Creating a Bigger Bath
Using the Deferred Tax Valuation Allowance

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ABSTRACT

The provisions of SFAS No. 109 allow U.S. companies to make an earnings big bath even bigger through the establishment of a deferred tax valuation allowance. At the time a firm recognizes a non-cash charge, it also recognizes a deferred tax asset to represent the future tax benefits of the charge. Recognition of the deferred tax asset partially mitigates the negative earnings impact of the special charge. However, if the firm does not expect to have sufficient future taxable income to utilize the future tax benefits of the charge, SFAS No. 109 requires the firm to establish a deferred tax valuation allowance, effectively eliminating the recognized deferred tax asset. Thus, the establishment of the valuation allowance amplifies the negative earnings impact of the non-cash charge. We use a valuation allowance prediction model to identify firms that create a larger-than-expected valuation allowance; these firms may be creating a large valuation allowance as a reserve to be used to manage earnings in a subsequent period. We find that the vast majority of these larger-than-expected valuation allowances apparently reflect informed management pessimism about the future in that these firms actually do have poorer operating performance in subsequent periods. Nonetheless, we also identify a specific set of firms that appear to have used a subsequent reduction in the valuation allowance to change a reported loss into a reported profit.

Keywords: deferred taxes; valuation allowance; big bath; earnings management

1. INTRODUCTION

This paper examines whether firms making large write-offs or taking restructuring charges use the deferred tax valuation allowance to make an earnings big bath even bigger. The provisions of Statement of Financial Accounting Standard (SFAS) No. 109 require U.S. firms that take a non-cash charge to recognize a deferred tax asset to represent the future tax benefits of the charge. Recognition of the deferred tax asset partially mitigates the negative earnings impact of the special charge. However, if it is deemed more likely than not that the elements of the charge will not yield future tax benefits, a deferred tax valuation allowance is also established, effectively eliminating either all or part of the recognized deferred tax asset.[1] As a result, with the recognition of a valuation allowance, the negative earnings impact of the non-cash charge is amplified. We investigate whether some big bath firms strategically create a deferred tax valuation allowance as a reserve to be used to manage earnings in a subsequent period.

Prior research suggests that earnings baths can be used as an extreme form of earnings management (Moehrle, 2002). Regulators argue that big bath firms simply accelerate future charges into the current period in order to artificially boost future earnings. For example, former SEC chairman Arthur Levitt criticized firms that take restructuring charges as part of a big bath. He stated that the decision to restructure "should not lead to flushing all the associated costs—and maybe a little extra—through the financial statements." In addition to urging standard setters to clarify accounting rules, he vowed to increase SEC scrutiny of firms taking restructuring charges (Levitt, 1998).[2]

[1] According to the standards of the International Accounting Standards Board (IASB), found in IAS 12, a deferred tax asset is recognized to the extent that it is probable that part or all of the associated tax benefits will be utilizable. In April 2003, the IASB agreed that, in the context of accounting for deferred tax assets, "probable" means "more likely than not." IAS 12 does not require the establishment of a separate valuation allowance, but the required annual evaluation and adjustment of the carrying value of any deferred tax assets accomplishes the same end result.

[2] Since Mr. Levitt's speech, the FASB has limited the flexibility of companies to use a restructuring charge as part of a big bath. See SFAS No. 144 (on impairment losses) and SFAS No. 145 (on the timing of the recognition of restructuring obligations).

Restructuring charges or write-offs are typically not tax deductible in the current period because, although accounting standards allow for the immediate recognition of expected decreases in the value of assets and the creation of future obligations, the tax code does not allow such deductions until the obligations are paid or the assets are disposed. Accordingly, SFAS No. 109 requires that these timing differences between book and taxable income be recognized as deferred tax assets in the period the non-cash charges are recognized. If firms estimate that they will not have sufficient taxable income in future years to recognize some or all of the future tax benefits associated with the special charge, they must establish a valuation allowance to offset the portion of the deferred tax asset that they deem to be unrealizable. Although SFAS No. 109 provisions are fairly explicit with respect to the recognition of deferred tax assets, firms have significant discretion in determining whether a deferred tax asset valuation allowance is necessary and, if so, what the amount should be. This discretion allows managers to make a big bath even bigger by recognizing a larger valuation allowance than they deem to be necessary. This larger-than-warranted valuation allowance may serve as a reserve that can be used to bolster income in future periods by changing the estimates and reversing the allowance. The valuation allowance is attractive in terms of earnings management because it is relatively easy to justify a change in estimates in future years in order to reverse the allowance. This is a prime example of the type of "cookie jar reserves" criticized by Arthur Levitt (1998).

We examine whether firms use the valuation allowance to make a big bath bigger. In order to do so, we identify a sample of firms that recognize large restructuring charges or write-offs. Following Miller and Skinner (1998) and Behn et al. (1998), we estimate a valuation allowance prediction model in order to identify those firms that are most likely to have established (1) a larger-than-necessary valuation allowance to increase the magnitude of a big bath (bigger bath firms) or (2) a smaller-than-necessary valuation allowance to mitigate the impact of the special charge or write-off (smaller bath firms). Our results do not support the view

that the primary factor behind the establishment of a deferred tax asset valuation allowance in a big bath setting is to create a cookie jar reserve. Instead, our results suggest that managers use private information about future operating performance to establish a valuation allowance that may be larger than expected (reflecting pessimism about the future) or smaller than expected (reflecting optimism about the future). Using operating performance data for subsequent periods, we demonstrate that this optimism or pessimism is justified.

Notwithstanding the fact that, on average, big bath firms appear to appropriately establish a deferred tax valuation allowance to reflect expectations about future performance, we also identify a small set of firms that apparently used a subsequent reduction in these valuation allowances to change a reported loss into a reported profit. The incidence of such cases is small, with this strategy being used by fewer than 10% of the firms that could have used it. This small number is not surprising given the transparent nature of this earnings management technique; for example, it can be easily detected by academic researchers using publicly-available data.

Our results contribute to the earnings management and big bath literatures in four ways. First, we show that firms can use the deferred tax valuation allowance as an additional element in a big bath. Second, we find evidence that, on average, firms do not use this highly visible technique as a routine earnings management tool. Third, we show that management's choice of the magnitude of a deferred tax valuation allowance established in connection with a big bath is informative about the future operating performance of the firm. Finally, we demonstrate that, even in a transparent setting, a few firms strategically manage accounting reserves to reach earnings targets.

The remainder of the paper is organized as follows. Section 2 develops our hypotheses. Section 3 describes our sample selection, methodology, and the characteristics of our sample firms. Section 4 presents the results, and section 5 provides concluding comments.

2. HYPOTHESIS DEVELOPMENT

(i) Earnings Management and the Deferred Tax Asset Valuation Allowance Account

We examine whether U.S. firms strategically choose the level of the deferred tax asset valuation allowance recognized when they incur special charges (restructuring costs or write-offs). The provisions of SFAS No. 109 allow firms substantial discretion in determining the level of the valuation allowance. Firms may use this flexibility either to make a big bath even bigger by recognizing a large valuation allowance or to mitigate the earnings impact of a special charge by recognizing a smaller-than-warranted valuation allowance. In addition, it is possible that firms may use this discretion to arbitrarily set the allowance account balance too high, thereby allowing the later reversal of these "cookie jar reserves" to manage earnings. Prior studies, in general, have found empirical evidence suggesting that firms set the level of the valuation allowance consistent with the provisions of SFAS No. 109 and have found little evidence of earnings manipulation.[3]

For example, Miller and Skinner (1998) find evidence suggesting that the empirical determinants of the valuation allowance for deferred tax assets are consistent with those variables described in SFAS No. 109. That is, the allowance is larger for firms with relatively more deferred tax assets and smaller for firms with higher levels of expected future taxable income. On the other hand, they find little evidence that managers use the valuation allowance to manage earnings. Because their sample is limited to firms that took relatively large Other Post-Employment Benefit (OPEB) charges when they adopted SFAS No. 106, they suggest that their sample firms may not be the most appropriate group to use in searching for earnings management involving the valuation allowance. Behn et al. (1998) also find empirical evidence

[3] Prior research has investigated various aspects of accounting for deferred tax assets and liabilities in different countries (e.g., Bauman and Das, 2004; Gaeremynck and Gucht, 2004; Citron, 2001; Arnold, 1994; Brown, et al., 1987; Wolk and Tearney, 1980; and Findlay and Williams, 1981). We do not attempt to provide a complete review of research on accounting for deferred taxes, but instead focus on the flexibility of managers in the United States in accounting for the deferred tax asset valuation allowance.

that variables listed as examples in SFAS No. 109 are highly associated with cross-sectional differences in the level of the valuation allowance. However, they do not examine the question of whether companies use the valuation allowance to manage earnings.

Kumar and Visvanathan (2003) perform an event study to examine investors' response to press releases made by firms making valuation allowance changes. Their evidence suggests that disclosures of changes in the deferred tax valuation allowance provide information beyond contemporaneous earnings reports. They argue that, similar to discretionary accruals, the valuation allowance can inform investors about future profitability. They also examine whether stock returns are associated with the opportunistic use of the valuation allowance to manage earnings. However, their results do not indicate an association between security price movements and earnings management via the valuation allowance.

Phillips et al. (2003) find that the deferred tax expense, their empirical surrogate for book-tax differences, is generally incrementally informative relative to total accruals and abnormal accruals derived from two "Jones-type" models in detecting earnings management to avoid an earnings decline (e.g., Jones 1991; Dechow et al. 1995). In a follow-up study, Phillips et al. (2004) decompose the total change in net deferred tax liabilities into eight components (including the valuation allowance account) to determine which types of accounts are associated with earnings management activities. They find that firms set their valuation allowance accounts consistent with guidance in SFAS No. 109. Thus, they find no evidence that managers use the valuation allowance account to manage earnings to avoid an earnings decline.

Schrand and Wong (2003) find evidence that most banks do not recognize a valuation allowance in order to manage earnings, but rather to follow the guidelines of SFAS No. 109. Similarly, Bauman et al. (2001) utilize a sample of *Fortune 500* firms to examine earnings management via changes in the deferred tax asset valuation allowance. Their cross-sectional tests find virtually no evidence in support of earnings management. Although critics of SFAS No. 109

argue that the valuation allowance account can be used in "big bath" behavior, Bauman et al. find empirical evidence suggesting that arguments about firms using the valuation allowance in "big bath" behavior may be exaggerated. They suggest a contextual approach that can identify specific instances in which earnings management may exist. Consistent with this recommendation, we examine a particular setting in which firms are more likely to use the valuation allowance account to increase the magnitude of a big bath or to mitigate the negative effects of a special charge or write-off.

Two prior studies find evidence of earnings management using the valuation allowance. Burgstahler et al. (2002) investigate earnings management related to deferred tax assets and argue that the deferred tax asset context is one in which incentives to manage earnings are particularly strong. They use the Burgstahler and Dichev (1997) methodology to compare firm-years with small scaled profits to firm-years with small scaled losses under the assumption that *ex post* there is a higher probability that firms with small scaled profits engaged in earnings management. They find evidence that firms with changes in the net deferred tax asset account that convert a loss to a profit decrease the relative valuation allowance by a larger amount than firms where changes in deferred tax assets do not convert a loss to a profit. Frank and Rego (2005) examine whether managers use the valuation allowance account to mange earnings around certain earnings targets. They find substantial evidence that firms use the valuation allowance account to manage earnings toward the mean analyst forecast. However, they do not find evidence that firms use the valuation allowance account to manage earnings around the positive net income and prior years' reported earnings targets. Thus, these studies find evidence that firms use the valuation allowance to meet earnings targets. We further this research by investigating the use of the valuation allowance to establish a "cookie jar reserve" at the time of an earnings bath.

(ii) Earnings Management and Large One-time Charges

Francis et al. (1996) investigate a sample of firms making write-offs between 1989 and 1992, including some described as restructuring charges. They find factors associated with both earnings manipulation and asset impairment to be important determinants in write-off decisions. Moehrle (2002) finds evidence that some firms reverse a portion of restructuring charges in a later quarter to beat analysts' forecasts and to avoid reporting net losses. He also finds some evidence that firms record reversals to avoid earnings declines. Overall, his results are consistent with firms using restructuring accrual reversals to manage earnings.

(iii) Hypotheses

We examine a powerful setting for detecting earnings management associated with the deferred tax valuation allowance. Our sample is comprised of firms that take large restructuring charges or write-offs. As mentioned previously, the recognition of a deferred tax asset valuation allowance increases the magnitude of a big bath. A valuation allowance might be recognized because concern about future profitability calls into question the realizability of the deferred tax asset. According to the provisions of SFAS No. 109, if it is "more likely than not" that the deferred tax benefits will not be realized, a valuation allowance must be recognized. Alternatively, a larger-than-necessary valuation allowance might be recognized in order to establish a "cookie jar reserve" that can be reversed in future periods or a smaller-than-necessary valuation allowance might be recognized to minimize the earnings impact of a special charge or write-off. We attempt to distinguish between these two motivations in recognizing a deferred tax valuation allowance by comparing the magnitude of the actual recognized allowance to the predicted magnitude derived from a model based on relevant firm characteristics identified by SFAS No. 109 and prior research (such as past profitability and the existence of offsetting deferred tax liabilities). We designate firms that recognize an unexpectedly large deferred tax valuation allowance as "bigger bath firms." If there are firms that use deferred tax accounting to

create a reserve that can be reversed to bolster earnings in a subsequent year, then it is more likely that they are the "bigger bath firms" because they have established a larger-than-expected valuation allowance. Therefore, we explore whether bigger bath firms are more likely than smaller bath firms to decrease their valuation allowance in subsequent years.

H_{1A}: Bigger bath firms are more likely to subsequently decrease the deferred tax asset valuation allowance in the year following the bath than are smaller bath firms.

A competing hypothesis is that managers use their private information about the future prospects of their company to appropriately establish the deferred tax valuation allowance. If managers are in possession of private information that causes them to be more pessimistic about the company's future than would be an outsider using publicly-available data, then they will establish a higher-than-expected allowance. In our formulation, the proxy for the view of an outsider is the output from the valuation allowance prediction model which uses publicly-available data. On the other hand, if managers possess optimistic private information, they will establish a lower-than-expected allowance. Our proxy for managers' private information during the big bath year about future performance is actual operating performance in the year after the big bath. This hypothesis is stated as follows.

H_{1B}: Bigger bath firms have worse operating performance in Year +1 (relative to the bath year) compared to smaller bath firms.

Once a deferred tax valuation allowance is established, whatever the motivation, it becomes a tempting tool for earnings management. To reduce or eliminate the allowance, and thus boost earnings on a dollar-for-dollar basis, a manager need only argue that it is now "more likely than not" that future earnings will in fact be sufficient to allow for the realization of the deferred tax asset. A manager would feel great incentive to try to make that argument if, for example, doing so would convert a bottom-line loss into a profit. However, unlike many other accrual decisions that can be used to manage reported earnings, the impact of a valuation

allowance accrual decision is very transparent; the beginning and ending balances of the valuation allowance, and the precise dollar earnings impact of any change, are clearly given in the notes to the financial statements. In contrast, the effects of revenue recognition or operating expense accrual decisions made for earnings management purposes are difficult, if not impossible, for an outsider to unravel.

The large valuation allowances associated with big bath firms provide a window into the dark world of earnings management. If managers blatantly manage earnings, then a large fraction of the firms that can use a reduction in their valuation allowance to change a loss into a profit will do so. On the other hand, if the transparency associated with this form of earnings management creates some caution among managers and their auditors, then the number of firms that seemingly take advantage of the valuation allowance to turn a loss into a profit will be relatively small. We have no prediction about whether the number of blatant earnings managers will be large or small; we will report our results in the spirit of an exploratory analysis.

2. SAMPLE SELECTION, METHODOLOGY, AND DESCRIPTIVE EVIDENCE

(i) Sample Selection Process

The sample selection process consists of three stages. First, we identify all companies on the annual *Compustat* file that report large negative special items (Compustat annual data item #17) during the years 1996 through 1998.[4] Specifically, we include companies that reported

[4] We include firms from the *Compustat* Research file in addition to the Primary, Supplementary, and Tertiary Annual files to mitigate any potential selection bias. The sample period begins immediately *after* the first effective dates of two major accounting rules regarding special charges. EITF 94-3 became effective in 1994 and SFAS No. 121 became effective in 1995.

special charges exceeding ten percent of their total assets during these years.[5] This process yields an initial set of 1,271 potential sample firms traded on the major U.S. stock markets (NYSE, AMEX, and NASDAQ).

In order to identify firms that are likely to exhibit "big bath" behavior, we then search the public earnings press releases of these 1,271 firms for evidence of large write-offs and/or restructuring charges. In order to do this, we search the *LexisNexis* database to identify sample firms' earnings announcements. Specifically, we explore the "*Company/Allnews (Arcnews)*" file in *LexisNexis*, which contains press releases of publicly traded firms. Our search includes terms such as "restructuring," "write-off," "write-down," and other variant forms of these expressions. This process identifies 567 firms with large write-offs and/or restructuring charges from 1996 to 1998.

Third, we search SEC 10-K filings in the EDGAR database to obtain deferred tax and valuation allowance data for this sample of firms reporting large write-offs or restructuring charges. In order to complete our initial analysis, we require deferred tax data for the year preceding and the year of the restructuring charge or large write-off. This search of the EDGAR database yields 522 potential sample firms. Then we required our sample firms file their future two years of data with the SEC. Our final sample consists of 444 large restructuring charge/write-off announcement firms with reported valuation allowance data.

Finally, in order to verify that any movements in deferred tax-related account balances are not an artifact of industry or market wide effects, we identify a set of control firms that did not incur large write-offs or special items during these years. Therefore, we identify a group of control firms matched on industry and size. Specifically, we match each sample firm to the

[5] Francis et al. (1996) use a one percent cutoff in selecting their sample. However, we employ a stricter requirement (ten percent) in order to identify potential "big bath" special charges. In addition, the use of this cutoff ensures a reasonable sample size for the hand collection of deferred tax data from the annual Form 10-K filings of sample firms.

Compustat firm closest in size (based on total assets) in the same four-digit SIC classification; we require the control firms to report special charges close to zero. None of our control firms reports special charges that exceed 1% of total assets. We perform this matching process during the year of each sample firm's special charge to avoid the effects of potential differences in macroeconomic conditions on control firms' deferred tax accounts. This process yields a final sample of 444 "bath" firms and 444 control firms.

(ii) Methodology

In order to distinguish between bigger bath and smaller bath firms, we regress the deferred tax asset valuation account as a percentage of deferred tax assets (*ALLOWDTA)* on variables which prior studies have found to be determinants of the deferred tax valuation allowance. We note at the outset that our intent in this study is to investigate whether managers use the valuation allowance opportunistically. Our objective is *not* to develop the best valuation allowance prediction model. We simply employ all significant variables identified by Miller and Skinner (1998), hereafter MS, and Behn, Eaton, and Williams (1998), hereafter BEW, in the following regression model[6]:

$$ALLOWDTA = a_0 + a_1 FUTURE + a_2 EARN + a_3 MKTBOOK + a_4 DISTRESS + a_5 STRATEGY + a_6 CONTIN + a_7 PASTROA + a_8 Z\text{-}SCORE + \varepsilon \qquad (1)$$

Where:

	ALLOWDTA	=	Deferred tax asset valuation account scaled by deferred tax assets (following BEW and MS),
	FUTURE	=	Deferred tax liabilities scaled by deferred tax assets (following BEW),
	EARN	=	The average operating earnings (loss) for the most recent three years (the year of the write-off or restructuring charge and the two previous years) scaled by total assets (following BEW),

[6] We use the same names and variable definitions reported by MS and BEW.

MKTBOOK	=	Market value of common equity divided by book value of common equity (following BEW),
DISTRESS	=	Indicator variable that is one if operating cash flow, operating income, or earnings are negative (following BEW),
STRATEGY	=	Federal income tax expense divided by net operating income (following BEW),
CONTIN	=	Indicator variable coded one if the firm has a material contingency and zero otherwise (following BEW),
PASTROA	=	Average return on assets over the previous three years (following MS), and
Z-SCORE	=	Altman's (1968) Z-score based on Shumway's (1997) updated coefficients (following MS).[7]

We use pooled data for both control and sample firms in year t-1 (where year t is the year of the write-off or restructuring charge) and for the control group in year t in order to estimate the parameters of the regression model. We then use the parameter estimates to calculate a predicted valuation allowance as a percentage of deferred tax assets (*ALLOWDTA*) for sample firms in year t. Finally, we use the prediction error (actual *ALLOWDTA* minus predicted *ALLOWDTA*) to distinguish between bigger and smaller bath firms.

(iii) Descriptive Evidence about Sample and Control Firms

Table 1 contains descriptive statistics for sample and control firms. Panel A indicates a wide distribution across industries among sample and control firms with the largest concentration of firms, 50%, in the manufacturing industries (SIC codes 2000-3999) and in the service industries, 30% (SIC codes 7000-8999).

Panel B compares sample and control firms based on size and other variables used in subsequent analyses. Panel B also reports comparisons of other variables, drawn from BEW

[7] Although the published version of Shumway's (2001) results differ slightly from those reported in his 1997 working paper, we use the coefficients from his working paper to maintain comparability to Miller and Skinner (1998).

(1998) and MS (1998), which we use to generate a firm-specific prediction of the level of the deferred tax asset valuation allowance. The Panel B profile results indicate that sample firms have significantly (1) lower deferred tax liabilities, FUTURE, (2) higher average operating earnings over the most recent three years, EARN, (3) higher probability of financial distress, DISTRESS, (4) lower federal taxes as a percentage of net operating income, STRATEGY, (5) lower average return on assets over the previous three years, PASTROA, and (6) higher probability of bankruptcy, Z-SCORE.[8] Taken together, these descriptive statistics suggest that relative to firms of similar size in similar industries, sample firms generally face significantly more difficult financial prospects than do their competitors.

Table 2 presents detailed descriptive statistics for all deferred tax accounts (scaled by total assets) as reported in the tax footnote of the 10-K filings for the sample firms (Panel A) and the control firms (Panel B). A comparison of Panels A and B suggests that sample and control firms have similar levels of deferred tax assets, DTA, during the two years prior to the write-off or restructuring charge year with a median deferred tax asset balance between five and eight percent of total assets for both sets of firms. In contrast, the median balance in the deferred tax asset account of the sample firms more than doubles in the year of the special charge to 15.8% of total assets whereas the deferred tax asset balance for the control firms remains basically unchanged.[9] The median balance in the deferred tax asset valuation allowance account, VALALLOW, of sample firms is between one and two percent of total assets in the two years preceding the special charge year; for the control firms, the valuation allowance balance is much less than one percent. This difference reflects the general financial uncertainty surrounding the sample firms – the same conditions that led to the special charge in year t also led to more doubt about the realizability of deferred tax assets, and thus a higher valuation allowance, in years t-2

[8] Note that a higher (lower) Z-score indicates a lower (higher) probability of bankruptcy.
[9] In order to provide meaningful comparisons of sample and control firms, we report results after winsorizing the data at the 1% and 99% levels of each variable's distribution.

and t-1. In the special charge year, the median balance in the valuation allowance account of sample firms increases dramatically (to 9.1% of total assets) while the median balance for the control firms is actually lower than in the preceding two years. For comparison, the median balance in the deferred tax liability account, DTL, remains relatively constant at about one percent of total assets for each of the three years reported for both sample and control firms.

3. RESULTS OF HYPOTHESIS TESTS

(i) Changes in the Deferred Tax-Related Balances for Sample and Control Firms

Because of the recognition of a large special charge, we expect sample firms to increase their deferred tax asset valuation allowance relative to their deferred tax asset account in the special charge year relative to firms of similar size in the same industry that did not recognize a special charge. Table 3 reports comparisons of sample firms and control firms matched on both firm size and four-digit SIC code. Panel A indicates a mean increase of approximately 3% in sample firms' valuation allowance as a percentage of the deferred tax assets, ΔALLOWDTA, in the year preceding the special charge year. This suggests that at least one year prior to the write-off or restructuring charge, some sample firms anticipate future financial difficulty that will make it more likely than not that they cannot utilize all of the tax benefits associated with their deferred tax assets. Moreover, sample firms increase their valuation allowance account as a percentage of deferred tax assets, on average, by approximately 11% in the special charge year. The *t*-statistic indicates that this increase is significant at the 0.01 level. On the other hand, Panel B reports that control firms decrease their valuation allowance (though the change is not significant) as a percentage of deferred tax assets in the year prior to the measurement year. Moreover, they continue to decrease their valuation allowance account in the measurement year and the decrease is statistically significant.

In summary, the data presented in Table 3 confirm that, after controlling for industry and economy wide effects, the deferred tax asset and associated valuation allowance account balances increased in the special charge year for the sample firms. This is not surprising—the deferred tax asset balance should increase because special charges are typically composed of items, such as asset writedowns and restructuring obligation accruals, that are not tax deductible until they are realized, which is usually several years later. The valuation allowance should also increase, both in absolute terms and as a percentage of the amount of deferred tax assets, because the existence of the special charge indicates unsettled financial conditions. These unsettled financial conditions increase the likelihood that it will be determined that it is more likely than not that portions of the deferred tax asset will never be realized. In the next section we explore whether the level of the deferred tax asset valuation allowance is chosen strategically and whether a reversal of the allowance in the subsequent year is predictable.

(ii) Distinguishing between bigger bath and smaller bath firms

In order to distinguish between firms that exhibit bigger bath and smaller bath behavior, we use firm characteristics to generate a predicted level for the deferred tax asset valuation allowance. Table 4 reports results for regression model 1; the parameters from this model are used to generate the predicted allowance amount. This model regresses the valuation allowance as a percentage of deferred tax assets, ALLOWDTA, on factors that prior research has found to be significantly associated with the level of the valuation allowance account (see MS, 1998 and BEW 1998). In order to estimate model 1, we include data for both sample and control firms in the year prior to the special charge year and for control firms in the special charge year. Table 4 indicates that almost all of the predictor variables are highly significant ($p < 0.01$) in directions consistent with what is found in prior research. The two exceptions are for market-to-book ratio of common equity, MKTBOOK, and an indicator coded one if the firm reports a material contingency in their footnote disclosures, CONTIN. The model's adjusted-R^2 of 0.4508 is

generally consistent with OLS adjusted-R^2 values reported by MS (1998), 0.417, and BEW (1998), 0.462.

We use the parameter estimates from the Table 4 regression to calculate a predicted valuation allowance as a percentage of deferred tax assets for sample firms in the special charge year. We then calculate a valuation allowance prediction error by subtracting the predicted value from each firm's actual valuation allowance as a percentage of deferred tax assets, ALLOWDTA. We define bigger bath firms as those in the top 33% of the valuation allowance prediction error distribution (i.e. firms whose actual ALLOWDTA is the highest relative to their predicted ALLOWDTA). We define smaller bath firms as those in the bottom 33% of the valuation allowance prediction error distribution (i.e. firms whose actual ALLOWDTA is the lowest relative to their predicted ALLOWDTA).

(iii) Are bigger bath firms more likely to subsequently decrease the deferred tax asset valuation allowance in the year following the bath than are smaller bath firms. (H_{1A})?

Hypothesis H_{1A} examines whether bigger bath firms appear to use the valuation allowance in the bath year in order to establish a "cookie jar reserve" that they use in the subsequent year to boost earnings. Table 5 reports comparisons of changes in the valuation allowance in the year subsequent to the special charge year for firms that we designate, *ex ante*, as bigger bath and smaller bath firms. Panel A indicates that bigger bath firms decrease the valuation allowance as a percentage of deferred tax assets (ΔALLOWDTA), on average, in the year subsequent to the special charge and the decrease is statistically significant. Panel B reports that smaller bath firms continue to increase the valuation allowance significantly as a percentage of deferred tax assets in the year following the special charge. Finally, Panel C shows that the change in the valuation allowance is significantly lower (more negative) for bigger bath firms than for smaller bath firms.

The results in Table 5 point toward a conclusion that the bigger bath firms intentionally overstate their valuation allowance in Year 0 in order to reverse the allowance (and increase earnings) in Year +1. However, there are several cautions that suggest that such a conclusion is premature. First, a deferred tax valuation allowance reduction increases earnings only if there is an actual reduction in the dollar amount of the allowance. A change in the percentage relationship between the valuation allowance and the deferred tax asset balance does not definitely indicate either an increase or a decrease in the actual dollar amount of the valuation allowance. Accordingly, the results in Table 5 showing a significant difference in the allowance amount as a percentage of the deferred tax asset balance do not directly address the impact of such a change on earnings in Year +1. Second, because the big bath and small bath firms are identified using error terms from a prediction model, the apparent reversal exhibited by the big bath firms could merely be a statistical artifact that is nothing more than reversion to the mean.

A final factor that clouds the interpretation of the results in Table 5 is that, upon closer inspection, a large number of the sample firms do not appear to have exercised any discretion in the establishment of their valuation allowance amounts. These firms fall into two groups. One group of firms did not establish any valuation allowance. These firms will hereafter be called the ZERO firms. The ZERO firms, as a group, have greater financial strength than the other sample firms. For the most part, the ZERO firms had never established a valuation allowance before the sample year and continued that pattern in spite of the financial uncertainty suggested by the large special charge in the sample year. These firms apparently had no significant doubt about their ability to generate sufficient future income to be able to completely realize their deferred tax assets.

A second group of firms that did not appear to exercise discretion in selecting their valuation allowance amount actually established the maximum possible valuation allowance. For these firms, the valuation allowance was either equal to the deferred tax asset balance or was

equal to the difference between the deferred tax assets and the deferred tax liabilities. In both cases, the valuation allowance was set such that the net reported deferred tax asset (deferred tax asset less valuation allowance less deferred tax liability) was zero; establishing a higher valuation allowance was not possible. We designate these as the MAX firms. As one might expect (and as demonstrated later in the paper), these MAX firms were significantly weaker financially than the other sample firms. Accordingly, the accounting rules were quite clear in requiring that these firms establish the maximum possible valuation allowance.

Because our objective is to focus on the strategy surrounding the establishment of a deferred tax valuation allowance, it makes sense to treat the ZERO and MAX firms separately and apply the prediction model only to the remaining firms. Also, because valuation allowance reversals impact earnings only to the extent that they represent an actual change in dollar amount, we can enhance our understanding of what the sample firms are doing by focusing on this view of a reversal.

In Table 6, the sample firms with available deferred tax data in Year +1 or Year +2 are categorized into four groups: the ZERO and MAX groups described earlier as well as a set of SMALL firms (the valuation allowance is smaller than expected given the prediction model discussed earlier) and a set of LARGE firms. For each group, firms that reduced their valuation allowance balance in either Year +1 or Year +2 are designated as reversal firms. As seen in Table 6, the frequency of valuation allowance reversals for the sample firms in the SMALL and LARGE groups is essentially the same (the small difference is statistically insignificant). These results suggest that the impression given by the Table 5 results is not correct; there is no evidence that, on average, bath firms establish larger-than-necessary valuation allowances in Year 0 in order to reverse those allowances and increase earnings in Year +1 or Year +2.

(iv) Do bigger bath firms have worse operating performance in Year +1 (relative to the bath year) compared to smaller bath firms. (H_{1B})?

There may not be evidence of widespread creation of cookie jar reserves by bath firms using the deferred tax valuation allowance in a bath year, but the determination of these allowance balances is still an interesting object of study. In fact, as shown in Table 7, and as suggested in Hypothesis H_{1B}, the magnitude of a valuation allowance established in Year 0 provides information about how the firm will perform in Year +1. In Panel A, it can be seen that operating performance in Year +1, measured by either earnings before interest, taxes, depreciation, and amortization (EBITDA) or operating income, decreases monotonically with increasing levels of the valuation allowance established in Year 0. The median value of operating income divided by total assets in Year +1 is -11.5% for the MAX firms compared to +7.7% for the ZERO firms. The differences shown in Panel A are consistent with managers using their private information in Year 0 about their firm's future to appropriately determine the deferred tax valuation allowance amount in Year 0.

The results in Table 7, Panel B demonstrate that the valuation allowance reversals that occur in Year +1 and Year +2 are, on average, related to operating results that occur after the initial valuation allowance balance was established in Year 0. For each of the four valuation allowance groups, the firms that reversed their valuation allowance had significantly better operating performance in Year +1 than did the firms that did not reverse. A reasonable interpretation of these results is that the primary driving factor behind the reversals was improved operating performance and not manipulation of the allowance balances for the purposes of earnings management.

The results reported in the preceding tables are on-average results. Although most firms appear to be appropriately applying the provisions of SFAS No. 109 in determining their deferrd tax valuation allowance balance in the year of a big bath, there still may be some subset of firms that uses the flexibility of the standards to create a valuation allowance cookie jar reserve. A search for such firms is summarized in Table 8. Reported earnings numbers and valuation

allowance balances for Year +1 and Year +2 are used to identify those sample firms that could have reversed their valuation allowance in order to change a loss into a profit. The available data make it possible to identify 168 such opportunities, as shown in Table 8, Panel A. In each of these opportunities, the firm's net income before extraordinary items, before considering any change it is valuation allowance, was negative. At the same time, the beginning balance in the firm's valuation allowance was large enough such that if the entire balance were reversed the earnings would have become positive. Prior research has shown that managers display a great interest in managing earnings to avoid reporting a loss. Hence, these opportunities are a likely place to observe the use of a valuation allowance reversal to manage earnings, if such uses occur. As shown in Panel A, managers of the sample firms took advantage of only 12 of the 168 opportunities to convert a loss into a profit using reversal of a deferred tax valuation allowance. The earnings and valuation allowance data for these 12 sample firms are listed in Panel B of Table 8. This small number of apparent earnings managers suggests that the transparency associated with this form of earnings management creates some caution among managers and their auditors.

4. CONCLUSION

This study examines the extent to which firms use the deferred tax valuation allowance to make a big bath even bigger. We use a valuation allowance prediction model to identify those firms that are most likely to have recognized an unexpectedly large valuation allowance as part of a big bath strategy. We find that the vast majority of these larger-than-expected valuation allowances apparently reflect informed management pessimism about the future in that these firms actually do have poorer operating performance in subsequent periods. We also find that subsequent reversal of valuation allowances established in a big bath year is associated with

positive operating performance, suggesting that the reversal is driven by correct application of the accounting standards rather than by earnings management. Nonetheless, we also identify a small set of firms that appear to have used a subsequent reduction in the valuation allowance to change a reported loss into a reported profit indicating that although use of valuation allowance reversals as an earnings management tool may not be rampant, it still does exist.

The results in this paper may offer some useful insight in the current debate about whether accounting standards should be principles based. In some sense, the standard for determining whether a firm should establish a deferred tax valuation allowance is a principles-based standard (although SFAS No. 109 does provide substantial implementation guidance). An argument against principles-based standards is that they are too susceptible to strategic manipulation. Our results strongly suggest that, perhaps because of the transparent disclosure associated with a deferred tax valuation allowance, managers are reluctant to use this judgment-based accounting accrual to manage earnings.

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Table 1
Descriptive statistics for sample and control firms

Panel A: Industry classification

		SIC Code							
Group	Total	0-1999	2000-2999	3000-3999	4000-4999	5000-5999	6000-6999	7000-7999	8000-8999
Sample Firms	444	7	55	164	16	54	9	110	29
Control Firms	444	7	55	164	16	54	9	110	29
Total	888	14	110	328	32	108	18	220	58

Panel B: Comparison of sample and control firms

	Sample Firms			Control Firms				Wilcoxon
Variable	N	Mean	Median	N	Mean	Median	*t* -statistic	*z* -score
TOTASSET	444	314.262	70.520	444	298.303	69.678	0.36	0.04
NETSALES	444	375.440	76.590	444	364.324	67.145	0.21	1.07
ALLOWDTA	444	0.559	0.671	444	0.351	0.038	7.37***	7.44***
FUTURE	444	0.262	0.069	444	0.793	0.169	-7.26***	-5.02***
EARN	444	-0.084	0.013	444	-0.011	0.059	-3.73***	-5.99***
MKTBOOK	443	2.876	0.817	444	5.630	2.345	-5.14***	-8.52***
DISTRESS	444	0.946	1.000	444	0.414	0.000	20.64***	16.97***
STRATEGY	444	0.009	0.000	444	0.220	0.281	-3.02***	-9.13***
CONTIN	444	0.047	0.000	444	0.043	0.000	0.32	0.32
PASTROA	444	-0.027	0.037	401	0.025	0.088	-2.17**	-3.31***
Z-SCORE	444	0.291	1.845	444	4.541	5.151	-11.76***	-14.15***

* Indicates statistical significance at the 0.10 level (two-tailed test).

** Indicates statistical significance at the 0.05 level (two-tailed test).

*** Indicates statistical significance at the 0.01 level (two-tailed test).

SIC Codes 1-1999 = Mineral and Construction Industries.
SIC Codes 2000-2999 = Manufacturing: Food, Tobacco, Textile, Lumber, Furniture, Paper, Printing, Chemicals, and Petroleum.
SIC Codes 3000-3999 = Manufacturing: Rubber, Leather, Stone, Metal, Machinery, Electronic Equipment, Transportation Equipment, etc.
SIC Codes 4000-4999 = Transportation, Communications, and Utilities.
SIC Codes 5000-5999 = Wholesale trade (durable and non-durable) and Retail trade (building materials, general merchandise, food, automotive, apparel, home furnishings, dining, etc.).
SIC Codes 6000-6999 = Financial services, insurance, and real estate industries.
SIC Codes 7000-7999 = Service industries: hotels, personal services, business services, automotive repair, motion pictures, amusement and recreation services.
SIC Codes 8000-8999 = Service industries: health, legal, educational, social, museums, engineering, accounting, management, etc.
TOTASSET = Total assets (Compustat data item #6).
NETSALES = Net sales (Compustat data item #12).
ALLOWDTA = Deferred tax asset valuation allowance as a percentage of deferred tax assets.
FUTURE = Deferred tax liabilities scaled by deferred tax assets.
EARN = The average operating earnings (loss) for the most recent three years (the year of the write off or restructuring charge and the two previous years) scaled by total assets.
MKTBOOK = Market value of common equity divided by book value of common equity
DISTRESS = Indicator variable coded one if any of the following conditions are met: (1) cash flows are negative, (2) operating income is negative, (3) the firm has a net loss
STRATEGY = Federal income tax expense divided by net operating income.
CONTIN = Indicator variable coded one if the firm has a material contingency and zero otherwise.
PASTROA = Average return on assets over the previous three years.
Z-SCORE = Altman Z-score based on Shumway's (1997) updated coefficients.

Table 2
Descriptive statistics of deferred tax accounts

Panel A: Sample firms

Variable	Sample Size	25th Percentile	Mean	Median	75th Percentile
Year -2 (Two Years prior to Announcement Year)					
DTA	308	0.028	0.210	0.062	0.170
VALALLOW	308	0.000	0.162	0.011	0.134
DTL	308	0.003	0.025	0.011	0.030
Year -1 (One Year prior to Announcement Year)					
DTA	427	0.033	0.249	0.076	0.200
VALALLOW	427	0.000	0.205	0.016	0.164
DTL	427	0.001	0.025	0.012	0.031
Year 0 (Announcement Year)					
DTA	444	0.079	0.429	0.158	0.387
VALALLOW	444	0.004	0.354	0.091	0.355
DTL	444	0.000	0.024	0.012	0.033

Panel B: Control firms

Variable	Sample Size	25th Percentile	Mean	Median	75th Percentile
Year -2 (Two Years prior to Announcement Year)					
DTA	292	0.028	0.245	0.055	0.170
VALALLOW	292	0.000	0.189	0.004	0.106
DTL	292	0.002	0.029	0.012	0.035
Year -1 (One Year prior to Announcement Year)					
DTA	429	0.027	0.236	0.058	0.196
VALALLOW	429	0.000	0.191	0.005	0.139
DTL	429	0.001	0.026	0.010	0.032
Year 0 (Announcement Year)					
DTA	444	0.025	0.268	0.051	0.178
VALALLOW	444	0.000	0.216	0.001	0.117
DTL	444	0.001	0.023	0.010	0.030

DTA = Deferred tax assets as a percentage of total assets.
VALALLOW = Deferred tax valuation allowance as a percentage of total assets.
DTL = Deferred tax liabilities as a percentage of total assets.

Table 3
Univariate comparisons of changes in deferred tax accounts

Panel A: Sample firms

Variable	N	Mean Change	H_o: $\Delta = 0$ *t*-statistic	Median Change	H_o: $\Delta = 0$ Wilcoxon Signed-Rank *z*-statistic
		Changes from Year -2 and Year -1			
ΔDTA	308	0.055	3.36***	0.007	4.72***
ΔVALALLOW	308	0.042	2.84***	0.000	2.47**
ΔALLOWDTA	305	0.032	2.39**	0.000	1.77*
		Changes from Year -1 and Year 0			
ΔDTA	427	0.194	6.89***	0.067	21.10***
ΔVALALLOW	427	0.158	6.99***	0.037	14.56***
ΔALLOWDTA	426	0.114	7.87***	0.000	7.48***

Panel B: Control firms

Variable	N	Mean Change	H_o: $\Delta = 0$ *t*-statistic	Median Change	H_o: $\Delta = 0$ Wilcoxon Signed-Rank *z*-statistic
		Changes from Year -2 and Year -1			
ΔDTA	292	0.001	0.05	0.000	0.64
ΔVALALLOW	292	0.003	0.20	0.000	-0.02
ΔALLOWDTA	289	-0.014	-1.45	0.000	-1.13
		Changes from Year -1 and Year 0			
ΔDTA	429	0.034	1.63	-0.002	-1.22
ΔVALALLOW	429	0.024	1.54	0.000	-1.43
ΔALLOWDTA	425	-0.026	-2.59***	0.000	-2.51**

* Indicates statistical significance at the 0.10 level (two-tailed test).

** Indicates statistical significance at the 0.05 level (two-tailed test).

*** Indicates statistical significance at the 0.01 level (two-tailed test).

DTA = Deferred tax assets as a percentage of total assets.
VALALLOW = Defered tax valuation allowance as a percentage of total assets.
ALLOWDTA = Deferred tax asset valuation allowance as a percentage of deferred tax assets.

Table 4
Deferred tax asset valuation allowance prediction regression

$$ALLOWDTA = a_0 + a_1 FUTURE + a_2 EARN + a_3 MKTBOOK + a_4 DISTRESS + a_5 STRATEGY + a_6 CONTIN + a_7 PASTROA + a_8 Z\text{-}SCORE + e$$

Variable	Parameter (Predicted Sign)	Parameter Estimates (T-statistics)
Intercept	a_0	0.391
		(18.07)***
FUTURE	a_1	-0.048
	(-)	(-8.90)***
EARN	a_2	-0.496
	(-)	(-7.03)***
MKTBOOK	a_3	-0.001
	(-)	(-0.69)
DISTRESS	a_4	0.154
	(+)	(7.32)***
STRATEGY	a_5	-0.114
	(-)	(-5.35)***
CONTIN	a_6	-0.051
	(+)	(-1.14)
PASTROA	a_7	-0.182
	(-)	(-6.27)***
Z-SCORE	a_8	-0.006
	(-)	(-1.82)*
Adjusted-R^2		0.4508

* Indicates statistical significance at the 0.10 level (one-tailed test if sign is predicted, otherwise two-tailed).

** Indicates statistical significance at the 0.05 level (one-tailed test if sign is predicted, otherwise two-tailed).

*** Indicates statistical significance at the 0.01 level (one-tailed test if sign is predicted, otherwise two-tailed).

ALLOWDTA = Deferred tax asset valuation allowance as a percentage of deferred tax assets
FUTURE = Deferred tax liabilities scaled by deferred tax assets
EARN = The average operating earnings (loss) for the most recent three years (the year o the write off or restructuring charge and the two previous years) scaled by total assets
MKTBOOK = Market value of common equity divided by book value of common equity
DISTRESS = Indicator variable coded one if any of the following conditions are me (1) cash flows are negative, (2) operating income is negative, (3) the firm ha a net loss.
STRATEGY = Federal income tax expense divided by net operating income
CONTIN = Indicator variable coded one if the firm has a material contingency and zero otherwise
PASTROA = Average return on assets over the previous three years
Z-SCORE = Altman Z-score based on Shumway's (1997) updated coefficients

Table 5
Univariate comparisons of changes in deferred tax accounts: Big bath versus small bath firms (year +1)

Panel A: Sample big bath firms--Top 33% (ALLOWDTA - Predicted ALLOWDTA)				
Variable	Mean Change	H_o: $\Delta = 0$ *t*- statistic	Median Change	H_o: $\Delta = 0$ Wilcoxon Signed-Rank *z* -statistic
		Changes from Year 0 and Year +1		
ΔDTA	0.092	2.95***	0.022	2.56**
ΔVALALLOW	0.087	2.76***	0.022	2.11**
ΔALLOWDTA	-0.055	-2.48**	0.000	-1.04
Panel B: Sample small bath firms--Bottom 33% (ALLOWDTA - Predicted ALLOWDTA)				
Variable	Mean Change	H_o: $\Delta = 0$ *t*- statistic	Median Change	H_o: $\Delta = 0$ Wilcoxon Signed-Rank *z* -statistic
		Changes from Year 0 and Year +1		
ΔDTA	-0.026	-0.52	0.004	1.59
ΔVALALLOW	0.024	0.70	0.000	2.87***
ΔALLOWDTA	0.107	4.45***	0.000	3.92***
Panel C: Univariate comparisons of big bath and small bath firms				
Variable	Difference in Means	*t*- statistic	Difference in Medians	Wilcoxon Rank-Sum *z* -statistic
		Changes from Year 0 and Year +1		
ΔDTA	0.118	1.94**	0.018	1.46
ΔVALALLOW	0.063	1.33	0.022	0.79
ΔALLOWDTA	-0.162	-4.93***	0.000	-3.23***

* Indicates statistical significance at the 0.10 level (two-tailed test).

** Indicates statistical significance at the 0.05 level (two-tailed test).

*** Indicates statistical significance at the 0.01 level (two-tailed test).

DTA = Deferred tax assets as a percentage of total assets.

VALALLOW = Defered tax valuation allowance as a percentage of total assets.

Table 6
Deferred Tax Valuation Allowance Reversals in Year +1 or Year +2

Sample Firm Category	Total Number of Firms	Number of Firms NO Reversal	Number of Firms YES Reversal	Percentage of Reversals
ZERO	80	80	0	0.0%
SMALL	108	60	48	44.4%
LARGE	102	61	41	40.2%
MAX	68	45	23	33.8%
Total	358	246	112	31.3%

Note: The intial number of SMALL and LARGE firms was 128 and 129, respectively. The missing 47 firms did not have 10-K filings available on EDGAR for Year +1 or Year +2.

Sample Firm Categories

ZERO = Sample firm established no valuation allowance in Year 0 (the bath year).

MAX = In Year 0, the sample firm established the maximum amount of valuation allowance equal to either the deferred tax asset in Year 0 or the net deferred tax asset (deferred tax asset minus deferred tax liability). In either case, the valuation allowance is of an amount large enough to result in a net reported deferred tax asset of zero.

SMALL = Of the sample firms that are not ZERO and not MAX, the firms with valuation allowance prediction errors in the lower half of the distribution indicating that the valuation allowance is smaller than predicted.

LARGE = Of the Sample firms that are not zero and not MAX, the firms with valuation allowance prediction errors in the upper half of the distribution indicating that the valuation allowance is larger than predicted.

Reveral Categories

NO = The valuation allowance was equal to or greater than the Year 0 balance in both Year +1 and Year +2.

YES = The valuation allowance was less than the Year 0 balance in either Year +1 or Year +2.

Table 7
Operating Performance in Year +1 Depending on the Size of the Valuation Allowance in Year 0 and whether there was a Subsequent Reversal

Panel A: Operating Performance in Year +1 by Year 0 Allowance Group

	Year +1 Operating Income / Assets		Year +1 EBITDA / Assets	
Sample Firm Category	Mean t-statistic ≠ 0	Median	Mean t-statistic ≠ 0	Median
ZERO	5.9% t = + 4.52	7.7%	11.6% t = + 9.19	13.7%
SMALL	-4.2% t = - 1.66	2.8%	2.2% t = + 0.91	9.3%
LARGE	-11.1% t = - 4.02	-4.2%	-3.6% t = - 1.39	3.1%
MAX	-59.8% t = - 3.63	-11.5%	-42.9% t = - 2.72	-2.5%

Panel B: Operating Performance in Year +1 by whether there was a subsequent reversal

	Year +1 Operating Income / Assets NO Reversal		Year +1 Operating Income / Assets YES Reversal	
Sample Firm Category	Mean t-statistic ≠ 0	Median	Mean t-statistic ≠ 0	Median
ZERO	5.4% t = + 4.09	7.6%	n/a	n/a
SMALL	-13.3% t = - 3.14	-2.6%	6.0% t = + 3.86	7.9%
LARGE	-22.0% t = - 5.64	-15.2%	4.9% t = + 2.24	5.6%
MAX	-77.4% t = - 3.05	-25.1%	-1.8% t = - 0.35	4.2%

Note: The reported t-statistics are for a parametric test of the difference of the reported percentages from zero.

Sample Firm Categories

ZERO = Sample firm established no valuation allowance in Year 0 (the bath year).

MAX = In Year 0, the sample firm established the maximum amount of valuation allowance equal to either the deferred tax asset in Year 0 or the net deferred tax asset (deferred tax asset minus deferred tax liability). In either case, the valuation allowance is of an amount large enough to result in a net reported deferred tax asset of zero.

SMALL = Of the sample firms that are not ZERO and not MAX, the firms with valuation allowance prediction errors in the lower half of the distribution indicating that the valuation allowance is smaller than predicted.

LARGE = Of the Sample firms that are not zero and not MAX, the firms with valuati allowance prediction errors in the upper half of the distribution indicating that the valuation allowance is larger than predicted.

Reveral Categories

NO = The valuation allowance was equal to or greater than the Year 0 balance in both Year +1 and Year +2.

YES = The valuation allowance was less than the Year 0 balance in either Year +1 or Year +2.

Table 8
Sample Firms for Which a Subsequent Change in Valuation Allowance Converted a Loss into a Profit

Panel A: Number of sample firms that could have changed a loss to a profit

Sample Firm Category	Year +1	Year +2
OPPORTUNITY	89	79
MANAGE	6	6
Percentage	6.7%	7.6%

Panel B: List of sample firms that did change a loss to a profit (numbers in millions)

Company Name	Year 0	Pre-Valuation Earnings in MANAGE Year	Valuation Beginning Balance	Reduction in Valuation	Reported Earnings
Firm A	1997	(0.923)	2.362	1.663	0.740
Firm B	1998	(4.177)	15.067	15.067	10.890
Firm C	1998	(11.329)	45.339	45.339	34.010
Firm D	1996	(0.170)	1.750	0.250	0.080
Firm E	1996	(0.408)	9.943	0.778	0.370
Firm F	1998	(0.052)	10.966	0.132	0.080
Firm G	1996	(2.830)	16.050	4.400	1.570
Firm H	1998	(0.212)	1.632	0.232	0.020
Firm I	1998	(4.660)	43.200	6.500	1.840
Firm J	1996	(4.750)	66.970	8.160	3.410
Firm K	1998	(0.723)	35.463	1.063	0.340
Firm L	1997	(0.235)	21.645	0.475	0.240

OPPORTUNITY = Sample firms for which the pre-valuation allowance earnings is negative and the beginning balance in the valuation allowance is large enough so that a reduction in the allowance to zero could change the negative earnings to positive earnings.

MANAGE = Sample firms that did use the valuation allowance to convert negative earnings to positive earnings.

Pre-Valuation Earnings = What the sample firm's net income before extraordinary items would have been if there had been no change in the deferred tax valuation allowance during the year. A decrease in the valuation allowance increases net income (and therefore needs to be taken out to get back to pre-allowance net income); an increase in the valuation allowance decreases net income (and so needs to be added back). The computations are as follows.
Pre-valuation net income = Net income + Ending Allowance – Beginning Allowance