them.

Mills and Newberry (2001) access confidential tax return data and use the total difference between a firm's financial and taxable incomes as their proxy for nonconforming earnings management activity; they thus capture both temporary and permanent book-tax differences. Most book-tax difference studies, however, rely on publicly available financial statement data and use deferred tax expense or the change in net deferred tax liabilities as proxies for nonconforming earnings management activity.<sup>7</sup> Since book-tax differences can reflect tax planning, earnings management, or nondiscretionary book-tax rule differences, prior book-tax difference studies measure earnings management activity with error. Likewise, studies that use abnormal accruals to measure earnings management do so with error (e.g., Guay et al. 1996).

Identifying settings in which earnings management is likely to have occurred is also problematic. For example, studies that focus on firms that just meet or beat earnings benchmarks (e.g., Burgstahler and Dichev 1997; Phillips et al. 2003; Durtschi and Easton 2005), or on firms with relatively high levels of debt (e.g., DeAngelo et al. 1994; DeFond and Jiambalvo 1994; Becker et al. 1998), not only rely on earnings management metrics that contain measurement error, but also lack certainty as to which firms *actually engaged* in earnings management. To minimize such error in identifying earnings management activity, we utilize a sample of firms that restated their financial results to correct previously reported accounting irregularities. As

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<sup>6</sup> This example is consistent with prior research that proposes, other things equal, firms should prefer to manage earnings upward in a manner that boosts financial accounting income relative to taxable income thereby minimizing current tax effects (e.g., Phillips et al. 2003).

<sup>7</sup> Under Statement of Financial Accounting Standard No. 109, deferred tax expense reflects temporary differences between financial and taxable incomes. See Phillips et al. (2003) for a more detailed discussion of SFAS No. 109.

Badertscher et al. (2007, 20) note, these “accounting irregularities include aggressive accounting practices, material errors, misinterpretation of accounting rules, and intentional or unintentional misuse of facts and fraud.” Hence, studies utilizing such firms assume that most restatements reflect earnings management (e.g., Richardson et al. 2002; Palmrose et al. 2004; Badertscher et al. 2007). Given the uncertainty whether or to what extent benchmark beaters (e.g., Durtschi and Easton 2005) or firms with high debt levels manage earnings, restatements are very likely a more reliable indicator of earnings management activity.

Focusing on misstatement firms also enables us to use each firm as its own control and to more accurately measure the amount of pretax earnings management. The misstatement sample provides measures of managed financial results (i.e., originally reported earnings and its components) and unmanaged financial results (i.e., restated earnings and its components) for each misstatement firm. This allows us to measure total pretax earnings management as the difference between restated and original pretax income.<sup>8</sup> Moreover, the misstatement setting is also attractive since it is difficult, if not impossible, to control for the amount of tax planning that publicly-traded companies engage in. By comparing originally reported and restated data for the same firm and year, we are able to hold constant the effects of tax planning on current and deferred income tax expense. For example, we can interpret changes in current tax expense resulting from restatements as being related to earnings management activity and unrelated to tax planning activity. Similarly, we are also able to hold constant the effects of other items that impact the tax accounts (e.g., tax credits and tax benefits from stock option exercises) but are not affected by the restatement. In sum, restatements allow us to more accurately identify a setting in which earnings management is likely to have occurred and to better measure and classify (i.e.,

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<sup>8</sup> Restated financial results can presumably still reflect unacknowledged earnings management; nonetheless, we assume that restated amounts reflect strictly less earnings management than the amounts firms originally reported.

conforming vs. nonconforming) the amount of managed earnings, relative to prior earnings management research.

## **Predictions**

We follow Phillips et al. (2003) and expect that managers prefer to manage earnings upward by temporarily boosting financial accounting income relative to taxable income (i.e., in a nonconforming manner). They find that deferred tax expense is incrementally useful beyond accrual-based measures in detecting upward earnings management to avoid reporting an earnings decline or a loss; however, they do not provide evidence regarding the prevalence of conforming versus nonconforming earnings management. Prior research documents conforming upward earnings management in certain contexts (e.g., LIFO abandonment – Johnson and Dhaliwal 1988; fraudulent earnings overstatements – Erickson et al. 2004<sup>9</sup>), and nonconforming upward earnings management in other contexts (e.g., earnings benchmarks – Mills and Newberry 2001 and Phillips et al. 2003). Given these mixed results, we initially investigate whether our sample firms engage in more nonconforming than conforming upward earnings management.

Next, we consider conditioning circumstances in which we expect that firms are more likely to choose to manage earnings upward in a book-tax *conforming* manner. We start by assuming firms have sufficient opportunities to engage in both conforming and nonconforming earnings management, and propose that firms manage earnings in a nonconforming manner when the net present value of tax benefits exceed the net expected detection costs associated with nonconforming earnings management, i.e., when:

$$\text{Net PVTB}_{\text{NC}} > \text{Net E}[\text{DC}]_{\text{NC}}. \tag{1}$$

We define the net present value of tax benefits from nonconforming earnings management as the present value of the tax costs related to book-tax conforming earnings

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<sup>9</sup> Erikson et al. (2004) also note that many firms in their sample deferred some taxes on earnings overstatements.

management ( $PVTC_C$ ) minus the present value of the tax costs related to *nonconforming* earnings management ( $PVTC_{NC}$ ). Similarly, net expected detection costs are the expected detection costs related to *nonconforming* earnings management ( $E[DC_{NC}]$ ) minus the expected detection costs related to *conforming* earnings management ( $E[DC_C]$ ). Accordingly, firms will engage in *nonconforming* earnings management when:

$$PVTC_C - PVTC_{NC} > E[DC_{NC}] - E[DC_C]. \quad (2)$$

We define the present value of tax costs as the amount of pretax earnings management ( $PT\_EM$ ) times the statutory tax rate ( $STR$ ), and in the case of *nonconforming* earnings management this amount is discounted by a factor that increases in both the discount rate ( $r$ ) and the number of years ( $n$ ) it would take the *nonconforming* earnings management to reverse  $((1+r)^n)$ .<sup>10</sup> Appendix A shows that the net present value of tax benefits associated with *nonconforming* earnings management ( $Net\ PVTB_{NC}$ ) is increasing in  $PT\_EM$ ,  $STR$ ,  $r$ , and  $n$ .

We define expected detection costs ( $E[DC]$ ) as the probability of detection ( $Pr(D_{NC})$  or  $Pr(D_C)$ ) multiplied by total detection costs ( $DC$ ). Thus, considering tax benefits and detection costs, firms will engage in *nonconforming* earnings management when:

$$\{PT\_EM \times STR - [(PT\_EM \times STR) / (1+r)^n]\} > \{[Pr(D_{NC}) \times DC] - [Pr(D_C) \times DC]\}. \quad (3)$$

Rearranging terms leads to the following expression:

$$PT\_EM \times STR \{1 - [1 / (1+r)^n]\} > [Pr(D_{NC}) - Pr(D_C)] \times DC, \quad (4)$$

where we assume that total detection costs ( $DC$ ) do not vary with the type of earnings management, and that  $[Pr(D_{NC}) - Pr(D_C)] > 0$ . This last assumption, that the probability of detection is greater for *nonconforming* than *conforming* earnings management, is based on prior research that argues book-tax differences often attract the attention of regulators such as the

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<sup>10</sup> We do not have to assume that all *nonconforming* earning management reverses. To incorporate non-reversing accruals, we assume that  $n \rightarrow \infty$ , which could also represent permanently *nonconforming* earnings management.

Internal Revenue Service (Mills 1998; Mills and Sansing 2000) and the Securities and Exchange Commission (Frank et al. 2006). Further, Hanlon and Krishnan (2005) find that external auditors increase the time and effort they spend on clients that have larger book-tax differences. These studies suggest that nonconforming relative to conforming earnings management should lead to a higher probability of detection and, in turn, higher net expected detection costs.

Equations (1) – (4) suggest two hypotheses; the first hypothesis focuses on the net present value of tax benefits associated with book-tax nonconforming earnings management (H1), and the second focuses on the net expected detection costs associated with nonconforming earnings management (H2). These hypotheses are (stated in the alternative):

H1: The lower the net present value of tax benefits associated with nonconforming earnings management, the less firms manage earnings in a nonconforming manner.

H2: The greater the net expected detection cost associated with nonconforming earnings management, the less firms manage earnings in a nonconforming manner.

We develop proxies for the net present value of tax benefits and net expected detection costs associated with nonconforming earnings management in the next section.

### **III. RESEARCH DESIGN**

#### **Prevalence of Conforming and Nonconforming Earnings Management**

We construct measures for both types of earnings management. Prior research has used current tax expense as a proxy for conforming earnings management (e.g., Erickson et al. 2004) and deferred tax expense as a proxy for nonconforming earnings management (e.g., Phillips et al. 2003). We use the changes in current and deferred tax expense disclosed in earnings restatements to measure conforming and nonconforming earnings management; this avoids much of the measurement error inherent in using the tax accounts to measure levels of taxable income (e.g., Hanlon 2003). However, NOL carryforwards and changes in the deferred tax asset

valuation allowance account (VAA) add measurement error to these earnings management proxies. In particular, if firms managing earnings upwards in a conforming manner have NOL carryforwards to offset the accompanying increase in taxable income, then changes in current tax expense will measure conforming earnings management with error. Similarly, changes in deferred tax assets related to NOL carryforwards and changes in the VAA can contaminate changes in deferred tax expense as a measure of nonconforming earnings management. That is, if the restatement of a firm's deferred tax assets related to NOLs or its VAA is not related to nonconforming pretax earnings management, then changes in deferred tax expense will contain measurement error. (Appendix B illustrates NOL- and VAA-induced measurement error.)

We address these measurement error problems by adjusting our proxies for conforming and nonconforming earnings management using hand-collected NOL and VAA data as follows:

$$CONFORM\_EM = (CTE\_EM - \Delta NOL\_EM) / STR; \text{ and} \quad (5)$$

$$NONCONFORM\_EM = (DTE\_EM + \Delta NOL\_EM - \Delta VAA\_EM) / STR.^{11} \quad (6)$$

We denote differences between originally reported and restated amounts as follows:  $CTE\_EM$  reflects differences in current tax expense;  $DTE\_EM$  indicates differences in deferred tax expense;  $\Delta NOL\_EM$  is for differences in the change in deferred tax assets relating to NOL carryforwards;  $\Delta VAA\_EM$  denotes differences in the change in VAA; and  $STR$  is the maximum corporate statutory tax rate, which was 35 percent throughout our sample period.<sup>12</sup>

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<sup>11</sup> Merger and acquisition activity should not effect the disclosed changes in deferred tax expense that we use to measure nonconforming pretax earnings management. While such activity complicates the use of changes in deferred tax assets and liabilities as a proxy for book-tax differences, consolidated deferred tax expense attributable to an acquired subsidiary is calculated as the change in net deferred tax liabilities from the acquisition date to year-end under SFAS No. 109. Thus, total deferred tax expense is not tainted by changes in subsidiary deferred tax accounts that occurred prior to an acquisition.

<sup>12</sup> We use the statutory tax rate to gross-up changes in adjusted current and deferred tax expense. If we use an incorrect statutory tax rate (e.g., for firms with low taxable income), we add measurement error to our estimates of the *amounts* of conforming and nonconforming earnings management. However, because we focus on the relative *proportions* of conforming and nonconforming earnings management and because the statutory rate impacts these proportions in a similar manner, our use of a potentially incorrect statutory tax rate should not affect our inferences.

*CONFORM\_EM* is based on current tax expense adjusted for changes in a firm's NOL carryforwards. We gross-up adjusted current tax expense (i.e., *CTE\_EM - ΔNOL\_EM*) by the statutory income tax rate (*STR*), so that *CONFORM\_EM* represents the dollar amount of conforming earnings management. Similarly, our dollar measure of nonconforming earnings management, *NONCONFORM\_EM*, is based on deferred tax expense adjusted for changes in a firm's NOL carryforwards and changes in its VAA.<sup>13</sup> We then scale both *CONFORM\_EM* and *NONCONFORM\_EM* by the total amount of earnings management (i.e., *PT\_EM*, the difference between originally reported and restated pretax income) to compute proportions of conforming (*C\_RATE*) and nonconforming (*NC\_RATE*) pretax earnings management.<sup>14</sup> We compare sample means and medians to determine whether *NC\_RATE* is significantly greater than *C\_RATE*. Appendix C illustrates the calculation of *NC\_RATE* and *C\_RATE* for two firms in our sample.

### **The Choice between Conforming and Nonconforming Earnings Management**

To explore which firm-specific characteristics impact the tradeoff between the net present value of tax benefits and the net expected detection costs related to nonconforming earnings management (H1 and H2), we estimate the following regression model:

$$\begin{aligned}
 NC\_RATE_i = & \alpha_0 + \alpha_1 NOL_i + \alpha_2 HI\_CASH_i + \alpha_3 BIG\_AUDIT_i + \alpha_4 AF_i + \alpha_5 FRAUD_i \\
 & + \alpha_6 LAG\_DTE_i + \alpha_7 LAG\_TA_i + \alpha_8 REV\_ONLY_i + \alpha_9 EXP\_ONLY_i \\
 & + \alpha_{10} INV\_MILLS_i + \alpha_j \sum_j INDUS_i + \varepsilon_i
 \end{aligned} \tag{7}$$

<sup>13</sup> Earnings management via income tax accruals potentially contaminates our proxies for pretax earnings management since income tax accrual management affects current or deferred tax expense (but not pretax income) in a manner opposite to pretax earnings management. For example, a firm that reduces a previously established tax cushion (i.e., the provision for income taxes on prior years' taxable income often related to an IRS audit) essentially reports less current tax expense than it otherwise would have reported. This lower current tax expense offsets any current tax effects from conforming upward pretax earnings management. Nonetheless, *a priori* there is no reason to believe this issue differentially biases our conforming and nonconforming earnings management measures.

<sup>14</sup> Total earnings management (*PT\_EM*) has three possible components. The two components we focus on in this paper, conforming and nonconforming earnings management, account for the vast majority of total earnings management. The third possible component, earnings management that creates permanent book-tax differences, accounts for approximately two percent of total earnings management on average in our misstatement sample. Thus, the sum of *C\_RATE* and *NC\_RATE* is only approximately 100 percent for our misstatement firms.

where:

$NC\_RATE$  = Proportion of nonconforming earnings management, which is computed as the ratio of nonconforming earnings management ( $NONCONFORM\_EM$ ) to total pretax earnings management ( $PT\_EM$ ) in year  $t$ ;

$NOL$  = 1 if the firm has net operating loss carryforwards available at the beginning of year  $t$ , and 0 otherwise;

$HI\_CASH$  = 1 if the firm is in the top one-third of the  $FREECASH$  distribution for misstatement firms during year  $t-1$ , and 0 otherwise;  $FREECASH$  = cash flow from operating activities ( $Compustat$  #308) minus capital expenditures (#128) plus sales of property, plant, and equipment (#107) minus acquisitions (#129) in year  $t-1$ , scaled by total assets at year-end  $t-2$ .

$BIG\_AUDIT$  = 1 if the firm is audited by a Big 4/5/6 auditor (#149 value of 1 – 7) in year  $t$ , and 0 otherwise;

$AF$  = 1 if the firm has any analyst following in year  $t$ , and zero otherwise;

$FRAUD$  = 1 if the firm engaged in fraudulent activities in year  $t$ , and 0 otherwise;

$LAG\_DTE$  = Deferred tax expense in year  $t-1$ , scaled by total assets at year-end  $t-2$ ;

$LAG\_TA$  = Total assets at year-end  $t-1$ ;

$REV\_ONLY$  = 1 if the GAO report indicates that the firm only restated revenue accounts in year  $t$ , and 0 otherwise;

$EXP\_ONLY$  = 1 if the GAO report indicates that the firm only restated expense accounts in year  $t$ , and 0 otherwise;

$INV\_MILLS$  = Inverse Mills ratio from the first-stage of the Heckman (1979) two-step estimation (discussed in the next section); and,

$\Sigma_j INDUS$  = 1 (0) if firm  $i$  is (is not) in industry  $j$  in year  $t$ , based on 3-digit SIC codes.

Year  $t$  is the year for which firm  $i$  restates its financial statements. When firm  $i$  restates multiple years' financial statements, year  $t$  is the first misstatement year.

$NC\_RATE$ , the dependent variable in equation (7), is the proportion of nonconforming earnings management. We focus on the proportion rather than the total amount of nonconforming earnings management because our hypotheses focus on the *relative* amounts of

conforming and nonconforming earnings management. To test H1 and H2, we include proxies for the net present value of tax benefits and the net expected detection costs associated with nonconforming earnings management. The first proxy for Net  $PVTB_{NC}$  is the availability of NOL carryforwards. NOLs would absorb the impact of upward conforming pretax earnings management and thereby lower the present value of tax benefits. Thus, all else equal, we expect misstatement firms with NOLs available at the beginning of the misstatement year to engage in less nonconforming upward earnings management than firms without such carryforwards.

Our second proxy for Net  $PVTB_{NC}$  is based on the level of free cash flow. Firms with relatively low levels of free cash flow are likely to have higher discount rates and thus greater present values of tax benefits associated with nonconforming earnings management, whereas firms with relatively high free cash flow are likely to have lower discount rates and thus derive fewer tax benefits. We define  $HI\_CASH$  as an indicator variable equal to 1 if the firm is in the top one-third of the free cash flow distribution for all misstatement firms and predict that firms with  $HI\_CASH = 1$  engage in less nonconforming earnings management.<sup>15</sup>

We identify three proxies for net expected detection costs associated with nonconforming earnings management (Net  $E[DC_{NC}]$ ). We assume that increased monitoring has a more positive impact on the probability of detection associated with nonconforming vis-à-vis conforming earnings management, and predict that firms subject to more effective monitoring are more likely to manage earnings in a conforming manner to minimize net expected detection costs.

Consistent with Francis and Wilson (1988) and Hanlon and Krishnan (2005), we assume that high quality auditors are more effective monitors and thus utilize the information in large book-tax differences more effectively than low quality auditors. Hence, we predict that firms with high quality external auditors are less likely to manage earnings in a nonconforming manner.

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<sup>15</sup> We obtain similar results when we use a 75 percent cutoff to determine when  $HI\_CASH = 1$ .

*BIG\_AUDIT* is an indicator variable equal to 1 if the firm used a Big 4/5/6 auditor during the misstatement year(s). Similar to high quality auditors, greater analyst following (*AF*) should provide more effective monitoring (relative to less analyst following). Thus, we predict that firms with greater analyst following are also less likely to engage in nonconforming earnings management. We define  $AF = 1$  (0) if a firm has any (no) analyst following.<sup>16</sup>

Because the potential costs of engaging in fraudulent earnings management are undoubtedly larger than those of non-fraudulent earnings management, we predict that firms engaging in fraud have greater incentives to avoid detection.<sup>17</sup> Consequently, firms committing accounting fraud are more likely to manage earnings in a book-tax conforming manner to minimize their net expected detection costs. We define *FRAUD* as an indicator variable equal to 1 if the misstatement firm *ex post* was alleged to have engaged in accounting fraud. To identify such firms, we use LexisNexis and 10kwizard.com to conduct a key word search for “fraud,” “fraudulent,” or “fictitious” on all misstatement firms’ press releases and financial statements.

Consistent with H1 and H2, we expect the coefficients on our proxies for the lower net present value of tax benefits and the higher net expected detection costs associated with nonconforming earnings management, i.e.,  $\alpha_1 - \alpha_5$  in equation (7), to be negative, indicative of less nonconforming earnings management.

Because there are likely different costs and benefits associated with different types of earnings management, we include two additional indicator variables in equation (7), one for misstatements only involving revenue recognition (*REV\_ONLY*) and the other for those only

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<sup>16</sup> Results are similar when we set *AF* equal to the number of analysts following a firm. In untabulated results we also included institutional investors as proxies for more effective monitoring. The results are similar to those tabulated in this paper, but the institutional investor variable is not significant, perhaps due to a reduced sample size.

<sup>17</sup> The excess costs of fraudulent earnings management include potentially higher legal and regulatory costs (e.g., attorney and court costs, and fines paid to regulatory agencies), shareholder wealth costs (due to the stock market’s loss of confidence in the financial and/or tax reporting of the firm), and management turnover costs (due to terminating existing management and locating new, talented individuals).

involving expense recognition (*EXP\_ONLY*). If there is a systematic relation between revenue versus expense management and whether such earnings management is achieved in a conforming or nonconforming manner, then our results could be biased. Thus, *REV\_ONLY* and *EXP\_ONLY* control for a possible link between earnings management type (conforming or nonconforming) and the type of account managed (revenue-only and expense-only) in our multivariate analysis.

Finally, equation (7) also contains variables that control for a firm's opportunity to manage earnings in *both* book-tax conforming and nonconforming ways, i.e., for its earnings management opportunity set. Specifically, we include *INDUS* to control for fundamental differences that may exist in earnings management opportunities across different industries. We also include *LAG\_TA*, the beginning-of-year total assets, to control for firm size and to capture the likely different (presumably greater) nonconforming earnings management opportunities that large firms encounter due to more complex operating, financing, and investing activities.<sup>18</sup> Finally, we include *LAG\_DTE*, deferred tax expense in the year prior to the misstatement period, to control for the prior year's nonconforming earnings management, which could limit a firm's ability to engage in more nonconforming earnings management in the misstatement year.

### **Self-Selection Correction**

Investigating the choice between conforming versus nonconforming earnings management among misstatement firms is potentially problematic because the misstatement firms were 'caught with their hands in the cookie jar' by the SEC, their external auditor, or a corporate insider. To the extent that the probability of detection is greater for nonconforming earnings management, then the misstatement sample may reflect a self-selection bias towards nonconforming earnings management. This potential bias can be addressed by using a self-

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<sup>18</sup> Firm size can also proxy for political costs (Watts and Zimmerman 1986). Large firms may engage in more conforming upward earnings management and incur higher current taxes to avoid additional regulatory scrutiny.

selection model. Such a model is readily justified when a firm makes a choice, e.g., choosing between LIFO and FIFO (Maddala 1991). However, firms presumably do not choose to restate earnings when they are deciding to manage earnings, although it is a risk they assume. Hence, it is not clear that a self-selection adjustment is appropriate in this case. Nevertheless, restating earnings is not a random event, and our research design allows for the possibility that self-selection bias is present and incorporates an adjustment for it when estimating equation (7).

More specifically, we employ Heckman's (1979) two-step estimation approach. We first estimate a selection (or prediction) model, equation (8), using misstatement firms and a control sample of non-misstatement firms drawn from the same industry (three-digit SIC code) and year as the misstatement firms. The dependent variable in the selection model is *RESTATE*, which equals 1 if a firm restates its earnings, and 0 otherwise. We then extract the inverse Mills ratio (*INV\_MILLS*), the adjustment for self-selection, from the estimated selection model,<sup>19</sup> and include it in equation (7), which we estimate as the second step of the two-step procedure. Assuming that nonconforming earnings management has a higher probability of detection and thus leads to more restatements, we expect *NC\_RATE* to be positively related to the inverse Mills ratio. That is, *INV\_MILLS* should be an increasing function of the probability that a firm restates its earnings and should have a positive coefficient in equation (7).

The selection model we use is the following probit regression:

$$\begin{aligned}
 RESTATE_i = & \beta_0 + \beta_1 DTE_i + \beta_2 MJAC_i + \beta_3 MBE_i + \beta_4 MB_i + \beta_5 FIN\_R_i + \beta_6 LEV_i + \\
 & \beta_7 INV\_INTCOV_i + \beta_8 EPS\_G_i + \beta_9 STRING_i + \beta_{10} \Delta CFO_i + \beta_{11} CFO_i + \\
 & \beta_{12} BIG\_AUDIT_i + \beta_{13} AF_i + \beta_{14} LAG\_TA_i + \beta_j \sum_j INDUS_i + \varepsilon_i,
 \end{aligned} \tag{8}$$

where:

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<sup>19</sup> *INV\_MILLS* equals the probability density function of the standard normal divided by the cumulative density function (e.g., Kennedy 1993) extracted from the estimation of equation (8). We thank Shivaram Rajgopal for programming assistance with regard to estimating *INV\_MILLS*.

- RESTATE* = 1 if firm *i* appears in the GAO restatement report and restated its earnings downward (i.e., has income-increasing earnings management) for the misstatement period, year *t*, and 0 otherwise;
- DTE* = Firm *i*'s deferred tax expense (*Compustat* #50) in year *t*, scaled by total assets (#6) at year-end *t-1*;
- MJAC* = Firm *i*'s abnormal accruals in year *t* computed using the modified Jones model (Dechow et al. 1995);
- MBE* = Dummy variable equal to 1 if the firm meets or beats the consensus annual analyst earnings forecast in year *t*, and 0 otherwise, unless the firm has no analyst following, in which case the dummy variable is 1 if current period earnings are the same as, or higher than, the prior year's earnings (#18);
- MB* = Market-to-book ratio, calculated as market value of equity (#25 × #199) at year-end *t-1* divided by the book value of equity (#60) at year-end *t-1*;
- FIN\_R* = Sum of additional cash raised from the issuance of common and preferred stock (#108) and the issuance of long-term debt (#111) during year *t*, scaled by average total assets for year *t*;
- LEV* = Short term debt (#34) plus long term debt (#9) at year-end *t-1*, scaled by total assets (#6) at year-end *t-1*;
- INV\_INTCOV* = Inverse interest coverage is interest expense (*Compustat* #15) in year *t*, divided by operating income before depreciation (*Compustat* #13) in year *t*. The ratio is capped at 2.00. If operating income before depreciation is negative we assign a value of 2.00;
- EPS\_G* = Earnings per share (EPS) growth, equal to the number of consecutive quarters of growth in EPS, ending at quarter 4 of the year prior to year *t*, where EPS growth is  $EPS\_Q4_t - EPS\_Q4_{t-1}$ ;
- STRING* = Number of consecutive quarters with small positive forecast errors ending at quarter 4 of the year prior to year *t*, where forecast error is actual earnings minus the most recent consensus analyst forecast from *I/B/E/S*;
- ΔCFO* = Change in firm *i*'s cash flows from continuing operations (#308 - #124) from year *t-1* to *t*, scaled by total assets at year-end *t-1*;
- CFO* = Cash flows from continuing operations (#308 - #124) in year *t*, scaled by total assets at year-end *t-1*;

and *BIG\_AUDIT*, *AF*, *LAG\_TA*, and *INDUS* are as previously defined.

Based on Phillips et al. (2003), Richardson et al. (2002), and our previous discussion concerning the probability of detection associated with nonconforming earnings management, the explanatory variables in equation (8) represent the following factors: (a) current period earnings management activity, as captured by deferred tax expense, *DTE* (Phillips et al. 2003) and modified Jones-model abnormal accruals, *MJAC* (Dechow et al. 1995); (b) incentives, or lack thereof, to manage earnings upwards, as reflected by security issuances (*FIN\_R*); closeness to debt covenants (*LEV* and *INV\_INTCOV*); meeting earnings targets (including current analyst forecasts (*MBE*), a history of meeting or beating analyst forecasts (*STRING*) and prior years' earnings targets (*EPS\_G*)); growth firms (*MB*); and current operating performance (*ΔCFO* and *CFO*); and (c) proxies for the probability of detection, *BIG\_AUDIT* and *AF*. We also control for possible differences in earnings misstatements across industries and firms of varying size.

#### IV. SAMPLE

We identify misstatement firms (i.e., firms that restated their financial statements in a subsequent year) from the October 2002 GAO report. The report includes 845 firms that made 919 public announcements of restatements during the period from January 1, 1997, to June 30, 2002.<sup>20</sup> The restatements corrected previous material misstatements of financial statement numbers caused by accounting irregularities. Such irregularities occur when firms violate GAAP and reflect aggressive accounting practices, material errors, misinterpretation of accounting rules, or the intentional or unintentional misuse of facts and fraud.

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<sup>20</sup> The GAO database excludes “restatements resulting from mergers and acquisition, discontinued operations, stock splits, issuance of stock dividends, currency-related issues, changes in business segment definitions, changes due to transfers of management, changes made for presentation purposes, general accounting changes under generally accepted accounting principles (GAAP), litigation settlements, and arithmetic and general bookkeeping errors” (GAO 2002).

The 845 firms' restatements reflect misstatements of annual or quarterly data. Because we require original and restated *annual* income tax data, we restrict our analysis to restatements of annual financial statements, which eliminates 407 observations. We hand collect the following variables from both the originally reported and restated financial statements: total assets, pretax net income, current tax expense, deferred tax expense, current and prior year deferred tax assets related to net operating losses, current and prior year deferred tax asset valuation allowance amounts, income before extraordinary items, net income, and cash flow from operations. We lose 215 firms having incomplete original or restated balance sheet, income statement, statement of cash flow, and/or income tax footnote data. The full misstatement sample consists of 223 misstatement firms (see Table 1, Panel A).

INSERT TABLE 1 HERE

Panel B of Table 1 describes the composition of the full misstatement sample with regard to the direction of earnings management. Of the 223 misstatement firms, 161 managed earnings upwards. That is, for the year (or the first year, if a firm has more than one misstatement year) that firms misstated their earnings, the restated earnings are always lower than the amounts originally reported. We focus on the 161 first misstatement years because subsequent years of multi-year restatements likely reflect a mix of upward earnings management and accrual reversals from prior years' earnings management. Thus, focusing on the first year of a multi-year restatement minimizes the impact of accrual reversals. We find in untabulated results that approximately 50 percent of the firms restated their financial results for just one year, compared to 36 percent that restated two years and 14 percent that restated three years.<sup>21</sup>

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<sup>21</sup> In sensitivity analyses we also examine firms that *consistently* managed earnings upward, and thus *consistently* restated their earnings downward; i.e., we exclude firms that restated earnings for multiple years where those restatements increased pretax income in one or more years. The results (untabulated) using this consistently income-increasing earnings management sample indicate that our main inferences remain unchanged.

In Table 1, Panel C, we summarize the types of accounting irregularities misstatement firms acknowledged. Because some misstatements reflect multiple accounting irregularities, there are 182 reasons provided for the 161 income-increasing misstatement firms. The most common accounting irregularities in our sample involve (to at least some extent) revenue recognition (37 percent) or expense recognition (20 percent). Per the GAO report, revenue recognition misstatements include instances in which revenue was improperly recognized, questionable revenues were recognized, or mistakes or improprieties that led to misreporting revenue.<sup>22</sup> Expense misstatements include instances of improperly recognizing expenses, improperly capitalizing expenditures, or mistakes in reported expenses.

## V. RESULTS

### Univariate Analysis

Table 2, Panel A, presents descriptive statistics for our sample of income-increasing misstatement firms for *PT\_EM\_S* (i.e., total pretax earnings restatement scaled by lagged total assets), *NC\_RATE* and *C\_RATE* (i.e., ratios, respectively, of nonconforming and conforming earnings management to *PT\_EM*), and the variables that we predict affect the choice between the two earnings management types. The mean (median) amount of *PT\_EM\_S* for firms that managed earnings upward is 5.8 (2.9) percent of total assets.<sup>23</sup> We expect that, all else equal, firms engage in more nonconforming than conforming earnings management to minimize current tax costs. Consistent with our expectation, the mean (median) *NC\_RATE* of 64.5 (54.1) percent is significantly greater than the mean (median) *C\_RATE* of 33.3 (21.2) percent.

INSERT TABLE 2 HERE

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<sup>22</sup> Our sample contains 9 firms that restated earnings after SEC Staff Accounting Bulletin No. 101, *Revenue Recognition* (SEC 1999) was issued. Our basic inferences are unaffected when these firms are removed.

<sup>23</sup> Amounts of income-increasing earnings management are shown as positive amounts throughout.

Table 2, Panel A, also indicates that 52.2 percent of sample firms had NOL carryforwards available at the beginning of the misstatement year, one-third of the misstatement firms (by construction) had high free cash flows,<sup>24</sup> 73.8 percent used a Big 4/5/6 auditor, analysts followed 70.8 percent of the firms, and 9.9 percent engaged in accounting fraud. Panel B shows that *NC\_RATE* is significantly negatively correlated with the presence of NOLs and with high operating cash flows, the two factors we predict reduce the expected tax benefits related to nonconforming earnings management. *NC\_RATE* is also significantly negatively correlated with the three factors (*BIG\_AUDIT*, *AF*, and *FRAUD*) we predict increase expected detection costs.

We provide additional univariate evidence by comparing the mean and median proportions of conforming and nonconforming earnings management (i.e., *C\_RATE* and *NC\_RATE*) in several contexts for the misstatement sample. Table 3, Panel A, displays the proportions of conforming and nonconforming earnings management by reason for the misstatement. For the 40 income-increasing misstatements that were due solely to irregularities in recognizing revenues, the mean rate of revenue-only nonconforming earnings management, 66.3 percent, is significantly greater than the revenue-only conforming earnings management mean of 50.4 percent.<sup>25</sup> Similarly, the mean *NC\_RATE* (70.7 percent) is significantly greater than the mean *C\_RATE* (26.1 percent) for the 22 misstatements caused solely by expense recognition irregularities. This pattern of mean differences also holds for the remaining 99 misstatements that impact a variety of accounts. Median differences reported in Panel A of Table 3 are consistent with the mean differences; i.e., the median *NC\_RATE* is significantly greater than the median *C\_RATE* in all three categories.

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<sup>24</sup> Note that both the mean and median values of *FREECASH* are negative.

<sup>25</sup> Recall that the sum of *NC\_RATE* and *C\_RATE* does not necessarily equal 100 percent since we also estimate the rate at which permanent differences are used to manage earnings.

Panel B of Table 3 presents *NC\_RATE* and *C\_RATE* by industry for the misstatement sample. For the nine industries with at least five firms, *NC\_RATE* exceeds *C\_RATE* in eight of the nine cases. Only the transportation industry (with seven observations) reflects a higher rate of conforming earnings management. Note that there is a mix of conforming and nonconforming earnings management across all industries.

Finally, in Panel C we show the mean proportions of each earnings management type for the two tax benefit and three detection cost variables that we predict reduce a firm's reliance on nonconforming earnings management. We expect that in the presence of each of these factors (e.g., *NOL* = 1), the mean *C\_RATE* (*NC\_RATE*) will be higher (lower) than when these factors are not present. The results are consistent with these expected relations in eight of the ten comparisons; the proportion of conforming (nonconforming) earnings management increases (decreases) as each of the four factors (*NOL*, *HI\_CASH*, *BIG\_AUDIT*, and *FRAUD*) goes from a value of 0 to 1, and the differences are significant. The results for *AF* are not as predicted.

INSERT TABLE 3 HERE

### **Multivariate Analysis**

Table 4 presents descriptive statistics for our misstatement firms (N = 161) and the control sample of non-misstatement firms (N = 8,468). The latter sample includes firms not in the GAO restatement sample that are matched with the misstatement firms on industry (three-digit SIC) and fiscal year. Misstatement firms have greater mean and median deferred tax expense (*DTE*), abnormal accruals (*MJAC*), and market-to-book (*MB*) than non-misstatement firms. There is also evidence of higher means for propensity to beat consensus analyst forecasts in year *t* (*MBE*) and prior quarterly earnings targets (*EPS\_G*), and a lower mean change in operating cash flows and for using a Big 4/5/6 auditor. On the other hand, misstatement firms

are similar to non-misstatement firms on a number of important dimensions, including firm size, analyst following, consecutive strings of meeting analyst forecasts, interest coverage, leverage, financing activity, and current tax expense (*CTE*). Panel B of Table 3 displays the industry composition for the misstatement and control samples.

INSERT TABLE 4 HERE

Table 5, Panel A presents the results of estimating equation (8), the first step in the Heckman (1979) two-step estimation approach. With regard to indicators of current period earnings management, the coefficients on both *DTE* and *MJAC* are positive and significant, indicating that deferred tax expense is incrementally useful beyond abnormal accruals in predicting earnings restatements (and thus, income-increasing earnings management), and *MJAC* is similarly incrementally useful to *DTE*. The *DTE* result extends Phillips et al. (2003), who demonstrate that deferred tax expense is incrementally useful beyond accrual-based measures in detecting upward earnings management to avoid reporting an earnings decline or a loss.

The results in Panel A dealing with incentives (or the lack thereof) to manage earnings upward suggest the following significant effects: the probability of restatement is positively related to meeting or beating analyst forecasts (*MBE*) and prior quarterly earnings targets (*EPS\_G*). In addition, *RESTATE* is negatively related to *BIG\_AUDIT*, which suggests that firms with high quality external auditors are less likely to restate earnings. There is also evidence that *RESTATE* is less likely when operating cash flows increase, which suggests that earnings management is less likely to occur when operating performance is improving.

We report the main multivariate results that reflect tests of H1 and H2 in Panel B of Table 5. As predicted by H1, the proportion of nonconforming earnings management declines in the presence of NOL carryforwards and high levels of free cash flow. These results suggest that

firms engage in more (less) book-tax *conforming* earnings management when the net present value of tax benefits associated with nonconforming earnings management are lower (higher).

As predicted by H2, *NC\_RATE* is lower when firms have a Big 4/5/6 auditor and when firms are alleged to have committed fraud.<sup>26</sup> These results are consistent with those in Erickson et al. (2004), who document that their sample of firms with fraudulent financial reporting relied on significant amounts of conforming earnings management. In sum, our results suggest firms substitute conforming for nonconforming earnings management when net expected detection costs associated with nonconforming earnings management are higher, as they should be with high quality audit firms and for misstatement firms identified *ex post* as having engaged in fraud.

After controlling for the type of account misstated, we find that the coefficient on *EXP\_ONLY* is significantly positive. Our results suggest that while a firm's propensity to engage in nonconforming earnings management strategies is in part determined by the type of account managed, the effects predicted by H1 and H2 are still significant. Lastly, *INV\_MILLS* is positive and marginally significant, consistent with the need to control for self-selection bias.<sup>27</sup>

In summary, univariate results support our expectation that all else equal, firms engage in more nonconforming than conforming earnings management to minimize current tax costs. In addition, the multivariate results support H1 and H2 and suggest that firm-specific characteristics that reduce the net present value of tax benefits and/or increase the net expected detection costs related to nonconforming earnings management are associated with firms engaging in more conforming and less nonconforming pretax earnings management.

INSERT TABLE 5 HERE

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<sup>26</sup> The relation between *NC\_RATE* and *AF* is negative but not significant.

<sup>27</sup> Stolzenberg and Relles (1997) argue that if selection bias is moderate or if samples have only a few hundred observations, as is the case here, then the two-step estimation approach can make estimates worse. We re-estimate equation (7) after excluding *INV\_MILLS*. Untabulated results indicate that our main inferences remain unchanged.

## VI. SUMMARY AND CONCLUSIONS

We examine the tax implications of pretax earnings management by investigating the relative amounts of two types of earnings management: book-tax conforming and book-tax nonconforming. We base our analyses on a sample of firms that restated their earnings downward (and thus had managed earnings upwards), and we measure earnings management as the difference between originally reported and restated pretax earnings.

Using hand-collected data from the misstatement firms' financial statements, we calculate and compare the relative amounts of both types of earnings management. We find that nonconforming earnings management accounts for the larger proportion of total pretax earnings management. Further, we provide evidence that firm-specific characteristics – presence of NOL carryforwards, high free cash flow, use of a high quality external auditor, and fraud – make it more costly to engage in nonconforming earnings management and leads firms to engage in more conforming earnings management than they otherwise would have. Our results are thus consistent with misstatement firms trading off the net present value of tax benefits against the net expected detection costs associated with nonconforming earnings management when deciding whether to engage in conforming versus nonconforming earnings management strategies.

Our research makes several contributions. First, our study investigates to what extent managers draw from a portfolio of accounting tools (i.e., conforming and nonconforming accruals) and choose to manage earnings upward in ways that systematically reflect differences in the costs and benefits of using such tools. Hence, researchers seeking to explain managerial behavior with regard to income-increasing earnings management should find our evidence on the choice between conforming and nonconforming accruals relevant to their research. Second, our results suggest that nonconforming earnings management generally accounts for a larger

proportion of income-increasing pretax earnings management among firms that restated earnings downward. Thus, our results also contribute to the debate regarding the potential costs and benefits of imposing book-tax conformity on tax and financial accounting rules. Showing that firms tend to manage earnings upward in ways that avoid increasing current taxable income suggests that book-tax conformity could discourage such earnings management activity. However, this would also mean that an indicator of earnings management, deferred tax expense, would be eliminated by book-tax conformity.

We acknowledge that GAO restatement firms may reflect some earnings management behavior not typically seen in the larger population of publicly-traded U.S. companies. Thus, our results may not generalize to the entire population of publicly-traded firms. We note, however, that the most common areas of accounting irregularities for our misstatement sample – revenue and expense recognition – are consistent with the most common areas of earnings management identified in Nelson et al. (2002) and Phillips et al. (2004). Finally, our analyses focus on pretax earnings management and thus we cannot speak to the relative magnitudes of pretax earnings management compared to income tax accrual management, as investigated by Dhaliwal et al. (2004), among others.

## REFERENCES

- Badertscher, B., D. Collins, and T. Lys. 2007. Earnings management and the predictive ability of accruals with respect to future cash flows. Working Paper, University of Iowa and Northwestern.
- Barth, M., D. Cram, and K. Nelson. 2001. Accruals and the prediction of future cash flows. *The Accounting Review* 76: 27-58.
- Becker, C., M. DeFond, J. Jiambalvo, and K. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15: 1-24.
- Burgstahler, D., and I. Dichev. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24 (1): 99-128.
- Collins, D., and H. Wan, 2005. An empirical assessment of alternative discretionary accrual models. Working Paper, University of Iowa.
- Dechow, P., R. Sloan, and A. Sweeney. 1995. Detecting earnings management. *The Accounting Review* 70 (2): 193-225.
- Dhaliwal, D., M. Frankel, and R. Trezevant. 1994. The taxable and book income motivations for a LIFO layer liquidation. *Journal of Accounting Research* (2): 278-89.
- Dhaliwal, D., C. Gleason, and L. Mills. 2004. Last chance earnings management: using the tax expense to meet analysts' forecasts. *Contemporary Accounting Research* 21 (2): 431-457.
- DeAngelo, H., L. DeAngelo, and D. Skinner. 1994. Accounting choice in troubled companies. *Journal of Accounting & Economics* 17: 113-144.
- DeFond, M., and J. Jiambalvo. 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17: 145-177.
- Durtschi, C., and P. Easton. 2005. Earnings management? The shapes of the frequency distributions of earnings metrics are not evidence ipso facto. *Journal of Accounting Research* 43 (4): 557-592.
- Erickson, M., M. Hanlon, and E. Maydew. 2004. How much will firms pay for earnings that do not exist? Evidence of taxes paid on allegedly fraudulent earnings. *The Accounting Review* 79 (2): 387-408.
- Francis, J., and E. Wilson. 1988. Auditor changes: A joint test of theories relating to agency costs and auditor differentiation. *The Accounting Review* 63 (4): 663-682.
- Frank, M., and S. Rego. 2006. Do managers use the valuation allowance account to manage earnings around certain earnings targets? *Journal of the American Taxation Association* (forthcoming).

- Frank, M., L. Lynch, and S. Rego. 2006. Does Aggressive Financial Reporting Accompany Aggressive Tax Reporting (and Vice Versa)? Working paper, University of Virginia and Iowa.
- Frankel, R., M. Johnson, and K. Nelson. 2002. The relation between auditors' fees for nonaudit services and earnings management. *The Accounting Review* 77: 71 -104.
- General Accounting Office. 2002. Financial statement restatements: Trends, market impacts, regulatory responses, and remaining challenges. Washington, DC: GAO-38-138.
- Griffin, P, 2004. A league of their own? Financial analysts' responses to restatements and corrective disclosures. *Journal of Accounting, Auditing and Finance* 18, 479-518.
- Guay, W., S.P. Kothari, and R. Watts. 1996. A market-based evaluation of discretionary accrual models. *Journal of Accounting Research* 34 (Supplement): 83-105.
- Hanlon, M. 2003. What can we infer about a firm's taxable income from its financial statements? *National Tax Journal* 56 (December): 831-864.
- Hanlon, M., and G. Krishnan. 2005. Do auditors use the information reflected in book-tax differences? Working paper, University of Michigan.
- Hanlon, M., and S. Laplante, and T. Shevlin. 2005. Evidence on the possible information loss on conforming book income and taxable income. Working Paper, University of Michigan and University of Washington.
- Hanlon, M., and E. Maydew, and T. Shevlin. 2006. Book-tax conformity and the information content of earnings. Working Paper, University of Michigan, University of North Carolina, and University of Washington.
- Hanlon, M., and T. Shevlin. 2005. Book-tax conformity for corporate income: An introduction to the issues. *Tax Policy and the Economy* 19: 101-134.
- Healy, P., and J. Wahlen. 1999. A review of the earnings management literature and its implications for standard setting. *Accounting Horizons* 13 (4): 365-383.
- Heckman, J. 1979. Sample selection bias as a specification error. *Econometrica* 46 (6): 1251-1271.
- Johnson, W. B., and D. Dhaliwal. 1988. LIFO abandonment. *Journal of Accounting Research* 26 (2): 236-272.
- Joos, P., J. Pratt, and S.D. Young. 2003. Using deferred taxes to infer the quality of accruals. Working paper, Massachusetts Institute of Technology.
- Krull, L. 2004. Permanently reinvested foreign earnings, taxes, and earnings management. *The Accounting Review* 79 (3): 745-768.

- Maddala, G. 2001. A perspective on the use of limited-dependent and qualitative variables models in accounting research. *The Accounting Review* 66 (4): 788-807.
- Matsunaga, S., T. Shevlin, and D. Shores. 1992. Disqualifying dispositions of incentive stock options: Tax benefits versus financial reporting costs. *Journal of Accounting Research* 30 (Supplement): 37-68.
- Mills, L. 1998. Book-tax differences and Internal Revenue service adjustments. *Journal of Accounting Research* 36 (2): 343-356.
- Mills, L., and K. Newberry. 2001. The influence of tax and nontax costs on book-tax reporting differences: Public and private firms. *Journal of the American Taxation Association* 23 (1): 1-19.
- Mills, L., and R. Sansing. 2000. Strategic tax and financial reporting decisions: Theory and evidence. *Contemporary Accounting Research* 17(1): 85-106.
- Nelson, M., J. Elliott and R. Tarpley (2002). Evidence from auditors about managers' and auditors' earnings-management decisions. *The Accounting Review* 77 (Supplement): 175-202.
- Palmrose, Z.-V., V.J. Richardson, and S. Scholz. 2004. Determinants of market reactions to restatement announcements. *Journal of Accounting and Economics* 37 (1): 59-89.
- Phillips, J., M. Pincus, and S. Rego. 2003. Earnings management: New evidence based on deferred tax expense. *The Accounting Review* 78 (2): 491-521.
- Phillips, J., M. Pincus, S. Rego, and H. Wan. 2004. Decomposing changes in deferred tax assets and liabilities to isolate earnings management activities. *The Journal of the American Taxation Association* 26 (Supplement): 43-66.
- Richardson, S., I. Tuna, and M. Wu. 2002. Predicting earnings management: The case of earnings restatements. Working Paper, University of Pennsylvania and Hong Kong University of Science and Technology.
- Scholes, M., P. Wilson, and M. Wolfson. 1990. Tax planning, regulatory capital planning, and financial reporting strategy for commercial banks. *The Review of Financial Studies* 3 (4): 625-650.
- Securities and Exchange Commission (SEC). 1999. *Revenue Recognition*. Staff Accounting Bulletin No. 101. Washington, D.C.: Government Printing Office.
- Stolzenberg, R., and D. Relles. 1997. Tools for intuition about sample selection bias and its correction. *American Sociological Review* 62 (June): 494-507.
- Watts, R. and J. Zimmerman. 1986. *Positive Accounting Theory*. Prentice-Hall.

**TABLE 1**  
**Misstatement Sample Selection and Description**

<b>Panel A: Misstatement Sample Selection</b>				
	<b>N</b>			
All GAO (2003) Restatement Announcements	845			
Less:				
Exclusion of quarterly restatements	(407)			
Exclusion of firms for insufficient financial, tax footnote, and/or restatement data	(215)			
Misstatement Sample – Firms	223			
<b>Panel B: Misstatement Firms Partitioned by First Year Direction of Earnings Management</b>				
<b>Direction of Earnings Management</b>	<b>Firms</b>			
First-Year Income Increasing	161			
First-Year Income Decreasing	36			
No Effect on Pretax Income	26			
Total	223			
<b>Panel C: Types of Accounting Irregularities Causing the Income-Increasing Misstatements</b>				
<b>Reason for Misstatement</b>	<b>GAO Report</b>	<b>Percent of Obs.</b>	<b>Our Sample</b>	<b>Percent of Obs.</b>
Revenue only or revenue and other irregularities	388	36.09%	68	37.36%
Expense only or expense and other irregularities	208	15.70%	37	20.33%
Mergers and Acquisitions	64	5.93%	13	7.14%
In-Process Research and Development	36	3.57%	0	0.00%
Reclassification	48	5.27%	9	4.95%
Related Third Party	31	3.01%	5	2.75%
Restructuring	124	8.94%	18	9.89%
Securities	65	5.36%	14	7.69%
Other	111	14.21%	18	9.89%
Total Firm Irregularities	1075		182	100%
Total Firms	845		161	

**TABLE 2**  
**Descriptive Statistics for Income-Increasing Misstatement Firms (N = 161)**

**Panel A: Means, Medians, Percentiles, and Standard Deviations**

<b>Variable</b>	<b>Mean</b>	<b>Std. Dev.</b>	<b>75<sup>th</sup></b>	<b>Percentiles</b>	
				<b>Median</b>	<b>25<sup>th</sup></b>
<i>PT_EM_S</i>	0.058	0.071	0.082	0.029	0.006
<i>NC_RATE</i>	64.47% <sup>1</sup>	0.708	94.40%	54.1% <sup>1</sup>	6.70%
<i>C_RATE</i>	33.27% <sup>1</sup>	0.544	80.50%	21.2% <sup>1</sup>	4.12%
<i>NOL</i>	0.522	0.501	1	1	0
<i>FREECASH</i>	-0.143	0.209	0.024	-0.061	-0.262
<i>HI_CASH</i>	0.333	--	--	--	--
<i>BIG_AUDIT</i>	0.738	0.463	1	1	0
<i>AF</i>	0.708	0.535	1	1	0
<i>FRAUD</i>	0.099	0.301	0	0	0
<i>LAG_DTE</i>	-0.003	0.019	0.001	0	-0.004
<i>LAG_TA</i>	1,193	2,810	882	115	42

<sup>1</sup> A one-tail test of whether the mean (median) *NC\_RATE* exceeds the mean (median) *C\_RATE* is significant at the 0.01 level.

**TABLE 2 (Continued)**

**Panel B: Pearson (above diagonal) and Spearman (below diagonal) Correlations (p-values shown below correlations) for Income-Increasing Misstatement Firms**

	<i>NC_RATE</i>	<i>NOL</i>	<i>HI_CASH</i>	<i>BIG_AUDIT</i>	<i>AF</i>	<i>FRAUD</i>	<i>LAG_DTE</i>	<i>LAG_TA</i>	<i>REV_ONLY</i>	<i>EXP_ONLY</i>	<i>INV_MILLS</i>
<i>NC_RATE</i>	---	-0.275	-0.159	-0.182	-0.222	-0.204	-0.041	-0.037	0.138	0.229	-0.087
		0.001	0.048	0.004	0.016	0.015	0.107	0.629	0.361	0.021	0.324
<i>NOL</i>	-0.255	---	-0.176	0.076	-0.157	0.121	-0.011	-0.126	0.035	0.119	-0.201
	0.001		0.029	0.330	0.045	0.120	0.291	0.103	0.654	0.128	0.144
<i>HI_CASH</i>	-0.153	-0.154	---	0.070	0.162	-0.067	0.088	0.207	0.061	-0.076	-0.049
	0.048	0.058		0.391	0.046	0.046	0.291	0.001	0.453	0.350	0.645
<i>BIG_AUDIT</i>	-0.172	0.076	0.070	---	0.257	-0.141	0.037	-0.117	0.142	0.030	-0.077
	0.004	0.330	0.391		0.001	0.071	0.657	0.134	0.069	0.703	0.268
<i>AF</i>	-0.221	-0.148	0.162	0.257	---	0.198	0.261	0.014	0.105	0.034	0.162
	0.016	0.058	0.046	0.001		0.011	0.001	0.067	0.182	0.667	0.311
<i>FRAUD</i>	-0.202	0.121	-0.067	-0.141	0.198	---	0.091	-0.020	0.031	-0.056	0.086
	0.019	0.120	0.046	0.071	0.011		0.275	0.800	0.694	0.472	0.263
<i>LAG_DTE</i>	-0.082	-0.055	0.110	0.011	0.209	0.178	---	0.065	0.046	-0.041	0.091
	0.145	0.508	0.186	0.897	0.011	0.241		0.439	0.572	0.605	0.254
<i>LAG_TA</i>	-0.084	-0.115	0.139	-0.018	0.153	0.122	-0.080	---	-0.085	-0.037	0.159
	0.282	0.140	0.085	0.815	0.050	0.119	0.338		0.277	0.634	0.183
<i>REV_ONLY</i>	0.167	0.035	0.058	0.142	0.105	0.031	-0.033	0.041	---	0.041	-0.042
	0.434	0.654	0.470	0.069	0.182	0.694	0.689	0.604		0.724	0.524
<i>EXP_ONLY</i>	0.243	0.119	0.059	0.030	0.034	-0.056	-0.033	0.041	0.041	---	0.013
	0.062	0.128	0.475	0.703	0.667	0.472	0.689	0.502	0.724		0.813
<i>INV_MILLS</i>	-0.131	0.201	-0.149	-0.036	0.051	-0.012	0.031	0.025	-0.012	0.035	---
	0.124	0.144	0.345	0.273	0.171	0.341	0.093	0.299	0.625	0.712	

Variable Definitions: *PT\_EM\_S* is the difference between originally reported and restated pretax income in year *t*, scaled by total assets in year *t-1*; *NC\_RATE* is the proportion of nonconforming earnings management, which is computed as the ratio of nonconforming earnings management total pretax earnings management (*PT\_EM*) in year *t*; *C\_RATE* is the proportion of conforming earnings management, which is computed as the ratio of conforming earnings management to total pretax earnings management (*PT\_EM*) in year *t*; *NOL* is equal to 1 if the firm has net operating loss carryforwards available at the beginning of year *t*, and 0 otherwise; *FREECASH* is equal to cash flow from operating activities (*Compustat* #308) minus capital expenditures (#128) plus sales of property, plant, and equipment (#107) minus acquisitions (#129) in year *t-1*, scaled by total assets at year-end *t-2*; *HI\_CASH* is equal to 1 if the firm is in the top one-third of the *FREECASH* distribution for misstatement firms during year *t-1*, and 0 otherwise; *BIG\_AUDIT* is equal to 1 if the firm is audited by a Big 4/5/6 auditor (#149 value of 1 – 7) in year *t*, and 0 otherwise; *AF* is equal to 1 if the firm has any analyst following in year *t*, and zero otherwise; *FRAUD* is equal to 1 if the firm engaged in fraudulent activities in year *t*, and 0 otherwise; *LAG\_DTE* is deferred tax expense (#50) in year *t-1*, scaled by total assets at year-end *t-2*; *LAG\_TA* is equal to total assets (#6) at year-end *t-1*. *REV\_ONLY* equals 1 if the GAO report indicates that the firm only restated revenue accounts in year *t*, and 0 otherwise; *EXP\_ONLY* equals 1 if the GAO report indicates that the firm only restated expense accounts in year *t*, and 0 otherwise; *INV\_MILLS* is the inverse mills ratio from the first-stage of the Heckman (1979) two-step estimation. See Table 3, Panel A for data on revenue only and expense only earnings management.

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**TABLE 3**  
**Proportions of Conforming and Nonconforming Earnings Management**

**Panel A: By Reason for Misstatement**

	Observations	<i>C_RATE</i>		<i>NC_RATE</i>	
		Mean	Median	Mean	Median
Revenue Only	40	50.4%*	28.4%**	66.3%	67.1%
Expense Only	22	26.1%***	22.9%**	70.7%	56.5%
All other Combinations	99	27.6%**	20.2%*	63.2%	53.1%
Total Firms	161				

\*, \*\*, \*\*\* Statistically significant at the 0.10, 0.05, 0.01 level, respectively, using a one-tailed test of differences in proportions within each row. For example, *C\_RATE* for Revenue Only (50.4%) is compared to *NC\_RATE* for Revenue Only (66.3%).

**Panel B: By Industry Classification**

Industry	Non-Misstatement Sample <sup>1</sup>		Misstatement Sample			
	# Obs	Percent	# Obs	Percent	<i>C_RATE</i>	<i>NC_RATE</i>
Transportation	245	2.89%	7	4.35%	65.42%	34.28%
Utilities	189	2.23%	3	1.86%	81.10%	22.10%
Services	903	10.66%	28	17.39%	37.71%	68.50%
Retail	755	8.92%	24	14.91%	19.00%	73.20%
Food	5	0.06%	2	1.24%	75.30%	34.10%
Extractive	191	2.26%	2	1.24%	33.10%	62.00%
Textiles and Printing/Publishing	162	1.91%	7	4.35%	40.50%	51.40%
Chemicals	118	1.39%	2	1.24%	71.30%	22.10%
Computers	2,327	27.48%	31	19.25%	37.19%	71.01%
Pharmaceuticals	670	7.91%	5	3.11%	43.70%	52.90%
Mining and Construction	89	1.05%	6	3.73%	25.10%	68.80%
Durable Manufacturers	2,563	30.27%	36	22.36%	37.01%	67.89%
Agriculture	0	0.00%	0	0.00%	0.00%	0.00%
Financials	251	2.96%	8	4.97%	36.90%	59.00%
<b>Total Observations</b>	<b>8,468</b>	<b>100%</b>	<b>161</b>	<b>100%</b>		

<sup>1</sup> For descriptive purposes, we use Barth et al.'s (2001) industry classifications: Agriculture (0100-0999), Mining & Construction (1000-1999, excluding 1300-1399), Food (2000-2111), Textiles & Printing/Publishing (2200-2780), Chemicals (2800-2824, 2840-2899), Pharmaceuticals (2830-2836), Extractive (2900-2999), 1300-1399), Durable Manufactures (3000-3999, excluding 3570-3579 and 3670-3679), Computers (7370-7379, 3570-3579, 3670-3679), Transportation (4000-4899), Utilities (4900-4999), Retail (5000-5999), and Services (7000-8999), excluding 7370-7379).

TABLE 3 (Continued)

Panel C: By Partitioning Based on *NOL*, *HI\_CASH*, *BIG\_AUDIT*, *AF*, and *FRAUD*

Proxies for Net Present Value of Tax Benefits Related to Nonconforming Earnings Management			Proxies for Net Expected Detection Costs Related to Nonconforming Earnings Management		
	<i>C_RATE</i>	<i>NC_RATE</i>		<i>C_RATE</i>	<i>NC_RATE</i>
<i>NOL</i> = 0	28.4%**	73.1%**	<i>BIG_AUDIT</i> = 0	10.6%***	87.5%***
<i>NOL</i> = 1	43.6%	50.7%	<i>BIG_AUDIT</i> = 1	41.3%	56.4%
	<i>C_RATE</i>	<i>NC_RATE</i>		<i>C_RATE</i>	<i>NC_RATE</i>
<i>HI_CASH</i> = 0	23.9%*	72.9%*	<i>AF</i> = 0	21.7%	63.5%
<i>HI_CASH</i> = 1	33.8%	59.7%	<i>AF</i> = 1	29.3%	68.7%
				<i>C_RATE</i>	<i>NC_RATE</i>
			<i>FRAUD</i> = 0	32.5%**	60.8%**
			<i>FRAUD</i> = 1	57.20%	45.10%

\*, \*\*, \*\*\* Statistically significant at the 0.10, 0.05, 0.01 level, respectively, using a one-tailed test of differences in proportions for each column. For example, *C\_RATE* for *NOL* = 0 (28.4%) is compared to *C\_RATE* for *NOL* = 1 (43.6%).

Variable Definitions: *NC\_RATE* is the proportion of nonconforming earnings management, which is computed as the ratio of nonconforming earnings management total pretax earnings management (*PT\_EM*) in year *t*; *C\_RATE* is the proportion of conforming earnings management, which is computed as the ratio of conforming earnings management to total pretax earnings management (*PT\_EM*) in year *t*; *NOL* is equal to 1 if the firm has net operating loss carryforwards available at the beginning of year *t*, and 0 otherwise; *HI\_CASH* is equal to 1 if the firm is in the top one-third of the *FREECASH* distribution for misstatement firms during year *t-1*, and 0 otherwise; *FREECASH* is equal to cash flow from operating activities (*Compustat* #308) minus capital expenditures (#128) plus sales of property, plant, and equipment (#107) minus acquisitions (#129) in year *t-1*, scaled by total assets at year-end *t-2*; *BIG\_AUDIT* is equal to 1 if the firm is audited by a Big 4/5/6 auditor (#149 value of 1 – 7) in year *t*, and 0 otherwise; *AF* is equal to 1 if the firm has any analyst following in year *t*, and zero otherwise; *FRAUD* is equal to 1 if the firm engaged in fraudulent activities in year *t*, and 0 otherwise.

**TABLE 4**  
**Comparative Descriptive Statistics for Income-Increasing Misstatement Firms versus a Control Sample of Non-Misstatement Firms**

Misstatement Firms:	N	Mean	Std. Dev.	Percentiles		
				75 <sup>th</sup>	50 <sup>th</sup>	25 <sup>th</sup>
<i>CTE</i>	161	0.015	0.032	0.027	0.003	0.000
<i>DTE</i>	161	-0.004**	0.027	0.004	0.001*	-0.007
<i>MJAC</i>	161	0.057***	0.172	0.102	0.036***	-0.059
<i>MBE</i>	161	0.694**	0.441	1.000	1.000	0.000
<i>MB</i>	161	6.851*	2.847	6.359	3.977*	2.748
<i>FIN_R</i>	161	0.278	0.352	0.583	0.076	0.001
<i>LEV</i>	161	0.258	0.235	0.379	0.218	0.038
<i>INV_INTCOV</i>	161	0.512	0.592	0.389	0.257	0.111
<i>EPS_G</i>	161	3.406*	1.056	4.000	2.000	1.000
<i>STRING</i>	161	3.380	2.523	5.000	2.000	1.000
<i>CFO</i>	161	-0.017	0.102	0.093	0.027	-0.054
<i>ΔCFO</i>	161	-0.058*	0.205	0.045	-0.013	-0.185
<i>BIG_AUDIT</i>	161	0.738**	0.463	1.000	1.000	0.000
<i>AF</i>	161	0.697	0.535	1.000	1.000	0.000
<i>LAG_TA</i>	161	1,193	2,810	882	115	42

Non-Misstatement Firms: <sup>a</sup>	N	Mean	Std. Dev.	Percentiles		
				75 <sup>th</sup>	50 <sup>th</sup>	25 <sup>th</sup>
<i>CTE</i>	8,468	0.021	0.027	0.018	0.006	0.000
<i>DTE</i>	8,468	-0.011	0.025	0.001	-0.000	-0.014
<i>MJAC</i>	8,468	-0.062	0.211	0.038	-0.053	-0.212
<i>MBE</i>	8,468	0.518	0.417	1.000	1.000	0.000
<i>MB</i>	8,468	3.575	4.908	4.293	2.186	1.064
<i>FIN_R</i>	8,468	0.236	0.326	0.362	0.065	0.021
<i>LEV</i>	8,468	0.253	0.241	0.536	0.236	0.003
<i>INV_INTCOV</i>	8,468	0.473	0.454	0.331	0.287	0.127
<i>EPS_G</i>	8,468	2.024	1.583	3.000	1.000	0.000
<i>STRING</i>	8,468	2.434	2.280	5.000	2.000	0.000
<i>CFO</i>	8,468	-0.032	0.241	0.073	0.013	-0.199
<i>ΔCFO</i>	8,468	-0.007	0.249	0.033	-0.003	-0.134
<i>BIG_AUDIT</i>	8,468	0.843	0.391	1.000	1.000	1.000
<i>AF</i>	8,468	0.787	0.472	1.000	1.000	1.000
<i>LAG_TA</i>	8,468	1,732	4,032	1,347	342	32

<sup>a</sup> Non-misstatement firms represent all *Compustat* firms not appearing in the GAO restatement sample and matched on three-digit SIC and year to the misstatement.

\*, \*\*, \*\*\* Statistically significant at the 0.10, 0.05, 0.01 level, respectively, between restatement and non-misstatement firms.

Variable Definitions: *CTE* equals firm *i*'s current tax expense (*Compustat* #63 plus #64) in year *t*, scaled by total assets (#6) at year-end *t-1*; *DTE* equals firm *i*'s deferred tax expense (#50) in year *t*, scaled by total assets (#6) at year-end *t-1*; *MJAC* equals firm *i*'s abnormal accruals in year *t* computed using the modified Jones model (Dechow et al. 1995); *MBE* is a dummy variable equal to 1 if the firm meets or beats the consensus annual analyst

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earnings forecast in year  $t$ , and 0 otherwise, unless the firm has no analyst following, in which case the dummy variable is 1 if current period earnings are the same as, or higher than, the prior year's earnings (#18);  $MB$  equals market-to-book ratio, calculated as market value of equity (#25  $\times$  #199) at year-end  $t-1$  divided by the book value of equity (#60) at year-end  $t-1$ ;  $FIN\_R$  is the sum of additional cash raised from the issuance of common and preferred stock (#108) and the issuance of long-term debt (#111) during year  $t$ , scaled by average total assets for year  $t$ ;  $LEV$  equals short term debt (#34) plus long term debt (#9) at year-end  $t-1$ , scaled by total assets (#6) at year-end  $t-1$ ;  $INV\_INTCOV$  equals inverse interest coverage is interest expense (#15) in year  $t$ , divided by operating income before depreciation (#13) in year  $t$ . The ratio is capped at 2.00. If operating income before depreciation is negative we assign a value of 2.00;  $EPS\_G$  equals earnings per share (EPS) growth, equal to the number of consecutive quarters of growth in EPS, ending at quarter 4 of the year prior to year  $t$ , where EPS growth is  $EPS\_Q4_t - EPS\_Q4_{t-1}$ ;  $STRING$  equals the number of consecutive quarters with small positive forecast errors ending at quarter 4 of the year prior to year  $t$ , where forecast error is actual earnings minus the most recent consensus analyst forecast from  $I/B/E/S$ ;  $CFO$  equals firm  $i$ 's cash flows from continuing operations (#308 - #124) year in year  $t$ , scaled by total assets at year-end  $t-1$ ;  $\Delta CFO$  equals the change in firm  $i$ 's cash flows from continuing operations (#308 - #124) from year  $t-1$  to  $t$ , scaled by total assets at year-end  $t-1$ ;  $BIG\_AUDIT$  is equal to 1 if the firm is audited by a Big 4/5/6 auditor (#149 value of 1 - 7) in year  $t$ , and 0 otherwise;  $AF$  is equal to 1 if the firm has any analyst following in year  $t$ , and zero otherwise;  $LAG\_TA$  is equal to total assets (#6) at year-end  $t-1$ .

**TABLE 5**  
**Results from Heckman (1979) Two-Step Regressions**

**Panel A: Results from First Stage of Heckman Estimation**

$$RESTATE_i = \alpha_0 + \alpha_1 DTE_i + \alpha_2 MJAC_i + \alpha_3 MBE_i + \alpha_4 MB_i + \alpha_5 FIN\_R_i + \alpha_6 LEV_i + \alpha_7 EPS\_G_i + \alpha_8 STRING_i + \alpha_9 \Delta CFO_i + \alpha_{10} CFO_i + \alpha_{11} BIG\_AUDIT_i + \alpha_{12} AF_i + \alpha_{13} LAG\_TA_i + \alpha_j \sum_i INDUS_i + \varepsilon_i \quad (8)$$

	Predicted Sign	Coefficient	p-value
<b>Intercept</b>	+/-	<b>-1.734</b>	0.026
<i>DTE</i>	+	<b>14.933</b>	0.048
<i>MJAC</i>	+	<b>1.323</b>	0.001
<i>MBE</i>	+	<b>0.198</b>	0.055
<i>MB</i>	+	0.129	0.191
<i>FIN_R</i>	+	0.643	0.263
<i>LEV</i>	+	-0.081	0.401
<i>INV_INTCOV</i>	+	0.190	0.385
<i>EPS_G</i>	+	<b>0.208</b>	0.048
<i>STRING</i>	+	0.036	0.284
<i>CFO</i>	-	0.004	0.421
<i>ΔCFO</i>	-	<b>-2.728</b>	0.094
<i>BIG_AUDIT</i>	-	<b>-0.049</b>	0.031
<i>AF</i>	-	0.003	0.434
<i>LAG_TA</i>	-	-0.062	0.355
Pseudo R <sup>2</sup>		28%	

Industry coefficients are included but not reported.  
p-values are one-tail if there is a predicted sign, two-tail otherwise.  
N = 161 misstatement firms and N = 8,468 non-misstatement firms.

**Panel B: Results From Second Stage of Heckman Estimation**

$$NC\_RATE_i = \alpha_0 + \alpha_1 NOL_i + \alpha_2 HI\_CASH_i + \alpha_3 BIG\_AUDIT_i + \alpha_4 AF_i + \alpha_5 FRAUD_i + \alpha_6 LAG\_DTE_i + \alpha_7 LAG\_TA_i + \alpha_8 REV\_ONLY_i + \alpha_9 EXP\_ONLY_i + \alpha_{10} INV\_MILLS_i + \alpha_j \sum_i INDUS_i + \varepsilon_i \quad (7)$$

	Predicted Sign	Coefficient	p-value
<b>Intercept</b>	+/-	<b>1.044</b>	0.001
<i>NOL</i>	-	<b>-0.241</b>	0.047
<i>HI_CASH</i>	-	<b>-0.239</b>	0.069
<i>BIG_AUDIT</i>	-	<b>-0.518</b>	0.063
<i>AF</i>	-	-0.011	0.329
<i>FRAUD</i>	-	-0.237	0.103
<i>LAG_DTE</i>	-	-7.435	0.141
<i>LAG_TA</i>	+/-	0.000	0.587
<i>REV_ONLY</i>	+/-	-0.034	0.295
<i>EXP_ONLY</i>	+/-	<b>0.234</b>	0.096
<i>INV_MILLS</i>	+	<b>0.153</b>	0.146
<b>Adjusted R<sup>2</sup></b>		32%	
<b>N</b>		161	

Industry coefficients are included but not reported.  
p-values are one-tail if there is a predicted sign, two-tail otherwise.

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Variable Definitions: *DTE* equals firm *i*'s deferred tax expense (#50) in year *t*, scaled by total assets (#6) at year-end *t-1*; *MJAC* equals firm *i*'s abnormal accruals in year *t* computed using the modified Jones model (Dechow et al. 1995); *MBE* is a dummy variable equal to 1 if the firm meets or beats the consensus annual analyst earnings forecast in year *t*, and 0 otherwise, unless the firm has no analyst following, in which case the dummy variable is 1 if current period earnings are the same as, or higher than, the prior year's earnings (#18); *MB* equals market-to-book ratio, calculated as market value of equity (#25 × #199) at year-end *t-1* divided by the book value of equity (#60) at year-end *t-1*; *FIN\_R* is the sum of additional cash raised from the issuance of common and preferred stock (#108) and the issuance of long-term debt (#111) during year *t*, scaled by average total assets for year *t*; *LEV* equals short term debt (#34) plus long term debt (#9) at year-end *t-1*, scaled by total assets (#6) at year-end *t-1*; *INV\_INTCOV* equals inverse interest coverage is interest expense (#15) in year *t*, divided by operating income before depreciation (#13) in year *t*. The ratio is capped at 2.00. If operating income before depreciation is negative we assign a value of 2.00; *EPS\_G* equals earnings per share (EPS) growth, equal to the number of consecutive quarters of growth in EPS, ending at quarter 4 of the year prior to year *t*, where EPS growth is  $EPS\_Q4_t - EPS\_Q4_{t-1}$ ; *STRING* equals the number of consecutive quarters with small positive forecast errors ending at quarter 4 of the year prior to year *t*, where forecast error is actual earnings minus the most recent consensus analyst forecast from *I/B/E/S*; *CFO* equals firm *i*'s cash flows from continuing operations (#308 - #124) year in year *t*, scaled by total assets at year-end *t-1*; *ΔCFO* equals the change in firm *i*'s cash flows from continuing operations (#308 - #124) from year *t-1* to *t*, scaled by total assets at year-end *t-1*; *BIG\_AUDIT* is equal to 1 if the firm is audited by a Big 4/5/6 auditor (#149 value of 1 – 7) in year *t*, and 0 otherwise; *AF* is equal to 1 if the firm has any analyst following in year *t*, and zero otherwise; *LAG\_TA* is equal to total assets (#6) at year-end *t-1*. *NC\_RATE* is the proportion of nonconforming earnings management, which is computed as the ratio of nonconforming earnings management total pretax earnings management (*PT\_EM*) in year *t*; *NOL* is equal to 1 if the firm has net operating loss carryforwards available at the beginning of year *t*, and 0 otherwise; *HI\_CASH* is equal to 1 if the firm is in the top one-third of the *FREECASH* distribution for misstatement firms during year *t-1*, and 0 otherwise; *FREECASH* is equal to cash flow from operating activities (#308) minus capital expenditures (#128) plus sales of property, plant, and equipment (#107) minus acquisitions (#129) in year *t-1*, scaled by total assets at year-end *t-2*; *BIG\_AUDIT* is equal to 1 if the firm is audited by a Big 4/5/6 auditor (#149 value of 1 – 7) in year *t*, and 0 otherwise; *AF* is equal to 1 if the firm has any analyst following in year *t*, and zero otherwise; *FRAUD* is equal to 1 if the firm engaged in fraudulent activities in year *t*, and 0 otherwise; *LAG\_DTE* is deferred tax expense (#50) in year *t-1*, scaled by total assets at year-end *t-2*; *LAG\_TA* is equal to total assets (#6) at year-end *t-1*. *REV\_ONLY* equals 1 if the GAO report indicates that the firm only restated revenue accounts in year *t*, and 0 otherwise; *EXP\_ONLY* equals 1 if the GAO report indicates that the firm only restated expense accounts in year *t*, and 0 otherwise; *INV\_MILLS* is the inverse mills ratio from the first-stage of the Heckman (1979) two-step estimation.

## APPENDIX A

### Present Value of Tax Benefits Associated with Nonconforming Earnings Management

Assume that in the current year  $t$  and also in year  $t + n$ , a firm has \$100 of “true” pretax book income. The firm engages in \$10 of earnings management and thus originally reports \$110 of pretax income in year  $t$ . Assume further that the earnings management reverses in year  $t + n$  and the firm reports pretax income of \$90.

If the above earnings management is performed in a conforming manner and the income tax rate is 35 percent, then the firm would incur tax costs of \$38.50 in year  $t$  ( $\$110 \times 35$  percent) and \$31.50 in year  $t + n$  ( $\$90 \times 35$  percent). The present value of tax costs would be  $\$38.50 + [\$31.50 / (1+r)^n]$ , where  $r$  is the firm’s discount rate.

If the earnings management is performed in a nonconforming manner, then the firm would incur tax costs of \$35 ( $\$100 \times 35\%$ ) in years  $t$  and  $t + n$ , since nonconforming earnings management does not affect taxable income (in this case, \$100). The present value of tax costs would be  $\$35 + [\$35 / (1+r)^n]$ .

The tax benefit from engaging in nonconforming versus conforming upward earnings management equals the net present value of tax benefits from doing so, i.e., the present value of tax costs associated with conforming earning management minus the present value of tax costs associated with nonconforming earnings management. This amount is computed as:

$$\begin{aligned} & \{ \$38.50 + [ \$31.50 / (1+r)^n ] \} - \{ \$35 + [ \$35 / (1+r)^n ] \} \\ & = \$3.50 - [ \$3.50 / (1+r)^n ]. \end{aligned}$$

More formally, the present value of tax benefits from managing earnings in a nonconforming manner in the current period is:

$$PVTB_{NC} = PT_{EM} \times STR \{ 1 - [ 1 / (1+r)^n ] \}$$

where  $PT_{EM}$  is the amount of pretax earnings management and  $STR$  is the maximum corporate statutory tax rate (35 percent). Note that:

$$\partial PVTB_{NC} / \partial r > 0;$$

$$\partial PVTB_{NC} / \partial n > 0;$$

$$\partial PVTB_{NC} / \partial PT_{EM} > 0; \text{ and}$$

$$\partial PVTB_{NC} / \partial STR > 0.$$

## APPENDIX B

### Detailed Computations of *CONFORM\_EM* and *NONCONFORM\_EM*

Assume a firm has \$80 of “true” pretax book income and engages in \$10 each of conforming and nonconforming earnings management, and thus originally reports \$100 of pretax income. For simplicity, assume the firm has no book-tax differences except those created by earnings management. Moreover, assume the firm has no deferred tax liabilities or deferred tax asset valuation allowance account (VAA) at the beginning of the year, and the firm’s only deferred tax asset of \$350 relates to a \$1,000 NOL carryforward. The applicable statutory tax rate is 35 percent.

When its accounting irregularities become known, the firm restates its pretax income to \$80, and also restates its VAA beginning balance to \$175 and VAA ending balance to \$161 (since the firm realistically expects to realize only one-half of the tax benefits associated with the NOL carryforwards).

The originally reported and restated deferred tax accounts are as follows:

	<b>Originally Reported</b>		<b>Restated</b>	
	<b>1/1</b>	<b>12/31</b>	<b>1/1</b>	<b>12/31</b>
Deferred Tax Liabilities	<u>\$0.00</u>	<u>\$3.50</u>	<u>\$0.00</u>	<u>\$0.00</u>
Deferred Tax Assets (NOLs)*	350.00	318.50	350.00	322.00
Less: VAA	<u>0.00</u>	<u>0.00</u>	<u>175.00</u>	<u>161.00</u>
Net Deferred Tax Assets	<u>350.00</u>	<u>318.50</u>	<u>175.00</u>	<u>161.00</u>
Net Deferred Tax Liability (Asset)	<u>(\$350.00)</u>	<u>(\$315.00)</u>	<u>(\$175.00)</u>	<u>(\$161.00)</u>
Change in Net Deferred Tax Liability		<u>\$35.00</u>		<u>\$14.00</u>
*NOL Carryforward	<u>\$1,000</u>	<u>\$910</u>	<u>\$1,000</u>	<u>\$920</u>

The firm originally reported \$90 of taxable income (\$80 of pretax income plus \$10 of conforming earnings management). The firm has no current tax expense given its NOL carryforwards, which were originally reduced to \$910 (from \$1,000) and valued at \$318.50 ( $\$910 \times 35\%$ ) on the year-end balance sheet as a deferred tax asset. (The firm did not originally report a VAA.) The \$10 of nonconforming earnings management created a \$3.50 ( $\$10 \times 35\%$ ) deferred tax liability. These items lead to \$35.00 of originally reported deferred tax expense.

Upon restatement, the firm only has \$80 of taxable income because there are no book-tax differences. The firm still reports zero current tax expense, but the \$1,000 NOL carryforward is now only reduced to \$920 and valued at \$322 ( $\$920 \times 35\%$ ) on the year-end balance sheet. Since upon restatement the firm was required to establish a beginning and ending VAA, under the expectation of 50 percent realization, the beginning and ending net deferred tax assets are now \$175 and \$161, respectively. In addition, the firm no longer has any deferred tax liability at year-end because the earnings restatement removed the temporary book-tax differences. These items lead to \$14 of restated deferred tax expense. The originally reported and restated pretax income and income tax expense amounts are as follows:

	<u>Original</u>	<u>Restated</u>	<u>Difference</u>
Pretax Income	<u>\$100.00</u>	<u>\$80.00</u>	<u>\$20.00</u>
Current Tax Expense	0.00	0.00	0.00
Deferred Tax Expense	<u>35.00</u>	<u>14.00</u>	<u>21.00</u>
Total Tax Expense	<u>35.00</u>	<u>14.00</u>	<u>\$21.00</u>
Net Income Per Books	<u>\$65.00</u>	<u>\$66.00</u>	
Taxable Income	<u>\$90.00</u>	<u>\$80.00</u>	

The difference between originally reported and restated pretax income (*PT\_EM*) is \$20; the difference between originally reported and restated current tax expense (*CTE\_EM*) is \$0; and

the difference between originally reported and restated deferred tax expense ( $DTE_{EM}$ ) is \$21. At this point we emphasize that the restatements of the deferred tax assets related to NOL carryforwards and the VAA erroneously cause current tax expense to understate the tax effect of conforming earnings management (\$0 instead of \$3.50) and deferred tax expense to overstate the tax effect of nonconforming earnings management (\$21 instead of \$3.50). We correct for such measurement error by computing our proxies for conforming and nonconforming earnings management. First, we compute  $\Delta NOL_{EM}$  and  $\Delta VAA_{EM}$  as the difference between the original and restated changes in the NOL deferred tax asset ( $NOL_{DTA}$ ) and VAA, respectively, as follows:

	Originally Reported			Restated			Difference in Changes
	1/1	12/31	$\Delta$	1/1	12/31	$\Delta$	
$NOL_{DTA}$	\$350	\$318.50	\$-31.50	\$350	\$322	\$-28	\$-3.50 = $\Delta NOL_{EM}$
$VAA$	0	0	0	\$175	\$161	\$-14	\$14 = $\Delta VAA_{EM}$

With  $\Delta NOL_{EM}$  equal to -\$3.50 and  $\Delta VAA_{EM} = \$14$ , we then compute the dollar amounts of our earnings management proxies as:

$$CONFORM_{EM} = (CTE_{EM} - \Delta NOL_{EM}) / STR$$

$$= [0 - (-\$3.50)] / .35 = \$3.50 / .35 = \$10; \text{ and}$$

$$NONCONFORM_{EM} = (DTE_{EM} + \Delta NOL_{EM} - \Delta VAA_{EM}) / STR$$

$$= [\$21 + (-\$3.50) - (\$14)] / .35 = \$3.50 / .35 = \$10.^{28}$$

<sup>28</sup> Under SFAS No. 109, changes in NOL carryforwards affect current tax expense because they determine (in part) the amount of current taxes paid. Changes in NOL carryforwards also affect deferred tax expense because they trigger changes in deferred tax assets, which directly affect the computation of deferred tax expense. In contrast, the VAA has no impact on the amount of taxes paid to tax authorities, since it is an accrual for financial accounting purposes only. Thus, the VAA affects deferred tax expense but not current tax expense.

## APPENDIX C

### Two Examples from our Restatement Sample

Versatility Inc. restated its fiscal year 1996 financial statements for the accounting treatment of certain transactions including revenue recognition criteria and timing, bad debt reserves, and other expense-related items. We determine that approximately 86.4 percent of Versatility's earnings management was book-tax conforming, as shown below.

<b>Year: 1996</b> (in millions)	<b>Versatility Inc.</b>		
	<b>Original</b>	<b>Restated</b>	<b>Difference</b>
PreTax Net Income	2.91	(8.18)	11.09
<b>Tax Provisions</b>			
Current:			
Federal	1.02	(0.33)	1.35
Foreign	0.01	0.10	(0.09)
State	0.23	(0.10)	0.33
<b>Total Current Provision</b>	1.26	(0.32)	1.59
Deferred Tax Expense			
Federal	(0.24)	0.00	(0.24)
Foreign	0.00	0.00	0.00
State	(0.06)	0.00	(0.06)
<b>Total Deferred Provision</b>	(0.30)	0.00	(0.30)
<b>Total Tax Expense</b>	0.96	(0.32)	1.29
Current Year NOL	0.00	1.76	(1.76)
Prior Year NOL	0.00	0.00	0.00
Change in NOL	0.00	1.76	(1.76)
Current Year VAA	0.00	2.84	(2.84)
Prior Year VAA	0.00	0.00	0.00
Change in VAA	0.00	2.84	(2.84)
<b><i>C_RATE</i></b>			<b>86.4%</b>
<b><i>NC_RATE</i></b>			<b>19.9%</b>

$$\begin{aligned}
 C\_RATE &= CONFORM\_EM / PT\_EM \\
 &= [(CTE\_EM - \Delta NOL\_EM) / STR] / PT\_EM \\
 &= [\$1.59 - (\$1.76)] / .35] / 11.09 = 86.4\%
 \end{aligned}$$

$$\begin{aligned}
 NC\_RATE &= NONCONFORM\_EM / PT\_EM \\
 &= [(DTE\_EM + \Delta NOL\_EM - \Delta VAA\_EM) / STR] / PT\_EM \\
 &= [\$ (0.30) + (\$1.76) - (\$2.84)] / .35] / 11.09 = 19.9\%
 \end{aligned}$$

Pre-Paid Legal Services Inc. restated its 1999 financial statements and significantly lowered reported earnings per share due to revenue and expense recognition practices. We determine that approximately 96.9 percent of Pre-Paid Legal Services' earnings management was book-tax nonconforming, as shown below.

<b>Pre-Paid Legal Services, Inc.</b>			
<b>Year: 1996</b> (in millions)	<b>Original</b>	<b>Restated</b>	<b>Difference</b>
PreTax Net Income	59.93	18.51	41.42
<b>Tax Provisions</b>			
Current:			
Federal	5.34	4.90	0.44
State	1.07	1.07	0.00
Total Current Provision	6.41	5.96	0.44
Total Deferred Provision	14.57	0.52	14.05
Total Tax Expense	20.97	6.48	14.49
Current Year NOL	0.00	0.00	0.00
Prior Year NOL	1.05	1.05	0.00
Change in NOL	(1.05)	(1.05)	0.00
Current Year VAA	(1.90)	(1.90)	0.00
Prior Year VAA	(1.98)	(1.98)	0.00
Change in VAA	0.08	0.08	0.00
<b><i>C_RATE</i></b>			<b>3.1%</b>
<b><i>NC_RATE</i></b>			<b>96.9%</b>

$$\begin{aligned}
 C\_RATE &= CONFORM\_EM / PT\_EM \\
 &= [(CTE\_EM - \Delta NOL\_EM) / STR] / PT\_EM \\
 &= [\$0.44 - (\$0)] / .35 / 41.42 = 3.1\%
 \end{aligned}$$

$$\begin{aligned}
 NC\_RATE &= NONCONFORM\_EM / PT\_EM \\
 &= [(DTE\_EM + \Delta NOL\_EM - \Delta VAA\_EM) / STR] / PT\_EM \\
 &= [\$14.05 + (-\$0) - (\$0)] / .35 / 41.42 = 96.9\%.
 \end{aligned}$$