An Extended Examination of the Effectiveness of the Sarbanes Oxley Act in Reducing Pension Expense Manipulation

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The Sarbanes Oxley Act of 2002 (i.e., Act) is an attempt to make company managers more accountable for the fair presentation of reported earnings in their financial statements. Therefore, it is logical to expect managers to manipulate pension expense less during the two years immediately following the passage of the Act than during the two years just prior to the passage of the Act. This research provides some evidence at least in the area of pension expense, that the Act is ineffective in making financial statement reporting more transparent and representative of actual financial position in the two years immediately following the Act's passage.

INTRODUCTION

Guiding this paper's research are the following three research questions:

(1) Are companies exhibiting benchmark behavior via pension expense during the five year period 2000 through 2004? In particular, is pension expense being decreased by company managers in the current year in order to increase their reported earnings in an effort to move closer to their benchmark earnings than they would otherwise be?

(2) Are companies exhibiting smoothing behavior via pension expense during the five year period 2000 through 2004? Specifically, is pension expense being increased by company managers in the current year in order to decrease their reported earnings in an effort to move closer to their benchmark earnings than they would otherwise be?

(3) Are companies exhibiting less benchmark and smoothing behaviors via pension expense in the two years immediately after the Sarbanes Oxley Act of 2002 (SOX) is passed than in the two years just before the Act is passed?

Concern about adherence to high quality professional accounting standards in the financial statement reporting process, as well as whether or not SOX effectively reduces financial statement manipulation motivate our study. SOX attempts to protect users of financial statements by improving the accuracy, accountability, and transparency of financial statements (U. S. House of Representatives, 2002). Section

302, Corporate Responsibility for Financial Reports, requires chief executive officers and chief financial officers to review and certify that their financial reports do not contain any misrepresentations. As a result of this legislation, company executives and auditors are faced with increased criminal penalties for noncompliance. If SOX is effective in improving the transparency of financial statement reporting as intended, then it is expected that both benchmark and smoothing company managers would manage earnings via pension expense less in the two years immediately after the Act is passed than in the two years just before the Act is passed.

Prior pension accounting research considers whether pension expense is used to manage reported earnings (Brown, 2001; Weishar, 1997; Ali & Kumar, 1993; Blankley, 1992; Kwon, 1989; VanDerhei & Joanette, 1988). Most prior research focuses on the manipulation of one of the three pension rate assumptions (discount rate, salary rate, or expected long-term rate of return on plan assets) in the calculation of pension expense rather than focusing on pension expense taken as a whole. Our approach differs by focusing on pension expense reported in the financial statements. We narrow the study to the five year period 2000 through 2004 to investigate if company managers use pension expense to manage reported earnings during this period. The study also examines the immediate impact of SOX in improving the transparency of financial statements by looking at smoothing and benchmark behaviors two years after the Act is passed as compared with the two years before the Act is passed [1].

The research model is intentionally designed to generate information useful in restraining future earnings management. Remedial action is made possible by identifying pension expense as one of the specific discretionary accounting items used by company managers to manage earnings. This identification provides financial statement users the necessary information to insist monitoring be improved to prevent this behavior via pension expense in the future.

When analyzing financial statements for manipulation, it is difficult to determine what a company's financial statements would report without the manipulation. Statement of Financial Accounting Standards (SFAS) No. 87, Employers' Accounting for Pensions (Financial Accounting Standards Board, 1985), provides techniques to reasonably measure pension expense without manipulation from year to year. The best approximation of current year pension expense is the prior year pension expense.

This study finds evidence that benchmark earnings (i.e., prior year earnings) generate capital market motivations in two distinct directions. The direction is determined by a company's economic status, measured by whether the company will miss or beat its benchmark earnings relative to its current year earnings before manipulation. Company managers are found to use pension expense as expected to manage reported earnings during the five year period 2000 through 2004. Companies show evidence of stronger benchmark behavior for the two years prior to the passage of SOX. However, companies unexpectedly show evidence of stronger smoothing behavior (i.e., pension expense manipulation increases) for the two years immediately after the passage of SOX.

The remainder of the study is reported in four sections. First, a concise review of prior literature is provided. Second, the methodology and hypotheses are developed. Third, empirical results are discussed. Fourth, the conclusions of this study are summarized.

LITERATURE REVIEW

Earnings management via pension expense research centers around the issuance of SFAS No. 87 (FASB ASC 960, Plan Accounting – Defined Benefit Pension Plans). Research prior to SFAS No. 87 (VanDerhei & Joanette, 1988) demonstrates that the motives for earnings management are related to sponsors' choices for the actuarial cost method. In response to these motives, the issuance of SFAS No. 87 requires that a single actuarial cost method be used by all sponsors of defined benefit pension plans, effective in 1985. SFAS No. 87 also requires pension plan assets to be valued at fair value (Beaudoin, Chandar, & Werner, 2011).

Post-SFAS No. 87 research (Weishar, 1997; Ali & Kumar, 1993; Blankley, 1992; Kwon, 1989; Rue & Tosh, 1987) primarily concentrates on how the pension rates are used in the calculation of pension expense as opposed to the pension expense amount as a whole. In the early post-SFAS No. 87 years, the

disclosure information required is not sufficient to fully calculate pension expense for defined benefit pension plans. Research naturally, then, evolves by focusing attention on the explanation of the three pension rates (discount rate, salary rate, and expected long-term rate of return on plan assets). This approach presents problems, particularly in the case of the expected long-term rate of return on plan assets, as it is required to be set at the beginning of the year. As such, this rate should be less susceptible to manipulation. In the early studies, the funding ratio is the only variable consistent in explaining the three pension rates.

Effective after December 1998, SFAS No. 132, Employers' Disclosures about Pensions and Other Postretirement Benefits (Financial Accounting Standards Board, 1998), requires improved disclosures that now allow financial statement users to recalculate the pension expense amount. Accordingly, pension rate explanation no longer is required to be the primary emphasis of pension expense manipulation research. However, this stream of research (Asthana, 2008; Bergstresser, Desai, & Rauh, 2006; Brown, 2001) continues to focus on the explanation of pension rates, instead of the pension expense amount explicitly. For example, Asthana (2008) finds that the expected rate of return is used to manipulate earnings per share upward when the benchmark would not otherwise be reached. Bergstresser et al. (2006) find company managers use higher than expected rates of return on pension plan assets when these company managers prepare to acquire other companies and when these company managers exercise stock options.

Following Burgstahler and Eames (2006), we establish a target for benchmark earnings in detecting pension expense manipulation. Our benchmark earnings target is pretax prior year earnings. These prior year earnings are on a pretax basis to be consistent with pension expense as reported in the financial statements.

Early earnings-based benchmark literature (Perols & Lougee, 2010; Bartov & Cohen, 2009, Moehrle, 2002; Brown, 2001; Barth, 1999, DeGeorge et al. 1999; Burgstahler & Dichev 1997) finds evidence that earnings are manipulated to avoid losses and decreases in earnings, to maintain a continual stream of increasing earnings, and to attain analysts' expectations. Earnings-based distribution research permits frequency predictions about the realization of earnings that are likely attributable to discretionary components of earnings (Burgstahler & Dichev, 1997). McNichols (2000) illustrates earnings realization frequencies in the surrounding area just above and just below benchmark earnings to evaluate whether the number of companies that report a given level of earnings is other than predicted.

METHODOLOGY AND HYPOTHESES

Our study uses the specific accruals method, which is a disaggregated research design. This design attempts to identify a specific accounting item used by managers in managing earnings. Here an individual accounting item, subject to substantial managerial judgment and able to significantly impact reported earnings, is selected for examination. Once identified, corrective action can be implemented to prevent managers from using the identified accounting item in the future to manipulate reported earnings. Another advantage of this design is the capacity for directional predictions based on researcher knowledge, skill, and scrutiny of the accounting item under examination. The key disadvantage of this approach is the researcher's inability to simultaneously analyze more than one accounting item or a total aggregated effect of multiple accounting items used by managers to manipulate reported earnings (McNichols, 2000, Fields et al.2000, Francis 2001).

Future research contributions in the area of earnings management are expected to come from documenting the extent and magnitude of the effects of specific accruals and from identifying factors that limit the ability of managers to manage earnings (Healy & Wahlen, 1999). Our selected research design is a mixture of prior research fundamentals. Our study uses a specific accruals research design with an earnings-based benchmark as the explanatory variable. The first distinction from prior research is determining whether or not an association exists between the change in pension expense and the amount by which companies would otherwise miss or beat their benchmark earnings (i.e., prior year earnings) based upon premanaged earnings for the five year period 2000 through 2004. The second distinction is

determining whether or not an association exists between the change in pension expense and the amount by which companies would otherwise miss or beat their benchmark earnings relative to the passage of the Sarbanes Oxley Act of 2002.

Since one of the primary purposes of the Act is to make financial reporting more transparent, it is expected that company managers would manipulate reported earnings less after the passage of the Act than before the passage of the Act (He, El-Masry & Wu, 2008). If the Act is effective in making financial reporting more transparent as intended, we can logically predict pension expense to be managed less in the two years following the passage of the Act in 2002 than in the two years preceding the passage of the Act.

Since companies generally engage actuaries (i.e., outside parties) to compute the extremely complicated defined benefit pension plan mathematics in order to record the pension expense amount in financial statements, a reasonable user of these financial statements might assume company managers lack the ability to manipulate pension expense. However, company managers have the ability to hire the actuaries with whom they choose to affiliate. Therefore, company managers have the ability to communicate their desired year end pension expense amount to their actuaries. Actuaries, in turn, may manipulate, without easy detection, the various actuarial assumptions (i.e., mortality rates, employee turnover, interest and earnings rates, early retirement frequency, and future salaries based on the salary rate) used in the calculation of the pension expense amount. Since these actuarial assumptions are highly subjective, cover an extended length of time in the future, and the pension plan mathematics are complicated, it is difficult to monitor and detect manipulation of these assumptions. As a result, company managers have the ability to manipulate pension expense.

In an attempt to determine whether or not company managers are manipulating pension expense in a rational economic manner and whether or not the Sarbanes Oxley Act of 2002 is effective in making financial reporting more transparent, three hypotheses are developed.

These expectations are expressed as hypotheses in alternate form.

> *H1: During the time period 2000 through 2004, benchmark behavior via pension expense is being exhibited. That is, pension expense is being decreased by company managers in the current year to increase their reported earnings to move closer to their benchmark earnings.*
>
> *H2: During the time period 2000 through 2004, smoothing behavior via pension expense is being exhibited. That is, pension expense is being increased by company managers in the current year to decrease their reported earnings to move closer to their benchmark earnings.*
>
> *H3: Pension expense is manipulated less from both benchmark behavior and smoothing behavior in the two years following the passage of the Sarbanes Oxley Act of 2002 than in the two years preceding the passage of the Act.*

Two estimated cross-sectional regression models are used in our analyses. Hypothesis One and Hypothesis Two are tested by the Equation One model, which includes additional control variables (i.e., $Year_t$ and Ind_i) to control for industry and time fixed effects. The time fixed effects variable also controls for the legitimate change in pension rate assumptions.

Hypothesis Three is tested by the Equation Two model. This model includes the before time period effects, the after time period effects, and tests whether the time period effects differ. The Equation Two model also includes year and industry control variables.

Equation 1 - Benchmark: Prior year pretax income

$$\text{ChgPExp} = \alpha_0 + \alpha_1 \text{Missed\_Dummy} + \alpha_2 \text{CapMMotive} + \alpha_3 \text{Interact} + \alpha_4 \text{EmplChg} + \sum_{t=2000}^{t=2004} \alpha_t \times yrD_t + \sum_{i=1}^{i=51} \alpha_i \times indD_i + \varepsilon \quad (1)$$

Where:	
ChgPExp	Is the change in pension expense equal to current year pension expense minus prior year pension expense all scaled by lagged assets.
Missed_Dummy	Is a dummy variable that equals 1 if the continuous variable, CapMMotive < 0, and 0 otherwise.
CapMMotive	Is a continuous variable equal to pretax income absent manipulation minus the applicable benchmark all scaled by lagged assets.
Interact	Is an interaction variable equal to Missed_Dummy times CapMMotive.
EmplChg	Is a control variable equal to the number of employees for the current year minus the number of employees for the prior year all scaled by lagged assets.
Year_t	Is a dummy control variable for each applicable year 2000-2004, with the 2002 dummy effects captured in the intercept.
Ind_i	Is a dummy control variable representing each applicable industry. The number of industries for Equation One is 52.
α_0	Intercept for CapMMotive $\geq$ 0 where Missed_Dummy = 0.
$\alpha_0 + \alpha_1$	Intercept for CapMMotive < 0 where Missed_Dummy = 1.
α_2	Incentive slope for CapMMotive $\geq$ 0 where Missed_Dummy = 0.
$\alpha_2 + \alpha_3$	Incentive slope for CapMMotive < 0 where Missed_Dummy = 1.

Equation 2 - Benchmark: Prior year pretax income

$$\text{ChgPExp} = \alpha_0 + \beta_0 \text{Post} + \alpha_1 \text{Missed\_Dummy} + \alpha_2 \text{CapMMotive} + \alpha_3 \text{Interact} + \alpha_4 \text{EmplChg} + \beta_1 \text{Missed\_Dummy\_2} + \beta_2 \text{CapMMotive\_2} + \beta_3 \text{Interact\_2} + \beta_4 \text{EmplChg\_2} + \sum_{t=2000}^{t=2004} \alpha_t \times yrD_t + \sum_{i=1}^{i=51} \alpha_i \times indD_i + \varepsilon \quad (2)$$

Where:	All variables except those listed below are previously explained in the paper with Equation One. All previously defined variables are not redefined.
Post	Dummy variable equal to 0 if data from two years preceding the Act and 1 if data from two years after the Act. If coded 0, this designates the applicable time period before the Act. If coded 1, this designates the applicable time period after the Act.
Missed_Dummy_2	Multiplied Missed_Dummy times post to capture post time period.
CapMMotive_2	Multiplied CapMMotive times post to capture post time period.
Interact_2	Multiplied interact times post to capture post time period.
EmplChg_2	Multiplied employee times post to capture post time period.

Following is how the smoothing group results will be interpreted. First the intercept information is presented and then the slope information is presented.

	Smoothing Group Intercept Interpretation Information
α_0	Intercept for smoothing companies before the Act. Intercept for CCapMMotive $\geq$ 0 where Missed_Dummy = 0.
β_0	Measures whether the intercept differs in the two time periods for the smoothing companies.
$\alpha_0 + \beta_0$	Intercept for the smoothing companies after the Act.
	Smoothing Group Slope Interpretation Information
α_2	Incentive slope for smoothing companies before the Act. Incentive slope for CapMMotive $\geq$ 0 where Missed_Dummy = 0.
β_2	Measures whether the incentive slope differs in the two time periods for the smoothing companies.
$\alpha_2 + \beta_2$	Incentive slope for smoothing companies after the Act.

Following is how the benchmark group results will be interpreted. First the intercept information is presented and then the slope information is presented.

	Benchmark Group Intercept Interpretation Information
$\alpha_0 + \alpha_1$	Intercept for benchmark companies before the Act. Intercept for CapMMotive < 0 where Missed_Dummy = 1.
$\beta_0 + \beta_1$	Tests whether the benchmark company effect differs in the two time periods.
$\alpha_0 + \alpha_1 + \beta_0 + \beta_1$	Intercept for benchmark companies after the Act.
	Benchmark Group Slope Interpretation Information
$\alpha_2 + \alpha_3$	Incentive slope for the benchmark companies before the Act. Incentive slope for CapMMotive < 0 where Missed_Dummy = 1.
$\beta_2 + \beta_3$	Tests whether the incentive slope effect for the benchmark companies differs in the two time period.
$\alpha_2 + \alpha_3 + \beta_2 + \beta_3$	Incentive slope for the benchmark companies after the Act.

The proxy for earnings management is the dependent variable, ChgPExp, and is computed as current year pension expense less prior year pension expense. To control for size, this variable is scaled by lagged assets. This is consistent with SFAS No. 87, which approximates the company's current year pension expense before manipulation as the prior year pension expense. Therefore, assuming no changes in the industry effects, the time fixed effects, and in the number of employees from the prior year, current year pension expense should be approximately the same as the prior year pension expense.

Dechow and Skinner (2000) contend that future academic research efforts should focus more on capital market motivations in detecting earnings management. They articulate that the natural tendency of academics to assume investor rationality has previously caused capital market motivations to be ignored in research. Our study uses a capital market motivation independent variable, CapMMotive, to explain pension expense manipulation.

The level of capital market incentive to manipulate earnings, measured by CapMMotive, is pretax income absent manipulation compared with the earnings benchmark (i.e., prior year earnings). To control

for size, this variable of interest is scaled by lagged assets. In essence, pretax income absent manipulation takes the current year pretax income and substitutes last year's pension expense amount in place of this year's pension expense amount.

A dummy variable, Missed_Dummy, is used to distinguish the two groups of companies being examined, the benchmark behavior companies and the smoothing behavior companies. This variable is coded zero for smoothing behavior companies (companies whose premanipulated earnings hypothetically beat their benchmark earnings) and one for benchmark behavior companies (companies whose premanipulated earnings hypothetically miss their benchmark earnings).

In interpreting Missed_Dummy, benchmark behavior companies have a higher intercept than the smoothing behavior companies when α_1 is significant and positive. Benchmark behavior companies have a lower intercept than the smoothing behavior companies when α_1 is significant and negative. No difference between benchmark behavior companies and smoothing behavior companies exists when α_1 is insignificant.

The primary concern in our study is the association between ChgPExp and the level of capital market motivation (i.e., CapMMotive) for manipulating earnings. The slope coefficient on CapMMotive is allowed to vary because both benchmark behavior companies and smoothing behavior companies are present. However, the predicted sign on Interact (i.e., α_3) is nondirectional because the two groups may not be equally important.

A positive correlation exists between the dependent variable, ChgPExp, and the incentive variable CapMMotive because these move together in the same direction. The slope coefficient for the smoothing behavior companies is captured by α_2. The slope coefficient for the benchmark behavior companies is captured by $\alpha_2 + \alpha_3$. The prediction is that $\alpha_2 > 0$ and that $\alpha_2 + \alpha_3$ is > 0.

The following two examples are provided to demonstrate the positive correlation between the change in pension expense, ChgPExp, and the incentive variable, CapMMotive. First, consider a company with premanipulated earnings of \$.20 per share and benchmark earnings (i.e., prior year earnings) of \$.17 per share. The prediction for this company is that actual earnings will be manipulated by increasing pension expense by \$.03 to offset the \$.03 excess in premanipulated earnings. Therefore, the change in pension expense and the incentive variable move in tandem (a positive correlation) in a positive direction.

Second, consider a company with premanipulated earnings of \$.17 per share and benchmark earnings (i.e., prior year earnings) of \$.20 per share. The prediction for this company is that actual earnings will be manipulated by decreasing pension expense by \$.03 to offset the \$.03 negative premanipulated earnings. Therefore, the change in pension expense and the incentive variable move in tandem (a positive correlation) in a negative direction.

The predicted nondirectional coefficient on Interact (i.e., α_3) is interpreted as follows. When α_3 is positive, this scenario suggests that benchmark behavior companies are actually decreasing pension expense (i.e., increasing earnings) by a greater absolute dollar amount than smoothing behavior companies are actually increasing pension expense (i.e., decreasing earnings). However, when α_3 is negative, this scenario suggests that benchmark behavior companies are decreasing pension expense (i.e., increasing earnings) by a smaller absolute dollar amount than smoothing companies are actually increasing pension expense (i.e., decreasing earnings).

When α_3 is positive and significant, benchmark behavior companies have a steeper slope than smoothing behavior companies. However, when α_3 is negative and significant, benchmark behavior companies have a flatter slope than smoothing behavior companies. When α_3 is insignificant, this result suggests the same slope for the benchmark behavior companies and the smoothing behavior companies.

In summary, capital market incentives are created in different directions depending on the level of current premanipulated earnings compared with their benchmark earnings. However, the research must consider another issue, big bath behavior. Barth et al. (1999) indicate that the capital market rewards a steady stream of upward growth in earnings. Therefore, companies sometimes take large write-offs and losses (i.e., a big bath) in a single accounting period in an attempt to clean up the balance sheet, which then allows them to present a steady stream of earnings in the future. Companies with actual performance

closer to their benchmark earnings are expected be more vulnerable to capital market incentives in the current period and are predicted to exhibit benchmark behavior and smoothing behavior. Big bath behavior companies are eliminated from our sample because these companies miss their benchmark earnings by a large amount.

EmplChg controls for variation in the change in pension expense, ChgPExp, resulting from a change in the number of employees from one year to the next. EmplChg is scaled by lagged assets to control for size and is computed in the current year as the difference in the number of employees from the prior year[2]. This control variable, EmplChg, also should diminish potentially misleading results from mergers and acquisitions. ChgPExp, the change in pension expense, and EmplChg, the change in the number of employees from year to year, are expected to have a positive correlation. An increase in pension expense is predicted with an increase in the number of employees. However, a decrease in pension expense is predicted with a decrease in the number of employees. Accordingly, EmplChg is expected to have a positive slope coefficient.

The SOX effects are captured in Equation Two. The model captures the two years (i.e., 2000 and 2001) effects before the Act, the two years (i.e., 2003 and 2004) effects after the Act, as well as the change effects for the two time periods under examination for both benchmark behavior companies and for smoothing behavior companies. The sample consists of 438 observations with 141 observations for the before time period, and 297 observations for the after time period.

Post, a dummy variable, is added to the model to capture the change and time effects between the two time periods of interest. Post is coded 1 if the data are after SOX and is coded 0 if the data are before SOX. Indicated below is how the results from Equation Two will be reported for the benchmark behavior companies and the smoothing behavior companies. For clarity refer to the interpretation information provided previously regarding the intercepts and slopes for the variables of interest for both benchmark behavior companies and smoothing behavior companies.

It is logical to believe that SOX legislation makes company managers more accountable and financial statements more transparent and representative of company position than before SOX is passed. Therefore, it is reasonable to expect company managers will manipulate pension expense less on average in the two years following the passage of SOX than in the two years preceding the passage of SOX. For these reasons, we are predicting that both benchmark behavior companies and smoothing behavior companies will manipulate the pension expense amount less in the two years after SOX than in the two years preceding SOX.

DATA AND STATISTICAL ISSUES

The Compustat database is used in retrieving data for the time period 1995-2008. Initially 327,880 observations were extracted from Compustat. Because of scaling by lagged assets, a company must have two years of consecutive data in order to remain in the final sample. Companies with missing observations, including those companies without defined benefit pension plans, are eliminated from the sample, leaving 13,326 company observations for testing. Next, observations are eliminated outside the applicable time periods under examination. Finally, the ten-cent screening process observations and outlier deletions are removed. The final samples consist of 532 and 438 company observations for testing (Table 1).

The concept in Dhaliwal, Gleason, and Mills (2004) is followed to study only those companies that are expected to experience a stronger propensity to manipulate earnings via pension expense. Their study uses an after tax five-cent earnings per share screen to determine if companies manipulate taxes in a predictable manner. Our study uses a pretax ten-cent earnings per share screen to determine if company managers manipulate pension expense in a predictable manner. Observations are selected whose difference between the actual earnings per share and the benchmark earnings per share are within the narrowly specified range. Actual earnings manipulation should be in the direction of the benchmark from levels of pre-manipulated earnings within an area near the benchmark. Because our screening process

may be considered ad hoc by some researchers, we conduct additional sensitivity tests. Both a twelve-cent and eight-cent screening process are tested with no qualitative differences in regression results noted.

The screening process is performed on a company by company basis. The determining comparison for inclusion in the sample is between the company pretax per share amount (i.e., actual company performance measure) and the company pretax per share benchmark amount (i.e., company benchmark performance measure). Therefore, to be included in the sample, the actual performance measure and the benchmark performance measure must be within the ten-cent screening range.

To reduce potential biasing of our results, outlier observations with an absolute studentized value greater than 2.2 (Table 1) are eliminated from the sample. Multicollinearity and heteroscedasticity are common problems associated with regression analysis. Neither of these problems is present in our study.

EMPIRICAL RESULTS

Table 1 summarizes information about the sample selection process for the two research models. The final samples consist of 532 and 438 observations, respectively. In addition, both samples have 52 industries represented. As previously discussed, the focus of our study is the manipulation of earnings via pension expense. Therefore, companies remaining in the final samples are only those with actual performance measures relatively close to their benchmark performance measures. These companies are expected to show stronger propensities to manipulate earnings via pension expense through benchmark behaviors and smoothing behaviors.

TABLE 1
SAMPLE SELECTION DETAILS FOR $.10 EPS

	Equation 1	Equation 2
Beginning Sample		
Company observations in original Compustat data set covering extended period 1995-2008	327,880	327,880
Less: Missing observations including companies that do not have defined benefit pension plans	-314,554	-314,554
Company observations before screening	13,326	13,226
Final Sample per $.10 EPS Screen		
Company observations before screening	13,326	13,326
Less: Company observations eliminated by the $.10 EPS screen; observations outside the applicable time period for each equation; and company observations where companies do not have two consecutive years of data needed to calculate the applicable variables	-12,787	-12872
Companies in final sample before outlier deletions	539	454
Less: Outlier Deletions	-7	-16
Companies in final sample after outlier deletions	532	438
Number of Industries	52	52

Beginning sample	The sample begins with all company observations with data from the Compustat files for the period 1995 through 2008. Companies are eliminated that do not have defined benefit pension plans and for missing observations. The remaining company observations are those before the application of the screening process.
Final sample	The final sample begins with the company observations before the screening process. Then company observations are eliminated by the $.10 screening process and the elimination of company observations outside the applicable time period for each equation.

$.10 EPS screens	The ad hoc $.10 earnings per share screen are on a pretax basis and are intentionally designed to focus only on companies that actually narrowly meet or miss their applicable benchmark. Therefore, if the applicable actual pretax performance per common share minus the applicable pretax benchmark performance per common share is greater than $.10 or less than $.10 then the company is deleted from the sample. The comparison is made between the applicable actual pretax benchmark performance per share and the applicable actual pretax performance per share instead of the applicable hypothetical premanaged performance per share. The rationale is to mitigate the possible correlation between the sample partitioning criteria and the independent regression variables.
Industries	There are 52 industries represented in each of the two equations.

Equation One, the basic research model, results are reported in Table 2. The model uses a scaler, lagged assets, in controlling for size differences. Control variables are included representing year effects (i.e., Year) and industry effects (i.e., Ind), as well as for the change in the number of employees (i.e., EmplChg) from one year to the next. The individual control variable results are not reported because these results serve no meaningful purpose for interpretation. This concise reporting approach focuses the attention on the variables of interest.

TABLE 2
CROSS SECTIONAL POOLED EFFECTS ESTIMATION
Using $.10 Screen With Year And Industry Fixed Effects

$$\text{ChgPExp} = \alpha_0 + \alpha_1 \text{Missed\_Dummy} + \alpha_2 \text{CapMMotive} + \alpha_3 \text{Interact} + \alpha_4 \text{EmplChg} + \sum_{t=2000}^{t=2004} \alpha_t \times yrD_t + \sum_{i=1}^{i=51} \alpha_i \times indD_i + \varepsilon \quad (1)$$

Equation 1: PY Earnings		Cross Sectional		
Final Sample: n = 532		Pooled Effects Estimation		
Outliers Trimmed		2000 2001 2002 2003 2004		
Variable		*Prediction*	*Coefficient*	*One Tail p-value*
Intercept		+	.00012	.4690
Missed_Dummy		-	-.00097	.0210
CapMMotive		+	.12113	.0001
Interact		+ / -	-.05822	.0185
$\alpha_0 + \alpha_1$		-	-.00085	.2948
$\alpha_2 + \alpha_3$		+	.06291	.0001
F-statistic as p-value	.0001			
R^2	.2720			
Adjusted R^2	.1793			

Where:

n	Number of company observations in the sample.
ChgPExp	Dependent variable representing the change in pension expense calculated as current year pension expense minus prior year pension expense all scaled by lagged assets.
Missed_Dummy	Dummy variable equal to 1 if CapMMotive < 0, and zero otherwise. If coded 1, the company would hypothetically miss its applicable benchmark using pretax income absent manipulation. If coded 0, the company would hypothetically meet or beat its applicable benchmark using pretax income absent manipulation.
CapMMotive	Continuous independent variable calculated as pretax income absent manipulation minus the applicable benchmark all scaled by lagged assets. Pretax income absent manipulation is pretax income plus current year pension expense minus prior year pension expense.

Interact	Represents an interaction variable calculated as Missed_Dummy multiplied times CapMMotive to yield the incremental portion of CapMMotive for the group that would have missed their benchmark using pretax income absent manipulation.
$\alpha_0 + \alpha_1$	Intercept for the group of companies that hypothetically miss their applicable benchmark using pretax income absent manipulation.
$\alpha_2 + \alpha_3$	Incentive slope for the group of companies that hypothetically miss their applicable benchmark using pretax income absent manipulation.

For smoothing behavior companies, the variable of interest slope (i.e. CapMMotive) is captured in the models by α_2, and for the benchmark behavior companies by $\alpha_2 + \alpha_3$. The estimated average change in pension expense when the applicable variable of interest increases or decreases by a single unit is represented by the slope on the applicable variable of interest (i.e., α_2 and $\alpha_2 + \alpha_3$). We predict that $\alpha_3 > 0$ when managers are more concerned with manipulating actual earnings upward (i.e., decreasing pension expense) to reach their benchmark earnings than managers are concerned with manipulating actual earnings downward (i.e., increasing pension expense) to move their actual earnings closer to their benchmark earnings than they would otherwise be without the manipulation. A positive correlation is expected between ChgPExp, (i.e., dependent variable) and CapMMotive (i.e., incentive variable of interest).

The variable of interest slope coefficient (i.e., $\alpha_2 > 0$) for the smoothing behavior companies is expected to be statistically significant. The variable of interest slope coefficient (i.e., $\alpha_2 + \alpha_3$) for the benchmark behavior companies is also expected to be statistically significant. The smoothing behavior companies' slope coefficient (i.e., $\alpha_2 > 0$) is tested with a t-test, and the benchmark behavior companies' slope coefficient (i.e., $\alpha_2 + \alpha_3$) is tested with a F-test. The main effects of the incentive variable of interest for the benchmark behavior companies and the smoothing behavior companies capture the economic substance in our study. We believe that pension manipulation is a function of the importance of the extent that companies hypothetically miss or hypothetically beat their benchmark earnings based on pre-manipulated earnings.

For the five year time period 2000 through 2004, the association test results are reported in Table 2. With the significant F-statistic (p-value = .0001), the inference of linearity is strong between the change in pension expense (i.e., ChgPExp) and the independent explanatory variables. The R^2, goodness of fit measure, is .2720. This suggests the proportion of variation in the dependent variable (i.e., ChgPExp) that is explained by the combination of the independent variables. It is also important to note the signs are in the predicted direction.

The CapMMotive slopes capture the average dollar amount of change in pension expense (i.e., ChgPExp) when a one-unit change in the incentive variable occurs (i.e., α_2 and $\alpha_2 + \alpha_3$). The CapMMotive slope coefficients are statistically significant for both smoothing behavior companies and benchmark behavior companies. Benchmark behavior companies are reducing pension expense by $.06 for every $1.00 that pre-manipulated earnings are below the benchmark earnings (i.e., prior year earnings). Whereas, smoothing behavior companies are increasing pension expense by $.12 for every $1.00 that premanipulated earnings are above the benchmark earnings (i.e., prior year earnings).

As predicted in Hypothesis One, during the period 2000 through 2004, benchmark behavior via pension expense is exhibited. That is, pension expense is being decreased by company managers in the current year to increase their reported earnings to move closer to their benchmark earnings. As predicted in Hypothesis Two, during the time period 2000 through 2004, smoothing behavior via pension expense is exhibited. That is, pension expense is being increased by company managers in the current year to decrease their reported earnings to move closer to their benchmark earnings. One explanation for why smoothing behavior companies are displaying stronger smoothing behavior than benchmark behavior companies are displaying benchmark behavior may be that auditors are more watchful and alert in constraining earnings management to increase earnings than earnings management to decrease earnings. Another explanation may be that companies displaying smoothing behavior are financially healthy, whereas companies displaying benchmark behavior are financially unhealthy. Therefore, companies

displaying benchmark behavior may be more limited under increased scrutiny by interested parties such as employees, stockholders, creditors, auditors, regulators, and even other pension plan beneficiaries.

Table 3 reports the results of Equation Two with data observations for the two years preceding the passage of the Act and for the two years following the passage of the Act. The significant F-statistic (p-value = .0001) and R^2 of .3116 infer a strong linear relationship between ChgPExp and the independent variables. Equation Two captures the before (i.e., 2000 and 2001) the Act effects, the after (2003 and 2004) the Act effects, and the change effects for both benchmark behavior companies and smoothing behavior companies. Again, ChgPExp represents manager manipulation, and CapMMotive represents the variable of interest.

TABLE 3
CROSS SECTIONAL POOLED EFFECTS ESTIMATION
Using $.10 Screen With Year And Industry Fixed Effects

$$\text{ChgPExp} = \alpha_0 + \beta_0\,\text{Post} + \alpha_1\,\text{Missed\_Dummy} + \alpha_2\,\text{CapMMotive} + \alpha_3\,\text{Interact} + \alpha_4\,\text{EmplChg} + \beta_1\,\text{Missed\_Dummy\_2} + \beta_2\,\text{CapMMotive\_2} + \beta_3\,\text{Interact\_2} + \beta_4\,\text{EmplChg\_2} + \sum_{t=2000}^{t=2004}\alpha_t \times yrD_t + \sum_{i=1}^{i=51}\alpha_i \times indD_i + \varepsilon \quad (2)$$

Equation 2: PY Earnings

Final Sample: n = 438 Outliers Trimmed Before and After SOX		Cross Sectional Pooled Effects Estimation 2000 2001 comparison 2003 2004		
Variable		*Prediction*	*Coefficient*	*One Tail p-value*
Intercept		+	.00038	.3021
Post		-	.00108	.0372
Missed_Dummy		-	-.00080	.1005
CapMMotive		+	-.00132	.4819
Interact		+ / -	.09936	.0406
Missed_Dummy_2		+	-.00017	.4097
CapMMotive_2		-	.12408	.0076
Interact_2		+ / -	-.21824	.0010
$\alpha_0 + \alpha_1$		-	-.00042	.2840
$\beta_0 + \beta_1$		-	.00090	.0828
$\alpha_0 + \alpha_1 + \beta_0 + \beta_1$		-	.00048	.2133
$\alpha_2 + \alpha_3$		+	.09804	.0214
$\beta_2 + \beta_3$		-	-.09416	.0285
$\alpha_2 + \alpha_3 + \beta_2 + \beta_3$		+	.00388	.3924
$\alpha_0 + \beta_0$		+	.00146	.0105
$\alpha_2 + \beta_2$		+	.12276	.0019
F-statistic as p-value	.0001			
R^2	.3116			
Adjusted R^2	.1956			

Where

N	Number of company observations in the sample.
ChgPExp	Dependent variable representing the change in pension expense calculated as current year pension expense minus prior year pension expense all scaled by lagged assets.
Missed_Dummy	Dummy variable equal to 1 if CapMMotive < 0, and zero otherwise. If coded 1, the company would hypothetically miss its applicable benchmark using pretax income absent manipulation. If coded 0, the company would hypothetically meet or beat its applicable benchmark using pretax income absent manipulation.

Post	Dummy variable equal to 0 if data from two years preceding the Act and 1 if data from two years after the Act. If coded 0, this designates the applicable time period before the Act. If coded 1, this designates the applicable time period after the Act.
CapMMotive	Continuous independent variable calculated as pretax income absent manipulation minus the applicable benchmark all scaled by lagged assets. Pretax income absent manipulation is pretax income plus current year pension expense minus prior year pension expense.
Interact	Represents an interaction variable calculated as Missed_Dummy multiplied times CapMMotive to yield the incremental portion of CapMMotive for the group that would have missed their benchmark using pretax income absent manipulation.
EmplChg	Control variable calculated as the number of employees for the current year minus the number of employees for the prior year all scaled by lagged assets.
Missed_Dummy_2	Multiplied Missed_Dummy times post to capture post time period.
CapMMotive_2	Multiplied CapMMotive times post to capture post time period.
Interact_2	Multiplied interact times post to capture post time period.
EmplChg_2	Multiplied employee times post to capture post time period
	Smoothing Group:
α_0	Intercept for smoothing group before the Act. Intercept for CapMMotive ≥ 0 where Missed_Dummy = 0.
β_0	Measures whether the intercept differs in the two time periods for the smoothing group.
$\alpha_0 + \beta_0$	Intercept for the smoothing group after the Act.
α_2	Incentive slope for smoothing group before the Act. Incentive slope for CapMMotive ≥ 0 where Missed_Dummy = 0.
β_2	Measures whether the incentive slope differs in the two time periods for the smoothing group.
$\alpha_2 + \beta_2$	Incentive slope for smoothing group after the Act.
	Benchmark Group:
$\alpha_0 + \alpha_1$	Intercept for benchmark group before the Act. Intercept for CapMMotive < 0 where Missed_Dummy = 1.
$\beta_0 + \beta_1$	Measures whether the intercept differs in the two time periods for the benchmark group.
$\alpha_0 + \alpha_1 + \beta_0 + \beta_1$	Intercept for benchmark group after the Act.
$\alpha_2 + \alpha_3$	Incentive slope for the benchmark group before the Act. Incentive slope for CapMMotive < 0 where Missed_Dummy = 1.
$\beta_2 + \beta_3$	Tests whether the incentive slope effect for the benchmark group differs in the two time period
$\alpha_2 + \alpha_3 + \beta_2 + \beta_3$	Incentive slope for the benchmark companies after the Act.

For the benchmark behavior companies, the intercept ($\alpha_0 + \alpha_1$) before the passage of the Act is not statistically significant. The intercept ($\alpha_0 + \alpha_1 + \beta_0 + \beta_1$) after the passage of the Act is not statistically significant either. The intercept change between the two time periods ($\beta_0 + \beta_1$) is not statistically significant and indicates no difference exists in the benchmark companies before and after the passage of the Act.

For the benchmark companies, the slope on CapMMotive_2 + Interact_2 (i.e., $\beta_2 + \beta_3$) tests whether the dollar effect of the variable of interest (i.e. CapMMotive + Interact) differs in the two time periods. A significant (p-value = .0285) difference exists in the two time periods, with a negative $.09 change effect. This result indicates benchmark companies are decreasing pension expense (i.e., increasing earnings) $.09 less in the two years after the passage of the Act than they are in the two years preceding the passage of the Act. The slope on CapMMotive + Interact (i.e., $\alpha_2 + \alpha_3$) is the incentive slope before the Act,

whereas $\alpha_2 + \alpha_3 + \beta_2 + \beta_3$ is the incentive slope after the Act. The $.09 slope before is significant (p-value = .0285), whereas the $.00 slope after is not significant.

For the smoothing behavior companies, the intercept before SOX is α_0 and is not statistically significant. The intercept after SOX is ($\alpha_0 + \beta_0$) and is statistically significant (p-value = .0105). The change between the two time periods (β_0) indicates a significant (p-value = .0372) difference in the smoothing companies after SOX.

For the smoothing behavior companies, the slope on CapMMotive_2 (i.e., β_2) tests whether the dollar effect of the variable of interest (i.e., CapMMotive) differs in the two time periods. There is a significant (p-value = .0076) difference in the two time periods with a $.12 change effect. This indicates smoothing behavior companies are increasing pension expense (i.e., decreasing income) $.12 more in the two years after the Act than they are in the two years preceding the Act. The slope on CapMMotive (i.e., α_2) is the incentive slope before the Act whereas CapMMotive + CapMMotive_2 (i.e., $\alpha_2 + \beta_2$) is the incentive slope after the Act. The $.00 slope before is not significant whereas the $.12 slope after is significant (p-value = .0019).

Hypothesis Three, that pension expense is manipulated less from both benchmark behavior and smoothing behavior in the two years following the Act than in the two years preceding the Act, is not supported in Table 3. As predicted, benchmark behavior companies manipulate pension expense less after the Act. However, smoothing behavior companies manipulate pension expense more after the passage of the Act. Our study provides some evidence that the Sarbanes Oxley Act of 2002 is ineffective in making financial reporting more transparent and representative of actual financial position at least in the area of pension expense.

CONCLUSIONS

With the issuance of the Sarbanes Oxley Act in 2002, Congress made an effort to increase transparency in financial statement reporting and to increase accountability by managers for the quality of their financial reporting. Thereby, a reduction in management of earnings is expected after the Act is passed. Strong capital market motivations, however, still persist for both benchmark and smoothing behavior companies. Thus, managers continue to experience pressure to manage earnings as a response to these motivations.

This study adds incrementally to the stream of accounting literature by demonstrating that earnings continue to be managed via pension expense as expected per a company's economic status, measured by whether companies will miss or beat their benchmark earnings based upon their current year premanaged earnings, during the five year period 2000 through 2004. Our research provides evidence that benchmark earnings (i.e., prior year earnings) create capital market incentives for companies in different directions depending on this measure of economic status. Companies hypothetically missing their benchmark earnings are predicted and shown to manipulate actual pension expense downward to increase current year reported earnings. In addition, companies hypothetically beating their benchmark earnings are predicted and shown to manipulate actual pension expense upward to decrease current year reported earnings. Therefore, both groups of companies are successfully manipulating pension expense in the direction that moves their current year reported earnings closer to their benchmark earnings than they would otherwise be. Interestingly, smoothing behavior is stronger (i.e., managed at greater dollar amounts) than benchmark behavior for the five year period 2000 through 2004.

While evidence exists that both benchmark and smoothing companies are managing earnings via pension expense during the two years just before SOX is passed, benchmark behavior is shown to be stronger (i.e., managed at greater dollar amounts) than smoothing behavior. Interestingly, while both benchmark and smoothing companies continue to manage earnings via pension expense during the two years immediately after SOX is passed, a decline in benchmark behavior and an increase in smoothing behavior both occur. Smoothing behavior becomes stronger than benchmark behavior during this two year period.

One possible explanation for the reversal of behavioral roles of managers for benchmark and smoothing behavior companies during the two years immediately after SOX is passed is that auditors may have become so concerned that companies not manage their earnings upward that they may have given companies that were managing their earnings downward less attention. This attitude by the auditors is understandable, as higher litigation exposure is present with benchmark behavior than with smoothing behavior.

This research finds mixed results concerning the impact of SOX in increasing the transparency and accuracy of financial statement reporting. Unexpectedly, smoothing behavior via pension expense increased during the two years immediately after the Act is passed. However, as expected, benchmark behavior decreases during these two years.

This research provides information that is both timely and relevant to numerous parties concerning the impact of SOX on earnings management via pension expense. Interested parties may include the United States Congress, the Securities and Exchange Commission, the Public Company Accounting Oversight Board, the American Institute of Certified Public Accountants, the Financial Accounting Standards Board, the International Accounting Standards Board, auditors, creditors, investors, pension plan beneficiaries, and educators. Perhaps this study will be a catalyst for regulators and standard setters within this group of parties to reconsider how pension expense is currently measured and reported. This possibility is consistent with the Phase II joint initiative between the Financial Accounting Standards Board and the International Accounting Standards Board to reconsider current pension plan accounting standards.

ENDNOTES

1. In related contemporaneous research, Parker, Swanson, and Dugan (2011) examine the use of pension expense as an earnings management tool in the 3 post-SOX years relative to the 3 pre-SOX years. Our research differs from theirs in that we focus on a narrower event window around the passage of SOX. By focusing on the 2 post-SOX years relative to the 2 pre-SOX years, our study contributes incrementally in that it provides additional evidence that the identified behaviors exist for the two year event window and results are in the same direction as those found by Parker, Swanson, and Dugan (2011). Evidence suggests smoothing firms are increasing pension expense $.05 less in the 2 post-SOX period than in the 3 post-SOX period for every $1.00 that their premanaged earnings are above their target earnings. Whereas, the benchmark firms are decreasing pension expense $.01 less in the 2 post-SOX period than in the 3 post-SOX period for every $1.00 that their premanaged earnings are below their target earnings. This additional evidence may suggest a learning effect by benchmark behavior managers and smoothing behavior managers or possibly an easing of auditor vigilance over time.
2. Sensitivity tests are performed using the prior year number of employees to scale the current year number of employees and then rerunning the regressions. No significant differences are noted.

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