

# The Determinants of the Deferred Tax Allowance Account Under SFAS No. 109

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**SYNOPSIS:** In this study, we examine empirically the association between the recognized deferred tax asset valuation allowance and certain variables put forth as sources of evidence in the FASB's (1992) Statement of Financial Accounting Standard (SFAS) No. 109. Although several papers have discussed theoretically how to account for and audit the deferred tax asset allowance account, there is limited descriptive or empirical evidence that demonstrates how firms are actually applying the standard. While this paper does not provide a definitive answer, it does provide an important initial step in learning how companies apply the SFAS No. 109 guidelines. By examining the association between publicly available proxies and the valuation allowance, we find evidence that certain variables consistent with SFAS No. 109 examples are highly associated with cross-sectional differences in the percent of deferred tax assets that are taken as an allowance. Auditors can use these results to focus on specific factors to aid their search and evaluation of areas of evidence in applying SFAS No. 109 guidelines. The determination of the valuation allowance account reflects a trade-off between relevance and objectivity; hence, the results of this study may also highlight specific factors to assist companies in developing their own approach for estimating the valuation allowance account. Finally, this study may be beneficial to researchers in searching for better proxies or methods to evaluate the deferred tax valuation allowance account.

**Key Words:** Deferred tax asset, Valuation allowance, SFAS No. 109.

**Data Availability:** All data are available from public sources.

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## INTRODUCTION AND MOTIVATION

Since its inception, Statement of Financial Accounting Standards (SFAS) No. 109 has been subject to much debate. One of the concerns regarding this standard is that its requirements could potentially lead to difficult implementation problems for corporations (Peavey and Nurnberg 1993). At the heart of the debate is SFAS No. 109's provision that companies are required to (1) recognize deferred tax assets at their full amount for all deductible temporary differences and carryforwards, and (2) reduce the recognized deferred tax assets by a valuation allowance judgment based on a "more likely than not" test.<sup>1</sup> Effectively, the valuation allowance requirement reduces deferred tax assets to an amount that is a lower expected recoverable value. Although several papers have discussed how to account for and audit the deferred tax asset allowance account (e.g., Heiman-Hoffman and Patton 1994; Petree et al. 1995; Read and Bartsch 1992; Smith and Freeman 1992), limited descriptive or empirical evidence exists to demonstrate how firms are actually applying the SFAS No. 109 standard.<sup>2</sup>

The objective of this study is to examine empirically the association between the recognized deferred tax asset valuation allowance (defined as a percentage of total deferred tax assets) and certain variables put forth as sources of evidence in SFAS No. 109 to determine how companies are applying the standard. Because we use publicly available proxies, not internal company data, this paper does not provide a definitive answer, but it does provide an important initial step in learning how companies apply the SFAS No. 109 guidelines. Examining how companies implement this requirement is important for several reasons.

First, auditors can use these results to focus on specific factors to aid their search and evaluation of areas of evidence in applying SFAS No. 109 guidelines. As Peavey and Nurnberg (1993, 78) point out "there are no magic formulas for determining if, or in what amount, a valuation allowance is needed." Second, as SFAS No. 109 states, the determination of the valuation allowance account reflects a trade-off between relevance and objectivity; hence, the results of this study may also highlight specific factors to assist companies in developing their own approach for estimating the valuation allowance account. As Petree et al. (1995) discuss, firms will need to develop an evaluation process to weigh the reasonableness and relevance of the data obtained. Finally, this study may be beneficial to researchers in searching for better proxies or methods to evaluate the deferred tax valuation allowance account.

Performing univariate tests and multivariate estimation procedures, we find evidence that taxable income in prior years, future reversals of temporary differences, the origin of the temporary differences, the Other Post-Employment Benefits (OPEB) temporary difference, the potential for future income, and tax planning strategies are highly associated with the relative amount of the recorded valuation allowance. Some support also exists for a firm's current financial situation having an impact on the relative level of the valuation allowance.

The remainder of this paper is organized as follows. Section two reviews the specific reporting requirements of SFAS No. 109 and identifies the variables used in this study.

<sup>1</sup> Under SFAS No. 109, "more likely than not" is defined as "a likelihood of more than 50 percent that some portion or all of the deferred tax assets will not be realized" based on the weight of all available evidence.

<sup>2</sup> The only paper of which we are aware that directly assesses the factors associated with the deferred asset allowance account is an unpublished working paper by Moreland (1996). Using a sample of early adopters, Moreland (1996) finds that net operating loss carryforwards and non-pension post-retirement benefits are associated with the allowance account, and he concludes that the FASB was partially successful in influencing management estimates of the deferred tax allowance account. While the intent of our study is similar to that of Moreland's (1996) study, we incorporate a different sample, research design and variables.

Section three describes the model and hypotheses development. Section four outlines the sample selection procedures and descriptive statistics. The final section discusses the univariate and multivariate results and conclusions.

### **SFAS NO. 109 AND VARIABLE IDENTIFICATION**

SFAS No. 109 states that the weight of all available evidence, both positive and negative, should be considered to determine the amount of the valuation account. According to the FASB, these weights vary with the facts and circumstances of each company but should be commensurate with the extent to which the evidence is subject to objective verification. For example, deciding whether a valuation allowance is warranted is not difficult when evidence such as cumulative losses (negative evidence) or carryback income (positive evidence) exists. While the FASB does not specifically address the weights given to all specific evidence, it does suggest that firms not only examine information about their current and past financial position, but also use any data which relate to future periods.<sup>3</sup> This analysis is important because future realizations of tax benefits depend ultimately on taxable income. SFAS No. 109 (para. 21) identifies four relevant sources of income as follows: (1) future reversals of existing taxable temporary differences, (2) future taxable income exclusive of reversing temporary differences and carryforwards, (3) taxable income in prior carryback year(s) if carryback is permitted under the tax law, and (4) tax-planning strategies.

While SFAS No. 109 identifies these four possible sources of future income, the judgment required to ascertain its existence and magnitude can vary significantly depending on the circumstances of an individual firm. Therefore, SFAS No. 109 provides the following examples of positive and negative evidence. Examples of positive evidence that suggest a valuation account would not be required or that the allowance could be reduced include existing contracts, sales backlog, strong historical earnings that could produce sufficient income to realize deferred tax assets, and an appreciated asset with a value that exceeds its tax basis in an amount sufficient to realize deferred tax assets. Examples of negative evidence that suggest a valuation account would be required or that the allowance should be increased include the incidence of cumulative losses in recent years, a history of allowing carryforwards to expire, the expectation of losses in future years, and uncertain circumstances that could potentially have an adverse effect on future operations.

In the following section, we use the examples provided by the FASB as a foundation to develop empirical proxies for positive and negative evidence. Although some of the FASB-suggested evidence is based on private, internal company data, we use public information to develop proxies that capture the intent of SFAS No. 109. A description of these variables is included in table 1.

### **Positive Evidence Variables**

#### ***FUTURE***

According to the FASB's guidelines, future reversals of existing taxable temporary differences should be considered as a source of income available to realize deferred tax assets. For example, when a company recognizes revenue using the completed

<sup>3</sup> Eaton and Williams (1996) attempt to address this issue of weights. They formulate a judgment model for analyzing the valuation of deferred tax assets, proposing a hierarchy of the objectivity and desirability of sources of income in valuing deferred tax assets. However, they do not test empirically whether their hierarchy of evidence is being used by the firms.

contract method for tax purposes and the percentage-of-completion method for financial accounting purposes, a deferred tax liability would be recorded because this temporary difference results in future taxable income. Although the nature and timing of a firm's reversing taxable temporary differences is important for calculating current and non-current deferred tax assets and liabilities, what is important for calculating the deferred tax asset valuation allowance is that enough future taxable income exists to support the deferred tax asset. If so, a valuation allowance should not be required. To capture the relative extent to which future reversals of temporary differences cover deferred tax assets, we define the variable **FUTURE** as the dollar value of total deferred tax liabilities at year<sub>t</sub> divided by the dollar value of total deferred tax assets at year<sub>t</sub> for firm<sub>i</sub>.

### **MAJOR**

Existing contracts is another of the sources of income available to realize deferred tax assets specifically mentioned by the FASB in SFAS No. 109 (para. 21). While it is difficult to obtain firm data on actual existing contracts, we assert there exist implicit sales contracts with current customers which provide positive evidence of future income. Marketing research has demonstrated that the longevity of customers' relationships favorably influences company profitability (e.g., Zeithami et al. 1996). Reicheld and Sasser (1990) contend that customer defections have a stronger impact on a company's net income than market share and other factors usually associated with competitive advantage. In fact, some relationship marketing researchers have promoted the idea of making zero customer defections an overall company performance standard. Thus, keeping key customers should be an important component of corporate strategy to support future revenue growth.

In keeping with the intent of SFAS No. 109, we assume that multiple years of sales revenues from significant customers are potential evidence that positive earnings will be generated in the future to realize deferred tax assets. To determine if firms have sales to significant customers, we examined the annual statement footnotes and 10-Ks for the past three years to determine if the company disclosed sales to significant customers. We use the FASB's (1979) SFAS No. 30 definition of major customers as our proxy for key customers.

According to SFAS No. 30, if ten percent or more of the revenue of an enterprise is derived from the sales to any customer, this fact and the amount of the revenue shall be disclosed (SFAS No. 30, para. 6). After reviewing this information, we found that while firms do keep with the intent of SFAS No. 30, the firms' definitions of a customer vary dramatically. For example, an automotive parts company grouped 30 customers together which accounted for 60 percent of the division's sales and 14 percent of company sales. Another firm grouped all government agencies together (whether federal, state or local) which accounted for 84 percent of the division's sales and 11 percent of company sales. Due to this variability, we did not use sales dollar values, instead we use the variable, **MAJOR**, which is coded one if a firm reports sales to significant customers in all three fiscal years (year<sub>t</sub>, year<sub>t-1</sub>, and year<sub>t-2</sub>) and zero otherwise. Thus, if a company consistently reports sales to significant customers, we assume this trend will continue and therefore represents positive evidence that there will be future income to realize the company's deferred tax assets.

### **BACKLOG**

Another specific SFAS No. 109 example of other sources of income is a firm's sales backlog. A situation could exist where sales to a particular customer for the current year are minimal and yet future sales, represented by unfilled order backlogs, could be

significant. We use the variable, BACKLOG, defined as the dollar value of a firm's unfilled order backlog divided by total assets to capture this additional information. The Securities and Exchange Commission S-K Subpart 229.101 (c) (viii) mandates the disclosure of material dollar values of unfilled order backlogs in the 10K. BACKLOG is divided by total assets to diminish the influence of scale differences across firms.

### **EARN**

According to SFAS No. 109, taxable income in prior carryback years is a potential source of income that is available to realize deferred tax assets. The FASB states that (para. 24) "a strong earnings history exclusive of the loss that created the future deductible amount, coupled with evidence indicating that the loss is an aberration not a continuing condition" is a source of positive evidence supporting a position that a valuation allowance is *not* required.

Obtaining estimates of taxable income is not straightforward because the consolidated tax return and financial statements may not include the same affiliated companies and not all permanent differences are directly available from the financial statements. In this study, we use operating income, defined as sales less cost of goods sold, selling, general and administration expenses (including depreciation) as a proxy for taxable income consistent with measures used by Omer et al. (1990). To capture SFAS No. 109's intent of a strong earnings history we use the variable, EARN, which is defined as the average operating income (loss) for three fiscal years (i.e.,  $(\text{year}_t \text{ operating income} + \text{year}_{t-1} \text{ operating income} + \text{year}_{t-2} \text{ operating income}) / 3$ ). Again, the variable EARN is divided by total assets at fiscal year<sub>t</sub> to lessen the impact of scale differences across firms.

### **STRATEGY**

Tax-planning strategies are also considered a source of income by the FASB; however, the FASB states that actions, elections and strategies to minimize income taxes in future years in the normal course of business are not tax-planning strategies. A tax-planning strategy is an action that management might not ordinarily take in the normal course of business but that would be undertaken to realize a tax benefit of a deductible temporary difference or carryforward that would otherwise expire. For example, the FASB states (SFAS No. 109, para. 237) that "a strategy to sell property and lease it back for the expressed purpose of generating taxable income to utilize a carryforward before it expires is not an action that management takes in the normal course of business."

While this type of information is usually proprietary and not disclosed by the firm, it appears that effective income tax rates may offer a reasonable proxy for a firm's ability to take advantage of potential tax savings. For example, effective income tax rates were used by the Citizens for Tax Justice's (1985) study as evidence of corporations using current tax rules to avoid paying corporate taxes. This study assumed that as a firm's ability to take advantage of tax savings increased, its effective tax rate decreased. Consistent with Omer et al. (1990), we use the firm's reported federal income tax expense in year<sub>t</sub> divided by operating income in year<sub>t</sub> as our proxy for STRATEGY. Operating income as defined in the discussion of EARN is used as the proxy for taxable income.

### **ORIGIN and OPEB**

How the deferred tax asset was created can also impact whether a valuation allowance is recognized. SFAS No. 109 requires the recognition of deferred tax assets for *all* deductible temporary differences and carryforwards. Deductible temporary differences

are created when expenses are recorded for financial reporting purposes but are not deducted for tax purposes until a later period.<sup>4</sup> For example, warranty costs are expensed as incurred (whether any claims were made); whereas, for tax purposes only the cash paid for actual claims can be deducted. Thus, the issue is mainly one of the timing of recognition. However, the longer the period between financial statement recognition and the deductibility of an amount on future taxable income, the more uncertainty exists as to its ultimate deductibility. Alternatively, carryforwards are created when the loss of a particular year is available to be taken forward in the future, normally because insufficient income is available to take it back to carryback years. Because carryforwards are normally created because of insufficient income, an argument has been made that deferred tax assets created by loss carryforwards are less certain of realization than those assets created by some deductible temporary differences (Read and Bartsch 1992).

While differences may exist in the potential for realization of these deductible temporary differences and loss carryforwards, it is difficult to isolate all the individual components of the firm's deferred tax asset. Therefore, based on the company's tax footnote disclosures, we have isolated the effects of Other Post-Employment Benefits (OPEB) temporary differences and other deductible differences from loss carryforwards. The OPEB liability was selected due to its size and the ability of firms to adjust the OPEB liability based on the benefits offered.<sup>5</sup> Firms are required to record as expenses (and as liabilities) the future costs of post-retirement benefits for current employees. A deferred tax asset is created because these costs are expensed for financial statement purposes but cannot be deducted for tax purposes until paid, which is frequently many years later.

Therefore, we include two variables in our model: (1) OPEB, measured as the total dollar value of the OPEB temporary difference divided by the total dollar value of deferred tax assets and (2) ORIGIN, measured as the total dollar value of deferred tax assets at year  $t$ , excluding those created by carryforwards and the OPEB temporary difference, all divided by the total dollar value of deferred tax assets at year  $t$  for firm  $i$ .<sup>6</sup> OPEB is used to capture the effects of the OPEB liability, which is assumed to lead to less certain deferred tax assets, and ORIGIN is used to capture the effects of the remaining temporary differences exclusive of loss carryforwards, which is assumed to lead to more certain deferred tax assets. The effect of the loss carryforwards is included in the intercept term.

## **MARKET**

Besides these explicit measures of future earnings, analysts and investors can develop their own expectations of future income based on other information released by the firms, industry analysis or discussions with management about future plans. In an efficient market, the stock price of the firm should reflect the consensus of these expectations. Therefore, the stock price of the firm could proxy for sources of future income not specifically identified by the other measures discussed earlier.

Recent theoretical work by Feltham and Ohlson (1995) has described the market value of the firm as a function of its book value and expected future abnormal earnings. Academic researchers have used similar measures to quantify the income potential of

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<sup>4</sup> Deductible differences can also be created when purchase accounting is used in business combinations where the tax basis of assets exceed their book basis.

<sup>5</sup> Although companies have promised their active and retired employees that health care benefits will be provided during the period of retirement, recent empirical and anecdotal evidence suggests that some companies are modifying existing coverages.

<sup>6</sup> This information is provided in the company's financial statement footnotes.

items such as research and development costs, advertising costs (Hirschey and Weygandt 1977) and managerial effectiveness (Servaes 1991). Because one of the FASB's objectives in SFAS No. 109 is to identify future sources of income, we include firm market value divided by book value as a proxy for a firm's future earnings potential.<sup>7</sup> Our measure of the market to book ratio (MARKET) is defined as the market value of a firm's equity at the end of the fiscal year (market share price multiplied by common shares outstanding) divided by the net book value of assets adjusted for deferred taxes. Net book value is defined as total assets (less deferred tax assets plus the deferred tax allowance) less total liabilities (plus deferred tax liabilities).

### **Negative Evidence Variables**

#### ***DISTRESS***

If losses are expected in future years, the FASB considers this as negative evidence regarding the realization of deferred tax assets. Such evidence would be consistent with the recognition of a valuation allowance. For this study, we use three conditions identified in the auditing literature as being significant indicators of financial distress (e.g., Chen and Church 1992): negative operating cash flows, negative operating income or a net loss. While forecasting future losses is difficult, prior research (e.g., Mutchler 1985) has shown that if a firm has a history of losses, there is a high probability that these losses will continue to occur in the future. If a firm meets any of the three conditions for all three fiscal years ended year<sub>t</sub>, year<sub>t-1</sub>, and year<sub>t-2</sub> we code a dummy variable, DISTRESS, one (zero otherwise).

#### ***CONTIN***

According to SFAS No. 109, unsettled circumstances that could be resolved unfavorably for the company and, as a result, adversely affect future operations and profit levels are considered negative evidence suggesting the need for a valuation allowance. In this study, a dummy variable, CONTIN, is used to proxy for potential material contingencies facing the firm. To obtain information on such contingencies, we reviewed management discussions and footnote disclosures for specific language that a material contingency existed. Only if specific disclosures were made such as "enforcement could have a material effect on the company" or "ultimate resolution of this situation could significantly impact the company" was CONTIN coded one.<sup>8</sup>

<sup>7</sup> Replacement value of assets has been used in prior research as a proxy for the fair value of assets. Not only are replacement values difficult to obtain (firm disclosures are optional), but it is unclear whether this information adds incrementally to net book values. For example, Landsmen (1986) found that current cost information actually increased (not reduced) measurement error relative to historical cost accounting. Therefore, we do not use replacement value in this study. The FASB specifically states (SFAS No. 109, para. 24) that "an excess of appreciated asset value over the tax basis of the entity's net assets in an amount sufficient to realize the deferred tax asset" is a source of positive evidence consistent with the position that a valuation allowance is not required. However, obtaining this information is extremely difficult, if not impossible, because public disclosure of tax basis information of individual assets, or appraised value of assets, is not required. For this study, we assume that the expected future benefits of appreciated asset values (over tax bases) are included in our MARKET measure. MARKET could also represent overvalued assets which then would represent lower expected future income.

<sup>8</sup> An example of a potential contingency taken from the 1993 Kerr McGee annual report is as follows: "Because of the continually changing environment and regulations, the large number of other potentially responsible parties, and pending legal proceeding, it is not possible to reliably estimate the amount of all future expenditures relating to these contingencies. Although management believes, after consultation with general counsel, that adequate reserves have been provided for all known contingencies, it is possible, due to the above noted uncertainties, additional reserves could be required in the future that have a material effect on the results of operations."

**TABLE 1**  
**Description of Variables<sup>a</sup>**

Predicted Sign	Variable	Explanation
	DTASSET <sub><i>i</i></sub>	= the dollar value of deferred tax assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
	ALLOW <sub><i>i</i></sub>	= the dollar value of the deferred tax allowance account at year <sub><i>t</i></sub> divided by the dollar value of deferred tax assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
-	FUTURE <sub><i>i</i></sub>	= dollar value of total deferred tax liabilities at year <sub><i>t</i></sub> divided by the dollar value of total deferred tax assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
-	MAJOR <sub><i>i</i></sub>	= coded one if firm <sub><i>i</i></sub> reports any significant customers for three consecutive years (year <sub><i>t</i></sub> , year <sub><i>t-1</i></sub> , and year <sub><i>t-2</i></sub> ) and zero otherwise.
-	BACKLOG <sub><i>i</i></sub>	= the dollar value of unfilled order backlogs at year <sub><i>t</i></sub> divided by total assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
-	EARN <sub><i>i</i></sub>	= the average operating earnings (loss) for fiscal years ((year <sub><i>t</i></sub> operating income + year <sub><i>t-1</i></sub> operating income + year <sub><i>t-2</i></sub> operating income) / 3) divided by total assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
-	STRATEGY <sub><i>i</i></sub>	= firm <sub><i>i</i></sub> 's federal income tax expense in year <sub><i>t</i></sub> divided by net operating income in year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
-	ORIGIN <sub><i>i</i></sub>	= the dollar value of deferred tax assets at year <sub><i>t</i></sub> less the deferred assets created by loss carryforwards at year <sub><i>t</i></sub> and the OPEB liability at year <sub><i>t</i></sub> divided by the dollar value of deferred tax assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> .
-	OBEB <sub><i>i</i></sub>	= the dollar value of deferred tax assets created by recognizing the OPEB liability divided by the dollar value of deferred tax assets for firm <sub><i>i</i></sub> .
-	MARKET <sub><i>i</i></sub>	= the market value of the equity (as measured by the market price at year <sub><i>t</i></sub> multiplied by common shares outstanding at year <sub><i>t</i></sub> ) divided by the net book value of net assets at year <sub><i>t</i></sub> for firm <sub><i>i</i></sub> . Net book value of assets is total assets less deferred tax assets plus the deferred asset valuation allowance less total liabilities plus deferred tax liabilities.
+	DISTRESS <sub><i>i</i></sub>	= coded one if any of the following conditions are met for all three fiscal years (year <sub><i>t</i></sub> , year <sub><i>t-1</i></sub> , and year <sub><i>t-2</i></sub> ): firm <sub><i>i</i></sub> has negative cash flows; firm <sub><i>i</i></sub> has negative operating income; firm <sub><i>i</i></sub> has negative net income.
+	CONTIN <sub><i>i</i></sub>	= coded one if firm <sub><i>i</i></sub> has a material contingency at year <sub><i>t</i></sub> (whether or not booked under SFAS No. 5) and zero otherwise.

<sup>a</sup> All variables are measured at the end of the firm's fiscal year unless otherwise stated.

While the FASB does identify other sources of negative evidence, most firms do not provide the requisite information necessary to develop appropriate proxies. Therefore, only DISTRESS and CONTIN are included in our model.

### MODEL AND HYPOTHESES

Based on the preceding discussion, we develop the following model to determine which types of evidence are associated empirically with the magnitude of the deferred tax valuation allowance account:



$$\begin{aligned} \text{ALLOW}_i = & B_0 + B_1 \text{FUTURE}_i + B_2 \text{MAJOR}_i + B_3 \text{BACKLOG}_i + B_4 \text{EARN}_i \\ & + B_5 \text{STRATEGY}_i + B_6 \text{ORIGIN}_i + B_7 \text{OPEB}_i + B_8 \text{MARKET}_i \\ & + B_9 \text{DISTRESS}_i + B_{10} \text{CONTIN}_i + e_i \end{aligned}$$

After management evaluates the weight of the available evidence they must determine if it is more likely than not that a deferred tax asset will not be realized. If this test is met, management must determine what percentage of the deferred tax asset will not be realized (i.e., what amount of valuation account is required). Since the outcome of this decision is a continuum from zero percent to 100 percent, we use a continuous dependent metric, rather than a one/zero measure in our model.

Because the deferred tax asset allowance is relative to the deferred tax asset, we define the variable, ALLOW, as the dollar value of the deferred tax asset allowance account as of December 31, 1993 divided by the dollar value of the deferred tax assets as of December 31, 1993. Therefore, the value of ALLOW is a percentage that ranges from zero to 100 percent.

For positive evidence measures FUTURE, MAJOR, BACKLOG, EARN, STRATEGY, ORIGIN, OPEB and MARKET, negative coefficients are predicted because as more positive support is gathered, the percentage of deferred tax valuation allowance to total deferred tax assets should decrease. For the two negative evidence measures, DISTRESS and CONTIN, positive coefficients are predicted because as more negative evidence is gathered, the percentage of deferred tax valuation allowance to total deferred tax assets should increase.

## SAMPLE SELECTION AND DESCRIPTIVE STATISTICS

### Sample Selection

To isolate companies with deferred tax allowance accounts, we start with all 1993 calendar year-end firms that have recorded deferred tax assets, regardless of whether they recorded a deferred tax asset valuation allowance. It is important to include the entire population of deferred tax asset firms because companies are required to support their deferred tax allowance position whether the recorded figure is zero or a positive value. The initial sample is obtained using the December 1994 *CD-Disclosure* database. We obtain all deferred tax asset amounts manually from the financial footnotes.

To be included in the sample, firms must (1) have a deferred tax assets/total asset ratio of at least .01 and have at least \$50 million in total assets, (2) be traded on the NYSE or AMEX stock exchanges, (3) have SIC codes between 2000–4000, and (4) have an unqualified audit opinion. The size restriction is included to make sure sample firms had at least a minimum level of deferred tax assets on their balance sheets. Firms must be traded on the NYSE or AMEX stock exchanges in order to obtain market value information. The SIC code restriction is included to eliminate potential industry effects from, for example, regulated industries (e.g., transportation, utility, and financial services). The final screen is included to eliminate firms that auditors have identified as violating the going-concern assumption, because these firms are more likely to have an allowance equal to the deferred asset value (i.e., there is no judgment involved). Based on these criteria, we obtain a sample of 401 observations. Of these, 79 are deleted because detailed disclosures relating to the components of the

deferred tax assets and liabilities or other necessary information are not available.<sup>9</sup> After these deletions a final sample of 322 remains, 196 (61 percent) of which reported a deferred asset valuation allowance.

### Univariate Statistics

Table 2 provides descriptive statistics for deferred tax assets and test variables for the overall sample and the two subgroups of firms: one subgroup for firms with a

<sup>9</sup> To determine whether these excluded firms are systematically different from the firms remaining in our sample, we performed t-tests for group differences in sales and asset means. We found no statistical differences between the groups at conventional levels. Therefore, it does not appear that eliminating these firms biases the analysis.

**TABLE 2**  
**Descriptive Statistics for Deferred Tax Assets and Explanatory Variables and Univariate Tests of Differences Between Firms With (and Without) a Deferred Tax Valuation Allowance**

Variables <sup>a</sup>	All Firms Mean [Std. Dev.]	Firms With a Valuation Allowance Mean [Std. Dev.]	Firms With No Valuation Allowance Mean [Std. Dev.]	Test of Difference <sup>b</sup>
Sample Size	322	196	126	
DTASSET	503.62 [2322.91]	745.52 [2950.47]	127.35 [204.91]	
FUTURE	1.03 [1.19]	.75 [.88]	1.47 [1.45]	-5.53***
MAJOR	.19 [.39]	.17 [.38]	.21 [.41]	-.74
BACKLOG	.17 [.38]	.14 [.26]	.20 [.52]	-1.37*
EARN	.13 [.08]	.11 [.07]	.15 [.09]	-4.63***
STRATEGY	.11 [.13]	.09 [.12]	.15 [.13]	-4.47***
ORIGIN	.62 [.27]	.53 [.24]	.76 [.27]	-8.01***
OPEB	.02 [.03]	.02 [.03]	.02 [.03]	-.31
MARKET	2.24 [2.79]	2.12 [2.54]	2.44 [3.15]	-3.61***
DISTRESS	.04 [.19]	.06 [.23]	.01 [.09]	2.42***
CONTIN	.12 [.32]	.15 [.36]	.07 [.26]	2.08**

\*\*\*, \*\*, \* indicate significance at the .01, .05, and .10 levels for the one-tail tests.

<sup>a</sup> All variables are defined in table 1. Means are stated in millions of dollars.

<sup>b</sup> This column reports the t-score (z-score) associated with a t-test of differences in means (a z-test of differences in proportions) between firms with valuation allowances and those without valuations allowances.

valuation allowance and one subgroup for firms with no valuation allowance. Differences in the means of the two groups are significant, at least at the .10 level, in the predicted directions for all of the variables except for MAJOR and OPEB. Differences in FUTURE, EARN, STRATEGY, ORIGIN, MARKET and DISTRESS are significant at the .01 level. Overall, these univariate results suggest that SFAS No. 109's factors are associated with whether firms record a deferred tax asset valuation account. However, caution should be exercised in drawing conclusions from these tests because univariate tests do not take into account the magnitude of the valuation allowance nor the correlations among these independent variables.

As reported in table 3, several variables are highly correlated. ORIGIN and OPEB are negatively correlated at  $-.43$ . This is, in part, due to the construction of these variables. Deferred tax assets are created from OPEB temporary differences, loss carryforwards and other temporary differences (ORIGIN). Therefore, for each firm the more deferred tax assets that are created from the OPEB temporary difference, the less deferred tax assets are created from other temporary differences, holding carryback losses constant. Other highly correlated variables include MARKET and EARN, which are positively correlated at  $.36$ , and DISTRESS and EARN, which are negatively correlated at  $-.43$ . These correlations make intuitive sense because higher earnings would correlate with higher stock prices and a higher likelihood of financial distress would correlate with lower earnings. To account for these correlations and the relative magnitude of the deferred tax allowance account, we use ordinary least squares (OLS) and tobit estimation procedures to test our multivariate model.

### MULTIVARIATE TEST RESULTS

One of the basic assumptions of OLS regression is that the expected value of the error term is equal to zero. If the dependent variable is censored (i.e., many observations concentrated around zero), it has been shown that not only is the expected error term not equal to zero but also that the error term will be a function of the independent variables. Thus, OLS estimators are biased and the bias depends on the level of censoring. Since our dependent measure ALLOW has 123 observations with zero values, our OLS estimates may be biased. To correct for this potential problem, we use a two-stage tobit estimation procedure (Greene 1990). In addition, because we have truncated the dependent metric as a percentage between zero and one, we have also modified the tobit procedure to allow for this truncation.<sup>10</sup> The results of both estimation procedures are shown in table 4.

For the most part, the two estimation procedures yield similar findings. We find significant negative coefficients for variables FUTURE ( $p < .01$ ), STRATEGY ( $p < .01$ ), ORIGIN ( $p < .01$ ), OPEB ( $p < .01$ ), and MARKET ( $p < .05$ ), which suggests that future reversals of temporary differences; tax-planning strategies, the origin of the temporary differences, the OPEB temporary difference, and the potential for future income are factors that are strongly associated with the relative level of the deferred tax asset valuation allowance in the predicted direction. We find a significant positive coefficient for DISTRESS ( $p < .01$ ) suggesting that current losses are associated with future losses and, therefore, increases in the valuation allowance. EARN is also significant at

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<sup>10</sup> According to Green (1990, 570) the basic tobit model assumes that the dependent measure is either zero or a continuous positive value. In this case, we have values that range from zero to 100 percent; therefore, the positive values are also truncated at 100 percent. We have modified the tobit procedure to incorporate this upper limit on the positive values.

TABLE 3  
Correlation Matrix for Independent Variables<sup>a</sup>

	<u>FUTURE</u>	<u>MAJOR</u>	<u>BACKLOG</u>	<u>EARN</u>	<u>STRATEGY</u>	<u>ORIGIN</u>	<u>OPEB</u>	<u>MARKET</u>	<u>DISTRESS</u>	<u>CONTIN</u>
FUTURE	1.00									
MAJOR	-.13	1.00								
BACKLOG	-.11	.29	1.00							
EARN	.12	-.01	-.05	1.00						
STRATEGY	.04	-.01	.03	.24	1.00					
ORIGIN	.19	.01	-.01	.22	.28	1.00				
OPEB	-.15	.02	.04	-.07	-.12	-.43	1.00			
MARKET	-.08	-.05	-.06	.36	.16	-.04	.08	1.00		
DISTRESS	-.13	-.05	-.01	-.43	.07	-.08	.05	-.13	1.00	
CONTIN	-.01	-.03	-.07	-.06	-.11	-.04	.10	-.03	.03	1.00

<sup>a</sup> All variables are defined in table 1.

**TABLE 4**  
**Ordinary Least Squares (OLS) and Tobit Coefficient Estimates<sup>a</sup>**

<u>Explanatory Variables</u> (predicted sign)	<u>OLS</u> <u>n = 322</u>	<u>Tobit</u> <u>n = 322</u>
CONSTANT (?)	.67 (16.63)***	.89 (14.51)***
FUTURE (-)	-.06 (-5.81)***	-.14 (-7.23)***
MAJOR (-)	.01 (.34)	-.01 (-.12)
BACKLOG (-)	-.01 (-.14)	-.07 (-1.37)*
EARN (-)	-.27 (-1.53)*	-.60 (-2.05)**
STRATEGY (-)	-.29 (-2.85)***	-.40 (-2.76)***
ORIGIN (-)	-.48 (-9.63)***	-.73 (-9.73)***
OPEB (-)	-3.06 (-6.56)***	-3.53 (-5.66)***
MARKET (-)	-.01 (-1.89)**	-.01 (-2.00)**
DISTRESS (+)	.39 (5.67)***	.35 (3.56)***
CONTIN (+)	.05 (1.41)*	.07 (1.41)*
F-Statistic/Chi-square	28.55***	101.64***
Adjusted R <sup>2</sup> /Pseudo R <sup>2</sup>	46.2%	52.4% <sup>b</sup>

\*\*\*, \*\*, \* indicate significance at the .01, .05, and .10 levels.

<sup>a</sup> All variables are defined in table 1. The figures in parentheses for the tobit estimations are the asymptotic t-statistics.

<sup>b</sup> This pseudo R<sup>2</sup> may not be a reliable indicator of the true explanatory power of this model because the constrained tobit model includes sigma and the intercept term.

the .05 level in the tobit procedure and at the .10 level in the OLS estimation. CONTIN is significant at the .10 level in both models, suggesting that if firms have material contingencies the relative level of the recorded valuation allowance increases. BACKLOG is significant ( $p < .10$ ) in the tobit procedure but not in the OLS estimation. As discussed earlier, the tobit estimation corrects for censoring bias; therefore, the tobit estimation provides a more efficient test of our propositions. Thus, based on the tobit results, unfilled order backlogs also influence the relative level of the deferred tax allowance account.

Overall, both the OLS and tobit models are highly significant with an F-statistic of 28.55 ( $p < .001$ ) and Chi-square statistic of 101.64 ( $p < .001$ ), respectively. The explanatory power is 46.2 percent for the OLS model and 52.4 percent for the tobit estimation. Thus, these models appear to do a reasonable job of explaining the variation in the relative levels of the deferred tax allowance account across firms.

### **Sensitivity Tests**

To assess the robustness of these findings, we run two additional tests. First, to address the impact of high correlation between ORIGIN and OPEB, we re-estimate the OLS and tobit procedures removing each of these variables in turn. Although all significance levels and coefficients of the other independent variables remained virtually unchanged, ORIGIN becomes more negatively significant when OPEB is removed and OPEB becomes more significant when ORIGIN is removed.

Prior research has used both level and scaled dependent measures in various model specifications. For example, Simunic (1980) in his audit fee study used fees divided by square root of assets as a dependent measure. Deis and Giroux (1992) used the log of a quality proxy as their dependent measure and included log of size as an independent variable. Therefore as our second sensitivity test, we run the tobit estimation defining ALLOW as the log of the deferred tax asset allowance valuation account and zero if no valuation allowance was recorded. Given that this dependent measure is not scaled, we include the log of total assets as another control variable. While most of the results are similar to those reported in table 4, BACKLOG becomes more negatively significant ( $p < .01$ ), and CONTIN becomes more positively significant ( $p < .03$ ). These differences could be due to the correlations among the log of assets and the other independent measures or to differences between explaining the level of the valuation account vs. the relative level of the valuation account. The log of assets is also significant ( $p < .01$ ). Based on the sensitivity tests, it appears that our results are robust to these alternative model specifications.

### **SUMMARY AND CONCLUSIONS**

The objective of this study is to examine empirically the association between the deferred tax asset valuation allowance and the SFAS No. 109 supporting evidence provided by firms. Based on the results from the univariate tests and multivariate estimation procedures, we find that taxable income in prior years, future reversals of temporary differences, the origin of the temporary differences, the OPEB temporary difference, the potential for future income, and tax-planning strategies are factors that are strongly associated with the relative level of the deferred tax asset valuation allowance. In addition, we find some support for a firm's current financial situation also having an impact on the relative level of valuation allowance recorded.

This study provides some of the first descriptive evidence on how firms are applying SFAS No. 109 provisions. This is important because, as SFAS No. 109 states, the determination of the valuation account allowance is judgmental, reflecting a trade-off of relevance and objectivity. Auditors can use these results to focus on specific factors to aid their search and evaluation of areas of evidence in applying SFAS No. 109 guidelines. The results of this study may also highlight specific variables to assist companies in developing their own approach for estimating the valuation allowance account. Finally, this study may be beneficial to researchers in searching for better proxies or methods to evaluate the deferred tax valuation allowance account.

We focus on differences across firms and variables highlighted in SFAS No. 109. While we identify several factors which are highly correlated with the relative value of the deferred tax asset valuation allowance, and it appears that the models do a reasonably good job of capturing the variation in the relative levels of the deferred tax allowance account across firms, the models do not completely explain the cross-sectional differences in the valuation allowance. One interpretation of these results is that since

the weights given to positive and negative evidence vary with the facts and circumstances of each company by year, a cross-sectional study may have difficulties isolating the effects of firm-specific actions. Another interpretation of this finding is that other information is being used to support the firms' valuation positions that is not specifically mentioned in SFAS No. 109. A third possible interpretation is that firms still have not come to a consensus on how to interpret the SFAS No. 109 guidelines.

Despite the guidance provided in SFAS No. 109 and the related implementation guide published in 1992, the results of our study suggest that additional guidance is needed in determining the existence and magnitude of the valuation allowance in a manner which satisfies SFAS No. 109. However, because it is likely the measures we use to proxy for the FASB guidelines are noisy, further research in this area will help clarify our findings.

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