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Do Firms Use the Deferred Tax Asset Valuation Allowance to Manage Earnings?

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ABSTRACT

This study utilizes a sample comprised of *Fortune 500* firms to examine earnings management via changes in the deferred tax asset valuation allowance. The study extends existing research in three ways. First, we document that the earnings effect of a valuation allowance change often cannot be determined from financial statement disclosures. Based on an analysis of sample firms' income tax footnotes, we offer suggestions to improve disclosure policy.

Second, prior research uses the net change in the valuation allowance account as a proxy for the earnings effect of valuation allowance changes. We argue that the amount reported in the effective tax rate reconciliation is a better measure of the income statement effect and document certain significant differences between the measures.

Third, prior research employs cross-sectional regression models in an effort to make generalizations about earnings management behavior. In contrast, we use a contextual approach to assess whether observed valuation allowance changes are consistent with different motivations for earnings manipulation. The contextual analyses are based on identifying firms in the position to engage in various forms of earnings management and examining the earnings effect of valuation allowance changes made by firm managers. Cross-sectional tests find virtually no evidence in support of earnings management. Of particular note, we find that the incidence of "big bath" behavior may be exaggerated. In contrast, a contextual approach identifies specific instances in which earnings management may exist. Thus, the analysis of valuation allowance changes is contextual and requires careful consideration of activity in the allowance account. This point underscores the deficiency in income tax reporting and the need for increased disclosure in this area.

Statement of Financial Accounting Standards No. 109, *Accounting for Income Taxes*, (SFAS No. 109) (FASB 1992) introduced a significant departure in income tax accounting by requiring firms to record deferred tax assets for the benefit of future deductible amounts and tax carryforwards. SFAS No. 109 further requires a valuation allowance for deferred tax assets if available evidence indicates it is more likely than not that all or some portion of the deferred tax assets will not be realized. It has been asserted that recognizing net deferred tax assets is the most complex

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and subjective area of SFAS No. 109 (Petree et al. 1995) and that this subjectivity may result in noncomparability and abuses (Bielstein and Trott 1992). Of particular concern to financial statement users is that changes in the recorded valuation allowance can be used to manage earnings (Hirst and Sevcik 1996; Mulford and Comiskey 1996).

The purpose of this paper is to examine the extent to which changes in the deferred tax asset valuation allowance are used as a vehicle to manage earnings through income taxes on continuing operations. This issue has important policy implications in light of the Securities and Exchange Commission's (SEC) expressed concern about earnings management (Levitt 1998). Evidence regarding the manner and extent of earnings management can provide insight into whether it is sound accounting policy to give firms substantial discretion to choose the level of the valuation allowance (Healy and Wahlen 1999). In addition, as the SEC is considering expanding the disclosure requirements with respect to accounts such as the deferred tax asset valuation allowance, evidence from actual firm disclosures resulting from the current reporting regime should be useful in these deliberations.

This study also makes two methodological contributions to academic research on the deferred tax asset valuation allowance. First, while extant research assumes that the earnings impact of a change in the valuation allowance is equal to the net change in the allowance account, we show that this assumption is generally not true. We focus instead on the impact of the change in the valuation allowance on income taxes from continuing operations as disclosed in firms' income tax footnotes. The income effect of valuation allowance changes is arguably measured with less error. Second, the present study investigates, on a contextual basis, evidence with regard to several forms of earnings management. In contrast, extant research relies on cross-sectional regression models that focus on the average relation between valuation allowance changes and empirical measures of the motivation for earnings management. Given differing motivations for earnings manipulation, the nature of the cross-sectional regression method results in reduced power (Dechow and Skinner 2000). The contextual analyses are based on identifying firms that were in the position to engage in various forms of earnings management (based on the level of income excluding the effect of valuation allowance changes) and examining the earnings effect of valuation allowance changes made by firm managers. We look at earnings management (1) to avoid losses, (2) to avoid a decrease in year-to-year income, (3) to invoke an earnings "big bath," and (4) to meet analysts' expectations.[1]

The sample utilized in this study includes all publicly traded firms in the 1997 *Fortune 500* that reported the impact of deferred tax asset valuation allowance changes on income tax expense during the period 1995–1997. The sample includes 62 separate firms (122 firm-year observations).

Based on an analysis of the sample firms' income tax footnotes, we find that current disclosure provisions are not sufficient to allow financial statement users to identify the earnings effect of valuation allowance changes. Only two of the sample firms voluntarily provide detailed information regarding changes in their valuation allowance. Even in these cases, speculation is required to arrive at an estimated earnings effect. In this regard, we suggest that accounting policymakers require a full reconciliation of the valuation allowance account in order to improve disclosure.

In terms of measuring the earnings effect of valuation allowance changes, we argue that the best available measure is disclosed in the effective tax rate reconciliation included as part of the income tax footnote. We find noteworthy differences between this measure and the proxy used in existing research (i.e., the net change in the valuation allowance account). In particular, we find that (1) the measures are equal in only 38 percent of our sample observations, (2) the measures have different signs in 13 percent of the observations, and (3) the absolute value of the difference between the measures is significantly different from zero.

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[1] When certain earnings milestones or objectives are achieved through the use of valuation allowance changes, the possibility of opportunistic behavior must be considered. Given the incentives of managers to exploit the flexibility inherent in accounting principles, Fridson (1995, 17) asserts that "the analyst is advised to maintain an attitude of skepticism bordering on mistrust." Similarly, O'Glove (1987, xiii) states: "I always suspect management is trying to hide something. What is it they are trying to do cosmetically? I ask. And I start out by assuming the worst."

Using cross-sectional tests, we find no evidence consistent with the systematic use of the deferred tax asset valuation allowance to manage earnings other than possibly to mitigate the difference between reported earnings and analysts' forecasts. Of particular note, we find that the incidence of "big bath" behavior may be exaggerated and document behavior that is consistent with the provisions of SFAS No. 109. In contrast, a contextual approach identifies specific instances in which various forms of earnings management may exist. With respect to using the net change in the valuation allowance as a proxy for the earnings effect, we document numerous instances of Type I and Type II errors in the contextual analyses.

Overall, we offer the following observations. As any data on valuation allowance changes must be obtained from the income tax footnote, using the earnings effect from the effective tax rate reconciliation is not more labor intensive for researchers than using the net change in the valuation allowance. A key finding of the study is that current disclosure requirements are inadequate. Thus, a fully accurate, large sample study cannot be performed under the current disclosure requirements.

If the SEC's disclosure requirements are not changed, Type I and II errors will be made when using change in the allowance (as evidenced by the sensitivity analysis with respect to our contextual earnings management measures). On the other hand, Type II errors can result by assuming undisclosed amounts have a zero earnings effect.

The following section outlines the motivation for the study and summarizes existing research. The third section discusses sample selection and provides a descriptive overview of the sample. The fourth section reports the findings. A summary is provided in the final section.

BACKGROUND

Accounting for Income Taxes

SFAS No. 109 was adopted in February 1992 and made effective for fiscal years beginning after December 15, 1992. Unlike prior income tax pronouncements, SFAS No. 109 requires recognition of deferred tax assets for temporary differences resulting in deductible amounts in future years and for tax carryforwards.[2] These deferred tax assets must be reduced by a valuation allowance if, based upon the weight of available evidence, there is a likelihood of more than 50 percent that some portion or all of the deferred tax assets will not be realized. As both the need for a valuation allowance and its dollar amount are based primarily on managerial judgment instead of observable criteria, SFAS No. 109 has been criticized as providing a vehicle for earnings management through strategic changes to the valuation allowance.[3] Accordingly, analysts warn investors that changes in the valuation allowance can be used to achieve strategic earnings targets (Center for Financial Research and Analysis, Inc. 2000; Ciesielski 1998, 1999).

Under SFAS No. 109 (¶47), firms are required to present a reconciliation of (1) the reported income tax expense attributable to continuing operations (when scaled by income before taxes, this is the effective tax rate, or "ETR") to (2) the amount of income tax expense that would result by applying the domestic federal income tax rate to reported pretax income from continuing operations ("ETR reconciliation"). Subject to a materiality threshold, the effect of a change in the deferred tax asset valuation allowance on income tax expense applicable to continuing operations is reported in the ETR reconciliation.[4]

Under SFAS No. 109 (¶26), the effect of a change in the valuation allowance that results from a change in judgment about the realizability of the related deferred tax asset ordinarily is included

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[2] Under APB Opinion No. 11 (1967), *Accounting for Income Taxes*, deferred tax assets could be recognized only if their realization was assured beyond a reasonable doubt.

[3] There exists no consensus as to whether earnings management is "bad" or "good." Brown (1999) asserts that managers may be obligated to manipulate reported earnings, given their mandate to maximize shareholder value. Christie and Zimmerman (1994) assert that evidence of managerial opportunism can also be interpreted as occurring for efficiency reasons.

[4] Per Rule 4-08 (¶(h)(2)) of Regulation S-X (SEC 2000a): "Reconciling items that are individually less than five percent of [the amount computed by multiplying the income (loss) before tax by the applicable statutory Federal income tax rate] may be aggregated in the reconciliation."

in income from continuing operations. However, there are two exceptions to this general rule. The first relates to business combinations accounted for under the purchase method. If a valuation allowance is recognized for deferred tax assets related to an acquired entity at the acquisition date, then the tax benefits for those items that are first recognized (by elimination of that valuation allowance) after the acquisition date are applied to reduce, in order: (1) goodwill related to the acquisition, (2) other noncurrent intangible assets related to the acquisition, and (3) income tax expense.

The second exception relates to the initial recognition (by elimination of the valuation allowance) of certain tax benefits that are charged or credited directly to related components of shareholders' equity (¶36). This includes: (1) increases or decreases in contributed capital, (2) expenses for employee stock options recognized differently for financial reporting and tax purposes, (3) dividends paid on unallocated shares held by an employee stock ownership plan, and (4) certain deductible temporary differences and carryforwards existing at the date of a quasi reorganization.

In addition to the above referenced provisions of SFAS No. 109, generation of deferred tax assets deemed unrealizable and the concurrent increase in the valuation allowance have no net effect on earnings. SFAS No. 109 defines income tax expense as income taxes payable plus increases (decreases) in deferred tax liabilities (assets) minus increases (decreases) in deferred tax assets (liabilities). When deferred tax assets are recognized and reserved in the same accounting period, there is no net impact on income tax expense as the decrease (increase) in income tax expense associated with the increase in deferred tax assets (valuation allowance) exactly offset. An income statement effect will occur only if the assets are eventually realized.[5]

In examining whether the deferred tax asset valuation allowance is being employed as an earnings management vehicle, it is therefore imperative to realize that *not all changes in the recorded valuation allowance affect income taxes on continuing operations*. To address this issue, we focus on the income tax effect of the change in the valuation allowance as disclosed in the ETR reconciliation. It is possible that firm managers can achieve earnings management goals by *not* recording valuation allowance changes in a particular accounting period when such changes are appropriate. However, our primary focus is to examine firms that (1) were in a position to engage in earnings management, and (2) took an observable action with respect to the valuation allowance. Testing for earnings management among "no effect" firms involves identifying firms that should have changed their valuation allowance but did not. This cannot be done with a reasonable degree of accuracy.

Prior Research

Existing research has examined deferred tax asset valuation allowances from both compliance and earnings management perspectives. Related to compliance, Behn et al. (1998) and Miller and Skinner (1998) present evidence that empirical proxies for evidence factors cited in SFAS No. 109 are highly associated with cross-sectional differences in observed valuation allowances. The primary valuation allowance determinants include the level of tax credits and carryforwards, future reversals of existing taxable temporary differences, past profitability, and expected future earnings.

With regard to earnings management, several studies examine whether firms manage earnings through changes in recorded valuation allowances. Miller and Skinner (1998) find no significant relation between changes in the allowance and either changes in leverage or a proxy for the incentive to smooth earnings.[6] Using firms in the Standard & Poor's 500 index, Visvanathan (1998)

[5] At realization, the simultaneous reductions in deferred tax assets and the valuation allowance offset, while the decrease in income taxes payable reduces reported income tax expense.

[6] Under the leverage hypothesis, firms close to violating debt covenants are expected to avoid income-reducing accounting choices. To test for smoothing, Miller and Skinner (1998) include the change in pretax operating earnings (scaled by total assets) as an independent variable. Assuming the target level for current operating earnings is the previous year's earnings, smoothing behavior is evident if managers increase (decrease) the valuation allowance when earnings increase (decrease). Their coefficient estimate for change in pretax operating earnings is not significantly different from zero.

finds no support for leverage or bonus-plan-based hypotheses. While he finds no systematic evidence of earnings smoothing, he does document behavior consistent with the "big bath" approach.[7] Lu (2000) focuses on the "big bath" motivation for earnings management. Citing the increased power associated with testing hypotheses on firms with similar incentives to manipulate earnings (Schipper 1989), he limits his sample to large firms (sales greater than $500 million) with income from continuing operations (before special items) lower than that of the previous year. In addition to confirming Visvanathan's (1998) evidence of "big bath" behavior, he also finds evidence (1) in support of a leverage hypothesis and (2) that the valuation allowance account is used to mitigate the difference between reported earnings and analysts' forecasts.

Finally, two studies examine capital market reactions to changes in recorded valuation allowances. Kumar and Visvanathan (2000) utilize an event study methodology to examine the information conveyed by public announcements of valuation allowance changes. They find no evidence of systematic earnings management behavior and conclude that investors use the disclosures in an informed manner. Utilizing a sample of publicly traded bank holding companies, Schrand and Wong (2000) find that discretionary changes in the valuation allowance are used to mitigate the difference between reported earnings and analysts' forecasts. In addition, they conclude that valuation allowance changes (in either direction) that result in a smoother earnings series are positively priced, consistent with contracting-related benefits.

While the present study also examines whether changes in the deferred tax asset valuation allowance are used to manage earnings, it expands on existing research in two substantive ways. In each of the above studies, the impact on earnings of altering the valuation allowance is presumed to be equal to the net change in the valuation allowance as reported in the balance sheet.[8] However, as described in the previous section, this assumption is not necessarily true. By examining the ETR reconciliation for sample firms, we arguably obtain a more accurate measure of the impact of valuation allowance changes on income taxes attributable to continuing operations.

In addition, extant research relies on regression analysis to detect on-average, cross-sectional behavior consistent with earnings management. As discussed by Dechow and Skinner (2000, 236), the desire of academics to make blanket statements about earnings management results in methodologies that "are not that good at identifying managers and firms that practice earnings management." The approach in the present study differs in that firm-year observations are examined in specific contexts to assess whether observed valuation allowance changes are consistent with several types of earnings manipulation. Specifically, we look at earnings management (1) to avoid losses, (2) to avoid a decrease in year-to-year income, (3) to invoke an earnings "big bath," and (4) to meet analysts' expectations.

SAMPLE SELECTION AND SUMMARY STATISTICS

The sample consists of all firms listed in the 1997 *Fortune 500* that report changes in the deferred tax asset valuation allowance in the ETR reconciliation during the period 1995–1997.[9]

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[7] Contrary to the earnings-smoothing hypothesis, Visvanathan (1998) documents a *negative* relation between changes in (1) current earnings excluding valuation allowance changes and deferred taxes (scaled by market value of equity) and (2) the valuation allowance. While this is consistent with "big bath" behavior, it is also consistent with the positive evidence provisions of SFAS No. 109.

[8] Only Visvanathan (1998) acknowledges that changes in the valuation allowance do not always affect income from continuing operations. Noting that firms do not always disclose the earnings impact of allowance changes in the ETR reconciliation, he focuses on total change in the allowance after controlling for changes in deferred tax assets and liabilities. In contrast, the present study includes only those firm-year observations for which valuation allowance changes are disclosed in the ETR reconciliation.

[9] Each footnote is examined in its entirety to ensure detection of nontransparent valuation allowance changes. For example, while the valuation allowance of Seagate Technology, Inc. increased by $15,062 thousand in 1996, the ETR reconciliation does not report it as a separate item (an "other" item equal to $1,587 thousand is reported). However, the ETR reconciliation in the 1997 income tax footnote reports an allowance change of $15,062 thousand along with "other" items equal to ($13,475) thousand. These amounts net to the $1,587 thousand reported as "other" in the previous year.

This results in a total of 64 firms (127 firm-year observations). Of these firms, two are dropped from the sample as they are privately owned.[10] This results in a final sample of 62 firms (122 firm-year observations).[11]

Descriptive statistics are presented in Table 1. Since the sample includes firms of varying size, all variables are scaled by the number of common shares outstanding.[12] To mitigate the impact of extreme observations, the variables are winsorized at the 5th and 95th percentiles.

[10] The privately held firms are Clark USA, Inc. and Food-4-Less Holdings, Inc.

[11] Of 186 possible firm-year observations (i.e., 62 firms times 3 years), 122 report earnings effects, 58 do not report earnings effects, while 6 observations have missing data.

[12] All analyses are repeated using total assets and market value of equity as alternative deflators. The results are not sensitive to choice of deflator.

TABLE 1
DESCRIPTIVE STATISTICS

Panel A: Mean (Median) of Deferred Tax Assets, DTVA, and DTVA Change Conditioned on Existence of DTVA Income Effect (n = 180)

	n	DTVA Income Effect	Deferred Tax Assets	DTVA	DTVA Change
DTVA income effect reported	122	0.071 (0.031)	4.941 (3.116)	0.995 (0.381)	0.052 (0.025)
DTVA income effect not reported	58	NA	4.790 (3.520)	0.404 (0.087)	0.036 (0.000)
Wilcoxon test for difference			5288 (p = 0.91)	3925 (p < 0.01)	5337 (p = 0.79)

Panel B: Comparison of DTVA Income Effect vs. DTVA Change (n = 122)

	Mean	Q1	Median	Q3
DTVA income effect − DTVA change	0.492	−0.030	0.000	0.020
|DTVA income effect − DTVA change|	0.607	0.000	0.024*	0.137

Correlation (DTVA income effect, DTVA change)
Pearson 0.431 (p < 0.01)
Spearman 0.763 (p < 0.01)

Panel C: Other Variables Used in Analysis (n = 122)

	Mean	Q1	Median	Q3	# < 0	# > 0
Pre-DTVA income	1.160	0.226	1.286	2.190	29	93
Pre-DTVA change in income	0.050	−0.687	0.199	0.978	48	74
DTVA income effect	0.071	−0.034	0.031	0.134	49	73

*Denotes statistical significance at the 0.01 level (two-tailed test).
DTVA refers to the deferred tax asset valuation allowance. DTVA change is beginning-of-period DTVA minus end-of-period DTVA. The DTVA income effect is the increase (decrease) in income tax expense arising from increases (decreases) in the DTVA. Pre-DTVA income is equal to income before extraordinary items and discontinued operations, excluding the DTVA income effect. Pre-DTVA change in income is equal to pre-DTVA income in year t minus reported income from continuing operations in year t − 1. All variables are scaled by common shares outstanding and winsorized at the 5th and 95th percentiles.

Panel A of Table 1 compares those firm-year observations with and without deferred tax asset valuation allowance changes reported in the ETR reconciliation. The increase (decrease) in income from continuing operations arising from decreases (increases) in the valuation allowance is referred to as the "DTVA income effect."[13] As 60 percent (73 of 122) of the observations have positive income effects, both the mean (0.071) and median (0.031) DTVA income effect are greater than zero. While the observations with and without reported DTVA income effects have comparable levels of deferred tax assets, those with nonzero reported income effects have significantly larger valuation allowances.[14] Thus, the observations without reported DTVA income effects tend to occur after large reductions in the valuation allowance. Overall, the net change in the valuation allowance account ("DTVA change") does not differ between the groups. The DTVA change for observations with reported DTVA income effects (mean = 0.052, median = 0.025) does not significantly differ from the DTVA change for observations without a reported DTVA income effect (mean = 0.036, median = 0.000).[15] This, however, is attributable to the distribution of the variables around zero.[16] The Wilcoxon test statistic based on the absolute value of DTVA change is significant at better than the 0.001 level.

Panel B presents data on the difference between the DTVA income effect and the DTVA change as a proxy for the income effect. Several items are noteworthy. First, while the measures are positively correlated, they are generally not equal. Nonzero differences exist for 77 of 122 (63 percent) sample observations, with the DTVA income effect greater (less) than the net DTVA change in 40 (37) observations. The absolute value of the difference (mean = 0.607, median = 0.024) is significantly greater than zero. Second, DTVA income effect and DTVA change indicate earnings effects of the opposite sign in 16 observations.[17] Third, one firm includes a DTVA income effect in its ETR reconciliation, yet discloses no valuation allowance on its books.[18] Overall, the evidence in this panel illustrates the potential problems associated with using the change in the valuation allowance account as a proxy for the income effect.

Panel C of Table 1 presents descriptive statistics for other variables used in the analysis. "Pre-DTVA income" (defined as income before extraordinary items and discontinued operations *excluding* the DTVA income effect) is positive for 93 of 122 (76 percent) sample observations. "Pre-DTVA change in income" (defined as pre-DTVA income in year t minus reported income from continuing operations in year t – 1) is positive for 74 (61 percent) of the observations. Thus, on average, sample firms report both positive pre-DTVA earnings and DTVA-related earnings effects.

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[13] The extent to which DTVA income effects are not reported due to immateriality is not clear. Of the 58 observations without reported DTVA income effects, 31 report no net change in the valuation allowance account. Of the remaining 27 observations, 9 (33 percent) have a valuation allowance change less than the SEC's disclosure threshold. In contrast, 24 percent of the observations with reported DTVA income effects have a valuation allowance change less than the SEC's disclosure threshold.

[14] Throughout the paper, the choice of significance test is based on the characteristics of the sample distribution of the relevant variable(s). In assessing the significance of the mean/median from a *single sample*, a t-test is used for normally distributed variables, the Wilcoxon signed rank test is used for nonnormal, symmetric distributions, and the sign test is used in all other cases. When testing for significance of *difference between two samples*, the corresponding tests are the t-test, Mann-Whitney-Wilcoxon test, and median test, respectively.

[15] As an increase (decrease) in DTVA proxies for a decrease (increase) in income, DTVA change is computed as the beginning balance in the allowance account minus the ending balance. Accordingly, the sign on DTVA change is consistent for comparisons to the DTVA income effect.

[16] Of the observations with reported DTVA income effects, DTVA change is positive (negative) 67 (54) times. Of the observations without reported DTVA income effects, 31 have zero DTVA changes, while 18 (9) have positive (negative) changes.

[17] The causes of these differences are generally not determinable from income tax disclosures, although several appear to be associated with goodwill and net operating losses.

[18] The tax disclosures of Allegiance Corporation indicate that income tax expense in 1997 was increased by a "valuation allowance for losses in unconsolidated subs." However, there is no indication that Allegiance recognized a valuation allowance on its books. Thus, even the earnings of firms without recorded valuation allowances can be affected by allowance changes of affiliated companies.

FINDINGS

Footnote Disclosure of Deferred Tax Asset Valuation Allowance

From the perspective of financial statement users, the SFAS No. 109-mandated disclosures regarding the deferred tax asset valuation allowance are minimal. One must attempt to piece together the activity in the valuation account from often-inadequate disclosures in the income tax footnote.[19] As detailed disclosure of changes in the valuation allowance account is very rare, it is instructive to examine information provided voluntarily by firms.

Exhibit 1 presents excerpts from the 1996 income tax footnote of USF&G Corporation. The footnote indicates that USF&G's valuation allowance was reduced from $36 million on December 31, 1995 to $0 at December 31, 1996. Based on the valuation allowance account reconciliation in Panel A, the $36 million decrease was the net result of a $60 million increase in shareholders'

[19] As part of its initiative to address earnings management concerns, the SEC is considering rule proposals which, in part, are intended to provide detailed disclosure of activity in valuation accounts (SEC 2000b).

EXHIBIT 1
1996 INCOME TAX FOOTNOTE EXCERPT FROM USF&G CORPORATION

Panel A: Valuation Allowance Account Reconciliation

The components of the changes in the valuation allowance were recorded through shareholders' equity and operations, as follows:

	At December 31		
(in millions)	**1996**	**1995**	**1994**
Changes Recognized in Shareholders' Equity:			
Change related to net unrealized (gains) losses	$ 95	$(147)	$ 119
Change related to minimum pension liability	(35)	13	(8)
Total changes recognized in shareholders' equity	**60**	**(134)**	**111**
Changes Recognized in Statement of Operations:			
Reduction for increased likelihood of realization	(96)	(81)	(267)
Other adjustments	—	2	(10)
Total changes recognized in statement of operations	**(96)**	**(79)**	**(277)**
Total change in valuation allowance	**$(36)**	**$(213)**	**$(166)**

Panel B: ETR Reconciliation

(in millions)	**1996**	**1995**	**1994**
Tax at federal rates	$ 91	$ 68	$ (16)
Tax Effect (Benefit)			
Adjustment of the beginning of the year valuation allowance	**(96)**	**(81)**	**(267)**
Tax-exempt interest income	(2)	(2)	(3)
Adjustment of property/casualty salvage and other subrogation accruals	—	—	6
Other	5	1	—
Provision for income taxes (benefit)	$ (2)	$ (14)	$(280)

equity and a $96 million decrease recorded in the income statement. In this regard, the ETR reconciliation (Panel B) confirms the effect on income tax expense as a $96 million decrease. Further, note in Panel A that the income statement effect of valuation allowance changes in 1995 and 1994 includes "other adjustments" of $2 million and $(10) million, respectively, that are not explicitly reflected in the ETR reconciliation. There are two possibilities with respect to these amounts. First, it is possible that these amounts have been netted against other items in the ETR reconciliation. This issue is discussed further below. A second possibility is that their effect is not included in the provision for income taxes on continuing operations, but is reflected elsewhere in the income statement.

Excerpts from the 1995 income tax disclosures of Chrysler Corporation are presented in Exhibit 2. Panel A indicates that the valuation allowance decreased from $77 million at December 31, 1994 to $3 million at the end of 1995. However, the ETR reconciliation in Panel B identifies the impact on income tax expense (and, therefore, income from continuing operations) as $29 million in 1995.[20] In addition, the ETR reconciliation indicates that none of the net $16 million increase in the valuation allowance during 1993 had an effect on income tax expense. Based on the ETR reconciliation, the realization of $20 million of reserved assets and the concurrent establishment of an allowance against $36 million of deferred tax assets generated in 1993 resulted in no net effect on the provision for income taxes.

As indicated above, it appears that some firms net portions of valuation allowance changes against other line items in the ETR reconciliation. In this regard, Exhibit 3 presents excerpts from the 1997 income tax footnote of US Airways Group. The company began 1997 with a $695,076 thousand valuation allowance, which was reduced to zero during the year. As indicated in Panel A of Exhibit 3, the deferred portion of US Airways' 1997 income tax benefit includes the entire reduction in the allowance account. However, the ETR reconciliation (Panel B) discloses only a $594,992 thousand reduction of the *federal* valuation allowance. The implication is that the remaining $100,084 is included in "State income tax provision (credit), net of federal tax benefit." This inference can be drawn because US Airways is one of the few firms disclosing components of deferred tax expense.[21]

Companies that change their valuation allowance but do not disclose any earnings effect in the ETR reconciliation are virtually impossible to evaluate from the financial statements alone. Given the lack of required disclosure, a number of possibilities exist. As seen in Exhibits 1 and 2, there may indeed be no income statement impact. Alternatively, the earnings effect may appear "below the line" as part of extraordinary items or discontinued operations. If income from continuing operations is affected, the effect may appear in the income tax provision or in another income statement account. As indicated in Note 4, disclosure of valuation allowance changes directly affecting income taxes on continuing operations is addressed in SEC Regulation S-X. However, the disclosure requirements are subject to interpretation as illustrated by the 1997 US Airways example. It would appear that reconciling items individually greater than $11,782 thousand (i.e., 5 percent of $235,630 thousand) must be separately disclosed. However, a $100,084 effect on state taxes appears to be netted against other state-tax-related items. This treatment can be justified by identifying state taxes, and not the valuation allowance change, as the relevant reconciling item. In the extreme, if firms choose to break valuation allowance changes into components, otherwise significant changes can be completely buried in the ETR reconciliation. Thus, as a general rule, the lack of disclosure does not necessarily imply immateriality.[22]

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[20] As the valuation allowance reconciliation indicates the $45 million difference was due to utilization of NOL carryforwards, it is not unreasonable to expect an income statement effect. However, it is not clear whether the additional $45 million flowed through the income statement since Chrysler merely discloses that the valuation allowance relates primarily to subsidiaries' NOL carryforwards.

[21] The fact that the company reports a large state tax *credit* in 1997 also supports this conclusion.

[22] Extant research indicates that 60 to 65 percent of publicly traded firms record valuation allowances (Miller and Skinner 1998; Behn et al. 1998). Using the low end of the range, one would expect 300 of the *Fortune 500* firms to have valuation allowances. As our review of income tax footnotes identifies only 64 firms reporting DTVA income effects, the extent of this problem may be considerable.

EXHIBIT 2
1995 INCOME TAX FOOTNOTE EXCERPT FROM CHRYSLER CORPORATION

Panel A: Valuation Allowance Account Reconciliation

The valuation allowance was principally related to a subsidiary's NOL carryforwards. Changes in the valuation allowance were as follows:

	YEAR ENDED DECEMBER 31		
	1995	1994	1993
	(IN MILLIONS OF DOLLARS)		
Balance at beginning of year	$ 77	$146	$130
Provision for unrecognizable deferred tax assets generated	—	—	36
Utilization of NOL carryforwards	**(45)**	**(25)**	**(20)**
Adjustments to reflect assessment of realizability of deferred tax assets	**(29)**	**(32)**	**—**
Other	—	(12)	—
Balance at end of year	$ 3	$ 77	$146

Panel B: ETR Reconciliation

A reconciliation of income taxes determined using the statutory U.S. rate of 35 percent to actual income taxes provided was as follows:

	YEAR ENDED DECEMBER 31		
	1995	**1994**	**1993**
	(IN MILLIONS OF DOLLARS)		
Tax at U.S. statutory rate	$1,207	$2,041	$1,343
State and local taxes, net of federal tax benefit	116	191	114
Recognition of prior years' research and development tax credits	—	(100)	—
Adjustments to reflect assessment of realizability of deferred tax assets	**(29)**	**(32)**	**—**
Rate adjustment of U.S. deferred tax assets and liabilities	—	—	(72)
Other	34	17	38
Total provision for income taxes	$1,328	$2,117	$1,423
Effective income tax rate	38.5%	36.3%	37.1%

These examples clearly illustrate the potential measurement error associated with assuming that the income statement effect of a change in the deferred tax asset valuation allowance is equal to the net change in the allowance account. As indicated, there also may be error in assuming that the ETR reconciliation discloses the full income statement effect of any valuation allowance change. *The key point is that the current disclosure provisions are not sufficient to allow financial statement users to identify the earnings effect of valuation allowance changes.* As illustrated with USF&G and Chrysler, presuming that the entire valuation allowance change affects income from continuing operations is subject to error. Further, the US Airways example shows that the amount disclosed in the ETR reconciliation may also differ from the true earnings effect.

EXHIBIT 3
1997 INCOME TAX FOOTNOTE EXCERPT FROM US AIRWAYS GROUP

Panel A: Deferred Tax Expense

The significant components of deferred income tax expense (benefit) for the years ended December 31, 1997, 1996 and 1995 are as follows (in thousands):

	1997	1996	1995
Deferred tax expense (exclusive of the other components listed below)	$ 191,307	$ 90,583	$ 17,779
Decrease in the valuation allowance for deferred tax assets	**(695,076)**	**(90,230)**	**(17,779)**
Total	$(503,769)	$ 353	$ —

Panel B: ETR Reconciliation

A reconciliation of taxes computed at the statutory federal tax rate on earnings before income taxes to the provision (credit) for income taxes (in thousands):

	1997	1996	1995
Tax provision computed at federal statutory rate	$ 235,630	$ 66,865	$ 13,089
Book expenses not deductible for tax purposes	15,482	16,535	15,088
State income tax provision (credit), net of federal tax benefit	(32,220)	2,320	196
Reduction of federal valuation allowance	**(594,992)**	**(75,133)**	**(24,687)**
Other	(2,830)	(2,776)	722
Provision (credit) for income taxes	$(378,930)	$ 7,811	$ 4,408

Based on a detailed review of the income tax footnotes of the sample firms, we argue that using the ETR reconciliation to measure the income statement effect of valuation allowance changes results in less error. In addition, we recommend that the disclosure requirements with respect to the deferred tax asset valuation allowance be expanded to include a full reconciliation of the account on both a quarterly and annual basis. The reconciliation should quantify income statement and balance sheet effects and identify the affected accounts.

Evidence of Earnings Management

This section documents the findings regarding earnings management. As the present study utilizes the ETR reconciliation to measure the income statement effect of valuation allowance changes, the focus is on earnings manipulation via income taxes on continuing operations. In particular, evidence is presented regarding earnings management: (1) to avoid losses, (2) to avoid a decrease in year-to-year income, (3) to invoke an earnings "big bath," and (4) to meet or exceed analysts' forecasts.

A research design issue in earnings management studies is the identification of discretionary and nondiscretionary components of accounting accruals (McNichols 2000). In the present study, this distinction is considered only for earnings management associated with valuation allowance *increases* (i.e., "big bath"). This is due to the provisions of SFAS No. 109. Under the Standard, objective and verifiable evidence (such as realized losses) receives greater weight than less tangible forms of evidence, such as expectations of future taxable income.[23] As losses are a first-order effect

[23] Paragraph 23 of SFAS No. 109 states: "Forming a conclusion that a valuation allowance is not needed is difficult when there is negative evidence such as cumulative losses in recent years."

increasing the allowance, part of the valuation allowance increase in a "big bath" year is nondiscretionary.

In contrast, the other forms of earnings management examined in this study involve a *decrease* in the valuation allowance. A decrease in an existing valuation allowance is usually associated with managerial judgments regarding future events. In this regard, Khalaf (1993) argues that the degree to which SFAS No. 109 permits managers to rely on the outlook for future profitability creates an environment in which auditors will not contest allowance changes. While the decision of a firm to reduce its allowance may be followed by profitable operations, the precise amount by which the allowance is reduced is purely subject to managerial discretion. Thus, a maintained hypothesis is that the achievement of an earnings milestone due to a valuation allowance reduction is not due to coincidence.

Earnings Management to Avoid Losses

Burgstahler and Dichev (1997) present evidence that earnings management to avoid losses is pervasive. A loss on continuing operations can be avoided by *reducing* the valuation allowance in an amount sufficient to create an income tax benefit that exceeds the pretax loss, even though losses provide evidence in support of an allowance.

Table 2 presents evidence on this motive for earnings management. Panel A presents a cross-tabulation of pre-DTVA income (positive or negative) and DTVA income effect (positive or negative). Most of the sample observations (93 of 122) have pre-DTVA income greater than zero, while a majority of firms (60 percent) have a positive DTVA income effect. A Chi-square test rejects the null hypothesis of independence at better than the 0.01 level. In particular, firms with positive (negative) pre-DTVA income tend to increase (decrease) income via valuation allowance changes. This evidence contradicts the assertion that firms systematically use the deferred tax asset valuation allowance to avoid (or even mitigate) losses.

In Panel B, the sample observations are grouped based on the sign of pre-DTVA income. If firms use the valuation allowance to avoid or mitigate losses, then the DTVA income effect for firms with negative pre-DTVA income will be significantly greater than zero. Contrary to this expectation, firms with negative pre-DTVA income have a significantly negative DTVA income effect (mean = −0.088, median = −0.039), while firms with positive pre-DTVA income have a significantly positive DTVA income effect (mean = 0.121, median = 0.045). Under the Wilcoxon rank sums test, the DTVA income effect for firms with pre-DTVA losses is significantly less than that for firms with positive pre-DTVA income.

In order to focus on firms motivated to use the valuation allowance to report positive earnings, the remainder of Table 2 examines only the 29 observations with pre-DTVA losses. In Panel C, these firms are divided into groups above/below the median loss level as it is possible that firms with smaller pre-DTVA losses are more likely to use the valuation allowance to avoid losses. Contrary to systematic loss-avoidance behavior, the DTVA income effect for each group is not significantly different from zero. The income effect for large-loss firms is significantly lower. This is further evidenced by marginally significant Pearson (0.318) and Spearman (0.311) correlations between pre-DTVA loss and DTVA income effect. Thus, large loss firms are more likely to further reduce earnings through the DTVA income effect.

Panel D of Table 2 presents a cross-tabulation of the size of pre-DTVA loss (above or below median) and DTVA income effect (positive or negative). Loss-avoidance behavior implies that firms with smaller pre-DTVA losses are more likely to record income-increasing valuation allowance changes. Contrary to this expectation, a Chi-square test does not reject the null hypothesis of independence.

While there is no evidence of systematic loss-avoidance behavior, individual firms may manage earnings to avoid losses. We now examine these cases. In particular, the following ratio is computed for the ten observations with a pre-DTVA loss and positive DTVA income effect:

$$\text{EM1} = \frac{\text{DTVA income effect}}{|\text{Pre-DTVA income}|}$$

Values in excess of 1 are consistent with using a valuation allowance decrease to report positive earnings.

TABLE 2
USE OF DEFERRED TAX ASSET VALUATION ALLOWANCE TO AVOID LOSSES

Panel A: Sign of Pre-DTVA Income vs. Direction of DTVA Income Effect

	Pre-DTVA Income < 0	Pre-DTVA Income > 0	Total
DTVA income effect < 0	19	30	49
DTVA income effect > 0	10	63	73
Total	29	93	122

Chi-square statistic = 10.18 ($p < 0.01$)

Panel B: Pre-DTVA Income and DTVA Income Effect Conditioned on Sign of Pre-DTVA Income

	n	Mean	Q1	Median	Q3
Pre-DTVA income > 0					
Pre-DTVA income	93	2.042	1.075	1.582	2.743
DTVA income effect		0.121	−0.016	0.045*	0.142
Pre-DTVA income < 0					
Pre-DTVA income	29	−1.669	−3.114	−1.138	−0.573
DTVA income effect		−0.088	−0.329	−0.039*	0.063
Wilcoxon test for difference					
Pre-DTVA income				435 ($p < 0.01$)	
DTVA income effect				1240 ($p < 0.01$)	

Panel C: Mean (Median) Values of DTVA Income Effect Conditioned on Magnitude of Pre-DTVA Loss

	n	Pre-DTVA Loss	DTVA Income Effect
Pre-DTVA loss < median	14	−2.887 (−3.262)	−0.210 (−0.448)
Pre-DTVA loss > median	15	−0.532 (−0.573)	0.025 (−0.008)
Wilcoxon test for difference			166 ($p = 0.057$)
Correlations			
Pearson	0.318 ($p = 0.09$)		
Spearman	0.311 ($p = 0.10$)		

Panel D: Magnitude of Pre-DTVA Loss vs. Direction of DTVA Income Effect

	Pre-DTVA Loss < Median	Pre-DTVA Loss > Median	Total
DTVA income effect < 0	10	9	19
DTVA income effect > 0	4	6	10
Total	14	15	29

Chi-square statistic = 0.42 ($p = 0.52$)

*Denotes statistical significance at the 0.01 level (two-tailed test).
DTVA refers to the deferred tax asset valuation allowance. The DTVA income effect is the increase (decrease) in income tax expense arising from increases (decreases) in the DTVA. Pre-DTVA income is equal to income before extraordinary items and discontinued operations, excluding the DTVA income effect. All variables are scaled by common shares outstanding and winsorized at the 5th and 95th percentiles.

Two of the ten observations are consistent with earnings management in order to avoid a reported loss on continuing operations. An example is provided by MedPartners/Mullikin, Inc. In 1995, the company reported a pretax loss of $13.682 million. The ETR reconciliation indicates that the income tax benefit was boosted by a $14.240 million decrease in the $14.571 million valuation allowance that had been established *in the previous year*. The result was a reported profit on continuing operations of $558 thousand. The values of EM1 for the remaining eight observations range from 0.020 to 0.217.

For comparison purposes, the above analysis is repeated using the net change in the valuation allowance account as a proxy for the DTVA income effect (results are not tabulated). While the results of the cross-sectional analysis are substantially the same, there are some noteworthy differences. First, the sample size increases from 122 to 150 firm-year observations. Second, while there are also ten observations with a pre-DTVA loss and positive DTVA income effect, the composition and results differ along several lines. There are only five common observations. Of the ten unique observations, six have opposite signs for the income effect. Using the net change in the allowance results in four observations with EM1 > 1 (including the two identified earlier).

Earnings Management to Avoid a Decrease in Year-to-Year Income

If pre-DTVA income in the current year is lower than reported income from continuing operations in the previous year, then a decline in annual earnings can be avoided (or mitigated) by a reduction in the valuation allowance.

Table 3 presents evidence on this motive for earnings management. Panel A presents a cross-tabulation of change in pre-DTVA income (positive or negative) and DTVA income effect (positive or negative). Most sample firms (74 of 122, or 61 percent) have changes greater than zero. A Chi-square test rejects the null hypothesis of independence. Contrary to smoothing behavior and the desire to avoid earnings declines, firms with positive (negative) changes in pre-DTVA income tend to increase (decrease) income via the valuation allowance.

In Panel B, the sample observations are grouped based on the sign of the change in pre-DTVA income. If firms use the valuation allowance to avoid (or mitigate) earnings declines, then the DTVA income effect for firms with negative changes in pre-DTVA income will be greater than zero. Firms with negative changes do not have a significant DTVA income effect (mean = −0.013, median = −0.018), while firms with positive changes have a significantly positive DTVA income effect (mean = 0.126, median = 0.059). These results provide evidence that, on average, firms with decreases in pre-DTVA income do not tend to increase earnings through valuation allowance decreases.

To more closely examine behavior to avoid earnings declines, the remainder of Table 3 focuses on those observations with negative changes in pre-DTVA income. In Panel C, these observations are divided into groups above/below the median earnings decline. It is not unreasonable to expect firms with small declines in pre-DTVA earnings to be more likely than firms with large declines to have positive DTVA income effects. Contrary to this expectation, the DTVA income effect for each group is not significantly different from zero. In addition, the Pearson (0.066) and Spearman (0.029) correlations between change in pre-DTVA loss and DTVA income effect are not significantly different from zero.

Panel D of Table 3 presents a cross-tabulation of the size of the decrease in pre-DTVA earnings (above or below median) and the DTVA income effect (positive or negative). If firms use the valuation allowance to avoid decreases in earnings, then firms with smaller decreases may be more likely to record income-increasing valuation allowance changes. Contrary to this expectation, a Chi-square test does not reject the null hypothesis of independence.

While there is no systematic evidence that firms use the valuation allowance to avoid earnings declines, we examine the extent to which individual firms engage in this behavior. The following ratio is computed for the 22 firm-year observations with negative changes in pre-DTVA income and positive DTVA income effects:

$$\text{EM2} = \frac{\text{DTVA income effect}}{|\text{Change in pre-DTVA income}|}$$

Values in excess of 1 are consistent with using a valuation allowance decrease to report an increase in earnings.

TABLE 3
USE OF DEFERRED TAX ASSET VALUATION ALLOWANCE TO AVOID EARNINGS DECLINES

Panel A: Sign of Change in Pre-DTVA Income vs. Direction of DTVA Income Effect

	Change in Pre-DTVA Income < 0	Change in Pre-DTVA Income > 0	Total
DTVA income effect < 0	26	23	49
DTVA income effect > 0	22	51	73
Total	48	74	122

Chi-square statistic = 6.46 (p = 0.01)

Panel B: Pre-DTVA Change in Income and DTVA Income Effect Conditioned on Sign of Pre-DTVA Change in Income

	n	Mean	Q1	Median	Q3
Pre-DTVA change in income > 0					
Pre-DTVA change in income	74	1.132	0.252	0.562	1.667
DTVA income effect		0.126	−0.011	0.059*	0.142
Pre-DTVA change in income < 0					
Pre-DTVA change in income	48	−1.162	−2.811	−1.111	−0.475
DTVA income effect		−0.013	−0.178	−0.018	0.106
Wilcoxon test for difference					
Pre-DTVA change in income				1176 (p < 0.01)	
DTVA income effect				2378 (p < 0.01)	

Panel C: Mean (Median) Values of DTVA Income Effect Conditioned on Magnitude of Pre-DTVA Earnings Decline

	n	Pre-DTVA Earnings Decline	DTVA Income Effect	Pearson/ Spearman Correlation
Pre-DTVA change in income < median	24	−2.765 (−2.811)	−0.051 (−0.038)	0.066 (p = 0.655)
Pre-DTVA change in income > median	24	−0.470 (−0.475)	0.026 (−0.012)	0.029 (p = 0.847)
Wilcoxon test for difference		300 (p < 0.01)	559 (p = 0.56)	

Panel D: Magnitude of Decrease in Pre-DTVA Income vs. Direction of DTVA Income Effect

	Decrease in Pre-DTVA Income < Median	Decrease in Pre-DTVA Income > Median	Total
DTVA income effect < 0	13	13	26
DTVA income effect > 0	11	11	22
Total	24	24	48

Chi-square statistic = 0.00 (p = 1.00)

Panel E: Descriptive Statistics for EM2 (firms with decrease in pre-DTVA income and DTVA income effect > 0)

n	Q1	Median	Q3	n > 1
22	0.027	0.086	0.702	4

(Continued on next page)

TABLE 3 (Continued)

*Denotes statistical significance at the 0.01 level (two-tailed test).
DTVA refers to the deferred tax asset valuation allowance. The DTVA income effect is the increase (decrease) in income tax expense arising from increases (decreases) in the DTVA. Pre-DTVA income is equal to income before extraordinary items and discontinued operations, excluding the DTVA income effect. Change in pre-DTVA income is equal to pre-DTVA income in year t minus reported income from continuing operations in year t − 1. EM2 is defined as DTVA income effect divided by the absolute value of pre-DTVA change in income. All variables (except EM2) are scaled by common shares outstanding and winsorized at the 5th and 95th percentiles.

Panel E presents descriptive statistics for EM2. Four firm-year observations are consistent with earnings management in order to avoid a decrease in annual earnings. Manpower Inc. provides an interesting example. In 1997, Manpower reported income from continuing operations of $163.88 million, a $1.58 million increase over 1996. Manpower's ETR reconciliation discloses a $3.611 million decrease in its deferred tax asset valuation allowance.

Manpower's 1996 income tax footnote discloses the following regarding its balance sheet dated December 31, 1996.

> The Company has recorded a deferred tax asset of $27.569 [million] for the benefit of loss carryforwards, all of which expire in 1999 and beyond. Realization is dependent on generating sufficient taxable income prior to the expiration of the loss carryforwards. A valuation allowance has been recorded against the *entire amount* of this asset as management believes that the asset's realization is unlikely. (emphasis added)

However, the 1997 income tax footnote discloses that the $27.799 million deferred tax asset for loss carryforwards at December 31, 1997 is *partially reserved* in the amount of $24.682 million. This $2.887 million valuation allowance reduction accounts for more than 100 percent of the increase in Manpower's earnings.[24]

It is also interesting to note that the DTVA income effect is only 2.2 percent of Manpower's reported income from continuing operations. Thus, the magnitude of the valuation allowance adjustment does not need to be especially large for earnings to be managed. Of the remaining 18 observations, the values of EM2 range from 0.011 to 0.779.

For comparison purposes, the above analysis is repeated using the net change in the valuation allowance account as a proxy for the DTVA income effect (results not tabulated). The following differences are noted with respect to the EM2 analysis. The number of observations with negative changes in pre-DTVA income and positive DTVA income effects increases from 22 to 27 (with 16 common observations). One of the four observations with EM2 > 1 from the above analysis is not included in the 27. Using the net change in the allowance, results in eight observations with EM2 > 1 (including five not previously identified).

Earnings Management to Invoke a "Big Bath"

Table 2 presents evidence that firms with negative pre-DTVA income tend to book significantly negative DTVA income effects. Further, Table 3 indicates that firms with declines in pre-DTVA income record earnings-decreasing DTVA income effects more often than expected. While these results are consistent with "big bath" behavior, they are also consistent with the provisions of

[24] Only $221 thousand of NOLs expired in 1999. It is not clear from the income tax disclosures in the 1999 Form 10-K whether the company was able to utilize these NOLs, although the company does indicate that it realized fully reserved NOLs.

SFAS No. 109.[25] Under the Standard (¶25), the weight given to evidence with respect to the need for a valuation allowance "should be commensurate with the extent to which it can be objectively verified." Thus, losses in current and preceding years provide evidence that is difficult to overcome. Further, to the extent future profitability is related to current profitability, there exists additional evidence in support of an allowance. In this section, we provide evidence to discriminate between these competing explanations.

In Panel A of Table 4, the sample firms with pre-DTVA losses are divided into groups above/below the median loss. "Big bath" behavior is evident in that firms with larger losses have negative mean and median DTVA income effects that are significantly less than small loss firms.

[25] Foster (1986, 226–227) defines "big bath" accounting as follows: "The underlying theme is that once management encounters a loss year, additional steps are taken to add to the magnitude of the loss....The result is a sizable decrease in the current year's reported income and, it is hoped, an increase in the income that will be reported in subsequent years."

TABLE 4
USE OF DEFERRED TAX ASSET VALUATION ALLOWANCE FOR EARNINGS "BIG BATH"

Panel A: Mean (Median) Values of DTVA Income Effect Conditioned on Magnitude of Pre-DTVA Loss

	n	Pre-DTVA Income	DTVA Income Effect
Pre-DTVA loss < median	14	−2.887 (−3.262)	−0.210 (−0.448)
Pre-DTVA loss > median	15	−0.532 (−0.573)	0.025 −0.008
Wilcoxon test for difference			166 (p = 0.067)

Panel B: Mean (Median) Values of Subsequent Year Pre-DTVA Earnings and Consensus Earnings Estimate Conditioned on Sign of Change in Percent Valuation Allowance

	Year t + 1 Pre-DTVA Income	Year t + 1 Consensus Earnings Estimate
Increase in percent valuation allowance	0.759 (1.096)	1.551 (1.590)
n	28	27
Decrease in percent valuation allowance	1.280 (1.343)	2.244 (1.880)
n	94	84
Wilcoxon test for difference:	1565 (p = 0.34)	1287 (p = 0.12)

DTVA refers to the deferred tax asset valuation allowance. The DTVA income effect is the increase (decrease) in income tax expense arising from increases (decreases) in the DTVA. Pre-DTVA income is equal to income before extraordinary items and discontinued operations, excluding the DTVA income effect. Percent valuation allowance is equal to DTVA divided by total deferred tax assets. All variables are scaled by common shares outstanding and winsorized at the 5th and 95th percentiles.

If firms are acting in compliance with SFAS No. 109, then they are increasing their valuation allowances as a result of ongoing profitability problems. On the other hand, an objective of a "big bath" is to boost future earnings. Thus, if "big bath" behavior is driving the observed negative relation between current earnings and valuation allowance changes, then one would expect future earnings to be *greater* for firms recording allowance increases. We argue that evidence of *depressed* earnings in the year subsequent to that in which the valuation allowance is increased provides evidence to contradict the "big bath" assertion.

In this regard, Panel B of Table 4 reports actual pre-DTVA income and I/B/E/S consensus earnings forecasts for year t + 1 for firms with valuation allowance increases vs. decreases. For both measures of future profitability, the mean and median are higher for firms decreasing their allowances (although the differences are not significant). We interpret this as evidence against systematic "big bath" behavior.

As discussed above, Lu (2000) claims to find evidence consistent with "big bath" behavior in that firms experiencing declining (increasing) earnings tend to increase (decrease) their valuation allowances. A problem in defining "big bath" in this manner is that a valuation allowance increase during years of poor operating performance is also consistent with the positive evidence factors cited in SFAS No. 109. Thus, a more complete set of criteria is needed to more appropriately classify "big bath" firms. The current study employs the following set of criteria.

The first two criteria are necessary conditions: (1) a loss on continuing operations excluding the effect of any change in valuation allowance (i.e., pre-DTVA income < 0), and (2) a change in the valuation allowance that increases the loss (DTVA income effect < 0). While a cross-sectional approach would include all available observations, a contextual approach focuses on the 19 firm-year observations meeting these criteria.[26]

The remaining criteria are designed to identify valuation allowance changes that may not be justifiable under SFAS No. 109 and, therefore, may be the result of manipulation. The third criterion is based on identifying annual valuation allowance (VA) increases that are disproportionate to concurrent changes in either total deferred tax assets (DTA) or total tax carryforwards (TCF).[27] The following metrics are employed, with values in excess of 0 for either measure serving as an indicator of potential earnings management.

$$\text{CHANGE\%}_{\text{DTA}} = \left(\frac{\text{VA}}{\text{DTA}}\right)_t - \left(\frac{\text{VA}}{\text{DTA}}\right)_{t-1}$$

$$\text{CHANGE\%}_{\text{TCF}} = \left(\frac{\text{VA}}{\text{TCF}}\right)_t - \left(\frac{\text{VA}}{\text{TCF}}\right)_{t-1}$$

Of the 19 sample observations considered, the third criterion identifies 12 firm-year observations as potential "big baths."[28] While a disproportionate valuation allowance increase may be part of an earnings "bath," it may also represent a negative signal regarding future earnings prospects. Accordingly, the fourth criterion is to examine future profitability. A disproportionate valuation allowance increase followed by years of positive (negative) pretax earnings is deemed consistent with earnings management (SFAS No. 109).

Four sample observations are consistent with an earnings "big bath," as defined. Apple Computer, Inc. provides an interesting example. Apple reported a pretax loss on operations of $403 million in fiscal 1997. A write-off of in-process research and development, restructuring costs, and the termination of a licensing agreement increased the pretax loss to $1.045 billion. On top of this,

[26] Using the net change in the valuation allowance account as a proxy for the DTVA income effect results in 22 firms meeting the criteria (with 16 common observations).

[27] Tax carryforwards include items such as net operating losses, capital losses, alternative minimum tax credits, and foreign tax credits.

[28] Using the net change in the valuation allowance account as a proxy for the DTVA income effect results in 5 additional firms meeting this criterion.

a valuation allowance increase reduced the reported benefit for income taxes from $208 million to $0.

Several factors lead to the conclusion of managed earnings. First, in 1997 the valuation allowance increased 145 percent more than Apple's tax carryforwards, resulting in $CHANGE\%_{TCF} = 0.61$. Second, Apple's CEO was ousted near the end of the fiscal year. Third, the allowance increase in 1997 did not signal future losses as pretax income from continuing operations was $329 million in 1998 and $676 million in 1999. Fourth, the valuation allowance was subsequently drawn down in each of the following two years, reducing the income tax provisions in 1998 and 1999 by $97 million and $153 million, respectively. Finally, it appears that Apple may have been planning the 1999 valuation allowance decrease as early as the year before. In its 1998 Form 10-K, Apple management predicted a 1999 effective tax rate "between 10% and 15%." The actual 1999 ETR was 11.1 percent. Without the valuation allowance decrease, the ETR would have been 33.7 percent.

Of the remaining eight observations, five exhibit behavior consistent with SFAS No. 109 and cannot realistically be classified as "big bath" firms. The final three observations represent firms that were acquired in the year following the large valuation allowance increase.

On balance, firms do not appear to systematically utilize the deferred tax asset valuation allowance to manage earnings consistent with "big bath" behavior. Instead, increases in the valuation allowance are often related not only to depressed current earnings, but also to depressed future profitability. These valuation allowance increases are, therefore, consistent with the provisions of the Standard.

Earnings Management to Meet Analysts' Forecasts

The pressure on firm managers to meet or exceed analysts' earnings expectations has been well publicized and is part of the impetus behind the SEC's concerns regarding earnings management (Levitt 1998).

Table 5 presents evidence on this motive. For analysis purposes, "pre-DTVA forecast difference" is defined as pre-DTVA earnings minus the mean I/B/E/S consensus estimate in the last month of the fiscal year. Panel A presents a cross-tabulation of pre-DTVA forecast difference (positive or negative) and DTVA income effect (positive or negative). Three-fourths of the sample observations for which forecast data are available (75 of 100) have pre-DTVA forecast differences less than zero. A Chi-square test does not reject the null hypothesis that the variables are independent. Since the sign of the pre-DTVA forecast difference is not related to the direction of the DTVA income effect, there is no evidence of earnings management to meet analysts' forecasts.

In Panel B, the sample observations are grouped based on the sign of the pre-DTVA forecast difference. If firms use the valuation allowance to eliminate (or reduce) pre-DTVA forecast differences, then the DTVA income effect for firms with negative pre-DTVA forecast differences will be greater than zero. Consistent with this assertion, the DTVA income effect for firms with pre-DTVA earnings below forecast (mean = 0.078, median = 0.045) is significantly greater than zero.

The remainder of Table 5 focuses on the 75 observations with pre-DTVA income lower than forecast. In Panel C, these firms are divided into quintiles based on the pre-DTVA forecast difference. Consistent with existing research (Lu 2000), there is evidence indicating that firms use the valuation allowance to reduce the difference between reported and forecast earnings. In particular, the DTVA income effect is significantly positive for firms closest to forecast (mean = 0.079, median = 0.038). While this provides evidence that firms *mitigate* the difference between pre-DTVA income and analysts' forecasts, it does not address whether firms use the valuation allowance to *meet or exceed* forecasts, which is the more pertinent issue.

To further examine firm behavior with respect to analysts' forecasts and extend existing research, the following ratio is computed for the 48 observations with negative pre-DTVA forecast differences and positive DTVA income effects:

$$EM3 = \frac{\text{DTVA income effect}}{|\text{Pre-DTVA income} - \text{I/B/E/S forecast}|}$$

Values in excess of 1 are consistent with using the valuation allowance to exceed the earnings forecast.

TABLE 5
USE OF DEFERRED TAX ASSET VALUATION ALLOWANCE TO MEET ANALYSTS' EARNINGS FORECASTS

Panel A: Sign of Pre-DTVA Forecast Difference vs. Direction of DTVA Income Effect

	Pre-DTVA Forecast Difference < 0	Pre-DTVA Forecast Difference > 0	Total
DTVA income effect < 0	27	12	39
DTVA income effect > 0	48	13	61
Total	75	25	100

Chi-square statistic = 1.14 (p = 0.27)

Panel B: Pre-DTVA Change in Income and DTVA Income Effect Conditioned on Sign of Pre-DTVA Forecast Difference

	n	Mean	Q1	Median	Q3
Pre-DTVA forecast difference > 0					
Pre-DTVA income	25	1.822	0.443	1.470	2.765
DTVA income effect		0.062	−0.028	0.020	0.108
Pre-DTVA forecast difference < 0					
Pre-DTVA income	75	1.226	0.650	1.440	2.190
DTVA income effect		0.078	−0.065	0.045**	0.142
Wilcoxon test for difference					
Pre-DTVA income				1350 (p = 0.49)	
DTVA income effect				1216 (p = 0.71)	

Panel C: Mean (Median) Values of DTVA Income Effect Conditioned on Pre-DTVA Forecast Difference (firms with pre-DTVA forecast difference < 0)

Quintile	n	Pre-DTVA Forecast Difference	DTVA Income Effect
Lowest	15	−3.861 (−2.869)	−0.151 (−0.216)***
2	15	−1.553 (−1.497)	0.164 (0.119)**
3	15	−0.639 (−0.588)	0.179 (0.022)
4	15	−0.265 (−0.273)	0.122 (0.126)
Highest	15	−0.048 (−0.015)	0.079 (0.038)***
Pearson correlation		0.179 (p = 0.126)	
Spearman correlation		0.087 (p = 0.460)	

Panel D: Descriptive Statistics for EM3 (firms with pre-DTVA forecast difference < 0 & DTVA income effect > 0)

n	Q1	Median	Q3	n > 1
48	0.057	0.635	1.560	18

(Continued on next page)

TABLE 5 (Continued)

, * Denotes statistical significance at the 0.05 and 0.10 levels (two-tailed test), respectively.
DTVA refers to the deferred tax asset valuation allowance. The DTVA income effect is the increase (decrease) in income tax expense arising from increases (decreases) in the DTVA. Pre-DTVA income is equal to income before extraordinary items and discontinued operations, excluding the DTVA income effect. Pre-DTVA forecast difference is defined as pre-DTVA income minus the mean I/B/E/S consensus estimate. EM3 is defined as DTVA income effect divided by the absolute value of pre-DTVA forecast difference. All variables (except EM3) are scaled by common shares outstanding and winsorized at the 5th and 95th percentiles.

Summary statistics for EM3 are presented in Panel D of Table 5. Of particular note, 18 observations have DTVA income effects that eliminate pre-DTVA forecast deficits. Of particular interest is the case of Lear Corporation in 1996. The mean I/B/E/S earnings forecast in December 1996 was $2.37 per share. For the year ended December 31, 1996, Lear reported earnings per share of $2.38.[29] The company's ETR reconciliation discloses a DTVA income effect of $8.3 million ($0.13 per share), despite an overall increase in the valuation allowance of $3.8 million.

For comparison purposes, the above analysis is repeated using the net change in the valuation allowance account as a proxy for the DTVA income effect (results not tabulated). The following differences are noted with respect to the EM3 analysis. The number of observations with negative pre-DTVA forecast differences and positive DTVA income effects increases from 48 to 53 (with 39 common observations). Using the net change in the allowance, results in 17 observations with EM3 $>$ 1 (with 14 common observations).

SUMMARY

This study investigates earnings management via changes in the deferred tax asset valuation allowance. The study contributes to accounting research in three ways. First, we document the inadequacy of financial statement disclosures with respect to valuation allowance changes. In particular, we find that the earnings effect of a valuation allowance change often cannot be determined with certainty. Based on our analysis, it is recommended that disclosure requirements be expanded to (1) include a full reconciliation of the account on both a quarterly and annual basis, and (2) quantify the income statement and balance sheet effects.

Second, we argue that the amount reported in the effective tax rate reconciliation is the best available measure of the income statement effect of valuation allowance changes. While prior research uses the net change in the valuation allowance account as a proxy for the earnings effect of valuation allowance changes, we present evidence of significant differences between these measures.

Third, in contrast to existing research, we use a contextual approach to assess whether observed valuation allowance changes are consistent with different motivations for earnings manipulation. We find virtually no cross-sectional evidence consistent with the systematic use of the deferred tax asset valuation allowance to manage earnings. In particular, we document behavior consistent with the provisions of SFAS No. 109 and inconsistent with "big bath" behavior documented in extant research. Although firms appear, on average, to comply with the provisions of SFAS No. 109, individual cases consistent with abuse exist in our sample. The analysis of valuation allowance changes is contextual and requires careful consideration of activity in the allowance account. This point underscores the deficiency in current income tax reporting and the need for increased disclosure in this area.

[29] On the date of the earnings announcement, Lear's excess stock return (adjusted for the average return on issues with similar betas) was 5.24 percent. The day after the filing of its Form 10-K, Lear's adjusted stock return was –1.8 percent.

Overall, we offer the following observations. As any data on valuation allowance changes must be obtained from the income tax footnote, using the earnings effect from the effective tax rate reconciliation is not more labor intensive for researchers than using the net change in the valuation allowance. A key finding of the study is that current disclosure requirements are inadequate. Thus, a fully accurate, large sample study cannot be performed under the current disclosure requirements.

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