ACADEMY OF ACCOUNTING AND FINANCIAL STUDIES JOURNAL

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Dr. Michael Grayson, Jackson State University, is the Accountancy Editor and Dr. Denise Woodbury, Southern Utah University, is the Finance Editor. Their joint mission is to make the *AAFSJ* better known and more widely read.

As has been the case with the previous issues of the *AAFSJ*, the articles contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

The Editors work to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. They will continue to welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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WALL STREET JOURNAL DISTRESS DISCLOSURES AND BANKRUPTCY RESEARCH

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Ena Rose-Green, Southern Illinois University Edwardsville

ABSTRACT

This study assesses the extent to which the Wall Street Journal (WSJ) is a useful and reliable source of distress disclosures for bankruptcy research. Prior accounting and finance studies document the importance of controlling for distress disclosures in bankruptcy research. These studies identify distress disclosures from numerous sources: 8-Ks, 10-Ks, NT10-Ks, LEXIS, annual reports, Moody's Industrial Manuals, the F&S Index of Corporate Changes, the Dow Jones News Service, and the WSJ. Some sources are costly (e.g., 8-Ks, 10-Ks, NT10-Ks, and the Dow Jones News Service), while other sources do not provide timely distress disclosures (e.g., LEXIS, annual reports, Moody's Industrial Manuals, and the F&S Index of Corporate Changes). This study focuses on the WSJ since it potentially represents a low-cost, timely, and widely-disseminated source of distress disclosure information. We first construct an aggregate WSJ distress disclosure measure, and find that this aggregate WSJ distress disclosure measure mitigates bankruptcy filing price reactions. We then examine WSJ reporting of six types of distress disclosures, and find that three types of WSJ distress disclosures mitigate bankruptcy filing price reactions: qualified audit opinions, technical defaults, and possible bankruptcy filings. The WSJ thus provides a useful and reliable source of distress disclosures for bankruptcy research.

INTRODUCTION

Extant research indicates that disclosures of bankruptcy filings produce significant negative price reactions. [1] The magnitude of the price decline is directly related to the amount of surprise in the bankruptcy filings. Prior distress disclosures increase investors' a priori assessment of firms' probability of bankruptcy, thus potentially reducing the surprise in subsequent bankruptcy filings. Abnormal returns surrounding bankruptcy filing should therefore differ between firms with prior distress disclosures and firms without such disclosures. Specifically, firms with prior distress disclosures should have smaller negative price reactions to their bankruptcy filings. Several studies report results consistent with this expectation.

Beneish and Press (1995) find that price reactions to bankruptcy filings are mitigated if preceded by technical default. Chen and Church (1996) and Dawkins and Rose-Green (1998) find that price reactions to bankruptcy filings are mitigated if preceded by going concern audit opinions and prior *Wall Street Journal* disclosures of possible bankruptcy filings, respectively. Rose-Green and Dawkins (2000) find that, at the time of bankruptcy filing, subsequently liquidated firms have significantly larger negative price reactions than subsequently reorganized firms. Dawkins et al. (2006) provides evidence that price declines immediately after bankruptcy filing are followed by short-lived price increases. Additionally, Giroux and Wiggins (1984) identify three distress events (net losses, debt accommodation, and loan default) that are significantly associated with bankruptcy, while Ward, Foster, and Woodroof (1998) identify two distress events (loan default/accommodation and loan covenant violations) that are significant explanatory variables of bankruptcy. The results of these studies indicate that researchers should control for prior distress disclosures in bankruptcy research to prevent potentially understating the effect of bankruptcy on stock prices.

These studies identify distress disclosures from numerous sources: 8-Ks, 10-Ks, NT10-Ks, LEXIS, annual reports, *Moody's Industrial Manuals*, the *F&S Index of Corporate Changes*, the Dow Jones News Service, and the *Wall Street Journal (WSJ)*. Several of the distress disclosure sources are costly (e.g., 8-Ks, 10-Ks, NT10-Ks, LEXIS, and the Dow Jones News Service), while other sources may not report distress information in a timely manner (e.g., LEXIS, annual reports, *Moody's Industrial Manuals*, and the *F&S Index of Corporate Changes*). Unlike most distress disclosure sources, the *WSJ* potentially represents a low-cost, timely, and widely-disseminated source of distress information for accounting and finance researchers. The purpose of this study, therefore, is to assess the extent to which the *WSJ* is a useful and reliable source of distress disclosures for bankruptcy research.

We investigate *WSJ* reporting of six types of distress disclosures: 1) qualified audit opinions, 2) omitted/reduced dividends, 3) downgraded debt, 4) technical default, 5) debt restructuring, and 6) prior disclosures of possible bankruptcy filings. The sample consists of 259 bankruptcy filings from 1980 to 1993, and we assess the usefulness of *WSJ* reporting by measuring whether *WSJ* reporting of each type of distress disclosure mitigates bankruptcy filing price reactions. The analysis consists of regressing two measures of *WSJ* distress disclosures on the firm mean-adjusted cumulative abnormal return for days –1 to +1 relative to the bankruptcy filing date. The first measure aggregates the number of *WSJ* distress disclosures in the 3-year period preceding each firm's bankruptcy filing. The second measure employs dummy variables to represent *WSJ* reporting of the six distress disclosures in the 3-year period preceding each firm's bankruptcy filing.

We find that the aggregate *WSJ* distress disclosure measure mitigates bankruptcy filing price reactions. Specifically, the number of *WSJ* distress disclosures in the 3-year period preceding bankruptcy is inversely related to the magnitude of bankruptcy filing price reactions (i.e., more *WSJ* distress disclosures yield smaller bankruptcy filing price reactions). We also find that three types of *WSJ* distress disclosures (qualified audit opinions, technical defaults, and prior *WSJ* disclosures

of possible bankruptcy filings) mitigate bankruptcy filing price reactions. Our results hold after controlling for total other *WSJ* disclosures in the 3-year period preceding bankruptcy, Broadtape disclosure of the bankruptcy filings, total assets, probability of bankruptcy, and predisclosure information.

Our study contributes to the accounting literature by providing empirical evidence that the Wall Street Journal still provides a low cost, efficient, source of distress disclosures even with the advancement of information technology and the availability of numerous sources of electronic disclosures. This is especially important to researchers in small universities with limited funds denying them access to many sources of data. Our results also complement Poon et. al. (2001). Poon et. al. (2001) while investigating the excess returns surrounding corporate restructurings, found that the larger the restructuring amount announced in the Wall Street Journal, the more negative the excess returns.

The remainder of this paper is organized as follows: The next section details the selection of sample firms and research method. The third section presents the empirical results, and the final section provides concluding remarks.

SAMPLE SELECTION AND RESEARCH METHOD

Sample

Our sample of bankrupt firms and their bankruptcy petition filing dates was drawn from Prentice-Hall's *Capital Adjustments* (1980-1989 edition, plus addenda for 1990-1992), Predicast's *F & S Index of Corporate Changes*, and *LEXIS*. The final sample includes firms satisfying the following criteria: 1) returns data are available from the University of Chicago's *Center for Research on Security Prices* (*CRSP*) daily returns file for at least 48 of the 60-day estimation period, 2) a firm mean-adjusted cumulative abnormal return (CAR) can be calculated over days −1 to +1 relative to the bankruptcy filing date, 3) the stock continued trading after the bankruptcy filing, and 4) there are no potentially confounding events (e.g., stock splits, stock dividends, mergers, acquisitions etc.) within two weeks (-1 week to +1 week) of the bankruptcy filing. The final sample consists of 259 firms.

Panel A of Table 1 reveals that 147 of the 259 sample firms (56.8%) had at least one distress disclosure in the 3-year period preceding their bankruptcy filings, and 112 sample firms (43.2%) had no distress disclosures in the 3-year period preceding their bankruptcy filings. Panel A also reveals that at the time of bankruptcy filing 165 sample firms traded on the NASDAQ (63.7%), 73 traded on the NYSE (28.2%), and 21 traded on the AMEX (8.1%). Panel B of Table 1 reports the median market value of equity by exchange listing for firms with and without *WSJ* distress disclosures. As expected, NYSE firms are the largest ($114.97 million), followed by AMEX firms ($41.34 million)

and NASDAQ firms ($24.01 million). Within each exchange, firms with *WSJ* distress disclosures are significantly larger than firms without such disclosures. Additionally, the sample is well diversified across industries as the 259 sample firms span 165 4-digit SIC codes, with 8 (3.1%) being the maximum number of firms in any 4-digit SIC code.

Table 1: Sample Descriptions				
Panel A: Exchange Listing of Firms With and Without *WSJ* Distress Disclosures				
Firms	NYSE	AMEX	NASDAQ	Total Filings
With *WSJ* distress disclosures	62	14	71	147
Without *WSJ* distress disclosures	11	7	94	112
Total Sample	73	21	165	259
Panel B: Median Market Value of Equity by Exchange for Firms With and Without *WSJ* Distress Disclosures				
Median MV of Equity of Firms[a]	NYSE	AMEX	NASDAQ	Total Filings
With *WSJ* distress disclosures	137.96	47.07	39.95	67.67
Without *WSJ* distress disclosures	36.06	12.40	13.19	14.30
Total Sample	114.97	41.34	24.01	37.30
The sample includes firms that filed bankruptcy petitions between 1980 and 1993. Firms were retained in the sample if 1) CRSP returns data were available for 48 of the 60 days in the parameter estimation period, 2) a firm mean-adjusted CAR could be calculated over days –1 to +1 relative to the bankruptcy filing date, 3) the security was publicly traded after the bankruptcy filing date, and 4) no other potentially confounding events were announced within ± 1 week of the bankruptcy filing date. [a]In millions.				

Measurement of Distress Disclosures

We use two methods to measure *WSJ* distress disclosures. First, *WSJ* distress disclosures are measured as the number of *WSJ Index (WSJ)* references to possible bankruptcy filings, financial troubles, cash flow or working capital problems, reorganizations or recapitalizations, debt restructurings, issuance of qualified opinions, evidence of misleading prospectii or inaccurate financial statements, fraud investigations, suspension of trading in or delisting of a firm's stock, default on debt obligations, omitted or reduced dividends, auditor disputes (resignations or dismissals), involuntary mergers, and negative analyst forecasts. We also collect data on the number of total other *WSJ* disclosures (i.e., non-distress disclosures).[2] The following two *WSJ* disclosure variables are recorded for the 3-year period preceding each firm's bankruptcy filing:

1)   number of *WSJ* distress disclosures in the 3-year period preceding each firm's bankruptcy filing (FDANN), and

2)   number of total other *WSJ* disclosures (i.e., non-distress disclosures) in the 3-year period preceding each firm's bankruptcy filing (NFDANN).

Table 2 contains descriptive statistics on FDANN and NFDANN for the total sample, firms with distress disclosures, and firms without distress disclosures.[3] Table 2 also contains descriptive statistics for CAR, total assets, probability of bankruptcy, predisclosure information, and market value of equity. Each variable measure was windsorized at 99% and 1% to minimize the impact of outliers.

Table 2: Descriptive Statistics for Bankrupt Firms With and Without *WSJ* Distress Disclosures								
	Total Sample		Firms with distress disclosures		Firms without distress disclosures			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean Diff.	t-value
FDANN	2.5	4.1	4.4	4.7	0.0	0.0	4.4	6.51[a,d]
NFDANN	24.9	36.5	36.6	44.2	9.4	10.5	27.2	7.22[a,d]
CAR	-28.8	33.8	-25.3	33.2	-33.5	34.0	8.2	1.94[b,f]
ASSETS	480.2	1517.2	818.5	1961.6	47.8	90.0	770.7	4.37[a,d]
BKPROB	0.87	0.22	0.87	0.22	0.87	0.22	0.0	0.23
PDI	-28.4	1.66	-37.7	1.61	-15.8	1.72	-21.9	-1.04
MVEQ	107.9	204.2	166.9	251.7	27.1	30.7	139.8	6.60[a,d]

FDANN =   number of distress disclosures in *WSJ* in the 3-year period preceding bankruptcy,
NFDANN =   number of total other disclosures in *WSJ* in the 3-year period preceding bankruptcy,
CAR   =   firm mean-adjusted cumulative abnormal return over days –1 to +1 relative to its bankruptcy filing date,
ASSETS   =   total assets, measured as of the fiscal year-end of the third year preceding the year of bankruptcy,
BKPROB   =   probability of bankruptcy, computed as of the fiscal year-end of the first year preceding the year of bankruptcy using Ohlson's (1980) model 1,
PDI   =   predisclosure information, measured as the cumulative firm-mean adjusted abnormal return over pre-filing days –240 to –2 relative to the bankruptcy filing date, and
MVEQ   =   market value of equity in millions, measured as of the fiscal year-end of the third year preceding the year of bankruptcy.
   a   =   significant at the 0.01 level
   b   =   significant at the 0.05 level
   c   =   significant at the 0.10 level
   d   =   Wilcoxon z-value (not reported) significant at the 0.01 level
   e   =   Wilcoxon z-value (not reported) significant at the 0.05 level
   f   =   Wilcoxon z-value (not reported) significant at the 0.10 level.

Second, we use dummy variables to represent *WSJ* reporting of six distress disclosures: 1) qualified audit opinions, 2) omitted/reduced dividends, 3) downgraded debt, 4) technical default, 5) debt restructuring, and 6) prior disclosures of possible bankruptcy filings. Each dummy variable is set to 1 if the *WSJ* reported that type of distress disclosure in the 3-year period preceding each firm's bankruptcy filing, or 0 otherwise. The six distress disclosures examined in this study are selected based on prior literature.[4] Table 3 contains descriptive statistics on the six *WSJ* distress disclosure dummy variables for the total sample, firms with distress disclosures, and firms without distress disclosures.

Table 3: Descriptive Statistics for Dummy Variable Used in the Regression			
Dummy Variable	Total Sample	Firms with *WSJ* distress disclosures (N=147)	Firms without *WSJ* distress disclosures (N=112)
QUALDUM	19/259 (7.3%)	19/147 12.9%)	0/112 (0.0%)
ODDUM	43/259 (16.6%)	43/147 (29.3%)	0/112 (0.0%)
DDDUM	31/259 (12.0%)	31/147 (21.1%)	0/112 (0.0%)
TDDUM	59/259 (22.8%)	59/147 (40.1%)	0/112 (0.0%)
DRDUM	62/259 (23.9%)	62/147 (42.2%)	0/112 (0.0%)
PRIOR	67/259 (25.9%)	67/147 (45.6%)	0/112 (0.0%)
DBT	232/259 (89.6%)	141/147 (95.9%)	91/112 (81.3%)

QUALDUM	=	dummy variable equal to 1 if the *WSJ* reported that the firm's audit report was qualified in the 3-year period preceding bankruptcy
ODDUM	=	dummy variable equal to 1 if the *WSJ* reported that the firm omitted or reduced dividends in the 3-year period preceding bankruptcy
DDDUM	=	dummy variable equal to 1 if the *WSJ* reported that the firm's debt was downgraded in the 3-year period preceding bankruptcy
TDDUM	=	dummy variable equal to 1 if the *WSJ* reported that the firm was in technical default of loan covenants in the 3-year period preceding bankruptcy
DRDUM	=	dummy variable equal to 1 if the *WSJ* reported that the firm had restructured its debt in the 3-year period preceding bankruptcy
PRIOR	=	dummy variable equal to 1 if the *WSJ* reported a possible bankruptcy filing in the year prior to bankruptcy
DBT	=	dummy variable equal to 1 if the firm's bankruptcy filing was disclosed on the Broadtape on day 0 or +1 relative to the bankruptcy filing.

Measurement of Abnormal Returns

We estimate the expected daily return for each firm as the average firm mean-adjusted return over a 60-day parameter estimation period (day -80 to day -21) relative to the bankruptcy petition filing date. For inclusion in the sample we require return data for at least 48 of the 60 estimation period days, and return data sufficient to calculate a firm mean-adjusted CAR over days -1 to $+1$ relative to the bankruptcy filing date. The daily cross-sectional average return is computed as the sum of the daily abnormal return across all the individual securities, divided by the number of observations. The test period is days -1 to $+1$ around the bankruptcy filing, with the average firm mean-adjusted CAR computed as the difference between the actual and expected return over days -1 to $+1$. The total sample CAR is -28.8 percent ($t=-13.74$, $\alpha \leq .0001$). The CAR for firms with *WSJ* distress disclosures is significantly smaller than the CAR for firms without *WSJ* distress disclosures (-25.3 percent, $t=-9.23$, $\alpha \leq .0001$ and -33.5 percent, $t=-10.40$, $\alpha \leq .0001$, respectively). This suggests that *WSJ* distress disclosures mitigate bankruptcy price reactions. We use regression analysis to confirm this univariate result.

Assessing the Effect of Aggregate *WSJ* Distress Disclosures on Bankruptcy Price Reactions

We assess whether *WSJ* distress disclosures mitigate bankruptcy filing price reactions by regressing the three-day bankruptcy CAR on the number of *WSJ* distress disclosures (FDANN) in the 3-year period preceding bankruptcy and five control variables. The five control variables are total other *WSJ* disclosures (NFDANN), Broadtape disclosure of the bankruptcy filings (DBT), total assets (ASSETS), probability of bankruptcy (BKPROB), and predisclosure information (PDI). The resulting model is expressed as:

$$CAR_i = a_0 + a_1 FDANN_i + a_2 NFDANN_i + a_3 DBT_i + a_4 ASSETS_i + a_5 BKPROB_i + a_6 PDI_i + e_i$$

where:

CAR_i	=	firm i's mean-adjusted cumulative abnormal return over days -1 to $+1$ relative to the bankruptcy filing date,
$FDANN_i$	=	number of distress disclosures in *WSJ* in the 3-year period preceding bankruptcy,
$NFDANN_i$	=	number of total other disclosures in *WSJ* in the 3-year period preceding bankruptcy,
DBT_i	=	dummy variable equal to 1 if firm i's filing is announced on the Broadtape on the bankruptcy filing date or day $+1$,

ASSETS$_i$	=	total assets, measured as of the fiscal year-end of the third year preceding the year of bankruptcy,
BKPROB$_i$	=	probability of bankruptcy, computed as of the fiscal year-end of the first year preceding the year of bankruptcy using Ohlson's (1980) model 1, and
PDI$_i$	=	proxy for pre-disclosure information impounded in prices over the year before the bankruptcy filing, measured as security i's cumulative firm mean-adjusted abnormal return computed over pre-filing days -240 to -2.

WSJ distress disclosures (FDANN) is measured as the number of *WSJ* distress disclosures in the 3-year period preceding each firm's bankruptcy filing. Since *WSJ* distress disclosures are expected to reduce the surprise in bankruptcy filings, we expect an inverse relationship between the number of *WSJ* distress disclosures and the magnitude of bankruptcy price reactions (i.e. the greater the number of *WSJ* distress disclosures, the smaller the bankruptcy filing price reaction). The coefficient on FDANN is therefore expected to be positive.

Total other *WSJ* disclosures (NFDANN) is measured as the number of total other (i.e., non-distress) *WSJ* disclosures in the 3-year period preceding each firm's bankruptcy filing. NFDANN is used as a control for all other *WSJ* disclosures in the 3-year period preceding bankruptcy. Since NFDANN only includes non-distress *WSJ* disclosures, the larger the NFDANN the greater the surprise in bankruptcy filings. This implies a direct relationship between the number of total other *WSJ* disclosures and the magnitude of bankruptcy filing price reactions (i.e. the greater the number of total other *WSJ* disclosures, the larger the bankruptcy filing price reaction). The coefficient on NFDANN is therefore expected to be negative.

The Broadtape dummy variable (DBT) equals 1 if the bankruptcy filing is disclosed on the Broadtape on the filing date or day +1, and 0 otherwise. Information disclosed on the Broadtape is immediately widely disseminated, thus increasing the speed with which the information is impounded into stock prices. Since Broadtape disclosure affects how quickly stock prices react to information, we expect larger price reactions to bankruptcy filings for firms whose bankruptcy filings are immediately disclosed on the Broadtape. The coefficient on DBT is therefore expected to be negative.

Total assets is included as a control for firm size, and is measured as of the fiscal year-end of the third year preceding the year of bankruptcy.[5] Grant (1980) and Atiase (1985; 1987) report a richer information environment for large firms relative to small firms. They found an inverse relationship between firm size and the stock market's reaction to the announcement of economic events. We, therefore, expect the coefficient on ASSETS to be positive (i.e., smaller price reactions to bankruptcy filings as total assets increases).

Probability of bankruptcy is used as a proxy for bankruptcy outcome, and is computed as of the fiscal year-end of the first year preceding the year of bankruptcy using Ohlson's (1980) model 1.[6] Prior studies (Kennedy and Shaw 1991; Chen and Church 1996) document a direct relation between probability of bankruptcy and price reactions to bankruptcy filings (i.e., larger price reactions to bankruptcy filings for firms with higher probabilities of bankruptcy). We therefore expect the coefficient on the BKPROB variable to be negative. A negative BKPROB variable means that investors view firms with higher probabilities of bankruptcy as less likely to survive their Chapter 11 filings (i.e., more likely to liquidate).

Predisclosure information (PDI) captures information impounded into stock prices in the year immediately preceding each firm's bankruptcy filing, and is measured as the cumulative firm mean-adjusted abnormal return computed over pre-filing days -240 to -2.[7] Prior research (Aharony, Jones, and Swary 1980) indicates that bankrupt firms experience excess negative returns from three years prior to bankruptcy through bankruptcy. The more adverse predisclosure information is impounded into prices before bankruptcy, the smaller the bankruptcy filing price reaction should be. We therefore expect the PDI coefficient to be negative.

Assessing the Effect of Individual *WSJ* Distress Disclosures on Bankruptcy Price Reactions

We assess whether six types of *WSJ* distress disclosures mitigate bankruptcy filing price reactions by regressing the three-day bankruptcy CAR on six models that incorporate a dummy variable for each type of *WSJ* distress disclosure examined. Each model includes four control variables from the aggregate *WSJ* distress disclosure model. The resulting models are expressed as:

$$CAR_i = a_0 + a_1 QUALDUM_i + a_2 DBT1_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$$
$$CAR_i = a_0 + a_1 ODDUM_i + a_2 DBT1_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$$
$$CAR_i = a_0 + a_1 DDDUM_i + a_2 DBT1_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$$
$$CAR_i = a_0 + a_1 TDDUM_i + a_2 DBT1_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$$
$$CAR_i = a_0 + a_1 DRDUM_i + a_2 DBT1_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$$
$$CAR_i = a_0 + a_1 PRIOR_i + a_2 DBT1_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$$

where:

CAR_i	=	firm i's mean-adjusted cumulative abnormal return over days -1 to $+1$ relative to the bankruptcy filing date,
$QUALDUM_i$	=	dummy variable equal to 1 if the *WSJ* reported that the firm's audit report was qualified in the 3-year period preceding bankruptcy,
$ODDUM_i$	=	dummy variable equal to 1 if the *WSJ* reported that the firm omitted or reduced dividends in the 3-year period preceding bankruptcy,

$DDDUM_i$	=	dummy variable equal to 1 if the *WSJ* reported that the firm's debt was downgraded in the 3-year period preceding bankruptcy,
$TDDUM_i$	=	dummy variable equal to 1 if the *WSJ* reported that the firm was in technical default of loan covenants in the 3-year period preceding bankruptcy,
$DRDUM_i$	=	dummy variable equal to 1 if the *WSJ* reported that the firm had restructured its debt in the 3-year period preceding bankruptcy,
$PRIOR_i$	=	dummy variable equal to 1 if the *WSJ* reported a possible bankruptcy filing in the year prior to bankruptcy,
DBT_i	=	dummy variable equal to 1 if firm i's filing is announced on the Broadtape on the bankruptcy filing date or day +1,
$ASSETS_i$	=	total assets, measured as of the fiscal year-end of the third year preceding the year of bankruptcy,
$BKPROB_i$	=	probability of bankruptcy, computed as of the fiscal year-end of the first year preceding the year of bankruptcy using Ohlson's (1980) model 1, and
PDI_i	=	proxy for pre-disclosure information impounded in prices over the year before the bankruptcy filing, measured as security i's cumulative firm mean-adjusted abnormal return computed over pre-filing days -240 to -2.

Since *WSJ* distress disclosures are expected to reduce the surprise in bankruptcy filings, we expect an inverse relationship between each *WSJ* distress disclosure dummy variable and the magnitude of bankruptcy filing price reactions (i.e. significantly smaller bankruptcy filing price reactions given the existence of a *WSJ* distress disclosures). The coefficient on each *WSJ* distress dummy variable is therefore expected to be positive.

EMPIRICAL RESULTS

Correlation of Independent Variables

Table 4 reports correlation coefficients for the independent variables used in the regression models. Examination of collinearity diagnostics reveals no serious multicollinearity problems since the variance inflation factors (not reported) do not exceed 3.3, well below Montgomery and Peck's (1982) benchmark of 5 or 10. Additionally, the condition indices do not exceed 13, again well below Belsley et al.'s (1980) benchmark of 30. See Table 4 on the following page.

Table 4: Aggregate *WSJ* Distress Disclosure Pearson Correlation Coefficients							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(1) CAR	1.00						
(2) FDANN	0.08	1.00					
(3) NFDANN	-0.03	0.61*	1.00				
(4) DBT	-0.13**	0.14**	0.15*	1.00			
(5) ASSETS	0.11	0.31*	0.54*	0.06	1.00		
(6) BKPROB	-0.09	0.09	0.05	0.03	-0.04	1.00	
(7) PDI	-0.04	-0.05	-0.04	-0.09	-0.03	0.11	1.00

CAR	=	firm mean-adjusted cumulative abnormal return over days –1 to +1 relative to its bankruptcy filing date,
FDANN	=	number of distress disclosures in *WSJ* in the 3-year period preceding bankruptcy,
NFDANN	=	number of total other disclosures in *WSJ* in the 3-year period preceding bankruptcy,
DBT	=	dummy variable equal to 1 if firm i's filing is announced on the Broadtape on the bankruptcy filing date (i.e., day 0),
ASSETS	=	total assets measured as of the fiscal year-end of the third year prior to the year of bankruptcy,
BKPROB	=	probability of bankruptcy, computed as of the fiscal year-end of the first year preceding the year of bankruptcy using Ohlson's (1980) model 1,
PDI	=	proxy for pre-disclosure information impounded in prices over the year before the bankruptcy filing, measured as security i's cumulative abnormal return computed over pre-filing days -240 to -2,
*	=	significant at 0.01
**	=	significant at 0.05

Relation between *WSJ* Distress Disclosures and Bankruptcy Price Reactions

Table 5 reveals the regression results on the relation between *WSJ* distress disclosures and bankruptcy filing price reactions. All reported t-statistics are based on White's (1980) heteroskedasticity-consistent covariance matrix. Panel A reports the results of regressing the firm mean-adjusted CAR on aggregate *WSJ* distress disclosures (FDANN) and the five control variables (NFDANN, DBT, ASSETS, BKPROB, and PDI). The significantly positive FDANN coefficient ($\alpha \leq 0.001$) reveals that the market reacts less negatively to bankruptcy filings for firms with more distress disclosures in the 3-year period preceding their bankruptcy filings (i.e. the number of distress disclosures is inversely related to the magnitude of bankruptcy filing price reactions). This result differs from Chen and Church's (1996) finding of no relation between distress disclosures (i.e., MKTNEWS) and bankruptcy filing price reactions.[8]

Table 5: Regression Results				
Panel A: Overall Aggregate *WSJ* Distress Disclosure Regression (FDANN and NFDANN measured over the three-year period preceding bankruptcy)				
$CAR_i = a_0 + a_1 FDANN_i + a_2 NFDANN_i + a_3 DBT_i + a_4 ASSETS_i + a_5 BKPROB_i + a_6 PDI_i + e_i$				
	Intercept	FDANN	NFDANN	DBT	ASSETS
coefficient	-0.013	0.019	-0.002	-0.201	0.00003
t-statistic	(-0.12)	(3.26)	(-2.36)	(-3.36)	(2.49)
sig. level	[0.452]	[0.001]	[0.009]	[0.001]	[0.006]
	BKPROB	PDI	ADJ. R^2		
coefficient	-0.118	-0.002	4.76%		
t-statistic	(-1.05)	(-0.15)			
sig. level	[0.147]	[0.440]			
Panel B: Dummy Variable *WSJ* Distress Disclosure Regressions				
$CAR_i = a_0 + a_1 QUALDUM_i + a_2 DBT_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$				
$CAR_i = a_0 + a_1 TDDUM_i + a_2 DBT_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$				
$CAR_i = a_0 + a_1 PRIOR_i + a_2 DBT_i + a_3 ASSETS_i + a_4 BKPROB_i + a_5 PDI_i + e_i$				
	Intercept	QUALDUM	DBT	ASSETS	BKPROB
coefficient	-0.031	0.148	-0.204	0.00001	-0.113
t-statistic	(-0.29)	(2.47)	(-3.42)	(1.77)	(-0.98)
sig. level	[0.386]	[0.007]	[0.001]	[0.038]	[0.164]
	PDI	ADJ. R^2			
coefficient	-0.005	3.23%			
t-statistic	(-0.38)				
sig. level	[0.352]				
	Intercept	TDDUM	DBT	ASSETS	BKPROB
coefficient	-0.041	0.092	-0.210	0.00001	-0.107
t-statistic	(-0.37)	(1.65)	(-3.47)	(1.78)	(-0.91)
sig. level	[0.356]	[0.050]	[0.001]	[0.038]	[0.181]
	PDI	ADJ. R^2			
coefficient	-0.003	3.25%			
t-statistic	(-0.26)				
sig. level	[0.397]				
	Intercept	PRIOR	DBT	ASSETS	BKPROB
coefficient	0.012	0.185	-0.225	0.00001	-0.175
t-statistic	(0.12)	(3.49)	(-3.92)	(1.00)	(-1.54)
sig. level	[0.452]	[0.001]	[0.001]	[0.159]	[0.062]

Table 5: Regression Results					
	PDI	ADJ. R^2			
coefficient	-0.004	6.94%			
t-statistic	(-0.30)				
sig. level	[0.382]				

Coefficients are presented with t-statistics based on White's (1980) heteroskedasticity covariance matrix in parentheses, and two-tailed significance levels in square brackets.

CAR = firm mean-adjusted cumulative abnormal return over days –1 to +1 relative to its bankruptcy filing date,

FDANN = number of distress disclosures in *WSJ* in the 3-year period preceding bankruptcy,

NFDANN = number of total other disclosures in *WSJ* in the 3-year period preceding bankruptcy,

DBT = dummy variable equal to 1 if the firm's bankruptcy filing was disclosed on the Broadtape on day 0 or +1 relative to the bankruptcy filing,

ASSETS = total assets, measured as of the fiscal year-end of the third year preceding the year of bankruptcy,

BKPROB = probability of bankruptcy, computed as of the fiscal year-end of the year preceding the year of bankruptcy using Ohlson's (1980) model 1,

PDI = predisclosure information, measured as the cumulative firm-mean adjusted abnormal return over pre-filing days –240 to –2 relative to the bankruptcy filing date,

QUALDUM = dummy variable equal to 1 if the *WSJ* reported that the firm's audit report was qualified in the 3-year period preceding bankruptcy,

TDDUM = dummy variable equal to 1 if the *WSJ* reported that the firm was in technical default of loan covenants in the 3-year period preceding bankruptcy, and

PRIOR = dummy variable equal to 1 if the *WSJ* reported a possible bankruptcy filing in the year prior to bankruptcy.

The significantly negative NFDANN coefficient ($\alpha \leq 0.009$) reveals that the market reacts more negatively to bankruptcy filings for firms with more total other *WSJ* disclosures in the 3-year period preceding bankruptcy (i.e. the number of total other *WSJ* disclosures is positively related to the magnitude of bankruptcy filing price reactions). This result is expected since the larger the number of total other *WSJ* disclosures (i.e., non-distress *WSJ* disclosures), the greater the surprise in bankruptcy filings. The negative coefficient captures the surprise element of price reactions to firms' bankruptcy filings.

The significantly negative DBT coefficient ($\alpha \leq 0.001$) indicates that firms whose bankruptcy filings are disclosed on the Broadtape on the filing date or day +1 have more negative price reactions to their bankruptcy filings. Information disclosed on the Broadtape appears to be widely and rapidly disseminated, causing the information to be quickly impounded into stock prices.

The significantly positive ASSETS coefficient ($\alpha \leq 0.009$) reveals that the market reacts less negatively to bankruptcy filings for firms with larger total assets (i.e., the magnitude of bankruptcy price reactions is inversely related to firm size). This result is consistent with an extensive body of literature documenting a firm size effect on price reactions to information disclosures. The

coefficients of BKPROB and PDI are not significant, although the negative sign on each variable is in the expected direction.

Panel B of Table 5 reports the results for the regression models incorporating dummy variables for each of the six types of *WSJ* distress disclosure examined. We only report results for the three *WSJ* distress disclosure dummy variables that were significantly associated with bankruptcy filing price reactions: qualified audit opinions, technical default, and prior disclosures of possible bankruptcy filings. Although the coefficient on all six *WSJ* distress dummy variables was positive, only *WSJ* disclosures of qualified audit opinions ($\alpha - \leq 0.007$), technical defaults ($\alpha \leq 0.05$), and prior disclosures of possible bankruptcy filings significantly ($\alpha \leq 0.01$) mitigate bankruptcy filing price reactions. The coefficients on the control variables for the regression results shown in panel B were generally consistent with those shown in panel A. To summarize, our regression results indicate that the *WSJ* is useful and reliable as a distress disclosure source when *WSJ* distress disclosures are measured in aggregate over several years, as well as for three types of distress disclosures (qualified audit opinions, technical defaults, and prior disclosures of possible bankruptcy filings).

CONCLUSION

This study assesses whether the *Wall Street Journal (WSJ)* is a useful and reliable source of distress disclosures for bankruptcy research. Prior studies document the importance of incorporating distress disclosures in bankruptcy research. These studies use many distress disclosure sources, of which some are costly and some report in an untimely manner. We focus on the *WSJ* since it potentially represents a low-cost, timely, and widely-disseminated source of distress disclosure information.

We first construct an aggregate *WSJ* distress disclosure measure, and find that this aggregate *WSJ* distress disclosure measure mitigates bankruptcy filing price reactions. We then examine *WSJ* reporting of six types of distress disclosures, and find that three types of *WSJ* distress disclosures mitigate bankruptcy filing price reactions: qualified audit opinions, technical defaults, and possible bankruptcy filings. Thus, our results indicate that the *WSJ* is a useful and reliable source of distress disclosures for bankruptcy research when *WSJ* distress disclosures are measured in aggregate over several years, as well as for three types of distress disclosures (qualified audit opinions, technical defaults, and prior disclosures of possible bankruptcy filings). Our findings should be especially useful to researchers at small universities who, due to limited funding, do not have access to many electronic sources of data.

ENDNOTES

1   See Aharony, Jones and Swary (1980), Altman and Brenner (1981), Clark and Weinstein (1983), Eberhart, Moore, and Roenfeldt (1990), Lang and Stultz (1992), Chen and Church (1996), Dawkins and Bamber (1998), and Dawkins and Rose-Green (1998).

2   Total other WSJ disclosures is used as a control variable in our regressions assessing WSJ distress disclosures.

3   WSJ distress lines (FDLINES) and total other WSJ lines (NFDLINES) data were also collected. The results (not reported) using these measures are qualitatively consistent with the WSJ distress disclosure results reported in this study.

4   We did not include net loss disclosures and management change disclosures in our analysis because such disclosures may be interpreted as good news (i.e., a smaller loss than expected or the hiring of a proven management team or turnaround specialist). We focus on distress disclosures that can only be interpreted as bad news.

5   Total assets is used as the control for firm size instead of the natural log of the market value of common equity since it is less correlated with the WSJ distress disclosure variables being examined. Regression results using the natural log of the market value of common equity as the control for firm size are qualitatively consistent with the reported results.

6   Sensitivity analysis was conducted on BKPROB using Ohlson's (1980) model 3, which predicts bankruptcy within one or two years. The BKPROB results using model 3 are less significant yet qualitatively similar to the results using model 1, and thus are not reported.

7   The parameter estimation period for PDI is the preceding 60 days, -300 to -241.

8   Chen and Church (1996) use a different proxy to measure distress disclosures, and they measure distress disclosures over a shorter time period.

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COINTEGRATION AND CAUSALITY BETWEEN STOCK INDEX AND MACROECONOMIC VARIABLES IN AN EMERGING MARKET

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ABSTRACT

This study examined the relationship between stock market index and selected macroeconomic variables during the post-financial liberalization (pre-financial crisis) and post-financial crisis in Thailand. In the empirical analysis, unit root, cointegration and Granger causality tests were performed. The post-financial liberalization results showed that the stock market index, the industrial production index, money supply, exchange rate, and world oil prices contained a unit root and were integrated of order one. Johansen cointegration test was then employed. The results showed at least one cointegrating or long-run relation between the stock market index and a set of macroeconomic variables. Money supply had a positive impact on the stock market index while the industrial production index, the exchange rate and oil prices had a negative impact. During the post-financial crisis, all variables were integrated at different orders. Cointegration existed between the stock market index and macroeconomic variables. In addition, the Granger causality test indicated money supply was the only variable positively affecting the stock market returns.

INTRODUCTION

The Stock Exchange of Thailand has been considered an emerging stock market since its inauguration in April 1975. The market capitalization of Thailand Stock Exchange is small while bond trading and other financial innovations have emerged in just the last few years. Like other emerging stock markets in Asia, liberalization in the Thai financial markets, both money and capital markets, reduced the regulation for foreign investors who were interested in investing in Thailand. The financial liberalization in 1992 included lifting capital control measures and allowing banks to lend and borrow more freely in both in- and off-shore transactions. In addition, the Thai government urged capital inflows in both portfolio and foreign direct investment. As a result, the volume of stock trading increased substantially in recent years. Equity instruments are a crucial source of funds for business firms. A continuous increase in private investment via issuing new stocks can be a conduit of GDP expansion and, thus, a high employment rate.

Under the fixed exchange rate regime prior to the financial crisis in 1997, Thailand saw large capital inflows, especially in terms of portfolio investment. This nearly offset the huge current account deficits. Additionally, large capital inflows caused domestic financial institutions to lend a large number of loans to both firms and individual borrowers. The ratio between loans and deposits in the banking system was as high as 1.35 in mid-1990 compared to 0.75 in early 1990. Many analysts believed this was due to the overheating of the Thai economy. In late 1996, private investment accounted for more than 40 percent of the national income. Such phenomena showed that domestic borrowers relied more on foreign capital inflows than domestic savings. During this period, the domestic interest rate rose and caused a wide gap between domestic and foreign interest rates. This interest rate differential induced large capital inflows mostly in portfolio investment. The financial crisis in 1997 had a devastating impact on the Thai economy. A significant effect related to exchange rate risk under the floating exchange rate regime began in July 1997. Other than real economic activity (e.g., real GDP or the industrial production index) that could affect an investment decision in common stocks, the risk generated from exchange rate fluctuations may also distort the portfolio investment decision. The main objective of this study was to investigate the effects of macroeconomic variables on stock market index/returns in Thailand during the post-financial liberalization prior to the financial crisis (January 1992-June 1997) and after the financial crisis (July 1997-December 2003). The stock market return represents the change in stock market index.

REVIEW OF THE LITERATURE

The literature review consists of two sections. The first reviews the literature on factors affecting stock market returns with emphasis on money supply and inflation. The second focuses on the long-run relationship or cointegration between stock market returns and macroeconomic variables.

Factors Affecting the Stock Market

Chen, Roll and Ross (1986) employed a multivariate arbitrage pricing theory (APT) to analyze the relationship between the market returns and macroeconomic factors, including measures of industrial production, the money supply, inflation, and interest rate and exchange rate variables. They confirmed a strong relationship between the market returns and these variables. Hamao (1988) found that inflationary expectations cause a change in the risk premium and in the term structure of interest rate. In turn, these variables have a significant impact upon stock returns in the Japanese market. Fung and Lie (1990) concluded that the response of the stock market index to changes in domestic production and money supply was weak in Korea. In other words, investors did not perceive a change in economic conditions could affect stock prices. Dhakal, Kandil, and Sharma

(1993) adopted a vector autoregression (VAR) model to test the impact of a change in the money supply on a change in the stock market index under a money market equilibrium condition. They discovered a significant relationship between these two variables in the United States. A study by Abdullah and Haywarth (1993) also found that a change in the market index was influenced by the rate of inflation and by the change in the money supply. On the relationship between inflation and stock returns, Fama (1981) indicated that most economic factors, except inflation, exhibited a positive correlation with the stock market index. The negative correlation between inflation and real equity returns was partially explained by the proxy hypothesis. In brief, inflation and real equity returns react in an opposite manner to news about future real output growth. Aarstol (2000) confirmed that this negative relationship persisted even when output growth was controlled. Rapach (2001) examined the effects of money supply, aggregate spending, and aggregate supply shocks on real U.S. stock prices in a structural VAR model. One of the main findings was that real stock returns were negatively correlated with inflation.

Cointegration

Long-run relationships between the stock market index and various macroeconomic variables are commonly observed. Mookerjee and Naka (1995) showed that short-run relationships among these variables existed in the Japanese stock market. However, this might not be the case for a small open economy. Mookerjee and Yu (1997) further found that not all macroeconomic variables were cointegrated with stock prices in Singapore. Cheung and Ng (1998) obtained evidence of cointegration between stock market indices and various macroeconomic variables, including oil prices. Cointegration between stock market returns and several macroeconomic variables also existed in South Korea (Kwon & Shin, 1999). However, the stock market indices were found not to be leading indicators of macroeconomic variables, such as the production index, money supply, exchange rate, and the trade balance. In the case of Malaysia, Ibrahim (1999) indicated that stock prices had a long-run relationship with consumer prices, credit aggregates, and official reserves. In 2003, Ibrahim found cointegration between returns and the money supply in the Malaysian equity market to be a major influence on equity prices. Groenewold (2004) analyzed the relationship between share prices and real output using structural VAR models without considering other macroeconomic variables. One of the major results showed that a macroeconomic boom caused an overvaluation in stock prices.

CONCEPTUAL FRAMEWORK

An early theory of arbitrage pricing uses a functional form to test the relationship between stock index and macroeconomic variables. All individual stocks are affected by common factors. The multifactor model, as in the arbitrage pricing theory (APT), stipulates various factors that can

influence the returns of all assets in the stock market. Market index can be affected by macroeconomic variables, such as changes in interest rate, money supply, economic growth, and inflation. By and large, the APT model has a drawback as it assumes the constant term to be a risk-free rate of return. The functional form of multiple regression that is widely used in empirical studies is:

(1) $SET_t = \beta_0 + \beta_1 IP_t + \beta_2 M2_t + \beta_3 P_t + \beta_4 EX_t + \beta_5 IN_t + \beta_6 OP_t + e_t$

where

- SET_t denotes the *market index* of overall market value of listed stocks in the Stock Exchange of Thailand. This is the sum of market value (share outstanding multiplied by market price) of all stocks being traded. A change in the index represents capital gains/losses. Rate of *return* (ΔSET) is measured as the sum of capital gains/losses for each period. Dividends are not available for inclusion in this study.
- IP_t is the logarithm of the total industrial production index, a proxy for real economic activity.
- $M2_t$ is the logarithm of changes in the broad definition of money supply.
- P_t is the logarithm of the inflation rate.
- EX_t is the logarithm of the nominal exchange rate measured in terms of Thai baht per U.S. dollar.
- IN_t is the logarithm of the long-term interest rate.
- OP_t is the logarithm of oil price measured in U.S. dollar per barrel.
- e_t is a disturbance term.

The ordinary least squares (OLS) estimate can be applied to Equation (1) if all variables are stationary. If variables are not stationary, the typical OLS regression will yield spurious results or will not be meaningful (Gujarati 2003).

Some systematic factors in the economy may play a major role in affecting the stock market index. In particular, a different period of time can capture different responses of stock prices to varying levels of macroeconomic activity. When Thailand experienced financial crisis, the policy makers shifted from a fixed foreign exchange rate regime prior to the crisis to a flexible rate regime after the crisis. Policymakers became more prudent in exercising monetary policy tools. The cointegration test indicates the presence or absence of long-run equilibrium relationships among variables. Cointegration among variables may or may not exist due to changes in their orders of integration when the regime shifts. Therefore, this research distinguishes the effects of macroeconomic variables on market returns in two periods: the post-financial liberalization before financial crisis (January 1992-June 1997) and the post-financial crisis (July 1997-December 2003). Results are expected to be different due to these different circumstances.

DATA AND METHODOLOGY

The Bank of Thailand Economic Bulletin provides monthly data on the industrial production index, the consumer price index (price level), money supply, interest rates, and nominal exchange rates from January 1992 to December 2003. The price level series are adjusted to the base period of 1998. Data used for the stock market index are obtained from Stock Exchange of Thailand index. The Energy Information Administration is the source for oil prices.

The relationship between the stock market index and crucial macroeconomic variables in equation (1) can be applied if all variables are stationary in level or trend. If they are not stationary in level, but stationary in first differences, they may or may not be cointegrated. If they are cointegrated, the error correction mechanism (ECM) can be used to determine the short- run deviation from the long-run equilibrium. If they are not cointegrated, the Granger causality can be employed to navigate direction of causation.

In practice, the most widely used method of estimation is based on the condition that many economic variables are known to be integrated of order one or I(1), with or without cointegration. The Phillips & Perron (PP) unit root test (Phillips & Perron, 1988) for time series is performed to determine the order of integration of each variable. Furthermore, Johansen cointegration tests (Johansen, 1991 & 1995) are conducted to determine whether the stock market index and a set of macroeconomic factors are cointegrated. If cointegration exists, there is a long-run relationship among the variables in question. If cointegration does not exist, Granger bivariate causality tests are employed to determine the direction of causation between stock market returns (stationary first differences of stock market index, DSET) and each of the relevant macroeconomic variables.

The Johansen's cointegration test employs the maximum likelihood procedure to determine the existence of cointegrating vectors. In nonstationary time series, a vector autoregressive (VAR) form is indicated in equation (2).

(2)
$$\Delta Z_t = \prod Z_t + \sum_{i=1}^{k} \Gamma_i \Delta Z_{t-i} + e_t$$

Where
- Z_t is a vector of nonstationary variables.
- Γ_i is the matrix of short-run parameters.
- $\prod = \alpha \beta^{/}$, is the information on the coefficient matrix between the levels of the series.

The relevant elements of the α matrix are adjusted coefficients and the β matrix contains the cointegrating vectors. According to Johansen and Juselius (1990), there are two likelihood ratio test statistics to test for the number of cointegrating vectors, i.e. the maximum eigenvalue statistic and the trace statistic. The two test statistics are compared with the critical values. If the maximum eigenvalue statistic and the trace statistic are greater than the critical values, cointigrating relation(s)

will be present. The Johansen procedure bases on the error correction mechanism (ECM) representation of the vector autoregressive model.

The equation below is used to test the causation from each of the macroeconomic factors (x_t) to stock market returns.

(3)
$$\Delta SET_t = \alpha_0 + \sum_{i=1}^{k} \alpha_i \Delta SET_{t-i} + \sum_{j=1}^{k} \beta_j X_{t-j} + e_t$$

The equation used to test the causation from stock market return to a change in each macroeconomic variable is

(4)
$$X_t = \alpha_0 + \sum_{i=1}^{k} \alpha_i X_{t-i} + \sum_{j=1}^{k} \beta_j \Delta SET_{t-j} + u_t$$

Equation (3) postulates that stock market returns (ΔSET) are related to the previous ΔSET and to an independent macroeconomic variable (x_t), and equation (4) postulates a similar behavior for x_t. According to the Granger causality test, if the set of estimated coefficients on the lagged x in (3) is statistically significant and the set of estimated coefficients on the lagged ΔSET in (4) is statistically insignificant, then the unidirectional causality from x to ΔSET exists. In contrast, if the set of estimated coefficients on the lagged x in (3) is not statistically different from zero and the set of estimated coefficients on the lagged ΔSET in (4) is statistically different from zero, then unidirectional causality from ΔSET to x exists. If the set of ΔSET and x coefficients are insignificant in both regressions, independence occurs. Bi-directional causality is present when both sets of ΔSET and x coefficients are significant in both regressions. The power of the test is valid if the b_j coefficients are significantly different from zero.

EMPIRICAL RESULTS

The Post-Financial Liberalization (Pre-Financial Crisis)

The results of the unit root test during the period of the post-financial liberalization (January 1992-June 1997) are reported in Table 1. The PP tests show the industrial production index is trend stationary, that is, I(0). Without trend, the industrial production index is nonstationary at level, but its first difference is stationary, I(1). The logarithm of each of the remaining variables contains a unit root at level. However, tests of first differences indicate stationarity or the absence of unit roots. Therefore, all variables are integrated of order one, I(1) during the pre-financial crisis. Money supply is chosen as a representative financial variable because the correlations among financial variables are high: 0.99 between money supply and consumer price index, 0.63 between money supply and interest rate, and 0.65 between consumer price index and interest rate.

Table 1: Unit Root Tests (January 1992-June 1997)			
Variables	PP Test		Order of Integration
	Without Trend	With Trend	
Stock Market Index: SET ΔSET	-0.525(3) [0.88] -7.394(3)***[0.00]	-0.403(2) [0.99] -8.106(1)***[0.00]	I(1)
Industrial Production: IP ΔIP	-1.631(3) [0.46] -11.076***[0.00]	-4.765(3)***[0.00]	I(1) or I(0) with trend stationarity
Money Supply(M2): M2 ΔM2	-0.160(1) [0.94] -7.398(2)***[0.00]	-2.577(2) [0.29] -7.337(2)***[0.00]	I(1)
Consumer Price Index: P ΔP	-0.301(2) [0.98] -6.665(3)***[0.00]	-2.338(1) [0.41] -6.627(3)***[0.00]	I(1)
Interest Rate: IN ΔIN	-1.436(4) [0.56] -4.835(0)***[0.00]	-2.510(4) [0.32] -4.809(0)***[0.00]	I(1)
Exchange Rate: EX ΔEX	-1.420(2) [0.57] -5.711(3)***[0.00]	-1.078(0) [0.92] -5.696(4)***[0.00]	I(1)
Oil Price: OP ΔOP	-1.976(2) [0.30] -4.877(3)***[0.00]	-2.081(3) [0.55] -4.896(2)***[0.00]	I(1)
Note The number in parentheses is the optimal bandwidth determined by Newey-West using Bartlett Kernel. The number in brackets is one-sided p-values of accepting the null hypothesis of a unit root (MacKinon, 1996). *** significant at 1 percent level			

The Johansen cointregation test is employed as shown in Table 2. Cointegration among the stock market index, the industrial production index, money supply, nominal exchange rate and oil price is performed using up to four lags length. This optimal lag length is determined by generally accepted techniques. The maximum Eigenvalue and Trace statistics show an acceptance of one and two cointegrating relation, respectively, at the 5 percent level among all five series. There exists at least one cointegrating relation among these series. The long-run relationship between the stock market index and four macroeconomic variables is:

	Table 2: Johansen Cointegration Test results (January 1992-June 1997)	
Cointegration rank (r)	Maximum Eigenvalue Statistics	Trace Statistics
r=0	34.27 (33.46)**	85.73 (68.52)**
r≤1	23.25 (27.07)	51.46 (47.21)**
r≤2	18.95 (20.97)	28.22 (29.08)
r≤3	9.17 (14.07)	9.27 (15.41)
r≤4	0.10 (3.76)	0.10 (3.76)
Note The number in parenthesis is the critical value at 5 percent level. **significant at 5 percent level.		

$$(5) \quad SET_t = -1.078\,IP_t + 0.975\,M2_t - 8.447\,EX_t - 1.496\,OP_t$$
$$\qquad\qquad (0.655) \quad\ (0.358) \quad\ (2.212) \quad\ (0.169)$$

The number in parenthesis is standard error. The error correction mechanism (ECM) is employed when cointegration exists. Equation (6) below shows the short-run deviation from the long-run equilibrium:

$$(6)\ \Delta SET_t = -0.032 + 0.209\Delta SET_{t-3} + 0.214\Delta SET_{t-4} + 0.470\Delta IP_{t-1} + 0.548\Delta IP_{t-2} + 0.638\Delta OP_{t-1}$$
$$\qquad\quad (-0.917) \quad (1.423) \qquad\quad (1.470) \qquad\quad (1.579) \qquad\quad (2.237) \qquad\quad (1.868)$$
$$\qquad\quad + 1.051\Delta OP_{t-2} + 0.771\Delta OP_{t-4} - 0.558\ ECT$$
$$\qquad\qquad (2.827) \qquad\quad (2.212) \qquad\quad (-4.268)$$

ECT in equation (6) is the error correction term. Lagged first differences coefficients at 10 percent significant level are customarily omitted. The number in parentheses is t-statistic.

The Post-Financial Crisis

The results of the unit root tests for the post-financial crisis (July 1997-December 2003) are reported in Table 3. The PP tests show that the variables are integrated at different orders. The stock market index, industrial production, nominal interest rate, and oil prices are integrated of order one, I(1). This means their first differences are stationary. Money supply, consumer price index, and nominal exchange rate are integrated of order zero, I(0), or are stationary series.

DISCUSSION

The Post-Financial Liberalization (Pre-Financial Crisis)

During the pre-financial crisis, there was a long-run relationship between the stock market index (SET) and the following macroeconomic factors: industrial production index (IP), money

supply (M2), nominal exchange rate (EX), and oil prices (OP) from Table 2 & Equation 5. Money supply positively influenced stock market index while the industrial production index, nominal exchange rate and international oil prices negatively influenced the stock market index. According to the data from Bank of Thailand, the ratio of M2 to GDP increased from approximately 0.80 before the crisis to 1.20 by the end of 1999. The ratio has changed slightly since that date. The fiscal position revealed a budgetary surplus until the crisis prompted expansionary monetary and fiscal policies to stimulate the economy. The nominal interest rate was somewhat manipulated to a low level in order to stimulate private investment spending.

Table 3: PP Test for Unit Root (July 1997-January 2003)			
Variables	PP Test Statistics		Order of Integration
	Without Trend	With Trend	
Stock Market Index: SET ΔSET	-1.730(2) [0.41] -9.359(0)***[0.00]	-1.585(0) [0.79] -9.640(2)***[0.00]	I(1)
Industrial Production: IP ΔIP	-0.474(3) [0.89] -15.126***[0.00]	-4.506(4)***[0.00]	I(1) or I(0) with trend stationarity
Money Supply(M2): M2	-3.079(4)**[0.03]	-4.265(4)***[0.01]	I(0)
Consumer Price Index: P	-4.390(5)***[0.00]	-5.490(4)***[0.00]	I(0)
Interest Rate: IN ΔIN	-0.422(5) [0.90] -5.882(4)***[0.00]	-1.951(5) [0.62] -5.866(4)***[0.00]	I(1)
Exchange Rate: EX	-5.116(1)***[0.00]	-4.671(2)***[0.00]	I(0)
Oil Price: OP ΔOP	-1.146 (1) [0.69] -6.142 (5)***[0.00]	-2.013(2)***[0.58]	I(1) or I(0) with trend stationarity
Note	The number in parentheses is the optimal bandwidth determined by Newey-West using Bartlett kernel. The number in brackets is one-sided p-values of accepting the null hypothesis of a unit root (MacKinnon, 1996). ***significant at 1 percent level and **significant at 5 percent level.		

Contrary to the existing theory, the industrial production index negatively affected the stock market index. Throughout the crisis, capacity utilization and the industrial production index declined as firms were reluctant to expand their levels of production. In spite of a decline in the industrial production index, the stock market index continued to rise because speculative motive in

financial and real estate sectors dominated the buy and hold strategy. It should be noted here that financial and real estate sectors are the major component of the stock market index. Furthermore, the nominal exchange rate adversely affected the stock market index as the inflow in portfolio investment plunged when Thai baht depreciated against the US dollar. Higher international oil prices due to foreseeable higher costs of production sent a negative signal to the stock market.

The dynamics of equation (6) indicates short-run impact of changes in industrial production and oil prices on stock market returns (also known as capital gain or loss). Stock market returns are not affected by changes in money supply and nominal exchange rate. The variables that play an important role are industrial production (or real activities) and oil prices. The error correction term (ECT) is significant at the 1 percent level. Its value indicates that about 0.56 of the discrepancy between the actual and the long-run or equilibrium, value of SET is corrected or eliminated each month. Case in point, the stock market index is related to some macroeconomic variables: industrial production index, money supply, nominal exchange rate, and international oil prices in the long run. There exists cointegration among these variables. The economic bubbles or pre-crisis relationships will not reappear if banks prevent it by restricting loans only to those firms that have fundamental strength. However, it must be said that what routinely occurs in a well-developed stock market may not appear in an emerging stock market.

The Post-Financial Crisis

The Johansen cointegration test in Table 4 shows no cointegration among four nonstationary variables. Thus, the Granger causality test is implemented. This test requires a stationary pair-wise series. Table 5 exhibits results from bivariate causality tests.

The post-financial crisis shows no cointegration between stock market index (SET) and crucial macroeconomic variables (Table 4). At the height of the crisis, the Bank of Thailand decided to no longer "peg" the nation's exchange rate. The exchange rate fluctuated erratically until 1998, when the fluctuations subsided. This structural break changed the behavior of investors and business firms. Due to the instability induced by the financial crisis, the variables become integrated at different orders post-crisis. As a result, it caused a change in the relationship between stock market returns and macroeconomic variables.

Unidirectional causality exists between stock market returns (DSET) and the following macroeconomic factors: money supply (M2), change in nominal interest rate and nominal exchange rate (Table 5). As indicated in Table 5, the money supply causes stock market returns to change in the same direction. In other words, money supply is a precursor of stock market returns. The money supply became the only variable to affect stock market return in the post-crisis period. This is due in part to its primary role in economic stimulus, while followed by expansionary fiscal policy. Additionally, information about economic conditions is not effectively transmitted among investors in the stock market. Furthermore, stock market return is a leading indicator of movements in

nominal interest and nominal exchange rates under the managed float regime (post-financial crisis) with the highly significant causation from stock market return to nominal exchange rate and nominal interest rate.

Table 4: Johansen Cointegration Test (July 1997-December 2003)		
Cointegration rank (r)	Maximum Eigenvalue Statistics	Trace Statistics
r=0	18.90 (27.07)	41.44 (47.21)
r≤1	11.59 (20.97)	22.54 (29.68)
r≤2	7.64 (14.07)	10.95 (15.41)
r≤3	3.30 (3.76)	3.30 (3.76)
Note The number in parenthesis is critical values at the 5 percent level.		

Table 5: Granger Causality F-Statistics (July 1997-December 2003)			
Lags	F-statistic	Optimal Lag	AIC
ΔIP → ΔSET ΔSET → OL68\f"Symbol"\s12IP	0.72 (0.40) 1.46 (0.23)	1	-4.54
M2 → ΔSET ΔSET → M2	4.18 (0.04)** 0.21 (0.65)	1	-7.96
P → ΔSET ΔSET → P	2.38 (0.13) 0.51 (0.48)	1	-9.49
ΔIN → ΔSET ΔSET → OL68\f"Symbol"\s12IN	2.56 (0.11) 6.88 (0.01)***	1	-5.72
EX → ΔSET ΔSET → EX	0.97 (0.38) 7.89 (0.00)***	2	-5.09
ΔOP → ΔSET ΔSET → OL68\f"Symbol"\s12OP	0.55 (0.46) 0.01 (0.93)	1	-3.37
Note Numbers in the parentheses are probabilities of accepting the null hypotheses of no causality. ***significant at 1 percent level, **significant at 5 percent level, and *significant at 10 percent level.			

Also noteworthy is the evidence showing that there are no relationships between stock market returns and the following macroeconomic factors: industrial production index, and oil prices. In order to prevent adverse supply shocks, the government controls the price of gasoline used in real activity. Thus, world oil prices did not have a significant impact. The erratic behavior of the stock

market was considered to be a temporary or transitory phenomenon as the economy gradually heals itself and adjusts toward long-run stability.

CONTRIBUTIONS

This paper makes two main important contributions to the literature concerning the long-run relationship between the stock market and macroeconomic variables. First, no existing research has studied this relationship in Thailand using a unit root test and cointegration test in the period that contains a structural break. The post-financial liberalization (and pre-financial crisis) and post-financial crisis periods are examined to control for the structural break that may result from changes in policy regime. Second, in the absence of cointegration after the financial crisis, the results from causality testing yield different notions from the existing literature. In summary, relationships exist among stock market return, money supply, nominal interest and exchange rate in the post- financial crisis. The industrial production index is not an indicator of stock market expansion at all after the financial crisis. Oil price shocks do not have an impact on the stock market, as generally believed. The estimated results should be stable and statistically acceptable since well-known and acceptable econometric methods were employed in the analysis.

IMPLICATIONS

This study finds that the stock index is cointegrated with some macroeconomic variables in the pre-financial crisis, but not in the post-financial crisis. During the post-financial liberalization prior to the financial crisis in Thailand, the industrial production index adversely affected stock market index (equation 5). This is contradictory to the belief that there is a positive linkage between real activities and stock market. The structural break has caused a change in the relationship between the stock market index and crucial macroeconomic variables. At the height of the financial crisis, the money supply played an important role. This suggests an expansionary monetary policy may be able to stimulate the stock market. An increase in money supply will increase stock market returns. However, the evidence obtained here suggests that this policy will be effective only in the short run. Additionally, understanding the stock market reaction to various macroeconomic variables over time, especially during an economic crisis, should provide valuable insight to both practitioners and researchers. For example, stock market returns may be employed as a leading indicator of change in nominal interest and exchange rates. The practical implication of this research is that in the recovery from an economic crisis, especially if it has significant financial implications, investors should spend more time and effort acquiring the knowledge associated with monetary policy and its effects on the economy.

CONCLUSION

This study examines the relationship between the stock market and several macroeconomic variables in Thailand. The Phillips & Perron (PP) test is used to test for unit roots in the variables in question. Cointegration tests between the stock market index and a set of the macroeconomic variables are performed for two periods, the post-financial liberalization and post-financial crisis periods. The existing literature indicates that real economic activity has a strong and positive effect on the stock market index. Money supply has a positive influence on stock market returns while inflation has a negative impact. Furthermore, oil price shocks and nominal exchange rate movements have been found to adversely affect stock market returns. Contrary to these findings, this study has found cointegration between stock market index and crucial macroeconomic variables during the pre-financial crisis only. During the post-fiancial crisis, causality between stock market return and macroeconomic variables is observed (to some extent) only for the money supply, change in nominal interest rate and exchange rate variables. In order to generalize the results obtained above, several suggestions for future research may be offered. The empirical model may be estimated with additional and/or alternative economic and financial factors. Studies encompassing various regions should be conducted when more data are available. Such research will contribute toward improving our understanding of the emerging financial markets responses to the frequently occurring phenomena of economic crisis induced by globalization.

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IMPLICATIONS OF THE "BIG BANG" ACCOUNTING REFORM ON KEY FINANCIAL RATIOS

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ABSTRACT

Japan has been implementing drastic changes in the field of accounting. Several new accounting standards have been established to align with the International Accounting Standards. Among these are the requirement of filing consolidated financial statements, semiannual interim reporting, pension cost accounting, income tax allocation accounting, translation of foreign currency, accounting for financial instruments, and fair value reporting on marketable securities.

This study examines the impact of the new standards on nineteen of the twenty-three large companies available in the Thompson database during 1999 – 2002. The findings of this study indicate that the new accounting rules in Japan introduce the greatest volatility to the profitability ratios. The volatility of debt/assets ratio is ranked next. The liquidity ratios and efficiency ratios are relatively less affected.

INTRODUCTION

Japan has been implementing drastic changes in the field of accounting since November 11, 1996. On that date, Prime Minister Hashimoto announced that the Japanese financial market would be transformed into an international financial market. This marked the inauguration of the Japanese "Big Bang." Several new accounting standards were then established to align with the International Accounting Standards. Among these are the requirement of filing consolidated financial statements with the Ministry of Finance, semiannual interim reporting, pension cost accounting, income tax allocation accounting, accounting for financial instruments including derivatives, and fair value reporting on marketable securities.

These new standards became effective for fiscal years beginning on or after April 1, 1999. They demonstrated a significant impact on key financial ratios of Japanese firms as early as 2002. Given the depressed stock markets, the low interest rates, and the economic slump in the last decade, projected benefit obligations of pension plans will probably exceed the plan assets. Obligations that once were shown only in the non-consolidated subsidiaries are now required to be aggregated with the parent's. Fair value is now required to be applied to marketable securities and derivatives. The latter will have a significant impact on cross-holding strategic investments among the keiretsu members. While these new standards secure a level of transparency relatively more in

line with international practices, they will have a significant impact on the key ratios of Japanese corporations.

The purpose of this study is to examine the impact of the new standards on Japanese large companies available for analysis in the Thompson database. The financial data were analyzed for the period 1999-2002. A comparison was made of the years prior to 2002 with the year 2002, when the new standards were fully implemented. The findings of this study provide insight to investors and management for understanding, investing, and managing Japanese corporations after the "Big Bang" accounting reforms.

DATA

Data for this study are derived from the Thompson database which contains 23 large Japanese firms. Four firms from the banking industry with incomplete data and one firm using U.S. GAAP rather than the Japanese Generally Accepted Accounting Principles are dropped from the sample. Hence, nineteen firms using the Japanese Generally Accepted Accounting Principles constitute the sample firms.

Table 1 provides firm characteristics. As shown, the sample companies represent a broad distribution of 12 industries. The chemical and pharmaceutical industries are represented by three companies in each industry, and the retail, transport equipment, and machinery industries are represented by two firms per industry. Each of the remaining industries is represented by one company per industry.

Table 1: Firm Characteristics		
Company Name	Industry Category	2002 Total Assets
Toyota	Transport Equipment	19,423,744
Asahi Kasei Corp.	Chemicals	1,187,702
Asahi Breweries	Foods	1,246,782
Toyota Industries	Machinery	1,768,164
Tonengeneral Sekiyu KK	Oil and Coal Products	989,845
Tokyu Corporation	Land Transport	2,459,654
Tokyo Electric Power Co.	Electric Power and Gas	14,232,371
Takeda Chemical Ind. Ltd.	Pharmaceutical	1,959,934
Sumitomo Electric Ind. Ltd.	Nonferrous Metals	1,740,357
Seven Eleven Japan Co. Ltd.	Retail	792,584

Table 1: Firm Characteristics		
Company Name	Industry Category	2002 Total Assets
Ono Pharmaceutical Co. Ltd.	Pharmaceutical	340,837
Oji Paper Company Ltd.	Pulp Paper	1,606,348
Mitsubishi Motors Corp.	Transport Equipment	2,802,647
Mitsubishi Chemical Corp.	Chemicals	2,163,815
Marui Co. Ltd.	Retail	729,661
Mabuchi Motor	Electrical Machinery	260,189
Daikin Industries	Machinery	457,198
Diichi Pharmaceutical Co. Ltd.	Pharmaceutical	513,884
Nitto Denko Corp.	Chemicals	341,148

As for size, the average total assets in 2002 was 3,154,125 yen, the largest was over 19 million yen, and the smallest was over 260 thousand yen. The majority of the sample firms (75%) had year-end on March 31, 11% on December 31, 5% on January 31, and 5% on February 28. Hence, the sample firms in general were large firms representing a broad distribution of industries and having a fiscal year-end on March 31.

EFFECTS ON FINANCIAL STATEMENTS AND RATIOS

The new accounting standards were expected to affect reporting and accounting. While a semiannual interim reporting requirement improves the timeliness of reporting, it does not affect the accounting. Among the new accounting standards that became effective beginning on or after April 1, 1999 were the treatment of consolidated financial statements as the primary financial statements and income tax allocation (The Japanese Institute of Certified Public Accountants, 1999). These changes impacted financial statements with fiscal years ending on March 31, 2000. Another major group of accounting changes took place beginning April 1, 2000. These changes entailed fair value reporting of marketable securities, pension plan assets, and derivatives. Additionally, revisions were made on foreign currency translation. This last group of changes affected financial statements with fiscal year-end of March 31, 2001.

Consolidated Financial Statements.

Effective April 1, 1999, the Japanese accounting standard on consolidated financial statements is substantially based on International Accounting Standards No. 27, "Consolidated

Financial Statements." Consolidated financial statements are treated as the primary financial statements. Companies are required to report consolidated financial statements as long as the parent company has effective control over a subsidiary.

Although the requirement of preparing consolidated statements was in force back in 1975 and had been disclosed as a part of the annual securities report since 1991, the parent company financial statements were treated as the primary financial statements. With the new revision, consolidated financial statements have become the primary financial statements. Consequently, financial analysis should now be based on the consolidated rather than the parent company financial statements. This change increases aggregated assets and liabilities on the balance sheet. While the net income remains intact, total revenues and total expenses increase. As shown in Table 2, all the liquidity ratios, asset turnover, profit margin, and return on assets ratios are impacted.

Table 2: Potential Impact from Consolidated Financial Statements										
Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Impacted Either Direction	Impacted Either Direction	Impacted Either Direction	Impacted Either Direction	Impacted Either Direction	Increase	Decrease	Decrease	No Impact	No Impact	Increase
Note: Either direction can be either increase or decrease										

Income Tax Allocation

Consistent with International Accounting Standard 12, Japanese accounting standards now require the adoption of asset-liability in inter-period tax allocation. Despite the fact that Japanese accounting has been influenced by Japanese tax law, timing differences do arise in the new environment when the accounting model is patterned after the Anglo-Saxon model. Based on the accrual basis in accounting for bad debt expense and pension costs, there is a timing difference in accounting for bad debts, tax loss carry-forward, accrued pension and severance costs, unrealized gains or losses on investments in securities and unrealized inter-company profits. Given the incentive of following tax law in accounting in order for expenses be deductible, there is a high probability that the deferred tax resulting from that application will be an asset rather than a liability. In other words, expense per financial accounting is either equivalent to deductible for income tax reporting or recognized earlier because of the accrual basis. The effect of the change would likely be recognition of income tax benefit on the income statement and deferred tax asset on the balance sheet. This will give rise to higher net income and assets. Table 3 illustrates the potential impact from the application of income tax allocation. As shown, while the asset turnover is decreased by the recognition of a deferred tax asset, it is not impacted by a deferred tax liability. Also, the impact

on the profitability ratios and debt ratio of a deferred tax asset is the reverse of that of a deferred tax liability.

Table 3: Potential Impact from Income Tax Allocation											
Type of Deferred Tax Account	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collect-ion Period	Inven-tory Turn-over	Asset Turn-over	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Asset	Increase	N/A	N/A	N/A	N/A	Decrease	Increase	Increase	Increase	Increase	Decrease
Liability	Decrease	N/A	N/A	N/A	N/A	N/A	Decrease	Decrease	Decrease	Decrease	Increase
Legend: N/A denotes Not Applicable.											

Fair Value of Securities

Effective April 1, 2000, listed companies are required to adopt the new accounting standard in reporting financial instruments at fair value. This is a change from the lower of cost or market method for marketable securities and cost method for other investments. Securities are required to be classified as trading, available-for-sale, or heldto-maturity. Both trading and available-for-sale securities are carried at fair value. The change in fair value under the trading classification is reported as unrealized gains or losses on the income statement. The unrealized gains or losses of the available-for-sale securities are shown as a separate component of stockholders' equity, net after taxes.

This new accounting principle for trading securities impacted income statements for the fiscal year which ended March 31, 2001. According to the 2001 Mitsubishi Motors Corporation Annual Report, the adoption of this new standard resulted in an increase in loss before income taxes and minority interest by 9,680 million yen (or $78,128 thousand) for the year ended on March 31, 2001. As shown in Table 4, the impact from the fair value reporting of trading securities is on the current ratio, quick ratio, asset turnover, debt, and profitability ratios. In addition, depending on the change of the fair value, a favorable change resulting in a gain would generate an opposite outcome.

Table 4: Potential Impact from Fair Value Reporting of Trading Security											
Change in Fair Value	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collectio n Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Loss	Decrease	Decrease	N/A	N/A	N/A	Increase	Decrease	Decrease	Decrease	Decrease	Increase
Gain	Increase	Increase	N/A	N/A	N/A	Decrease	Increase	Increase	Increase	Increase	Decrease

The effect on stockholders' equity for the unrealized gains or losses on available-for-sale securities, on the other hand, was deferred for one year. The impact on the stockholders' equity would be on financial statements with fiscal year ends of March 31, 2002. This category of

securities included cross-shareholdings owned by keiretsu member companies. The primary purpose of holding these securities is to maintain relations among corporate members. For example, in Asahi Kasei's consolidated balance sheet, the net unrealized gains amounted to 26,233,000 yen as of March 31, 2002. Although this change has no impact on net income, available-for-sale securities classified as current would impact the current ratio, quick ratio, asset turnover, and debt ratio. Those classified as non-current, on the other hand, would not have an impact on the current ratio and quick ratio. Table 5 and Table 6 detail the pertinent ratios affected by the type of change in fair value from the fair value reporting of available-for-sale securities classified as current and non-current respectively.

Table 5: Potential Impact from Fair Value Reporting of Current Available-For-Sale Security											
Change in Fair Value	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Loss	Decrease	Decrease	N/A	N/A	N/A	Increase	N/A	Increase	Increase	N/A	Increase
Gain	Increase	Increase	N/A	N/A	N/A	Decrease	N/A	Decrease	Decrease	N/A	Decrease

Table 6: Potential Impact from Fair Value Reporting of Non-Current Available-For-Sale Security											
Change in Fair Value	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Loss	N/A	N/A	N/A	N/A	N/A	Increase	N/A	Increase	Increase	N/A	Increase
Gain	N/A	N/A	N/A	N/A	N/A	ecrease	N/A	Decrease	Decrease	N/A	Decrease

As the global economy was very volatile and fair value fluctuated, it was anticipated that the adoption of the new accounting standard on reporting trading securities at fair value would introduce volatility to the net income for the fiscal year ending March 31, 2001. The initial transition change resulting from the changes in fair value would either increase or decrease net income in the period of adoption. The related ratios on profitability would also be impacted in the year ending on March 31, 2001. On the other hand, the impact on stockholders' equity, from the required reporting available-for-sale securities in April 2001, would not affect the profit margin and EPS ratios by the fiscal year end of March 31, 2002.

Pension Accounting.

The new standard on pension accounting did not go into effect until March 31, 2000. Under this standard, listed companies are required to record pension costs and liabilities on an accrual basis. Consistent with the International Accounting Standard 19, the pension benefits are based on future salary levels discounted to the present value based on actuarial calculations and estimations. Plan assets are required to report at fair value. Unrecognized prior service costs at the date of

implementation are to be amortized over 15 years. The amortization period reflects a slight deviation from the international accounting standard. The latter requires that the transitional amount be expensed immediately or over a five-year period from the date of adoption. Japanese firms appear to amortize it over fewer than 15 years. For example, Daikin's annual report disclosed that there was a transitional obligation of 25,249 million yen as of April 1, 2000 and that it was being amortized over a seven-year period. Another deviation is the omission of applying the corridor amortization on the pension gains and losses under the new Japanese accounting standard.

From the income statement perspective, the initial transition charge resulting from the recognition of pension expenses for the fiscal year ended March 31, 2001 would decrease net income. It is unlikely that companies would over-fund the pension fund in the prevailing sluggish economy. The impact on the balance sheet would be an increase to the pension liability. Consistent with the conceptual construct, Mitsubishi Motors Corporation Annual Report indicated that the adoption of the new standard for retirement benefits increased the retirement benefit costs by 116,984 million yen and loss before income taxes and minority interests by 117,569 million yen in the year ending March 31, 2001. As shown in Table 7, this accounting change would decrease the profitability ratios (other than the profit margin ratio) and increase the debt ratio.

Table 7: Potential Impact from Pension Accounting										
Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
N/A	N/A	N/A	N/A	N/A	N/A	N/A	Decrease	Decrease	Decrease	Increase

Translation of Foreign Currency Balances and Transactions.

Effective April 1, 2000, the revised accounting standard requires long-term receivables and payables denominated in foreign currencies, which were translated at the exchange rate prevailing at the transaction dates under the old standard, to be translated at the current exchange rates on the balance sheet date. The impact of this is not only on the receivables and payables, but also on the income statement, since the unrealized gains and losses are charged currently to other income (expense). Hence, the profitability and debt ratios would be impacted. For example, Mitsubishi Motor Corporation reported a foreign exchange loss amounting to 224 million yen (or $1,808 thousand) from this accounting change. Table 8 illustrates the impact from the revision of translating long-term receivables and payables on the profitability and debt ratios when foreign currency is strong. The opposite would be true if foreign currency were weak.

Another revision is on the current rate method in which the currency of the overseas subsidiary is the local currency. Any gains or losses resulting from the translation of the foreign currency into yen was formerly accounted for as a component of assets or liabilities in the previous fiscal years, and should now be recorded as a component of shareholders' equity and minority

interest in the consolidated balance sheet. The volatility of shareholders' equity would be enhanced from this revision. Likewise, the Return on Equity ratio would fluctuate more than before. Table 9 illustrates and compares the potential impact of this revision when the foreign currency is strengthening versus weakening. As shown, when the foreign currency is strengthening, the equity would increase. A larger denominator of the equity would give rise to a decrease in the ROE ratio. The reverse is true when the foreign currency is weakening.

Table 8: Potential Impact from the Revised Translation of Foreign Currency (F.C.) Transactions											
Type	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Long-Term Receivable-Strong F.C.	N/A	N/A	N/A	N/A	N/A	Decrease	Increase	Increase	Increase	Increase	Decrease
Long-Term Payable-Strong F.C.	N/A	N/A	N/A	N/A	N/A	N/A	Decrease	Decrease	Decrease	Decrease	Increase

Table 9: Potential Impact from the Change of Foreign Currency (F.C.) Translation under the Current Rate Method											
Foreign Currency	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Strengthening	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Decrease	N/A	N/A
Weakening	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Increase	N/A	N/A

Derivative and Hedging Activities.

Effective April 1, 2000, companies are required to state the derivatives position at fair value. The changes in fair value of derivatives designated as hedging instruments is deferred only until the loss or gain on the underlying hedging instrument item is recognized. Formerly, gains or losses on derivative positions were deferred without the assessment of hedge effectiveness.

From an income statement perspective, the adoption of this accounting standard will not have any impact if the fair value hedge is perfect. On the other hand, if the hedge is a cash-flow hedge, the pronounced impact is on ROE. This is attributed to the unrealized gains or losses on the cash flow hedge which are "parked" in stockholders' equity awaiting the "arrival" of the realization of the hedged items. Table 10 illustrates and differentiates the impact from the fair value reporting of a cash-flow hedge when there was an unrealized loss as compared to an unrealized gain. As a change in the fair value of a cash flow hedge does not impact income, an unrealized loss would give rise to an increase in ROA, ROE, and debt ratios. The reverse would be true for an unrealized gain.

Table 10: Potential Impact from Fair Value Reporting Derivatives and Hedging Activities											
Cash Flow Hedge	Current Ratio	Quick Ratio	Receivable Turnover	Avg. Collection Period	Inventory Turnover	Asset Turnover	Profit Margin	ROA	ROE	EPS	Debt/ Assets
Unrealized Loss	N/A	N/A	N/A	N/A	N/A	Increase	N/A	Increase	Increase	N/A	Increase
Unrealized Gain	N/A	N/A	N/A	N/A	N/A	Decrease	N/A	Decrease	Decrease	N/A	Decrease

The alignment of the Japanese accounting standards with the International Accounting Standards gave rise to a number of significant changes. All the key accounting elements are impacted in both directions: increases and decreases. Among the ratios, the profitability ratios will probably experience the greatest impact. The volatility of these ratios will be relatively higher than the other ratios.

ANALYSIS OF RESULTS

Table 11 displays the comparative volatility of key ratios. As expected, all the profitability ratios are relatively more volatile than the other ratios. The volatility of the debt/assets ratio is ranked as the next highest following the profitability ratios. Overall, the liquidity ratios and efficiency ratios are less volatile from the change in accounting principles.

Table 12 reflects the differences of the key ratios between 2002 and the average of the three prior years. Consistent with the estimate made by Goldman Sach in 1999, ROE experienced a remarkable drop in 2002 when compared with the average of the prior years (Gordon 1999, 43). Only four firms (21%) showed a positive increase in 2002 when compared to the average of prior years. Nevertheless, profit margins had the highest drop among the profitability ratios, and ROA had the least decline. Surprisingly, EPS showed a significant increase of 59% in 2002 over the average of prior years. This suggests that there must be shrinkage in the number of shares outstanding. Also, the exceptional improvement in Asahi Brewery earnings in 2002 of more than 22 times over the mean of prior years enhanced the remarkable increment in EPS. Only six firms (32%) reported increases in EPS in 2002.

Not surprisingly, the debt/assets ratio reflected an overall increase in 2002. However, seven firms (37%) showed a decrease in this solvency ratio. Unexpectedly, the accounting reforms appeared to improve the receivables turnover and average collection period. Twelve firms (63%) reflected improvements in the efficiency in collecting the receivables in 2002. Although the accounting changes had the least impact on the receivable turnover and the average collection period, these ratios showed improvements. This is probably attributed to the recent corporate restructuring since 1997 to address the impact of the new accounting standards. Corporations were pressured by the changes in accounting principles to sell unprofitable business units and subsidiaries.

The divestiture of the keiretsu-related investments and the reclassification of the marketable available-for-sale securities from the current assets to non-current assets (other investments) resulted in a decrease in current ratio and quick ratio. As shown in Table 12, nine firms displayed a decrease in current ratio and ten firms in quick ratio.

Although the significant "Big Bang" financial reforms on a sluggish economy were expected to give rise to severe, negative impacts on the financial position and performance of the Japanese firms, five firms (26%) were not negatively affected in terms of profitability. One was found in transport equipment, one in the chemical industry, one in electric power and gas, one in food, and one in pharmaceuticals. This demonstrates that companies that apply the effective strategies in a timely fashion can improve their operating results reported under the new rules.

SUMMARY AND CONCLUSIONS

The Big Bang Accounting Reform facilitated investors with timely and transparent information. The weak reporting system of the past with opaque disclosure of hidden losses and liabilities, resulting in financial scandals and bankruptcies, appeared to be resolved by this new accounting reform. However, despite the various changes that took place during these few years, retroactive adjustments of prior years' financial statements were prohibited. The comparative financial statements were therefore not comparable. The only resort investors had was to read the notes in financial statements for any material changes in accounting policies of each company. Unfortunately, determining whether a change is "material" is a judgment call. Thus, there is no consistency in such disclosures. Care must be taken in comparing prior-year results with recent year results by taking into account the various changes that took place in Japanese accounting standards. The findings of this study indicate that the new accounting rules in Japan introduced the greatest volatility to the profitability ratios. The negative impact on these ratios is attributed to the application of fair value in a sluggish economy both locally and globally. The solvency ratio was also impacted from the consolidation of all subsidiaries over which the parent company had effective control and from the pension cost accounting. Nevertheless, not all firms were negatively affected. Five firms or 26% of the sample firms reflected no negative impact on their profitability ratios. Hence, the increased transparency and relevance in accounting reporting could actually enhance firms to manage more effectively with timely planning and strategic implementation in restructuring divisions and subsidiaries, hedging, and divestures of unprofitable business units and subsidiaries. Future research will examine the value relevance of the application of the revised accounting standards.

	Current	Quick	Rec.	Avg. Coll.	Inventory	Asset	Profit	ROA	ROE	EPS	Debt/
Table 11: Comparative Ratio Volatility*											
Company	Ratio	Ratio	Turnover	Period	Turnover	Turnover	Margin				Assets
Toyota	0.04	0.19	0.15	0.15	0.05	0.05	0.17	0.19	0.15	0.26	0.17
Asahi Kasei	0.02	0.04	0.58	0.03	0.04	0.02	0.57	0.57	0.49	0.50	0.19
Asahi Brew	0.09	0.13	0.04	0.03	0.04	0.05	3.64	3.41	3.81	3.45	0.45
Toyota Industry	0.07	0.12	0.09	0.10	0.24	0.37	0.21	0.29	0.27	0.38	0.03
Tonengener Sekiyu	0.16	0.12	0.14	0.15	0.30	0.23	-3.82	-3.80	-3.37	-2.47	0.49
Tokyu	1.40	1.36	0.25	0.33	0.28	0.22	-1.63	-1.96	-1.89	-1.88	0.99
Tokyo Elec.	0.05	0.04	0.08	0.08	n/a	0.02	0.38	0.19	0.29	0.44	0.83
Takeda Chem.	0.05	0.07	0.06	0.06	0.08	0.13	0.35	0.24	0.21	0.42	0.53
Sumitomo Elec.	0.05	0.10	0.06	0.06	0.58	0.04	0.53	0.56	0.54	0.56	0.09
Seven Eleven	0.05	0.05	0.74	1.68	0.05	0.02	0.04	0.02	0.01	0.12	0.57
Ono Pharmac.	0.13	0.14	0.06	0.06	0.16	0.03	0.16	0.18	0.23	0.12	0.84
Oji Paper	0.03	0.02	0.03	0.04	0.18	1.39	2.10	-3.58	-4.33	-4.95	0.53
Mitsubishi Motors	0.11	0.27	0.64	1.44	0.58	0.58	-1.22	-1.86	-1.94	-1.90	0.84
Mitsubishi Chem.	0.14	0.21	0.58	1.37	0.08	0.57	-1.37	-0.84	-0.70	-0.84	0.57
Marui Co.	0.13	0.12	0.09	0.10	0.03	0.04	0.18	0.41	0.28	0.28	0.26
Mabuchi Motor	0.28	0.30	0.06	0.06	0.16	0.17	0.16	0.19	0.20	0.17	0.98
Daikin	1.44	1.44	0.82	1.28	1.32	1.25	-15.44	-15.54	-12.67	1.60	0.68
Diichi	1.26	1.20	1.28	1.23	1.25	1.27	2.52	2.45	2.40	1.13	0.60
Nitto Denko	0.07	0.09	0.06	0.06	0.07	0.03	0.69	0.74	0.67	0.70	0.36
Average	0.29	0.32	0.31	0.44	0.31	0.34	-0.62	-0.96	-0.81	-0.10	0.53
Rank							3	1	2		4
*Normalized Std. Dev.(Std.dev./average)											

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Table 12: Difference between 2002 and the Average of Prior Years

	Toyota	Asahi Kasei	Asahi Breweries	Toyota	Tonen-genera Sekiyu KK	Tokyu	Tokyo Electric Power	Takeda Chemical	Sumitomo	Seven Eleven	Ono	Oji	Mitsubishi Motors	Mitsubishi Chemical	Marui	Mabuchi	Daikin	Diichi	Nitto	Average
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	
Current Ratio	4%	-3%	-9%	-6%	15%	-78%	5%	10%	-4%	-3%	18%	0%	-20%	-17%	-23%	54%	2%	6%	5%	-3%
Quick Ratio	14%	-7%	-14%	-20%	8%	-78%	7%	14%	-12%	-7%	12%	-2%	-39%	-25%	-21%	56%	0%	-4%	-3%	-7%
Receivable Turnover	-19%	52%	-3%	1%	14%	28%	-12%	12%	11%	86%	-9%	3%	95%	42%	-17%	-1%	18%	13%	3%	17%
Avg. Coll. Period	23%	-6%	3%	-2%	-13%	-27%	13%	-11%	-10%	-91%	9%	-3%	-82%	-74%	20%	1%	-16%	-12%	-3%	-15%
Inventory Turnover	-6%	5%	-4%	29%	56%	28%		-15%	-90%	7%	-15%	33%	61%	-15%	4%	-11%	4%	-5%	-7%	0%
Asset Turnover	-5%	-1%	5%	-27%	51%	23%	3%	-18%	-1%	0%	3%	-74%	39%	46%	-7%	-25%	5%	8%	-1%	1%
Profit Margin	33%	-50%	0%	0%	-200%	-133%	33%	77%	-100%	0%	-19%	-109%	-100%	-60%	0%	-6%	50%	13%	-100%	-40%
ROA	33%	-50%	0%	0%	-200%	-100%	0%	50%	-50%	0%	-13%	0%	-100%	100%	0%	-33%	100%	100%	-75%	-19%
ROE	33%	-75%	0%	0%	-200%	-155%	43%	45%	-75%	0%	-22%	0%	-118%	100%	0%	-30%	3%	14%	-100%	-30%
EPS	54%	-75%	2269%	63%	-173%	-162%	54%	98%	-71%	15%	-12%	-983%	-109%	171%	7%	-18%	47%	26%	-91%	59%
Debt/Assets	25%	19%	55%	0%	70%	158%	115%	-56%	4%	-59%	-88%	70%	128%	74%	-25%	-89%	21%	-66%	-46%	16%
Average	17%	-17%	209%	-2%	-52%	-45%	26%	19%	-36%	-5%	-12%	-97%	-22%	31%	-6%	-9%	22%	8%	-38%	-2%

PHISHING, PHARMING AND IDENTITY THEFT

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ABSTRACT

Identity theft is the fastest growing crime in America, occurring when the criminal obtains confidential information from an individual or business and uses it to access private financial accounts. In today's world of information technology, many thieves prey on their victims via the Internet. The level of disclosure of personal information in many of today's information age transactions is what leaves so many individuals and businesses open to identity theft.

Two of the most common ways that thieves acquire personal information to aid them in identity theft are phishing and pharming. Phishing utilizes bulk e-mail messages to entice recipients into revealing personal information. Pharmers, on the other hand, cast a wide net for the unwary. There is a huge potential reward for criminals who succeed in these malicious acts. In addition, now that organized crime has become involved, the money available to help thieves carry out the crimes is immense.

Information indicates that U.S. losses are approximately $52.6B per year. Approximately 90% of this total is being carried by businesses and financial institutions, and consumers' cost is the remaining 10%. Another huge cost of identity theft, to businesses is the loss of customer trust. Creating awareness is one of the most important tools in fighting identity theft via phishing and pharming schemes. However, it is not enough. Financial institutions and consumers need to work together to prevent future occurrences. Hopefully, with advanced technology and continued educational outreach by businesses, financial institutions and educational organizations, there will be a decline in the level of identity theft taking place on the Internet.

INTRODUCTION

The United States Postal Service, the Federal Bureau of Investigation, the National Crime Prevention Council, the Office of the Inspector General and others have all referred to identity theft as the fastest growing crime in America. Identity theft occurs when a criminal obtains confidential information from an individual or business and uses it to access private financial accounts. The personal information stolen from an individual in order to gain this access might include social security number (SSN), address, date of birth, or mother's maiden name. Once offenders have this

information, they have the ability to open bank accounts, make loans, rent homes, apartments or automobiles, set up utilities and a myriad of other things, all in another individual's name. Information stolen from a business might include bank account numbers, bank access codes, computer access codes or restricted employee records. Thus, just as with identity theft against an individual, the company's financial accounts, or perhaps those of individuals whose information was taken from the company, are then capable of being violated.

In today's world of information technology, many thieves prey on their victims via the Internet. The level of disclosure of personal information in many of today's information age transactions is what leaves so many individuals and businesses open to identity theft. Online purchases, credit card purchases at restaurants or gas stations, or ATM access all require personal information. When a thief gains access to this information, individuals and/or businesses can become potential victims of identity theft. It has been estimated that there were nearly 10 million cases of identity theft in 2005, which translates to 4.6% of the U.S. population annually (How Many…, 2006). Identity theft is not limited to the U.S. so when it is considered globally, the number of cases increases significantly.

At the recent Chief Securities Officer (CSO) Perspectives Conference, it was reported that: (1) 53 million identities have been stolen to date and 19,000 more are stolen every day and (2) Companies, on average, spend 1,600 work hours per incident at a cost of $40,000 to $92,000 per victim (Friedenberg, 2006). U.S. losses have stabilized (since 2003) at approximately $52.6 billion per year and that approximately 90% (or some $47.6 billion) of this total is being carried by businesses and financial institutions, with consumers' cost is the remaining 10%, or around $5 billion (How Many…, 2006). Focusing on these statistics on a per incident basis, the average cost has been stated as $10,200 for institutions and $1,180 for individuals.

Another huge cost of identity theft, to businesses, is the loss of customer trust, resulting in a loss of positive customer relations. According to Edward McNicholas, a partner in the law firm Sidley Austin, "if you experience a security breach [of customers' personal information], 20 percent of your affected customer base will no longer do business with you, 40 percent will consider ending the relationship, and 5 percent will be hiring lawyers!" (Friedenberg, 2006).

While there are many ways in which identities are stolen, this paper will focus on two: phishing and pharming. Each of these schemes relies on the Internet to gain the information necessary to acquire one's identity and while phishing is much more common, pharming is much more difficult to defend against as an individual. In a nutshell, phishing utilizes bulk e-mail messages to entice recipients into revealing personal information, while pharming secretly installs a virus or malicious program on a computer. As a result of the program, when the user types in legitimate web address, they are taken to an imitation of the site. Using these methods, identity thieves seek social security numbers, financial account numbers, credit card numbers, mothers' maiden names, and other personal information. The amount of personal data available on the Internet is amazing and criminals instigate huge amounts of fraud with this easily obtained information.

While phishing and pharming are opportunistic crimes, the level of criminal organization, motivation, and financing is escalating. The problem is directly related to the anonymity of the Internet and the amount of the money that can be quickly stolen. For instance, an e-mail that appeared to be from the security division of e-gold.com was sent to members to update their configuration settings. Authorized users of e-gold.com buy and sell title to gold deposits held in London and the United Arab Emirates. Opening the official-looking e-mail instantly downloaded a keylogger virus. The malicious program opened a hidden web session in the background draining the user's account while they were connected to the e-gold.com official web site. According to Paul Stamp, a Forrester Research computer security analyst, the amount of money stolen this way is unknown (Cyber crime…, 2005). This is only one example of phishing; however, it demonstrates how powerful and dangerous a tool for fraud it is, when employed by the "right" user.

In order to minimize the risk of being victims of identity theft, individuals and businesses must take measures to protect against theft of their private information. Some of these measures involve simply using common sense about giving out private data or providing it online, others involve technical security measures.

PHISHING

As stated previously, phishing is initiated through bulk emails. The sender of the email somehow persuades the recipient to voluntarily giving personal information. Phishing is much more insidious than spam e-mail messages selling products. The average time for spammers to target e-mail addresses is 29.5 days. Identity criminals, on the other hand, typically act on victims' responses within 14 hours of receipt. The difference in speed may be due to the operating structure of the crime. Typically there is a division of labor between the harvesters of e-mail addresses and the actual spam senders. Phishing is a serious solitary criminal activity according to Matthew Prince, co-creator of Project Honey Pot a spam tracking service (Mindlin, 2005).

Phishing e-mails are lures cast into cyberspace in an attempt to hook the unwary. For example, a criminal may send out one million e-mails that appear to be from SunTrust Bank. By chance, some recipients will actually be SunTrust customers. This does not mean that a list of SunTrust customers is circulating on the Internet. Still, in some instances, financial institutions may have disclosed customers' information. Privacy notices warn individuals that their information may be shared unless the customer follows specific instructions (Huntley, 2005).

Even the Internal Revenue Service is not immune to phishers. In November, 2005 the IRS issued a consumer alert about e-mails from taxrefunds@irs.gov (IRS Warns…, 2005). The e-mail directs readers to a link that requests social security and credit card numbers. Stolen identity can be used in multiple ways, for example, to open new credit accounts, apply for loans or benefits, or to file a fraudulent tax return (Palmer, 2006). Identity thieves select companies that are likely to appear

relevant to its potential victims. In addition to various banks, other popular companies used in the phishing emails are eBay and paypal, high volume Internet sites.

Consumers are enticed into revealing their personal identification and financial information on fraudulent web sites, also known as spoofed web sites. The victim may receive a phishing e-mail describing a plausible problem that appears serious. To correct the supposed issue, the consumer will be provided with a link to a sophisticated imitation of the bank's web site in order for the victim to confirm account information. The phisher can then use the stolen PIN numbers, passwords, and identity to empty bank accounts.

The phisher has another option: he or she can sell the information. Despite years of security improvements and improved law enforcement, stolen consumer information can be easily found for sale on the Internet. The black market for this data is well organized. Buyers, sellers, intermediaries and even service industries meet in cyberspace, frequently on web sites that are run from computer servers in the former Soviet Union. In fact, traders earn titles, ratings and reputations for the quality of the stolen goods. Malicious-code writers advertise their services to phishers who in turn contract with spammers to send out millions of increasingly sophisticated phony e-mails to lure victims (Zeller, 2005b).

The logic behind every phishing campaign is that someone, somewhere, will always take the bait. True, phishing e-mails and web sites have improved significantly. In addition, new computer users along with a portion of the population are simply gullible and get tricked by implausible offers. Over twenty years ago, J. Barton Bowyer proposed that deception follows two basic strategies, hiding the real or showing the false. To hide the real, a criminal might use masking: concealing critical characteristics, repackaging: adding or subtracting components, or dazzling: obscuring the truth. To show the false a thief might use mimicking: false imitations, inventing: lies made out of a portion of the truth, or decoying: distracting from the truth (Zeller, 2005a).

Twenty years later researchers at the University of Virginia and the University of Texas at Austin suggested that these same basic categories transfer into the virtual world. There are few barriers to enter online crime. Moreover, the Internet provides an incredible opportunity to reach millions of potential victims at the same time. In other words, for criminals, phishing continues to pay (Grazioli and Jarvenpaa, 2003).

A potentially more lethal version of phishing, spear-phishing, is raising alarms among the digital world's watchdogs. This hybrid form of phishing casts lures for specific victims instead of casting a net across cyberspace to catch hordes of unknown prey. Security specialists say that spear-phishing is much harder to detect than phishing. Messages appear to be legitimately sent from well-known organizations with a twist, the e-mails are targeted at people known to have an established relationship with the imitated sender. Software, for example a keylogger, is used to monitor the web access by victims and it starts recording information when the user enters the sites of interest to the fraud perpetrator, enabling them to directly target those persons. In addition, spear-phishing is more

likely to be linked to sophisticated groups seeking financial gain, trade secrets or military information. It is one of the most insidious cyber crimes encountered (O'Brien, 2005).

Alan Paller, research director at the SANS Institute, a group that trains and certifies computer security professionals, believes that there has never been a better attack method than spear-phishing (O'Brien, 2005). There is little data about actual incidents of spear-phishing because victims are hesitant to come forward. In June 2005, the National Infrastructure Security Coordination Centre, a government agency that monitors computer security in the United Kingdom, issued a rare public warning about a spear-phishing campaign aimed at industrial and government computer networks. "Files used by the attackers are often publicly available on the Web or have been sent to distribution lists," the warning said. "The attackers are able to receive, trojanise and resend a document within 120 minutes of its release, indicating a high level of sophistication" (Targeted Trojan..., 2005). The warning reported that the phishing e-mail messages appear to come from a trusted sender. In addition, antivirus software and firewalls did not protect receivers, and worse, there was no way to completely protect any computer connected to the Internet from the attack once the recipient opened the spear-phishing e-mail. The files used by the criminals are often publicly available on the Internet or have been sent to distribution lists.

Cyber crime is cost effective for spear-phishers. CipherTrust, a computer security firm, reports that a spear-phisher can rent a server for as little as $300 a month after paying a $100 set-up fee. Spam-sending software on the server is approximately $1,200 a month and for another $1,900 a month the spear-phisher obtains spam-sending proxies, a database of e-mail addresses, and other add-ons. The relatively low-cost endeavor can reap lucrative rewards depending on the number of victims hooked (A Little Fraud..., 2006).

Johannes Ullrich at the SANS Institute's Internet Storm Center believes that phishing and spear-phishing will merge so that company logos can be stolen from web sites to build customized databases of corporate logos. After all, the goal of all attacks is automation, getting the largest effect with the least amount of effort (O'Brien, 2005).

PHARMING

Pharming is a more technologically advanced form of phishing in which a virus or malicious program is secretly installed on a computer. Typing in a legitimate web address takes the computer user to an imitation of the site. As a result, any information provided at the fake web site, such as account numbers or passwords, can be stolen (ID thieves preying..., 2005). Thus, even though the computer screen displays the desired web address, the domain-name server system has redirected the traffic to a fraudulent location (Biersdorfer, 2005).

Computer users unintentionally download the malicious program without clicking on a link or opening an attachment. Opening a pharmer's e-mail message is all that is required to install the stealth application redirecting the browser to a counterfeit web site. Moreover, the newest form of

pharming does not even require e-mail. A virus can attack through Microsoft Messenger using a keylogger. This type of virus tracks a user's keystrokes on legitimate web sites and captures passwords. Consequently, consumers who use the same password on numerous sites expose themselves to multiple frauds (Hicks, 2005).

Pharmers cast a wide net across the Internet to catch prey. Redirecting Internet traffic to fraudulent web sites can be done several ways. For instance, pharmers often take advantage of spelling mistakes in domain names. The pharmer builds a web site with one letter missing from the legitimate address to trick the unwary into believing the address is genuine. Another popular mode of pharming is malware, malicious software. This type of virus alters the code of a consumer's computer causing a correctly typed address to be redirected to a fraudulent web site. Slamming is an additional method utilized by pharmers to redirect Internet traffic. Slamming takes place when a domain transfer request is submitted to move the domain name to a different registrar. The pharmer, who is also the account holder at the new registrar, then controls where the web address sends computer users (Swann, 2005).

Domain name server poisoning is still another avenue available to pharmers. Domain name servers (DNS) convert web addresses into Internet Protocol addresses and routes the computer user to the correct location. Thirteen root DNS servers cover the entire Internet along with a number of local servers. Once reconfigured, the DNS can send users to any number of web sites and seriously compromise the entire Internet system (Swann, 2005). To illustrate, once a web URL address is typed into a browser, it accesses a DNS server to retrieve a numeric Internet Protocol (IP) address corresponding to that URL address in order to display the requested web page. A pharming mode of operation is to alter the list of addresses in a DNS server so that a legitimate URL address points to an illegitimate Internet Protocol address, the fraudulent web site (Buckler, 2005).

Pharming attacks usually target small local servers operated by Internet service providers (ISP). However, these attacks can be aimed higher, specifically, upon the 13 servers on which all other DNS servers rely. DNS security extensions (DNSsec) is designed to guard against these types of threats by encrypting addresses with a procedure similar to the IP security protocol used to protect e-commerce transactions. DNSsec offers the ability to verify that the address returned by a DNS server has not been altered (Buckler, 2005).

Unfortunately, DNSsec is rarely utilized because it is only effective in a tight community where information is sent back and forth between itself. It is simply not practical to secure sub-domains one at a time due to the number of security keys involved. Ronald Aitchison, author of Pro DNS and Bind, a book on DNS systems, believes that DNSsec would be much more effective if applied to top-level domains such as dot-com, dot-org and dot-edu along with country code domains like Canada's dot-ca. Still, adoption of DNSsec is not enough. Computers reading Internet Protocol addresses must request security data from the secured servers for verification that the web address returned is legitimate (Buckler, 2005).

To date, Sweden is the only country to publicize DNSsec implementation. The transition for that country began in mid-September 2005. Due to the critical nature of the entire DNS system, some countries are hesitant to follow Sweden's lead. The Canadian Internet Registration Authority is studying the issue and expects to learn from Sweden's experience to ensure that Canada's own implantation of DNSsec goes smoothly (Buckler, 2005).

SOURCE COUNTRIES

While reports of phishing and pharming scams may appear to indicate Eastern European and Asian countries as the top source, surprisingly, the United States is the biggest phisher with 34.1 percent of the total. China and Korea fall way behind in second and third place with 15 percent and 8.17 percent, respectively (Phishing Activity…, 2006). Despite the fact that the United Kingdom does not appear as a top source on the phishing list, pharming is one of the top Internet crimes in the United Kingdom (Britt, 2005).

Although the United States is indeed the top source of phishing scams, the English-speaking criminals, especially Americans, are often the lowest members of the organization. According to Gregory Crabb, an investigator with the United States Postal Inspection Service and the economic crimes division of Interpol, American phishers are "a dime a dozen" and easy to track down (Zeller, 2006). Crabb also indicates, however, that low members of the organization often lead to recruiters in Eastern Europe and Russia.

Unfortunately, due to privacy rights and political treaties, stopping international crime is a challenge. It is extremely difficult to entice the cooperation of foreign investigators. Indeed, former Eastern Bloc countries have more immediate local crime issues to tackle shuffling American banks and consumers to the bottom of their priority list. In some countries the problem is compounded since law enforcement officials in charge of fighting online crime may not have ever owned a credit card themselves. These investigators do not clearly understand how credit cards work. Even more discouraging, once a top Eastern European is caught, he or she is often quietly released while awaiting trial (Zeller, 2006).

Whitfield Diffie, the chief security officer of Sun Microsystems, points to a basic flaw in most e-mail systems: the failure to reveal the history of an e-mail. He notes that a message that appears to be from a recognizable company like Amazon.com could have actually originated in the Ukraine, Romania, Bulgaria, Poland, Russia, or any other country that is a favorite place for phishing scams. Some computer security specialists agree that including that basic information would allow software programs to warn Internet users that the 'from' address is not consistent with the path history (O'Brien, 2005).

THE VICTIMS AND THE COSTS

These fraudulent Internet scams pose a dangerous threat to both the financial sectors and consumers. Phishing and Pharming schemes are on the rise, and according to studies, this is a problem that will continue to burden Internet users for years to come. For the past two years, there has been a tremendous growth in the number of cases reported. In 2005, the Gartner Phishing Study showed that 73 million Americans who used the Internet had received an average of 50 phishing e-mails in the last year (Gartner survey…, 2005). In the nine months ended February 2005, the monthly growth in phishing sites rose by approximately 26 percent (Phishing Activity…, 2005).

The creativity and savvy of hackers has grown, and consequently, so has the number of phishing reports submitted. In January 2006, there were 17,877 cases reported. This is the largest number ever recorded and that figure is 50 percent higher than the previous year. Even more worrying is the number of phishing sites that are appearing on the Internet. The Anti-Phishing Working Group recorded 9,715 sites in January 2006, up from just 4,630 in November 2005 (Malone, 2006).

Technology experts say there are a number of factors contributing to the growth of these attacks. Hackers are better motivated and better financed than ever, compared to the mid-1990's when criminal hacking was just getting off the ground. The hacker community is becoming more dangerous (Cyber Crime.., 2005). Their prevalent skill in disguising scam attacks to trick end users is ever growing. What is worse is that most people do not even realize they are being taken and by the time they do become aware, it is too late.

According to the Anti-Phishing Act of 2005 (New Leahy Bill…, 2005), organized crime is now allegedly involved, and is using sophisticated methods to escalate attacks in new, hard-to-detect ways. Organized crime bosses are "catching on" to the potential this type of activity provides. There are piles of cash to be made through these scams and they are willing to pay big bucks to someone who can perpetrate this sort of cyber attack (Cyber Crime, 2005). Also, perpetrators of these crimes typically use a decentralized approach, with one party holding customer information, another originating the initial message, and still another handling the cash that is illegally obtained. Consequently, the financial sector is finding itself up against not one, but perhaps 20 people orchestrating an attack (Sturgeon, 2005).

Not surprisingly, the most spoofed sites are in the financial sector, with 92 percent of recorded phishing and pharming attempts targeting banks and other financial institutions (Malone 2006). However, in 2005, there has been a huge increase (633%) in the number of credit unions, regional and mid-sized to small-sized banks attacked by fraudsters. This movement could be a result of larger banks implementing stronger security measures; leaving the smaller banks vulnerable to attacks (PSECU Battles…, 2005).

Both consumers and institutions face a tremendous amount of financial loss if confronted with this type of fraud. In May 2005, a Connecticut-based research and advisory firm conducted a study

on phishing and found that 1.2 million Americans lost a total of $929 million in the previous year due to phishing scams (Gartner Survey…, 2005). They also established that a typical phishing attack could cost a financial institution between $50 and $60 per account compromised, or $50,000 per attack. Institutions also need to be concerned with the costs associated with disabling the phishing sites, resetting legitimate passwords, and installing software patches (Hicks, 2005).

Security measures need to be implemented within financial organizations to prevent phishing and pharming attacks from ever taking place. Huge costs can also stem from creating secure systems that can detect this type of fraud. It is likely that over the next several years, banks will spend millions of dollars enhancing information security in response to the recent Federal Financial Institutions Examination Council (FFIEC) guidelines. FFIEC guidelines were updated in response to the increased threats from phishing and pharming scams. These new guidelines suggest that financial institutions assess the risk associated with their Internet banking applications, identify mitigating actions and adjust their information security programs to implement those actions. Theoretically, the FFIEC does not consider an identification name and password alone as a sufficient security measure for Internet-based banking. This current practice of using an identification name and password is extremely susceptible to fraud. Therefore, the FFIEC guidelines state that additional controls need to be implemented, especially in high-risk areas.

Processes such as multi-factor authentication and mutual authentication are just two examples of additional security measures that can deter future fraudulent activity from occurring in Internet-based banking. Multi-factor authentication refers to the use of more than one factor to verify a user's identity. Passwords and pin numbers can still be used to confirm a user's identity, but with multi-factor authentication, they would be used in conjunction with other types of identity proof, such as a finger print or retinal scan. Mutual authentication allows the user and financial institution to authenticate each other (Baker, 2005).

Modern day threats, like phishing and pharming, are forcing corporate executive officers to continuously reassess the emerging dangers of the Internet and re-evaluate what they are doing to protect the company, employees and customers. Focusing on security needs to be a priority to everyone within an organization. Otherwise, companies are in effect opening their cash registers to hackers and thieves. However, organizations must realize that security is not the real cost. Rather, the real cost is not having the proper security measures in place. The expense associated with the actual fraud, cleanup and potential loss of customers is a cost that can put these institutions out of business (Mitchell, 2005).

Financial losses are not the only cost impacting businesses. The non-financial losses that businesses face can be just as horrific, if not worse. If an institution's systems are infected, the cost and disruption are immense. The Internet has changed the way in which everyone conducts business. Therefore, if customers sense that the Internet cannot be trusted, they will spend less money buying products online, which perhaps, means not buying those particular products at all. Also, if customers feel that their information is not secure, they will discontinue use of the medium altogether.

Businesses also face the consequence of the security issue being publicized, leading customers to believe that the business cannot be trusted. The cost of lost customers is so extreme that it can even cause a business to go bankrupt (Mitchell, 2005).

HOW TO AVOID THESE ATTACKS

Many technology analysts expect that the number of reported cases will continue to increase before falling off. However, there are several ways that a company can protect itself and its customers. Experts declare that technology has the most impact over the short term, but it should be used in conjunction with internal and external security efforts (Britt, 2005). Financial institutions can take several steps to protect themselves from pharming attacks. For example, setting up a digital certificate can differentiate a legitimate Web page from a pharming site (Swann, 2005).

Banks should renew their domain names frequently and investigate any similar domain names to prevent phishing or pharming attacks from occurring. Banks should also have its card processors set parameters to automatically decline authorization if the card verification value (CW) or card verification code (CVC) is missing or does not match. The use of a neutral network that performs antifraud functions based on cardholder use patterns can also be effective. Any suspicious use of the card will alert the network and temporarily block the account or contact the cardholder (Garrett, 2005).

Software vendors, like Symantec, are urging banks to take proactive steps to protect their customers' personal computers. Symantec actually works with several banks that allow customers to check their computers' protection level and even download a Symantec product at a discount, right through the on-line banking site. Browser plug-ins, such as "Netcraft" or "SpoofStick" can also be installed into a user's computer and each product will alert the user of suspected spoof sites (Grebb, 2005). Institutions have started taking steps to protect customers from phishers and pharmers. In 2005, Bank of America initiated SiteKey, a web site authentication service that makes it easier for users to determine whether they are on the real Bank of America site. They have also implemented a personal digital-image system. Customers choose a secret image for logging onto the web site and if the secret image does not appear when he or she logs on, then it is a fake site (Hicks, 2005). Institutions and consumers need to continue taking these steps to prevent phishing and pharming attacks from occurring.

Consumer education is essential in preventing phishing and pharming. Increasing education by financial institutions for these crimes is required. Consumers need education about the differences between legitimate sites and "spoofed" or fraudulent sites (Swann, 2005). For example, Boston Private Bank & Trust recently hired two full-time staff members dedicated to fraud detection and prevention. In addition, the bank formed a committee to coordinate consumer-education efforts. As people begin losing confidence in the Internet, it will deter them from banking on-line. Consequently, it is crucial that banks educate its consumers in order to protect themselves (Grebb, 2005).

According to Beth Robertson, a senior analyst at a research and consulting firm, one of the most important ways to deter the effectiveness of national or local attacks is to educate consumers about these crimes and teach them to protect themselves. For instance, several financial institutions have already informed their customers that they will not ask for personal or account information via e-mail. Any account discrepancies will be handled through traditional mail. As a result, consumers should be wary of any e-mails sent from their financial institutions asking for any personal information. If a consumer does receive an e-mail that seems fraudulent or suspicious, he or she should contact the institution directly (Britt, 2005).

LAWS/ENFORCEMENT

In February 2005, Senator Patrick Leahy introduced the Anti-Phishing Act of 2005. This bill was specifically created to outlaw the practice of phishing and/or pharming. The act adds two new laws to the U.S. Code. The first law prohibits "the creation or procurement of a web site that represents itself to be that of a legitimate business, and that attempts to induce the disclosure of personal information, with the intent to commit a crime of fraud or identity theft." The second law prohibits "the creation or procurement of an e-mail that represents itself to be that of a legitimate business, and that attempts to induce the disclosure of personal information, with the intent to commit a crime of fraud or identity theft." The bill allows for a five-year jail term and a fine of up to $250,000 for anyone convicted of phishing or the related practice of pharming (New Leahy…, 2005).

Phishing may have appeared to be covered by the pre-existing fraud laws, but asking for credit card numbers was, in itself, not illegal. Some phishers and pharmers can be prosecuted under wire fraud or identity theft statutes, but often these prosecutions take place only after someone has been defrauded. Fraudulent e-mails are now sufficient for prosecution, whereas previous laws only allowed phishers to be prosecuted if the crime had taken place and was reported.

There is also the problem of enforceability. Many of these attacks, if they can be traced at all, originate overseas where there is no proper enforcement to give laws any strength. However, there was one notable exception in Brazil last year, where a gang was arrested after allegedly stealing an estimated $37 billion from online bank accounts by recording and transmitting the victims' passwords and login numbers to their own accounts. Still, this was an exception, and not the rule. However, even though law enforcement might not be able to shut down a phishing site due lack of jurisdiction, authorities should still be notified as soon any attacks are identified (Britt, 2005).

CONCLUSIONS

The extent of identity theft by use of phishing and pharming scams is staggering. It is imperative that individuals protect themselves and that businesses protect themselves and their customers. Not only is the immediate monetary cost incredible for breaches of security concerning

private data, but the future costs associated with loss of confidence in the company is immeasurable and potentially dramatic in terms of public relations and dollars.

Phishing and pharming are not merely esoteric fraud schemes that appear in the news and seem mildly interesting. Businesses and individuals can suffer greatly if they are the victims of an attack. The number of phishing and pharming scams has grown tremendously over the past few years. There is a huge potential reward for criminals who succeed in these malicious acts. These crimes will continue to grow unless consumers and financial institutions work together to stop phishing and pharming from occurring.

Creating awareness is one of the most important tools in fighting identity theft via phishing and pharming schemes. However, it is not enough. Financial institutions and consumers need to work together to prevent future occurrences. Multi-factor authentication and mutual authentication should be implemented to provide assurance that the communication between customers and financial institutions is authentic. Also, various other business practices may need to be changed to protect identity data.

No one is perhaps more aware of the pitfalls of identity theft scams than ChoicePoint, the Alpharetta, Ga.-based company fined $15 million by the Federal Trade Commission for the disclosures of information. The company was fooled into selling personal information on 163,000 people to fake companies set up by Nigerian criminals. Other companies have also suffered enormously from not having proper safeguards set up to keep their customer data secure.

The role of company fraud examiners (whether internal employees or consultants) and accountants should be significant. They can use their skills to not only identify schemes already in place in the company's system but also recognize weaknesses in data security and online access and define changes the company should implement.

Some suggestions for changes, which the fraud examiner could also help implement, are: blocking access by foreign address to all company networks, screening customers more thoroughly, encrypting data feeds, and making passwords and user ids more protected. Institutions should also continue to send correspondence through the mail, informing customers about cyber crimes and instructing them not to give out personal information if they are prompted via e-mail. eBay's procedure on email is a prime example of this safeguard in action. The company sends email warnings to customers that indicate they will not contact them via email and ask for private information; they provide a number/email address to check with before doing anything that may turn out to be from a fake/"spoof" email.

Hopefully, with advanced technology and continued educational outreach by businesses, financial institutions and educational organizations, there will be a decline in the amount of identity theft taking place on the Internet. Unfortunately, Internet users (individuals and businesses alike), in order to protect their identities, pay the costs associated with stopping phishing, pharming, and other types of cyber crimes. Higher costs will continue to be incurred, though, if private information is not properly secured.

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INTERVENTION IMPACT OF TAX REFORM ACT ON THE BUSINESS FAILURE PROCESS

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ABSTRACT

This paper investigates the impact of the intervention of Tax Reform Act on the business failure momentum. The data covers the period January 1967 through December 1986 and divided into pre- and post-event periods for both large and small business failures. We employ intervention analysis with transfer function modeling for the full data set and maximum likelihood time-series regression on the pre- and post-event periods. After controlling for the new business formations, we find the Tax Reform Act is instrumental in extending the memory of business failure momentum and amplifying the domino effect. These results also echoed in the intervention analysis. However, the impact of the intervention of Tax Reform Act is found to be more pronounced for large businesses than for small businesses.

INTRODUCTION

Business failure is generally viewed as an exogenous factor. Overall perception is that bankruptcy is a condition created by external factors that are beyond the control of the firms. Bankruptcy Reform Act of 1978 may be viewed as one of these external factors. Subsequently (early and mid 1980's), many firms sought to avoid the bankruptcy procedure by privately resolving conflicts among themselves. Between 1980-1986, 91 of the 192 (or 47%) defaulting NYSE and ASE companies were reorganized privately (Jensen, 1999). There are numerous motivations that can be attributed to these private workouts. In addition to the 40% continuity requirement that reflects a liberalization compared to 50% rule governing taxable acquisitions; avoidance of bankruptcy costs (legal and others), loss of tax carryforwards (in case of liquidation), decrease in value of the firm due to negative market perception. Shrieves & Stevens (1979) in their paper viewed these similar factors as a rationale for private workout arrangements. Jensen (1999) argues the popularity of private workout arrangements in the early 1980s was a natural market response to the high costs and time delays imposed by the bankruptcy procedure.

The objective of this paper is to analyze the effect of the Tax Reform Act on business failure process. We hypothesize, by encouraging private workout arrangements; the Tax Reform Act of 1978 enhanced the impact of the externalities of business failures, what has been characterized as a "domino effect" (see, Campbell & Choudhury, 2002).

Our sample consists of monthly observations of the number of business failure obtained from Dun and Bradstreet Corporation. This sample covers the period of January 1967 through December 1986. After dividing the sample observations into pre- and post-event periods, we examine the intervention effect of the Tax Reform Act on the business failure momentum for both large and small firms. We control for the new business incorporations and due to the presence of autocorrelation, maximum likelihood estimation method is used. Pre-event period providing a benchmark, we find the Tax Reform Act is instrumental in extending the memory of business failure and amplifying the domino effect. This suggests that the Tax Reform Act have impacted firms to accelerate private workout process by providing economic incentive. Our results contribute to the literature by documenting the constructive externalities of business failure and associating alternative recontracting procedures with dissimilarity in business failure momentum.

Following section summarizes the related literature on business failure. In the third section we discuss our data selection and research methodology. Results of our analyses are discussed in section four and we summarize our findings in section five.

RELATED LITERATURE

Bankruptcy issues and its impact on the capital market have been studied by many researchers (Baxter, 1967; Stiglitz, 1972; Kraus & Litzenberger, 1978; Scott, 1976). One of the most continuing issues in the bankruptcy literature concerns the efficiency of corporate bankruptcy. Many scholars consider bankruptcy, particularly bankruptcy reorganization process, an inefficient method and should be eliminated (e.g. Roe, 1983; Baird, 1986; Jackson, 1986; Wruck, 1990; Bradley & Rosenzweig, 1992). In bankruptcy procedure a judge determines valuation and parcels out interests. As a result, absolute priority rule is frequently violated, and deadweight economic costs are incurred (Jackson & Scott, 1989; Wruck, 1990; Baird, 1986). White (1989) concludes, "The U.S. bankruptcy system, rather than helping the economy move toward long-run efficiency, in fact appears to delay the movement of resources to higher value uses". Bulow & Shoven (1978) perceived that Chapter 11 happens only because of disagreement between the concerned parties.

The primary criticisms of the bankruptcy procedure involve the high costs and time delays it imposes on bankrupt firms (Bradley & Rosenzweig, 1992). Altman (1984) has presented a model to estimate the expected bankruptcy costs (both direct and indirect costs) on the basis of actual profits and expected profits. For large industrial firms, Weiss (1990) found direct administrative costs, such as legal fees and court costs; averaged 2.8 percent of total asset book value at the fiscal year-end prior to bankruptcy and the average time spent in Chapter 11 was 2.5 years. For small firms, the time spent in bankruptcy procedure is shorter but the direct bankruptcy costs are proportionally higher. Campbell (1997) found closely held firms spent on average 1.3 years in Chapter 11 and direct bankruptcy costs averaged 8.5 percent of total asset book value at the start of the proceeding. Moreover, assets values usually decline dramatically while a firm is in bankruptcy procedure. In

contrast, the available evidence suggests the direct costs of private workout arrangements are only about 10 percent of those in a Chapter 11 proceeding of comparable size (Gilson et al., 1990). In addition to higher direct costs, bankruptcy reorganization also imposes substantial indirect costs on the debtor firm. Indirect costs include lost sales, lost profits, the inability to obtain credit from suppliers, and lost investment opportunities (Titman, 1984). Quantifying these indirect costs is difficult; however, in many bankruptcy proceedings the indirect costs are likely to exceed the direct costs. Jensen (1999) observed that a private workout commonly takes only a few months to negotiate and costs much less than Chapter 11, views the private workout arrangement as a natural market response to inefficiency.

Market studies suggest private workout arrangements do enhance firm value relative to bankruptcy reorganizations. Pastena & Ruland (1986) provide statistical evidence that distressed firms with high ownership concentration being systematically better off if their firm's debt is restructured privately. Belker, Franks & Torous (1999) report once the result of a workout attempt is known, the returns to shareholders are greater for firms which successfully complete a workout, than for firms entering bankruptcy procedure.

Traditional view of business failure is an exogenous event brought on by certain internal and external factors (e.g. bad management and high interest rates) that have rendered the debtor unable to meet its obligations. This view ignores the interdependence among firms through their contractual relationships and the constructive externalities of the failure process, what Campbell & Choudhury (2002) termed as domino effect. Consequently, market value of competitors may depreciate and cause accelerated failure process to others (Lang & Stulz 1992). Society has an interest in understanding the domino effect and helping otherwise viable businesses survive the disruption. These ideas are based on theories that business failure is a dynamic process of several events, rather than a single (or few) static event. Moreover, the traditional view ignores differences in the failure processes of large and small firms. Hambrick & D'Aveni (1988) found large bankrupt firms showed signs of relative weakness very early, as far back as ten years before failure, and they characterize the large firm failure process as a long protracted downward spiral. On the other hand, small firm failure often found to be abrupt and catastrophic as observed by Venkataraman et al. (1990).

DATA AND RESEARCH METHODOLOGY

The sample period is a twenty year window with 240 continuous monthly data. The event date, 1978, is the date the Tax Reform Act of 1978 went into effect. The Bankruptcy Code of 1978, made major changes in bankruptcy procedure. For example, under the former Bankruptcy Act of 1938 (the Chandler Act) there were different reorganization procedures for different types of firms. Chapter 11 of the Bankruptcy Code combines Chapters X, XI, and XII of the old Bankruptcy Act into a single procedure for business reorganization. Such major changes in reorganization procedures could impact business failure process, specifically to those firms that are financially distressed. To

test the intervention effect of this event on business failures, we divide our sample into two periods: the pre-event period January 1967 through December 1978 (144 monthly observations) and the post-event period January 1979 through December 1986 (96 monthly observations). Since prior research has indicated the failure processes of large and small firms differ, we analyze large and small firms separately.

Table 1 presents summary statistics for the pre- and post-event periods. A "failure" is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors" (Dun and Bradstreet's measures of failures). All industrial and commercial enterprises petitioned into the Federal Bankruptcy Courts are included as business failures. Also included are: 1) concerns forced out of business through actions in the state courts such as foreclosures, executions, and attachments with insufficient assets to cover all claims; 2) concerns involved in court actions such as receiverships, reorganizations, or arrangements; 3) voluntary discontinuations with a known loss to creditors; and 4) voluntary out of court compromises with creditors. In other words, the number of business failures is broadly defined to include private workout arrangements, state court actions, and federal bankruptcy proceedings. A small business is defined as a concern having less than $100,000 in current liabilities; a large business is defined as a concern having more than $100,000 in current liabilities. Current liabilities include all accounts and notes payable, whether secured or unsecured, known to be held by banks, officers, affiliated companies, suppliers, or the Government.

Table 1: Summary Statistics for Large and Small Firm Failures for the Periods January 1967 – December 1978 and January 1979 – December 1986 (Monthly Data)[a]					
Variables[b]	Period 19--	Monthly Means	Standard Deviations	Minimums	Maximums
SMFAIL	67-78	579.56	147.09	244.00	1003.00
	79-86	1297.15	922.04	242.00	3952.00
LGFAIL	67-78	230.59	60.88	96.00	446.00
	79-86	1443.51	995.59	254.00	4145.00
NEWBUS	67-78	26445.90	7075.41	2135.00	42605.00
	79-86	49905.17	5861.38	27234.00	68087.00

[a]   Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b]   Variable Definitions:
   SMFAIL   =   number of small firm failures;
   LGFAIL   =   number of large firm failures;
   NEWBUS =   number of new business incorporations.

Table 1 shows the average number of small business failures rose dramatically over the twenty years study period. From January 1967 through December 1978, the pre-event period, small business failures averaged 580 per month, while from January 1979 through December 1986, the post-event period small business failures averaged 1298 per month. The average number of large business failures also rose over the two periods: for the pre-event period the number of large business failures averaged 231 per month, while for the post-event period the number of large business failures averaged 1444 per month. Finally, Table 1 also presents the summary statistics for the number of new business incorporations. For the pre-event period the number of new business incorporations averaged 26,446 per month; for the post-event period the number of new business incorporations averaged 49,905 per month.

We hypothesize that the intervention impact of the Tax Reform Act resulted in an elevated change in business failure momentum. To test our hypothesis we perform two separate analyses. First, we perform an intervention analysis for the event period using transfer function modeling to observe the direction of the effect of the Tax Reform Act and its magnitude. If there is a significant impact of the Tax Reform Act on business failure, and the Tax Reform Act enhances the constructive externalities of business failure process then the coefficient of the indicator variable (TaxLaw_78) should be large and positive. Second, we use time-series regression to examine the magnitude and trend of business failures over the pre- and post-event periods to observe the acceleration /deceleration of the momentum of the process. Specifically, we regress the number of business failures on a proxy for business failure momentum in both the pre- and post-event periods. The proxy variable, MOMENTUM, is a constant growth series beginning at one and growing by one each month. If the Tax Reform Act contributes to boost business failure momentum, then the coefficient for MOMENTUM should be larger in magnitude and positive in the post-event period compared to pre-event period.

In an effort to better disentangle the effects of business failure momentum from expanding business activity, regression model includes a control variable measuring the number of new business incorporations. Additionally, Durbin-Watson statistic on ordinary least squares (OLS) estimates indicated the presence of positive autocorrelation. One major consequence of autocorrelated errors (or residuals) when applying ordinary least squares is the formula variance $[\sigma^2 (X'X)^{-1}]$ of the OLS estimator is seriously underestimated (see Choudhury, 1994), which affects statistical inference. Where X represents the matrix of independent variables and σ^2 is the error variance.

Durbin-Watson statistic is not valid for error processes other than the first order (see Harvey, 1981; pp. 209-210) process. Therefore, we evaluated the autocorrelation function (ACF) and partial autocorrelation function (PACF) of the OLS regression residuals using SAS procedure PROC ARIMA (see SAS/ETS User's Guide, 1993). This allowed the observance of the degree of autocorrelation and the identification of the order of the model that sufficiently described the autocorrelation. After evaluating the ACF and PACF, the residuals model was identified as second

order autoregressive model $\left(1 - \phi_1 B - \phi_2 B^2\right) v_t = \varepsilon_t$ (see Box, Jenkins, & Reinsel, 1994). The final specification of the regression model is of the following form for large and small firm failures:

$$LGFAIL_t = \beta_0 + \beta_1 MOMENTUM_t + \beta_2 NEWBUS_t + v_t \qquad (1),$$
$$\text{and} \quad v_t = \phi_1 v_{t-1} + \phi_2 v_{t-2} + \varepsilon_t$$

$$SMFAIL_t = \beta_0 + \beta_1 MOMENTUM_t + \beta_2 NEWBUS_t + v_t \qquad (2),$$
$$\text{and} \quad v_t = \phi_1 v_{t-1} + \phi_2 v_{t-2} + \varepsilon_t$$

Where: MOMENTUM = a series starting at 1 and growing at a constant amount B=1 each time period; NEWBUS = the number of new business formations.

Maximum likelihood estimation method was used instead of two step generalized least squares to estimate the regression parameters in equations (1) and (2). Maximum likelihood estimation is preferable over two step generalized least squares, because of its capability to estimate both regression and autoregressive parameters simultaneously. Moreover, maximum likelihood estimation accounts for the determinant of the variance-covariance matrix in its objective function (likelihood function). In general, the likelihood function of a regression model with autocorrelated errors has the following form:

$$L(\beta, \theta, \sigma^2) = -\frac{n}{2} \ln(\sigma^2) - \frac{1}{2} \ln |\Omega| - \frac{(Y - X\beta)'\Omega^{-1}(Y - X\beta)}{2\sigma^2} \qquad (3)$$

where,

    Y- vector of response variable (number of failures),
    X – matrix of independent variables (MOMENTUM, NEWBUS, and Intercept),
    β – vector of regression parameters,
    θ – vector of autoregressive parameters,
    σ^2 – error variance,
    Ω – variance-covariance matrix of autocorrelated regression errors.

For further discussion on different estimation methods and the likelihood function, see Choudhury et al. (1999); also see SAS/ETS User's Guide, 1993 for expressions of the likelihood function.

To estimate the direction of the effects and magnitude of the Tax Reform Act, intervention model is employed (see Box & Tiao, 1975). There are two common types of deterministic input variables that have been found useful to represent the impact of intervention events on a time series data. Both of these are indicator variables taking only 1 and 0 to indicate the occurrence and nonoccurrence of intervention. For our analysis, we use step function rather than pulse function, which is given as,

$$S_t^{1978} = \begin{cases} 0 & t \le 1978 \\ 1 & t > 1978 \end{cases} \qquad (4).$$

The final specification of the intervention model that we have found for our analysis is of the following form for large and small firm failures:

$$LGFAIL_t = \mu + \omega_1\, S_t^{1978} + (1 - \theta_1 B - \theta_2 B^2)(1 - \Theta B^{12})\varepsilon_t \qquad (5)$$

$$SMFAIL_t = \mu + \omega_1\, S_t^{1978} + (1 - \theta_1 B - \theta_2 B^2)(1 - \Theta B^{12})\varepsilon_t \qquad (6)$$

where θ_1, and θ_2 are regular moving average parameters and Θ is denoted for seasonal (monthly) moving average parameter. Maximum likelihood estimation is used to estimate these intervention models.

EMPIRICAL RESULTS

We report the results of our empirical analysis investigating the intervention effect of the Tax Reform Act of 1978 on business failures. First, we test the intervention effect using transfer function model. Intervention analysis of the event study has been reported in Table 2 for the period of January 1967 to December 1986 using step function. The estimated coefficient of the intervention indicator variable (TaxLaw_78) for the pre- and post-event period is statistically significant and positive for both large and small businesses. The magnitude of the estimated coefficient is substantial for both large and small business failures. However, the extent of the estimated coefficient is greater for the large firms compared to small firms.

This leads us to test the business failure momentum on a separate regression in order to gain insight into the force and its magnitude behind the domino effect. Campbell & Choudhury (2002) found the cumulative lagged effects of past business failures are significantly correlated with current business failures. These cumulative lagged effects usually have long memory characteristics. Choudhury & Campbell (2004) found that on average they stay statistically significant for about 24 months.

Table 3 reports the regression results for the January 1967 through December 1978 pre-event period. The estimated coefficient for business failure momentum (MOMENTUM) is statistically significant for both large and small businesses but positive for large firms and negative for small firms. However, the magnitude of the estimated coefficient is small for both large and small business failures. The control variable for new business formations, NEWBUS, is not significant.

Table 2: Intervention Analysis on 1978 Tax Reform Act of Large and Small Firm Failures for the Period January 1967 – December 1986 (Monthly Data)[a] : Maximum Likelihood Estimates.		
Independent Variables[b]	**Large Firm Failures (corrected for autocorrelation[d])**	**Small Firm Failures (corrected for autocorrelation[e])**
Intercept	324.20[c] (4.08)***	668.0243 (8.52)***
TaxLaw_78	970.7415 (8.20)***	639.1512 (5.67)***
MA-1	-0.4849 (-8.62)***	-0.5422 (-10.94)***
MA-2	-0.5581 (-9.77)***	-0.6465 (-12.88)***
MA-12	-0.4663 (-6.74)***	-0.5141 (-5.34)***

[a]   Small firms have less than \$100,000 in current liabilities; large firms have more than \$100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b]   Variable Definitions:
TaxLaw_78 = an indicator variable coded 0 for t ≤ 1978 and 1 for t >1978 time period.

[c]   The t-statistics reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels.

[d]   The time series part of the intervention model was identified as, $v_t = (1-\theta_1 B - \theta_2 B^2)(1-\Theta B^{12})\varepsilon_t$ and then the structural parameters and time series parameters were estimated simultaneously using maximum likelihood estimation method in SAS.
Both regular and seasonal moving average parameters are significant at the one (***) percent level.

[e]   The time series part of the intervention model was identified as, $v_t = (1-\theta_1 B - \theta_2 B^2)(1-\Theta B^{12})\varepsilon_t$ and then the structural parameters and time series parameters were estimated simultaneously using maximum likelihood estimation method in SAS.
Both regular and seasonal moving average parameters are significant at the one (***) percent level.

In contrast, the regression results reported in Table 4 for the post-event period, January 1979 through December 1986, show the estimated coefficient for business failure momentum (MOMENTUM) is statistically significant for both large and small firms. Moreover, the magnitude of the estimated coefficient is large for both firms. Thus, for large businesses, if time is increased by one month (i.e., one month into the future), the number of business failures increases by 25 firms. Similarly, for small businesses, if time is increased by one month, the number of business failures increases by 30 firms.

Table 3: Regression Results for Number of Large and Small Firm Failures for the Period January 1967 – December 1978 (Monthly Data)[a] : Maximum Likelihood Estimates.

Independent Variables[b]	Large Firm Failures (corrected for autocorrelation[d])	Small Firm Failures (corrected for autocorrelation[e])
Intercept	91.1804[c] (2.70)***	1110.00 (11.85)
MOMENTUM	0.8666 (3.37)***	-2.8562 (-4.92)***
NEWBUS	-0.00025 (-0.22)	-0.0017 (-1.18)
R-Squared	0.51	0.83
Durbin-Watson	2.19	1.92

[a]   Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b]   Variable Definitions:
    MOMENTUM = a series starting at 1 and growing at a constant amount B=1 each time period;
    NEWBUS = the number of new business formations;

[c]   The t-statistics reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels.

[d]   The regression residuals model was identified as, $\left(1 - \phi_1 B - \phi_2 B^2\right)v_t = \varepsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $\left(1 + 0.29B + 0.28B^2\right)v_t = \varepsilon_t$.

$$(3.42)*** \quad (3.50)***$$

Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

[e]   The regression residuals model was identified as, $\left(1 - \phi_1 B - \phi_2 B^2\right)v_t = \varepsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $\left(1 + 0.64B + 0.15B^2\right)v_t = \varepsilon_t$

$$(7.67)*** \quad (1.72)*$$

Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

In light of the previous results presented in Table 3, the Table 4 results suggest the Tax Reform Act has accelerated the domino effect by escalating the momentum of business failures. The estimated coefficients for the control variable NEWBUS are not significant either for the large firm or the small firm regressions. Overall, these results suggest the amplification of business failure momentum is a consequence of the Tax Reform Act of 1978. The impact is more pronounced for large businesses than for small businesses; however, in both cases the effect is clearly visible.

Table 4: Regression Results for Number of Large and Small Firm Failures for the Period January 1979 - December 1986 (Monthly Data)[a] : Maximum Likelihood Estimates		
Independent Variables[b]	**Large Firm Failures (corrected for autocorrelation[d])**	**Small Firm Failures (corrected for autocorrelation[e])**
Intercept	-5728.00[C] (-2.86)***	-7197.00 (-5.85)***
MOMENTUM	25.17 (3.39)***	29.46 (6.29)***
NEWBUS	-0.0028 (-0.21)	0.00075 (0.08)
R-Squared	0.84	0.90
Durbin-Watson	1.96	2.17

[a] Small firms have less than $100,000 in current liabilities; large firms have more than $100,000 in current liabilities. A failure is defined as, "a concern that is involved in a court proceeding or voluntary action that is likely to end in a loss to creditors." Source: Dun & Bradstreet, Inc.

[b] Variable Definitions:
  MOMENTUM = a series starting at 1 and growing at a constant amount B=1 each time period;
  NEWBUS = the number of new business formations;

[c] The t-statistics reported in parenthesis are significant at ten (*), five (**), and one (***) percent levels.

[d] The regression residuals model was identified as, $\left(1 - \phi_1 B - \phi_2 B^2\right) v_t = \varepsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $\left(1 + 0.45 B + 0.37 B^2\right) v_t = \varepsilon_t$.
  (4.58)*** (3.72)***

Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

[e] The regression residuals model was identified as, $\left(1 - \phi_1 B - \phi_2 B^2\right) v_t = \varepsilon_t$ and the estimated first and second order autoregressive (AR) parameters from SAS were, $\left(1 + 0.34 B + 0.44 B^2\right) v_t = \varepsilon_t$.
  (3.62)*** (4.60)***

Where t-statistics for autoregressive parameters are reported in parentheses and they are both significant at the one (***) percent level.

SUMMARY AND CONCLUSIONS

After controlling for increases in new business formations, we find strong evidence that the Tax Reform Act of 1978 is associated with expansion of the memory for business failure process and thereby strengthening the domino effect of business failure momentum. Intervention analysis of the event study also confirms the similar outcome. These results suggest the initiation of Tax Reform Act may have provided many firms with economic incentive to private workout arrangement rather than to attempt to restructure under the bankruptcy procedure.

Results of this study are consistent with the hypothesis that uncertainty in policy implementation combined with inefficient bankruptcy procedure generates a natural market response to private workout arrangement. Business failure by definition implies that firms are economically inefficient to continue to operate in the same form and this tax reform event probably enhanced their financial efficiency by accelerating the conversion of their resources into more efficient utilization. These findings contribute to the literature by documenting the constructive externalities of business failures and its association with business failure momentum.

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AN EXAMINATION OF THE RECENTLY RESTATED FINANCIAL STATEMENTS DUE TO INAPPROPRIATE LEASE ACCOUNTING

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ABSTRACT

The purpose of this paper is to describe the history surrounding the recent spike in financial statement restatements related to firms' accounting for leases. The restatements were largely caused by a letter from the SEC emphasizing the rules regarding appropriate accounting for leases. This paper explains why the large number of restatements caused by the SEC letter was such a surprise and discusses the accounting issues raised by the SEC letter. Prior research has found that restatements are more likely in areas where GAAP is contradictory or unclear. GAAP for leases is well established and fairly clear. Also, prior research has found that restatements are more likely due to inappropriate accounting for items that are not part of a company's core earnings. However, in this case the lease accounting that led to the restatements was part of the companies' core earnings. Finally, the paper provides some analysis regarding the commitment to quality financial reporting practices by the companies that restated their financial statements due to inappropriate lease accounting. This analysis indicates that companies that restated did not show lower levels of commitment to quality financial reporting than did firms that did not restate. This evidence is consistent with the conjecture made by many of the companies that restated that they thought their method of accounting for leases was acceptable.

INTRODUCTION

The Sarbanes-Oxley Act of 2002, which came about largely due to the financial scandals at Enron and WorldCom, requires (among other things) that publicly-traded companies review and document their internal controls over financial reporting (Ge and McVay, 2005). While conducting its internal control review in 2004, CKE Restaurants, Inc., owner of Hardee's and Carl's Jr., discovered that it had several errors in its previously issued financial statements that required the statements to be restated. In November 2004, CKE filed a Form 8-K with the SEC and issued a press release explaining the reasons for the restatement, which included problems with how CKE had been accounting for its operating leases.

Shortly after CKE's announcement, several other companies disclosed that they too needed to restate their previously issued financial statements due to problems with their lease accounting. Because of all the activity, and following a request from the AICPA to provide further guidance on the issues surrounding lease accounting, the SEC issued a letter in February 2005 explaining its position. That letter caused many more companies to review their lease accounting and decide that their financial statements also needed to be restated (Rapoport, 2005).

The majority of the lease accounting restatements were reported in the first few months of 2005, and during that time the business press published a variety of articles on the topic (e.g., Byrnes and Sager, 2005; Gullapalli, 2005; Hughes, 2005; Jones and Gibson, 2005; and Spielberg, 2005a,b). The reactions of analysts quoted in the articles are wide-ranging. Some expressed concern that the lease restatements were simply one more example of how companies were not following GAAP and were using accounting tricks to manage their earnings. For example, one expert stated that the restatements expose "a game that has been played for decades" (Jones and Gibson, 2005, C3), another said that the restatements "raise questions about the companies' financial expertise" (Smith, 2005, 3B), and another added that the restatements "should give investors pause that accounting statements were even less accurate before than anyone imagined" (Smith, 2005, 3B). However, not all analysts agreed that the improper lease accounting was serious enough to merit concern or had been done intentionally. One stated that he did not believe that this was "an attempt to puff up profits" (Byrnes and Sager, 2005, 11); another added that he "did not believe the magnitude of the potential restatements warrants alarm" (Spielberg, 2005a, 59), while another said that, "Technically speaking, this lease issue is not really a big [deal]" (Spielberg, 2005b, 11). Meanwhile, company officials insist that "the problem boils down to a simple, common error and that they never intended to deceive" (Jones and Gibson, 2005, C3).

We have identified 274 companies that restated their financial statements due to lease accounting problems. We explain why the large number of restatements due to lease accounting was such a surprise and discuss the accounting issues raised by the SEC letter. We also provide some evidence that attempts to determine whether the restating firms were trying to manage earnings through the way they applied lease accounting or were simply misapplying an old accounting standard. Based on the reported evidence, it appears that the companies were not intentionally misapplying the lease accounting standards; rather, they were following incorrect, but common, industry practices.

The remainder of the paper is organized as follows. Section two summarizes the contents of the SEC letter and provides a review of the accounting issues involved. Section three includes excerpts from some actual restated financial statements and discusses the magnitude of the restatements. The fourth section reviews prior research on restated financial statements and explains how it relates to the current paper. Section five explains the sample and provides descriptive statistics, while section six presents the results of our transparency and disclosure score analysis. Section seven provides some final discussion and concludes the paper.

ACCOUNTING FOR OPERATING LEASES

On February 7, 2005, the SEC issued a letter to clarify its interpretation of some of the accounting standards related to operating leases. The letter focuses on the following three issues: (1) the amortization of leasehold improvements when a lease has lease renewal periods, (2) the recognition of rent expense when a lease contains free or reduced rent periods (often referred to as "rent holidays"), and (3) the method of recording landlord incentives received by a tenant for leasehold improvements. Following is a summary of how the companies that issued restatements were accounting for these lease issues, the SEC's comments on these issues, as well as some discussion from the original FASB pronouncements.

Amortization of Leasehold Improvements. Many leases include both an initial lease term and a renewal option that is given to the lessee. In these situations the lessee may or may not exercise the option to extend the lease. Many companies were incorrectly applying the lease accounting standards by assuming that the future renewal option would be exercised and therefore using the initial lease term plus the renewal period as the period of time over which the leasehold improvements were amortized. Amortizing leasehold improvements over this extended period of time decreases the yearly amortization expense. Regarding this issue, the February 7, 2005 letter from the SEC states:

> The staff believes that leasehold improvements in an operating lease should be amortized by the lessee over the shorter of their economic lives or the lease term, as defined in paragraph 5(f) of FASB Statement 13 "SFAS 13"), Accounting for Leases, as amended. The staff believes amortizing leasehold improvements over a term that includes assumption of lease renewals is appropriate only when the renewals have been determined to be "reasonably assured," as that term is contemplated by SFAS 13.

The question of the term of the lease has been clarified over time by the FASB. The original definition of the lease term, provided in SFAS No. 13, paragraph 5(f), as later amended by SFAS No. 98, states the following:

> Lease term. The fixed noncancelable term of the lease plus (i) all periods, if any, covered by bargain renewal options (as defined in paragraph 5((e)), (ii) all periods, if any, for which failure to renew the lease imposes a penalty (as defined in paragraph 5(o)) on the lessee in such amount that a renewal appears, at the inception of the lease, to be reasonably assured, (iii) all periods, if any, covered by ordinary renewal options during which a guarantee by the lessee of the lessor's debt directly or indirectly related to the leased property is expected to be in effect or a loan from the lessee to the lessor directly or indirectly related to the leased property is expected to be outstanding, (iv) all periods, if any, covered by ordinary renewal options preceding the date as of which a bargain purchase option as defined in paragraph 5(d)) is exercisable, and (v) all periods, if any, representing renewals or extensions of the lease at the lessor's option; however, in no case shall the lease term be assumed to extend beyond the date a bargain purchase option becomes exercisable.

According to SFAS No. 13, the determining factor in deciding whether to include the renewal option period in the lease term is the existence of a penalty to be imposed on the lessee, or a benefit to be foregone, if the lease is not renewed. An example of a benefit to be foregone is a bargain renewal option, which is defined as a "provision allowing the lessee, at his option, to renew the lease for a rental sufficiently lower than the fair rental of the property at the date the option becomes exercisable that exercise of the option appears, at the inception of the lease, to be reasonably assured." If the penalty or foregone benefit is significant, the lessee can assume that the renewal option will be exercised and the renewal period should be included in the lease term. The FASB did not define a penalty in SFAS No. 13. SFAS No. 98 added paragraph 5(o) to SFAS No. 13 to clarify the term penalty as described in the prior paragraph. Paragraph 5(o) defines a penalty as:

> Penalty. Any requirement that is imposed or can be imposed on the lessee by the lease agreement or by factors outside the lease agreement to disburse cash, incur or assume a liability, perform services, surrender or transfer an asset or rights to an asset or otherwise forego an economic benefit, or suffer an economic detriment. Factors to consider when determining if an economic detriment may be incurred include, but are not limited to, the uniqueness of purpose or location of the property, the availability of a comparable replacement property, the relative importance or significance of the property to the continuation of the lessee's line of business or service to its customers, the existence of leasehold improvements or other assets whose value would be impaired by the lessee vacating or discontinuing use of the leased property, adverse tax consequences, and the ability or willingness of the lessee to bear the cost associated with relocation or replacement of the leased property at market rental rates or to tolerate other parties using the leased property.

While it is not always inappropriate to include the option period in the lease term, the burden is on the preparer of the financial statements to identify a penalty as defined above. One indication that companies were not including the renewal option period in the lease term because of the existence of a penalty is that many of the restatement firms were not consistent in what lease term they used in two different aspects of lease accounting. When computing amortization expense on leasehold improvements, companies were using the initial lease period plus option periods as the lease term. However, as discussed in the next section, when computing rent expense, companies were using only the initial lease period as the lease term. In addition, when evaluating whether the lease should be treated as a capital lease or an operating lease, the companies did not include the option periods in the lease term.

The second accounting issue addressed by the SEC letter is the proper accounting for rent holidays. This topic is discussed in the following paragraphs.

> Rent Holidays. The accounting issue involves how to account for leases that have uneven rent payments. Many long-term leases are structured such that the lease payments escalate over time. Also, in some cases, the lease might have no lease payments, or reduced payments, during the early portion of the lease while the lessee is preparing the property for business (sometimes known as rent holidays). Firms faced the question of whether to record rent expense on an as-paid basis or on a straight-line

basis over the life of the lease. Many of the firms that restated their financial statements due to improper lease accounting had incorrectly recognized rent expense on an as-paid basis (i.e., cash basis) or on a straight-line basis that did not begin until the first lease payment was made.

The SEC's comment on this issue from the February 7, 2005 letter states:

> The staff believes that pursuant to the response in paragraph 2 of FASB Technical Bulletin 85-3 ("FTB 85-3), Accounting for Operating Leases with Scheduled Rent Increases, rent holidays in an operating lease should be recognized by the lessee on a straight-line basis over the lease term (including any rent holiday period) unless another systematic and rational allocation is more representative of the time pattern in which leased property is physically employed.

The original guidance on this issue came from paragraph 15 of SFAS No. 13, which states:

> Normally, rental on an operating lease shall be charged to expense over the lease term as it becomes payable. If rental payments are not made on a straight-line basis, rental expense nevertheless shall be recognized on a straight-line basis unless another systematic and rational basis is more representative of the time pattern in which use benefit is derived from the leased property, in which case that basis shall be used.

SFAS No. 13 indicates firms are to use the straight-line method of recognizing rent expense unless, as the final phrase of paragraph 15 states, "…another systematic and rational basis is more representative of the time pattern in which use benefit is derived from leased property, in which case that basis shall be used." This wording originally caused some confusion; to eliminate the confusion, the FASB later issued Technical Bulletin (FTB) 85-3, which states:

(1)   Certain operating lease agreements specify scheduled rent increases over the lease term. Such scheduled rent increases may, for example, be designed to provide an inducement or "rent holiday" for the lessee, to reflect the anticipated effects of inflation, to ease the lessee's near-term cash flow requirements, or to acknowledge the time value of money. For operating leases that include scheduled rent increases, is it ever appropriate for lessees or lessors to recognize rent expense or rental income on a basis other than the straight-line basis required by Statement 13.

(2)   The effects of those scheduled rent increases, which are included in minimum lease payments under Statement 13, should be recognized by lessors and lessees on a straight-line basis over the lease term unless another systematic and rational allocation basis is more representative of the time pattern in which the leased property is physically employed. Using factors such as the time value of money, anticipated inflation or expected future revenues to allocate scheduled rent increases is inappropriate because these factors do not relate to the time pattern of the physical usage of the leased property. However, such factors may affect the periodic reported rental income or expense if the lease agreement involves contingent rentals, which are excluded from minimum lease payments and accounted for separately under Statement 13, as amended by Statement 29.

A good argument can be made that sometimes scheduled rent increases represent the lessor's and lessee's belief that the rental property will increase in value over time, and, therefore, the lease should be accounted for in the same manner as a contingent rental. In other words, when this happens it could be argued that recognizing rent expense on an as-paid basis provides a better matching of revenues and expenses. This reasoning may serve as the basis for many of the companies' restatements related to their lease accounting. While the FASB considered this argument, they decided against it, as detailed below in FTB 85-3:

(12)   Recognizing scheduled rent increases as rent expense as paid would effectively account for those mandatory increases in the same manner as for contingent rentals. The accounting for operating leases under Statement 13, as amended by Statement 29, however, differentiates between (a) scheduled rent increases that are not dependent on future events and (b) increases or decreases in rentals that are dependent on future events such as future sales volume, future inflation, future property taxes, and so forth. The former are minimum lease payments to be accounted for under paragraphs 15 and 19(b) of Statement 13. The latter are contingent rentals that affect the measure of expense or income as accruable, as specified by Statement 29. Opponents of the guidance in the proposed Technical Bulletin asserted that the economic substance of contingent rentals and scheduled rent increases designed to reflect the anticipated effects of inflation are the same and should be accounted for similarly.

(13)   There is an important substantive difference between lease rentals that are contingent upon some specified future event and scheduled rent increases that are unaffected by future events; the accounting under Statement 13 reflects that difference. If the lessor and lessee eliminate the risk of variable payments inherent in contingent rentals by agreeing to scheduled rent increases, the accounting should reflect those different circumstances.

The third concern addressed by the SEC letter involves the proper accounting for landlord incentives received by a tenant for leasehold improvements. This topic is discussed in the following paragraphs.

Landlord/Tenant Incentives. Some leases provide incentives to the lessee to maintain and update the leased property. The lease may allow the lessee to reduce the cash payment made to the lessor for amounts the lessee pays on approved items to maintain or improve the property. These arrangements are sometimes referred to as landlord/tenant incentives. The SEC's letter includes the following statement regarding this issue:

The staff believes that: (a) leasehold improvements made by a lessee that are funded by landlord incentives or allowances under an operating lease should be recorded by the lessee as leasehold improvement assets and amortized over a term consistent with the guidance in item 1 above; (b) the incentives should be recorded as deferred rent and amortized as reductions to lease expense over the lease term in accordance with paragraph 15 of SFAS 13 and the response to Question 2 of FASB Technical Bulletin 88-1 ("FTB 88-1"), Issues Relating to Accounting for Leases, and therefore, the staff believes it is inappropriate to net the deferred rent against the leasehold improvements; and (c) a registrant's statement of cash flows should reflect cash received from the lessor that is accounted for as a lease incentive within operating activities and the acquisition of leasehold improvements for cash within investing activities. The staff recognizes that evaluating when improvements should be recorded

as assets of the lessor or assets of the lessee may require significant judgment and factors in making that evaluation are not the subject of this letter.

Because this area of lease accounting is the most opaque, an example is given here (this example is adapted from the Credit Suisse First Boston Newsletter, dated February 22, 2005). Assume a retail company leases space in a mall that was previously used by another retailer. The landlord needs to perform work on the space to ready it for the new tenant. Because the retail company has better knowledge regarding what needs to be done, the landlord might enter into an agreement with the retail company, whereby the retail company will contract for the work and pay the contractor. The landlord will then reimburse the retail company for the amount agreed upon by the landlord and the retail company.

Assume that the retail company spends $100 to improve the store space. The landlord agrees to reimburse the retail company $40 for the construction as a construction allowance. The lease is a 10-year lease and calls for $80 per year lease payments. Common practice for the companies that incorrectly accounted for landlord/tenant incentives was to make the following entry:

Leasehold Improvements	$60	
Receivable from Landlord	$40	
Cash		$100

Then, in each year over the 10-year lease, companies would make the following entry to record rent expense and amortization expense:

Amortization Expense	$ 6	
Rent Expense	$80	
Accumulated amortization		$ 6
Cash		$80

Based on the SEC letter and a closer reading of GAAP, the proper accounting for landlord/tenant incentives when the retail company pays the contractor the $100 for construction on the store space should be:

As a result, the leasehold improvements are recorded at their actual cost of $100, and a deferred rent credit is established for an amount equal to the reimbursement to be received from the landlord ($40 in this case). This deferred credit is then amortized as a reduction to rent expense over the life of the lease on a straight-line basis (see FTB 88-1, paragraphs 6-7). Therefore, each year over the 10-year lease, the retail company should make the following entry to record rent expense and amortization expense:

Leasehold Improvements	$100	
Receivable from Landlord	$ 40	
Cash		$100
Deferred rent credit (liability)		$ 40

Amortization expense	$10	
Rent Expense	$76	
Deferred rent credit	$ 4	
Accumulated amortization		$10
Cash		$80

As shown in the above example, firms would record additional amortization expense for the leasehold improvements, but there is an equal offset to rent expense. Therefore, adopting the correct GAAP approach for landlord/tenant incentives will not affect a company's net income or cash flows; however, a company's balance sheet will be affected. Leasehold improvements will be larger under the new method, and there will be a corresponding increase in liabilities represented by the deferred rent credit account.

EXAMPLES OF RESTATEMENTS

As noted above, CKE Restaurants, Inc. is the company that provided the impetus for the SEC letter dated February 7, 2005, and the large number of financial restatements due to inappropriate lease accounting that followed. Based on CKE's 8-K report filed with the SEC on November 23, 2004, the main reason that CKE needed to restate its financial statements was due to incorrectly accounting for the amortization of leasehold improvements (the first issue discussed in the previous section). The following excerpts from CKE's 8-K report discuss the restatements made by the company and provide an example of how the issue was addressed in practice.

> For many years, the Company has entered into a substantial number of real property leases and made significant investments in buildings, leasehold improvements and certain intangible assets. In determining whether each of these leases was an operating lease or a capital lease and in calculating its straight-line rent expense, the Company used in its calculations only the initial term of each lease… Simultaneously, the Company depreciated its investment in the buildings, leasehold improvements and intangible assets, other than capital lease assets, over a period that included both the initial term of the lease and all option periods provided for in the lease (or the useful life of the asset if shorter than the lease term plus options). The Company believed that this accounting treatment was permitted under

GAAP. Through many years of reporting its financial results, the Company was never advised to change these accounting treatments. As a result, the Company never determined a need to change these practices or to make them consistent with each other. Under the appropriate circumstances, either definition of lease term could be acceptable under GAAP. However, as discussed hereinafter, a question arose as to whether the Company could utilize both definitions of lease term, one for purposes of lease classification and straight-line rent expense calculations and the other for purposes of determining useful life for leasehold improvements.

[After much research and discussions with the company's CPA firm and its Audit Committee]…the Company will generally limit the maximum depreciation period to the initial term of the lease. However, in circumstances where the Company would incur a significant economic penalty by not exercising one or more option period, the Company will include one or more option periods when determining the maximum depreciation period and in classifying the lease and computing straight-line rentals.

The total increase to depreciation expense for CKE for all years affected was $32.7 million. To understand the magnitude of the adjustment, after restatement CKE reported a loss before income taxes of $48.0 million for its fiscal year ended January 31, 2004 (on total revenues of $1.4 billion), and the increase to depreciation expense for the year was $6.0 million.

Continental Airlines, Inc. restated its financial statements due to incorrectly accounting for the amortization of leasehold improvements and rent holidays (the first and second issues discussed in the previous section, respectively). The following excerpt from Continental's amended 10-K report, filed on July 20, 2005, explains the restatements made by the company and provides an example of how these issues were addressed in practice.

The Office of the Chief Accountant of the Securities and Exchange Commission ("SEC") recently issued interpretive guidance clarifying its position that leasehold improvements in an operating lease should be depreciated by the lessee over the shorter of their economic lives or the remaining lease term, as defined in SFAS 13. Leasehold improvements for us are primarily at airport locations (e.g., capitalized construction costs of the ticketing area, gate area, airport lounges, etc.) or other leased facilities (i.e., office space, kitchens, maintenance and reservations). In practice, we had depreciated leasehold improvements over the useful life of the improvement when the lease term was less than 10 years. We followed this accounting practice due to our expectation that the lease would be renewed for at least the period over which the leasehold improvements were being depreciated. However, based on the recent interpretative guidance from the SEC staff, we have restated our financial statements to depreciate our leasehold improvements over the shorter of their economic lives or the remaining term of the lease.

Rent expense under operating leases with fixed rent escalation clauses and lease incentives should be recognized evenly, on a straight-line basis over the lease term. Historically, we have accounted for all of our airport ground leases on an as-incurred basis. Based on an extensive review of our leases, we determined that some of our airport ground leases had fixed rent escalation clauses and that we were not recognizing rent expense appropriately. The adjustment reflected in this Amendment recognizes such rent expense on a straight-line basis in accordance with generally accepted accounting principles.

Due to the change in accounting for leasehold improvements, the total increase to depreciation expense for Continental for all years affected was $30.0 million; the increase to depreciation expense for 2004 was $1.0 million. Due to the change in accounting for rent holidays, the total increase to rent expense for Continental for all years affected was $81.0 million; the increase to rent expense for 2004 was $8.0 million. After restatement, Continental reported a loss before income taxes of $449.0 million for the year ended December 31, 2004 (on total revenues of $9.9 billion).

Abercrombie & Fitch Co. provides an example of a company that restated its financial statements due to incorrectly accounting for rent holidays and landlord/tenant incentives (the second and third issues discussed in the previous section, respectively). The following excerpt from Abercrombie & Fitch's amended 10-K report, filed on April 12, 2005, explains the restatements made by the company and provides an example of how these issues were addressed in practice.

> The Company has historically recognized the straight line rent expense for leases beginning on the commencement date of the lease rather than on the date the Company takes possession. This approach had the effect of excluding the build-out period of the Company's stores from the calculation of the period over which it expenses rent. The build out period is generally three to four months prior to store opening date… [T]he effect of the revised accounting for rent holidays requires the Company to increase accrued expenses…
>
> Historically, the Company's consolidated balance sheets have reflected the unamortized portion of construction allowances received from landlords of properties leased by the Company for its stores as a reduction of property and equipment instead of as a deferred lease credit… [T]he effect of the revised accounting for construction allowances requires the Company to increase property and equipment and establish a corresponding deferred lease credit.

The total after-tax effect of the increase to rent expense due to the correction for rent holidays for all years affected was $13.6 million. After restatement, Abercrombie & Fitch reported income before income taxes of $334.9 million for the year ended January 31, 2004 (on total revenues of $1.7 billion), and the increase to rent expense for the year was $0.5 million. The effect on Abercrombie & Fitch's balance sheet due to the correction for landlord/tenant incentives was more significant. On its balance sheet dated January 31, 2004, total assets and liabilities both increased by $181.4 million once the deferred lease credit was reported as a liability instead of as a reduction to property and equipment. Abercrombie & Fitch reported adjusted total assets of $1.4 billion on January 31, 2004.

PRIOR RESEARCH ON RESTATED FINANCIAL STATEMENTS

The fact that so many companies had to restate their financial statements due to inappropriate lease accounting was a surprise to many. If the misstatements are viewed as an attempt at earnings management by these companies, then the existence of so many successful attempts at earnings management can be contrasted with some prior research findings.

Schipper (1989, 92) defines earnings management as "…a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain." Healy and Wahlen (1999) note that earnings management can be performed by misapplying accounting standards or by structuring transactions in such a way as to achieve a desired financial statement result. Nelson et al. (2002) find that managers are more likely to manage earnings with structured transactions in areas where there are imprecise accounting standards. Palmrose and Scholz (2004) classify companies that issue restated financial statements into two categories. The two categories are restatements due to misstatements in primary (core) earnings and misstatements in other components of earnings (noncore). Palmrose and Scholz (2004) find that restatements due to noncore earnings items are more common than restatements due to core earnings items.

The fact that so many companies were accounting for leases inappropriately contradicts these prior research findings in two important ways. First, managers seemed to be structuring transactions (leases) to manage earnings in an area where the accounting standards are relatively clear and well established rather than where they are imprecise. Second, based on our analysis and review of the companies' financial statements, the expenses requiring restatement due to improper lease accounting are part of the companies' core earnings rather than noncore earnings.

SAMPLE AND DESCRIPTIVE STATISTICS

In February 2005, after the SEC issued its letter on lease accounting, Jack Ciesielski, publisher of the *Analyst's Accounting Observer*, began tracking the companies that restated their financial statements due to improper lease accounting. The sample we use in this paper was obtained primarily from the Analyst's Accounting Observer website (www.accountingobserver.com), but it is supplemented with our own research using the ABI/Inform Business Articles database. In total, 274 companies were identified as having restated their financial statements due to inappropriate lease accounting. The following tables provide descriptive information of the companies that comprise our sample, including the industry categories of the restating companies, the types and number of leasing errors identified, and who audited the companies.

As noted in Table 1, the restating companies come from a variety of industries. The industry with the largest number of restating companies is the retail industry, which is not surprising since companies in that industry are known for leasing most of the properties they occupy.

Table 2 includes a summary of the number and types of lease accounting errors that required restatement by the companies in our sample. Note that the errors include all three issues addressed by the SEC letter. The most common error involved rent holidays. Landlord/tenant incentives and amortization of leasehold improvements were less common and about equally likely to occur. The total number of errors included in Table 2 does not equal the number of firms in Table 1 because many of the firms had more than one type of lease accounting error.

Table 1: Industry Categories for Companies that Restated Financial Statements due to Inappropriate Lease Accounting	
Industry Categories	**No. of Firms**
Retailers	149
Hospitality	59
Wireless telecom	16
Banking/finance	8
Real estate enterprises	7
Other	35
Total	274

Table 2: Types of Leasing Errors	
Error Type	**No. of Firms**
Rent holidays and/or escalation	160
Landlord/tenant incentives	98
Amortization of leasehold improvements	94
Total	352

Table 3: Summary of Auditors for Companies that Restated Financial Statements due to Inappropriate Lease Accounting	
Auditor	**No. of Firms**
Deloitte & Touche	72
Ernst & Young	71
PricewaterhouseCoopers	61
KPMG	57
BDO Seidman	5
Grant Thornton	3
Others	5
Total	274

Table 3 gives a breakdown of the restatement companies by auditor. It is interesting to note not only the prevalence of the improper lease accounting, but also that all of the major auditing firms seemed to have signed off on the improper lease accounting practices.

TRANSPARENCY AND DISCLOSURE SCORE ANALYSIS

The large number of companies issuing restated financial statements due to improper lease accounting raises the question of the cause of so many restatements. Were the restatements due to confusion regarding the appropriate accounting for operating leases, or was this a deliberate attempt by companies to manage earnings? This paper hypothesizes that if it was an attempt at earnings management, this would indicate a low level of commitment to quality financial reporting by the company. If this is the case, one would expect this low commitment to quality financial reporting to be manifest in other areas of the companies' financial reporting practices. However, if the lease misstatements were due to a misunderstanding of GAAP or due to a perception that the practices had become de-facto GAAP due to common industry practices, then one would expect that the restatement companies' financial statements would not be of lower quality than other companies that did not restate.

To analyze the "quality" of financial reporting practices of the companies that restated their financial statements due to improper lease accounting, this paper relies on the transparency and disclosure (T&D) scores generated by Standard & Poor's. The T&D scores are based on 2002 information. Since the firms in this study are restating the 2004, 2003, and 2002 financial statements, the 2002 T&D scores give a good measure of the companies' commitment to quality financial reporting during the period of interest for this study. Standard & Poor's published a study that examines the T&D practices of major public companies. Standard & Poor's identifies 98 disclosure items and classifies these items into three major categories. Each company that is evaluated is then given a score in these three major areas and a composite score representing the total score from each of the three main categories. The three main categories evaluated are: (1) ownership structure and investor rights, (2) financial transparency and information disclosure, and (3) board of directors and management structure and process.

This paper uses the T&D scores as a surrogate for the "quality" of a company's financial statements. This paper posits that if the companies that restated due to improper lease accounting were trying to manage their earnings through inappropriate accounting practices, then the restatement companies would have a lower average T&D score than other companies that did not have to restate their financial statements. However, if the restatement companies were following what they thought were generally accepted accounting practices due to the prevalent nature of the improper lease accounting practices in their industry, then the restatement companies should have T&D scores that show no difference from average T&D scores for the industry.

Of our sample of 274 restating firms, 36 were included in the Standard & Poor's 500. While Standard & Poor's did the study on the S&P 500, only 460 firms had scores in the final study due to data requirements. Therefore, the comparison is between the mean T&D score between our 36 restating firms and the remaining 424 S&P 500 companies in the study.

Table 4 compares the mean T&D scores for the restating firms and the non-restating firms. Table 4 uses the composite T&D scores based on the companies' annual report, 10-K, and proxy statement. As can be seen in Table 4, there is no significant statistical difference in the T&D scores between the restating and non-restating firms. While there is no statistically significant difference between the T&D scores, it is interesting to note that for three of the four scores the restating firms actually have higher mean T&D scores than the non-restating firms.

Table 4: Comparison of Composite T&D Scores for Non-Restating Firms and Restating Firms			
Composite Ranking Based on Annual Report, 10-K, and Proxy Statement	**Non-Restating Firms n = 424**	**Restating Firms, n = 36**	**T-stat***
Composite-final ranking	7.502	7.528	-0.28
Composite-ownership & investor rights	5.627	5.889	-1.70
Composite-financial transparency	8.127	8.278	-1.32
Composite-board and mgmt structure	8.212	8.167	0.48
Note: Larger T&D scores represent more transparent financial statements *No T-statistic is significant at the 0.05 level			

Table 5 repeats the comparison of T&D scores between non-restating firms and restating firms; however, this time the T&D score is based only on the firms' annual report. It is interesting to note that on all categories for the T&D scores, based only on the annual report, that restating firms have higher mean T&D scores than the non-restating firms. The T&D final ranking, which is a combination of the other three T&D scores, shows a statistically significant difference. The T&D final ranking for non-restating firms is 4.648 and the T&D final ranking for restating firms is 5.000 (p-value < .05). These results indicate that the sample of restating firms is at least as good in terms of T&D scores as the control group of non-restating firms. Additionally, on at least one measure, the restating firms have higher T&D scores than do the non-restating firms. This evidence indicates that the restating firms have the same degree of commitment to high quality financial reporting as did the non-restating firms. Based on this evidence, it does not appear as if the restating firms were deliberately trying to manipulate their financial statements through improper lease accounting.

Table 5: Comparison of Annual Report T&D Scores for Non-Restating Firms and Restating Firms			
Ranking Based on Annual Report	**Non-Restating Firms, n = 424**	**Restating Firms, n = 36**	**T-stat**
Annual report-final ranking	4.648	5.000	-1.94*
Annual report-ownership investor rights	3.024	3.361	-1.79
Annual report-financial transparency	7.127	7.250	-0.50
Annual report-board and mgmt structure	3.519	3.861	-1.50
Note: Larger T&D scores represent more transparent financial statements			
*Statistically significant at the 0.05 level			

CONCLUSION

This paper examines the recent increase in corporate financial restatements due to improper lease accounting. The official accounting pronouncements regarding lease accounting were reviewed as well as a discussion of the ways that companies were misapplying the official pronouncements. A sample of companies that restated their financial statements was gathered and a measure of these companies' commitment to quality financial reporting was compared to a control group. The sample of restating companies did not have lower quality of financial reporting measures than did the control group. In fact, on one measure the restating firms had a higher measure of financial quality than did the control group. This evidence is consistent with the conjecture that in regards to lease accounting, the companies that restated were not intentionally misapplying GAAP, but rather following accounting practices that were widely used and recognized in their industries.

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THE IMPACT OF THE RESPONSE MEASURE USED FOR FINANCIAL DISTRESS ON RESULTS CONCERNING THE PREDICTIVE USEFULNESS OF ACCOUNTING INFORMATION

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ABSTRACT

Researchers testing the usefulness of accounting information in predicting financial distress have used many different responses as proxies for financial distress. They often compare results across these different studies, attempting to make conclusions concerning the usefulness of particular accounting information. However, comparisons are valid only if the various response variables used by the various studies have construct validity; the different response variables all measure the same intended construct, economic financial distress.

The primary purpose of this paper is to determine the validity of various response variables of financial distress by observing the stability of results across three different response variables. Similar results across the different response variables would suggest that researchers could validly compare results of the various financial distress studies. However, results that vary depending on the response variable used would indicate that different response variables may actually measure different constructs, and that the results reported in previous studies may be dependent on the response variable used.

The findings of this study suggest that results very dependent on the response variable used for financial distress. Thus, one cannot validly compare the results of prior financial distress studies that used different measures of financial distress. The results of this study suggest that the various response variables are not equal measure of financial distress. Results seem to suggest that a dichotomous bankruptcy measure may be the poorest measure of economic financial distress.

INTRODUCTION

Since the 1960s, accounting researchers have used an ability to predict financial distress criterion to evaluate the usefulness of competing accounting methods. A major area of accounting information predictive usefulness research in the last three decades has concerned the predictive ability of accrual and cash flow information. The profession stressed the incremental usefulness of cash flow information by requiring that companies present a Statement of Cash Flows in 1987. In

Opinion No. 95, the Financial Accounting Standards Board (FASB) expressed the board's belief that cash flow information, when taken together with accrual information, should help users predict future cash flows and future firm insolvency. The board required that companies report three net cash flows by activities: cash flow from operating activities, cash flow from investing activities, and cash flows from financing activities.

Prior researchers have used various response variables as proxies for financial distress. The earliest researchers used a dichotomous nonfailed versus failed response variable, while subsequent researchers have primarily used a dichotomous nonbankrupt versus bankrupt response variable for financial distress. A few studies have used multi-state response variables for financial distress.

Researchers often compare results across these different studies, attempting to make conclusions concerning the usefulness of particular accounting information. However, comparing the results of prior financial distress studies is questionable considering researchers used different response variables (dependent variables) for financial distress. Comparisons between studies are valid only if the various response variables have construct validity; the different response variables must all measure the same intended construct, economic financial distress.

This study compares the predictive ability of cash flow and accrual information using different response variables for financial distress. The primary purpose of this paper is to determine the validity of various response variables of financial distress by observing the stability of results across three different response variables. Similar results across the different response variables would suggest that researchers can validly compare results of the various financial distress studies. However, results that vary depending on the response variable used would indicate that different response variables may actually measure different constructs, and that the accrual and cash flow results reported in previous studies may be dependent on the response variable used.

REVIEW OF THE LITERATURE

The author selected the comparison of cash flow and accrual information as the vehicle to address the issue of response measure validity because of the substantial amount of research found in accounting and business journals during the last three decades. This subject is also very important since firms spend substantial time and cost preparing a cash flows statement, while results of prior financial distress cash flow research has been mixed concerning the incremental predictive usefulness of cash flow information over accrual information. Early financial distress researchers found a naive measure of operating cash flow, net income plus depreciation and amortization, to be a significant predictor of financial distress. Bankruptcy studies since 1980 tested more refined measures of operating cash flow (researchers eliminated other allocations and the impact of current receivables and payables on operating cash flow) and tested other cash flows. These studies' results suggest that cash flows do not have incremental predictive power over accrual information, although cash flow from operations is sometimes significant, especially one year before financial distress. However, two

multi-state studies in the 1990s found evidence suggesting the naive operating cash flow, cash flow from operating activities, and cash flow from investing activities may have incremental predictive ability certain periods before financial distress. More recent studies have used various response measures to measure the usefulness of related accounting information.

Ward (1999) contains a through review of the earlier research in this area. Table 1 contains brief summaries of some of the studies over this period of time.

Table 1: Summary of Prior Financial Distress Cash Flow Studies			
Study	**Response/Sample**	**Cash Flow Variables Tested**	**Findings**
Used distressed versus non-distressed measure:			
Beaver (1966).	79 failed and 79 nonfailed firms (failed = bankrupt bond default overdrawn bank account, or nonpayment of preferred dividends).	Naive operating cash flow (net income + depreciation and amortization scaled by various balance sheet totals).	Cash flow/total debt (CF/TD) is best single predictor.
Deakin (1972)	32 failed and non-failed (failed = bankrupt, insolvent, or liquidated).	CF/TD.	CF/TD most significant in all models.
Blum (1974)	115 failed and 115 non-failed industrial firms (failed = failure to pay debts when due, debt accommodation agreement with creditors, or bankrupt).	CF/TD.	CF/TD variable generally received high rankings.
Used bankrupt versus non- bankrupt measure:			
Altman et al. (1977).	53 bankrupt and 58 non-bankrupt firms from manufacturing and retailing.	Naive cash flow scaled by fixed charges and CF/TD.	Out of 27 variables, the naive cash flow variables were not found to be a part of the best model.
Norton & Smith (1979).	30 bankrupt and 30 non-bankrupt publicly traded firms.	CF/TD and naive cash flow scaled by sales (CF/S), total assets (CF/TA), and net worth (CF/TW).	CF/TA and CF/TD were part of best discriminant model 3 years before bankruptcy.
Mensah (1983)	For *ex ante* prediction purposes, 11 bankrupt and 35 non-bankrupt firms were randomly selected.	CF/S, CF/TA, CF/NW, CF/TD, and naive cash flow scaled by curent liabilities (CF/CL).	CF/NW was most important ratio in discriminant model.
Largay & Stickney (1980).	One bankrupt firm.	Working capital from operations (WCFO), cash flow from operations (CFO, more refined operating cash flow measure).	CFO provided a more accurate & timely signal of W.T. Grant's eventual bankruptcy.

Table 1: Summary of Prior Financial Distress Cash Flow Studies			
Study	**Response/Sample**	**Cash Flow Variables Tested**	**Findings**
Casey & Bartczak (1984 & 1985)	60 bankrupt and 230 non-bankrupt firms. Matched by industry Holdout sample.	CFO and CFO scaled by current liabilities (CFO/CL) and total liabilities (CFO/TL).	Cash flow ratios are significant during certain years. However, neither cash flow variable had higher classification accuracy than 6 combined accrual ratios. Addition of each cash flow variable did not increase classification accuracy.
Gentry et al. (1985).	33 bankrupt and loss firms and 33 non-bankrupt firms. No holdout sample, but 2nd sample of weak versus non-weak firms.	7 cash-based funds flows (each divided by total net cash flow). Never tested CFP, but tested components of CFO.	Funds flow components have predictive content but the cash flow components of CFO do not improve classification accuracy.
Gentry et al. (1987).	Same as before.	11 funds flow variables.	Investment, dividend, and receivable funds flow variables are significant, and some have incremental predictive power.
Gombola et al. (1987)..	77 bankrupt and 77 non-bankrupt firms. Two separate models: early (1967-1972) & late (1973-1981).	CFO/TA and WCFO/TA.	CFO variable not significant, and CFO variable not more useful in late-year model.
Aziz et al. (1988)	49 bankrupt and 49 non-bankrupt firms. No holdout sample, jackknife technique.	6 cash flow variables, each sclaed by book value.	Taxes paid, operating cash flow, & lender cash flow most significant.
Aziz & Lawson (1989).	Same as before, except also used a holdout sample of 26 bankrupt and 67 non-bankrupt firms.	Same cash flow variables as before and the 5 accrual ratios in Altman's (1968) Z-score model.	Cash flow variables do not improve on existing models' overall accuracy.
Used bankrupt versus non-bankrupt and bankrupt versus distressed samples:			
Gilbert et al. (1990)	Two main samples: (1) sample of 76 bankrupt and 304 non-bankrupt firms and (2) sample of 76 bankrupt and 304 distressed firms (distressed firms = those that had negative cumulative earnings over a consecutive 3 year period. Holdout (above samples split into two groups) sample.	Replicated Casey and Bartczak's study (1985) and Altman's study (1968).	CFO/TL has incremental predictive power for bankrupt versus distressed models. Bankruptcy models performed poorly distinguishing bankrupt from distressed firms.

Table 1: Summary of Prior Financial Distress Cash Flow Studies			
Study	**Response/Sample**	**Cash Flow Variables Tested**	**Findings**
Ward et al.(2006).	50 distressed and 50 non-distressed firms. Primary holdout and combined samples.	Net income/total assets Sales/current assets, current assets/current liabilities, total liabilities/owner's equity, current assets/total assets, cash + mk securities, log (total assets), estimated operating cash flow, and reported operating cash flow.	Distressed firms have greater nonarticulation than non-distress firms.
Used Multi-state measures of financial distress:			
Lau (1982) related to 1987 published article	350, 10, 15, 10, & 5 firms in 5 states: healthy, omitting or reducing dividends, default of loan interest &/or principal payments, protection under Chapter X or XI, and bankruptcy & liquidation for 1976. Nominal statistical model. Holdout sample of 1977 firms.	Attempted to test 4 funds flow variables, of which CFO/TL was one.	Results mixed, CFO/TL model strongest using classification accuracy, WCFO/TL model strongest using rank scores.
Lau (1987)	Same as above	10 variables, of which WCFO/TL was the funds flow variable tested.	Multi-state model somewhat strong.
Ward (1994).	164, 22, 23, & 18 firms in 4 states: healthy omitting or reducing dividends, loan principal/interest default or debt accommodation, and protection under Chapter X. Ordinal statical model. Holdout sample of 1989 firms.	9 variables, of which one was CF/TL and one was cash flow from operating activities scaled by total liabilities (CFFO/TL). Purpose was to determine what construct CF/TL was measuring.	CF/TL is measuring an economic income construct. CF/TL incrementally significant two years before financial distress. CFFO/TL incrementally significant one year before financial distress.
Ward (1992)	Same as above.	12 variables, of which one was cash flow from financing actitivies scaled by total liabilitis (CFFF/TL). Author also tested three gross cash flows: long-term financing flow (LFF/TL), short - term financing flow)SFF/TL), and equity financing flow(EFF/TL). Purpose was to detemine whether the gross financing cash flows had incremental predictive ability over the net cash flow from financing actitivies.	LFF/TL has incremental significan explanatory power over CFFF/Tl one year before financial distess. SFF/TL has increamentail significant explanatroy power over CFF/TL two years before finacial distress.
Ward et al. (1996)	Same as above, except, authors also collapsed states into various reduced models.	Same basic variables as 1994 as control variables. Authors added various allocation free variables (11 variables) into the models.	Depreciation and deferred tax have no useful information content in predicting financial distress.

Early cash flow studies compared the predictive usefulness of accrual and cash flow information. Beaver (1966), Deakin (1972), and Blum (1974) tested the predictive ability of a naive operating cash flow, net income plus depreciation and amortization, to predict financial distress. These three studies used a dichotomous nonfailed versus failed response for financial distress. All three studies found that the naive operating cash flow scaled by total debt was a strong predictor of financial distress.

Subsequent studies by Altman et al. (1977), Norton and Smith (1979), and Mensah (1983) tested the ability of financial ratios and cash flows to predict nonbankrupt and bankrupt firms. The authors used various stepwise linear and quadratic MDA models. Except for Altman et al., the naive cash flow, scaled by various measures, was a strong predictor of financial distress when included in models with accrual ratios.

Largay and Stickney (1980), Casey and Bartczak (1984; 1985), Gentry et al. (1985; 1987), Gombola et al. (1987), Aziz et al. (1988), and Aziz and Lawson (1989) subsequently tested more refined measures of operating cash flow (they eliminated additional accounting allocations and the timing differences in payables and receivables, etc.). Subsequent studies also tested the predictive ability of additional cash flows besides operating cash flow. For the studies that sampled more than one firm, the results provided little evidence suggesting that cash flows have incremental content above accrual information in predicting bankruptcy. These results are surprising, since a main stated benefit of cash flows is their incremental usefulness in helping creditors to predict insolvency (Staubus, 1989). The only study showing that cash flow based components have incremental predictive content (Gentry et al., 1987) actually found that certain changes in accounts that comprise working capital have incremental predictive content.

Gilbert et al. (1990) replicated the study of Casey and Bartczak (1985) and using two separate samples of firms, a sample of nonbankrupt versus bankrupt firms and a sample of distressed (defined as firms having consecutive losses) versus bankrupt firms. The authors found that operating cash flow could significantly distinguish between distressed and bankrupt firms. However, a model developed from the nonbankrupt versus bankrupt sample performed poorly when used to distinguish distressed firms from bankrupt firms. This result suggests that cash flow information may be more useful in distinguishing between events of financial distress other than bankruptcy. However, Gilbert et al. failed to: (1) look at other economic events of financial distress such as loan defaults and failure to pay dividends; (2) develop multi-state models of distress to better capture the predictive ability of cash flow and accrual information; and (3) control for the size of the firms, either by matching or by including size as an independent variable.

Ward et al. (2006) investigated whether bankrupt firms had greater articulation problems than nonbankrupt firms. The authors found that bankrupt firms where more likely to have articulation problems than nonbankrupt firms and that these articulation problems resulted in an overstated estimated operating cash flow measure. The authors concluded that this articulation problem for the

bankrupt firms might explain why earlier distress studies found little significance in explaining financial distress for operating cash flows.

Lau (1982; 1987) extended the methodology of prior studies by using a five-state response scale to approximate the continuum of corporate financial health instead of the conventional bankrupt and nonbankrupt dichotomy. The states included: (1) financial stability, (2) omitting or reducing dividend payments, (3) default of loan interest or principal payments, (4) protection under Chapter X or XI of the Bankruptcy Act, and (5) bankruptcy and liquidation. Lau considered the distressed firms to be on an ordinal scale, stating that "states one to four are states of increasing severity of financial distress" (pg. 128).

Lau compared the predictive ability of four funds flow measures, of which one was CFO/TL (cash flow from operations/total liabilities), in her 1982 dissertation. However, the results from this study were mixed. The CFO/TL model was the strongest model when classification was used to evaluate the predictive ability of each model, while working capital from operations scaled by total liabilities was the best measure when a rank score was used. Lau only reported the results for the working capital from operations model in the 1987 published study.

The model used by Lau, however, did not incorporate the ordinal structure of the dependent variable; her statistical models were nominal, not ordinal. For an ordinal multi-state dependent variable, ordinal logistic regression provides many advantages over nominal logistic regression (Agresti, 1984; Kennedy, 1992).

Ward (1994) developed an ordinal four-state model similar to Lau's nominal five-state model to determine the reason why Beaver's naive cash flow measure is such a strong predictor of financial distress. Ward extended the methodology of Lau's study by using ordinal logistic regression to generate the prediction models, thus incorporating the ordinal scale of the dependent variable. Ward found that the naive measure of financial distress is an incrementally significant predictor variable two years before financial distress, while cash flow from operating activities is significant one and two years before financial distress.

Ward and Foster (1996) subsequently used various multi-state models in testing the usefulness of allocation free information in predicting financial distress. The authors found that accounting ratios free of deferred tax components and depreciation best explained future financial distress.

More recent studies have used various measures of financial distress to test the ability of neural network models to predict financial distress (Zurada et al., 1999; 2001a; 2001b; Agarwal, 2001). Results of these studies have been somewhat mixed, with various neural network models showing some success in predicting financial distress.

Sensitivity of Results to Response Variable Used

Bahnson and Bartley (1992) investigated the sensitivity of cash flow results to the response variable used. They compared prior cash flow models of Casey and Bartczak (1984; 1985) with their

own models using three different definitions (responses) of financial distress: (1) nonbankrupt (nonevent, technical default, default, or troubled debt restructures) versus bankrupt, (2) solvent (nonevent or technical default) versus insolvent (default, troubled debt restructured or bankrupt), and (3) three state response with nonevent, technical default, and insolvent (default, troubled debt restructured or bankrupt). Results showed that the usefulness of CFO (cash flow from operations) depended on the definition of failure. CFO was not significant in either model when a nonbankrupt versus response was used. However, when the response was measured in a broader sense as solvent versus insolvent, CFO is significant in the Bahnson and Bartley model as type 1 errors (i. e., incorrectly classify a failed firm as being nonfailed) are increased.

However, Bahnson and Bartley's study suffers from two limitations that limit the generalizability of their results. First, Bahnson and Bartley used response variables substantially different from those used in prior studies. The multi-state and broadly defined responses used by Bahnson and Bartley were based on their previous unpublished paper. Nonbankrupt firms included technical default, default, and troubled debt restructured firms. Although prior bankruptcy studies likely included some technical default, default, and troubled debt restructure firms in their nonbankrupt samples, the numbers were likely much smaller than used in Bahnson and Bartley's study.

The authors also included technical default firms in all of their measures. Since loan covenants are normally based on accounting information, using this event to measure a response variable (dependent variable) regressed on accounting ratios produces some statistical bias and can produce misleading results. The bias from including technical default firms in the samples could be great considering that technical default dominated the "event" sample (76 of the 119 event companies were technical default firms).

Neill et al. (1991) reviewed prior financial distress cash flow research and concluded that CFO (cash flow from operations) doesn't appear to be a consistent predictor of financial distress. Other cash flows, particularly investment and dividends paid cash flows, appear more useful. They conclude that the usefulness of CFO information appears to be affected by "(1) the definition of failure employed (CFO is more important when failure is defined broadly, (2) the condition of the economy (CFO is more important in an economic downturn) and (3) the condition of the firms (CFO is more important for extreme observations)" (pp. 143-144). The authors stress that "greater attentions should be paid to the definition of failure employed and to the independent variables used" and that "future research should present results using alternative definitions of failure" (pp. 144-145).

Ward and Foster (1997) tested whether a loan default/debt accommodation response variable produced different results than a bankruptcy response measure. The authors concluded that a loan default/accommodation response seems to be a better measure of economic distress than bankruptcy. However, the authors never investigated multi-state response measures and a dichotomous distress versus nondistress measure.

This paper extends the research of Neil et al. (1991), Bahnson and Bartley (1992), and Ward and Foster (1997) by comparing the predictive ability of cash flow and accrual information using different response variables for financial distress. Similar to Bahnson and Bartley, this paper tries to determine whether or not cash flow results differ across various response variables. This study extends prior research by: (1) using response variables (especially the multi-state and broadly defined dichotomous responses) more similar to those used in prior studies, (2) including investing and financing cash flow variables in all models, (3) looking at cash flows during strong economic times, and (4) developing a separate holdout sample to determine the predictive ability of each model.

METHODS

Sample Selection

This study uses two separate samples of firms, an original sample and a holdout sample. The original sample was used to generate the prediction models and is composed of healthy and financially distressed 1988 firms. A holdout sample of 1989 firms was used to validate the predictive ability of models generated. The author developed the samples from separate years to provide intertemporal validation of each model's predictive strength. Readers should consult Lau (1982; 1987) and Altman et al. (1981) for discussions concerning the need for intertemporal validation of prediction models.

Since the purpose of this paper is to compare whether results are consistent across the differing responses used in prior research, the author needed to select samples from periods similar to prior studies. This sample is the same initial sample used by Ward (1994) and Ward and Foster (1997) and the period is consistent with the other cash flow studies. For a complete description of the sampling procedures used to select these firms, see Ward and Foster (1997).

The 1988 sample contained 227 firms of which 164 were healthy, twenty-two reduced cash dividends, twenty-three experienced a loan default or debt accommodation, and eighteen filed bankruptcy. The 1989 sample included 158 firms of which 111 were healthy, seventeen reduced cash dividends; fourteen experienced a loan default or debt accommodation, and sixteen filed for bankruptcy.

For some firms, the bankruptcy announcement comes before financial reports for the preceding year are issued. Consequently, these financial reports include information about a firm's bankruptcy (Ohlson, 1980). This problem can also occur for firms experiencing a default or debt accommodation. Therefore, this study substitutes reports from the previous fiscal year as the most current year of interest for firms releasing financial reports after the date of financial distress.

Response Variables

This study tests the predictive ability of cash flow and accrual information using three response variables (dependent variables) for financial distress. These three response variables are similar to variables used in prior financial distress studies. The three dependent variables are as follows: (1) healthy versus distressed (nonfailed versus failed) response, (2) healthy versus bankrupt response, and (3) ordinal four-state response.

The nondistressed versus distressed dependent variable was coded as follows:

DIST = 0 if firm was healthy, and
     = 1 if firm experienced a greater than forty percent reduction in cash dividend per share after a history of successive dividends per share, a loan principal/interest default or debt accommodation, or filed (or was forced to file) for Chapter XI protection.

This binary response variable is similar to the nonfailed versus failed measure used in previous financial distress studies.

The healthy versus bankrupt dependent variable was coded as follows:

DIST = 0 if firm was healthy, and
        1 if firm filed, or was forced to file, for Chapter XI protection.

This binary response variable is similar to the nonbankrupt versus bankrupt response measure used in prior studies.

The ordinal four-state dependent variable was coded as follows:

DIST = 0 if firm was healthy (no event of financial distress),
        1 if firm experienced a greater than forty percent reduction in cash dividend per share after a history of successive dividends per share (Deciding on a criterion for selecting dividend reduction/default firms is somewhat arbitrary. The author chose a forty percent criterion because this criterion was used by Lau (1982 and 1987)),
        2 if firm experienced a loan principal/interest default or debt accommodation, and
        3 if firm filed, or was forced to file, for Chapter XI protection.

This ordinal four-state response variable is the same response variable used by Ward (1992; 1994) and Ward and Foster (1997) and is similar to Lau's five-state response variable. The primary difference between the four-state response variable used in this study and Lau's five-state response variable is that the four-state response variable does not include liquidation firms as a fifth state because of the small number of liquidation firms in the original sample (four firms).

Advantages and Disadvantages of Each Response Variable

Each response measure has certain advantages and disadvantages over the other measures. One advantage of the dichotomous nondistressed versus distressed response variable is that this response measure includes firms that are marginally distressed as well as firms that are very distressed. Thus, the researcher can obtain a much larger sample of distressed firms. This mixture of distressed firms should result in a stronger test of the predictive ability of accounting information. The major criticism of this dichotomous response variable is that the nondistressed state is composed of heterogeneous firms. In a two-group failure classification, firms within a group should be homogeneous and representative of the population of failed enterprises (Altman et al., 1981).

A major advantage of the healthy versus bankrupt response measure is that a researcher can easily find a sufficient sample of bankrupt firms. Researchers can identify the bankrupt firms from many sources (such as CD data bases or by identifying firms that have been transferred to the *Compustat Research Tape*). Bankruptcy also has the advantage of tradition. Users of financial accounting information, accountants, and researchers are comfortable with using bankruptcy as the traditional definition of financial distress.

However, a nonbankrupt versus bankrupt dichotomous response variable suffers from two weaknesses somewhat ignored in prior financial distress literature. First, the use of bankruptcy as the sole proxy for financial distress is an overly simple representation of the financial distress process and is unlikely to capture the true underlying construct. The financial distress of a firm is an unobservable continuum. Firms are not simply bankrupt or nonbankrupt but possess certain degrees of financial distress that vary from day to day and period to period. Financial distress literature stresses the belief that many events indicate different degrees of financial distress (Giroux and Wiggins, 1984; Lau, 1987).

Second, one can also question the use of bankruptcy as a proxy for financial distress because bankruptcy is a legal event and not an economic event (Dietrich, 1984). Financial distress results from economic occurrences. Only economic events should truly capture the level of financial distress of a firm. Legal recognition of bankruptcy may occur after the firm is economically insolvent, or occur even though the company is not economically insolvent. The economic conditions of bankrupt firms are likely not similar to other types of distressed firms. Thus, using a legal event as a proxy for economic conditions may produce misleading results.

The ordinal four-state response variable's principal advantage is that it should provide a stronger test of the usefulness of accounting information, while not suffering from the limitation of having heterogeneous firms combined in one level. Predictor (independent) variables must distinguish between firms that are healthy and those marginally distressed, as well as distinguish between healthy firms and very distressed firms, thus providing a stronger test of the predictive usefulness of the variables tested.

The ordinal response measure does suffer from the complexity of using multi-states. Much time and effort is needed to obtain sufficient sample sizes using multiple states of financial distress. From a statistical perspective, the researcher must determine whether to use nominal (such as Lau) or ordinal regression (such as Ward) to generate the four-state model. If the response scale is ordinal, then ordinal logistic regression is the appropriate method to use (Kennedy, 1992). However, nominal logistic regression would be more appropriate if, after logistic transformation, the independent variables are not linearly related to the dependent variable (e.g., the relationship may be curvi-linear or the states may reverse).

Independent Variables

The independent variables examined consist of seven control variables and the three net cash flows required on a Statement of Cash Flows. The control variables are six accrual ratios found significant in prior financial distress studies (Casey and Bartczak, 1984; 1985; Gentry, et. al., 1987; Gilbert et. al., 1990; Ward, 1992; 1994; Ward and Foster, 1997) and a control variable to control for firm size. The control variables are as follows:

SIZE	=	log (total assets),
NITA	=	net income/total assets,
SALESCA	=	sales/current assets,
TLOE	=	total liabilities/owners' equity,
CACL	=	current assets/current liabilities,
CATA	=	current assets/total assets, and
CASTA	=	cash plus marketable securities/total assets.

The cash flow variables tested are as follows:

CFFO	=	cash flow from operating activities,
CFFI	=	cash flow from investing activities, and
CFFF	=	cash flow from financing activities.

The cash flow variables were computed from *Compustat* tapes. The author calculated the cash flows using the following formulas based on *Compustat* line items: CFFO = Income before extraordinary items + depreciation and amortization + deferred taxes + equity in net loss (earnings) + loss (gain) from sale of property, plant, and equipment and investments + funds from operations-others + accounts receivable-decrease (increase) + inventory-decrease (increase) + other current assets-decrease (increase) + current liabilities other than current debt-increase (decrease). CFFI = sale of property, plant and equipment - capital expenditures - acquisitions - increase in investments + sale of investments + short-term investments-change. CFFF = change in current debt-increase (decrease) + change in long-term debt-increase (decrease) + sale of common and preferred stock - purchase of common and preferred stock - cash dividends.

To prevent heteroscedasticity, this study scaled the cash flow variables by total liabilities. The author selected total liabilities as the scaling measure because it yielded a better fit to the data than scaling by current assets, total assets, current liabilities, sales, or owners' equity. This result is consistent with prior result (Gilbert et al., 1990; Lau, 1987; Ward, 1992; 1994).

Statistical Models

This study uses financial data for 1984/85 (year three models), 1985/86 (year two models), and 1986/87 (year one models) to predict the financial distress of 1988 firms. The predictive accuracy of each model is then validated with a holdout sample of 1989 firms.

The ordinal four-state prediction model was constructed using ordinal logistic regression (OLGR), proportional odds variation. This procedure fits a parallel lines regression model based on transformed cumulative logits. OLGR assumes an ordinal relationship between the dependent and independent variables. However, OLGR does not make an assumption concerning the intervals between the levels of the dependent variable.

Binary logit regression (LG) was used to generate the dichotomous prediction models in this study. LG is similar to OLGR. LG fits a regression model based on a single transformed logit instead of cumulative logits. (The ordinal and binary logistic models used in this study were proportional odds models.) LG has been used extensively in prior financial distress research (e.g., Casey and Bartczak, 1985; Gentry et al., 1985; Aziz et al., 1988; Aziz and Lawson, 1989). For brevity's sake, this study doesn't illustrate the OLGR or LG models. Agresti (1984), Kennedy (1992), and Ward (1992; 1994) discuss ordinal logistic regression, while Hosmer and Lemeshow (1989) provide a thorough discussion of binary logit regression.

Since dichotomous financial distress studies use nonrandom techniques to sample distressed firms, parameter estimates can be biased (sample proportions are not similar to population proportions). Zmijewski (1984) demonstrated a weighted probit procedure to correct for this choice-base bias in a binary probit model, while Cosslett (1981) illustrated weighted binary *conditional logit* models. However, Maddala (1991) demonstrates that the binary *logit* model does not result in biased

parameter estimates. According to Maddala, one does not need to use a weighting procedure for the logit model because the unequal sampling rates do not affect the coefficients of the predictor variables; only the intercept needs to be adjusted based on the proportion sampled from the population for each group.

Since the purpose of this study was to compare across the different models, and since it is almost impossible to determine the percentage of loan default/accommodation firms actually identified (the researcher is unable to identify all of these firms in a population) from the population, the author of this study didn't adjust the intercept of each binary model by the proportions. Failure to adjust the intercept should not affect comparisons between the models since all models were treated the same. However, this study did use the sample ratios (healthy to distressed) as cutoffs for classification. The author of this study is unaware of research addressing the existence of choice-base sampling bias in ordinal multi-state models.

RESULTS

Significance of Independent Variables - Original Sample

The author first developed four regression models, one for each response variable, to test the explanatory power of the independent variables. If all four response measures are measuring the same financial distress construct, then the results for the predictor variables should be similar across the various response variables. Table 2 contains the statistical results for the regression models.

Table 2: Predictor Variables Significant at P-value $\leq$ .05, Using Various Response Variables for Financial Distress										
		Predictor Variables								
Year	Response[1] Variable	SIZE[2]	NITA	SALESCA	CACL	TLOE	CATA	CASHTA	CFFO	CFFI	CFFF
Year 1:										
	Four-state		.021		.001				.001		
	H vs. D		.013						.006	.023	
	H vs. B				.012				.025		
	H vs. L								.008	.030	
Year 2:										
	Four-state				.034			.021		.040	
	H vs. D		.006					.018	.026		
	H vs. B				.007						
	H vs. L	.050	.002					.004			

					Predictor Variables						
Year	Response[1] Variable	SIZE[2]	NITA	SALESCA	CACL	TLOE	CATA	CASHTA	CFFO	CFFI	CFFF
Year 3:											
	Four-state						.043				
	H vs. D						.049				
	H vs. B										
	H vs. L		.004				.034	.047			

Table 2: Predictor Variables Significant at P-value $\leq$ .05, Using Various Response Variables for Financial Distress

[1] Four-state = ordinal four-state response. H vs. D = healthy versus distressed response. H vs. B = healthy versus bankrupt response. H vs. L = healthy versus loan default/accommodation response.

[2] SIZE = log (total assets). NITA = net income/total assets. SALESCA = sales/current assets. CACL = current assets/current liabilities. TLOE = total liabilities/owners' equity. CATA = current assets/total assets. CASHTA = cash + marketable securities/total assets. CFFO = cash flow from operating activities. CFFI = cash flow from investing activities. CFFF = cash flow from financing activities.

Table 2 shows that the statistical results are very dependent on the response variable used; results are not consistent across the different responses. Only CFFO is significant in all of the four models one year before distress. The H vs. B (healthy vs. bankrupt) model's results generally fail to agree with the other models' results, especially two or three years before financial distress. However, the H vs. B model's results are consistent with prior bankruptcy cash flow studies. CFFO is the primary incremental explanatory cash flow variable of bankruptcy one year before financial distress. This result suggests that either the other three response variables are poor proxies of financial distress or a bankruptcy response variable is not a good proxy for financial distress.

The H vs. D (healthy vs. distressed) model shows significance for the operating cash flow variable two of the three years before financial distress. This result suggests that the main advantage of cash flows may be their ability to distinguish between firms with different levels of financial distress (marginally distressed firms). Cash flows may not add explanatory power to accrual information when asked to discriminate between firms that are healthy and firms that are very distressed. This finding is consistent with the findings of Gilbert et al. (The author reviewed the correlation matrices (not reported) of the estimated parameter estimates for all models to determine if multicollinearity was a problem. These correlation matrices did not indicate a multicollinearity problem in any model.)

Significance of Independent Variables - Combined Sample

To determine if the small sample sizes for the loan default/accommodation firms in the H vs. L model (twenty-three loan default/accommodation firms) and the bankrupt firms in the H vs. B

model (eighteen bankrupt firms) could have affected the results, the author combined the original and holdout samples and reran the models. Table 3 contains the statistical results for the models using the combined sample.

Table 3: Predictor Variables Significant at P-value ≤ .05, Samples Combined											
		Predictor Variables									
Year	Response[1] Variable	SIZE[2]	NITA	SALESCA	CACL	TLOE	CATA	CASHTA	CFFO	CFFI	CFFF
Year 1:											
	Four-state		.003		.001			.007	.001		
	H vs. D		.002		.017			.005	.002		
	H vs. B				.002	.006					
	H vs. L			.047	.001				.014		
Year 2:											
	Four-state		.001		.013			.012		.014	
	H vs. D		.001					.014	.016	.031	
	H vs. B		.016		.008						
	H vs. L	.006					.013			.032	
Year 3:											
	Four-state	.004					.017	.003		.043	
	H vs. D	.022						.007			
	H vs. B	.015					.057				
	H vs. L	.007						.025			

[1] Four-state = ordinal four-state response. H vs. D = healthy versus distressed response. H vs. B = healthy versus bankrupt response. H vs. L = healthy versus loan default/accommodation response.

[2] SIZE = log (total assets). NITA = net income/total assets. SALESCA = sales/current assets. CACL = current assets/current liabilities. TLOE = total liabilities/owners' equity. CATA = current assets/total assets. CASHTA = cash + marketable securities/total assets. CFFO = cash flow from operating activities. CFFI = cash flow from investing activities. CFFF = cash flow from financing activities.

Table 3 results show that more predictor variables are now significant. Still, the results primarily agree with the original sample results reported in Table 2. The significance of particular predictor variables are still dependent on the scaling measure used. Only CACL and SIZE are incrementally significant explanatory variables for all four models (one and three years before the event, respectively). The four-state and H vs. D models tend to agree more than any of the other models.

However, as for the original sample, the H vs. B model's results are different from the other models' results (except for CACL and SIZE), especially for the cash flow variables. The H vs. B model's results suggest that no cash flow variable is significant either year before bankruptcy.

However, CFFO is incrementally significant for the other three models one year before financial distress, while CFFI is significant for the other three measures two years before financial distress.

The results using a combined sample also suggest that a binary bankruptcy proxy may be a poor proxy for financial distress. Thus, using a binary bankruptcy response as the sole proxy for financial distress could result in misleading conclusions concerning the incremental predictive ability of accounting information, especially cash flow information. Since prior financial distress studies primarily used a binary nonbankrupt versus bankrupt response variable for financial distress to test the predictive usefulness of cash flow information, their findings that cash flow information was not incrementally useful may have been affected by the response variable used.

Validation of Models - Using Classification Accuracy

To validate the statistical results reported in Tables 2 and 3, the author checked the ability of the models to classify firms correctly one, two, and three years before financial distress. As stated before, the author used prior probabilities equaling the sample sizes for classification purposes to eliminate the effects of choice-base bias on classification rates. The author also reports the classification rates for the four-state model. Comparing the classification rates of the four-state model with the binary models' classification rates is questionable, considering the four-state model is scaled differently. Since the four-state model must select classification among four different states, it naturally would have a lower overall percentage of firms classified correctly. A rank score that considers the ordinal scale of the response variable would be a better measure of the predictive ability of an ordinal regression model. Because this study is primarily interested in comparing the change in prediction ability after adding the cash flow variables to the accrual variables, the author had to select a validation method that could be applied to all of the response variables. Classification accuracy has been used extensively in the binary financial distress studies. Thus, the author of this study believes it appropriate to also calculate the classification rates for the four-state model.

Table 4 contains the classification rates for the models using the original sample, while Table 5 contains the results for the holdout sample.

Table 4: Classification Rates of Accrual and Mixed Models Using Various Responses Variables for Financial Distress - Original Sample					
		Response Scale			
Year	Model	4-State	H vs. D	H vs. B	H vs. L
Year - 1:					
	Accrual Model:				
	Total[1]	76.2	76.7	90.7	87.7
	H	98.8	78.7	91.5	89.0
	D, B, or L	17.5	71.4	83.3	78.3

		Response Scale			
Table 4: Classification Rates of Accrual and Mixed Models Using Various Responses Variables for Financial Distress - Original Sample					
Year	Model	4-State	H vs. D	H vs. B	H vs. L
	Mixed Model:				
	Total	78.9	77.1	88.5	90.4
	H	98.8	78.0	89.6	91.5
	D, B, or L	27.0	74.6	77.8	82.6
Year - 2:					
	Accrual Model:				
	Total	73.6	71.4	81.9	87.2
	H	98.2	72.6	83.5	87.2
	D, B, or L	9.5	68.3	66.7	87.0
	Mixed Model:				
	Total	75.8	74.0	86.8	86.6
	H	100.0	75.0	87.2	88.4
	D, B, or L	12.7	71.4	83.3	73.9
Year - 3:					
	Accrual Model:				
	Total	71.8	64.3	71.4	78.6
	H	98.8	65.2	72.6	78.7
	D, B, or L	1.6	61.9	61.1	78.3
	Mixed Model:				
	Total	72.7	64.8	68.7	76.5
	H	97.0	65.9	70.1	78.0
	D, B, or L	9.5	61.9	55.6	65.2
[1] Total = total percentage of firms classified correctly by each model for the different response scales. H = number of healthy, nonbankrupt, or nonloan default/accommodation firms classified correctly. D, B, or L = percentage of distressed, bankrupt, and/or loan default/accommodation firms classified correctly.					

If cash flow information has practical incremental predictive usefulness above accrual ratios, then the combined models with the cash flows added to the accrual ratios should out-predict an accrual model. Table 4 results primarily validate the statistical results reported earlier. Results vary depending on the response variable used. For example, the cash flow variables improve predictions all three years for the four-state and H vs. D models, while the H vs. B and H vs. L (healthy vs. loan default) models show an improvement in classification in only one of the three years.

		Response Scale			
Table 5: Classification Rates of Accrual and Mixed Models Using Various Responses Variables for Financial Distress - Holdout Sample					
Year	**Model**	**4-State**	**H vs. D**	**H vs. B**	**H vs. L**
Year - 1:					
	Accrual Model:				
	Total[1]	70.9	81.0	88.2	85.6
	H	96.4	82.9	92.8	88.3
	D, B, or L	10.6	76.6	56.3	64.3
	Mixed Model:				
	Total	72.2	76.6	87.4	86.4
	H	96.4	81.0	93.7	89.2
	D, B, or L	14.9	63.8	43.8	64.3
Year - 2:					
	Accrual Model:				
	Total	71.5	70.9	81.1	83.2
	H	98.2	75.7	82.9	87.4
	D, B, or L	8.5	59.6	67.8	50.0
	Mixed Model:				
	Total	70.9	67.1	84.3	76.0
	H	96.41	70.3	87.4	81.1
	D, B, or L	10.6	59.6	62.5	35.7
Year - 3:					
	Accrual Model:				
	Total	70.3	60.8	67.7	72.0
	H	100.0	63.1	68.5	73.9
	D, B, or L	0.0	55.3	62.5	57.1
	Mixed Model:				
	Total	70.9	58.2	69.3	71.2
	H	99.1	61.3	69.4	73.0
	D, B, or L	4.3	51.1	68.8	57.1

[1]   Total = total percentage of firms classified correctly by each model for the different response scales. H = number of healthy, nonbankrupt, or nonloan default/accommodation firms classified correctly. D, B, or L = percentage of distressed, bankrupt, and/or loan default/accommodation firms classified correctly.

The holdout sample results also suggest that results vary depending on the response variable used. However, results differ for particular response variables. For the holdout sample, the H vs. D model failed to show an improvement for the cash flows either year, while the four-state and H vs. B responses showed improvement two of the three years.

Additional Analysis Using a Nonbankrupt versus Bankrupt Response

The H vs. B response used in this study differs somewhat from the nonbankrupt versus bankrupt response used by prior researchers. Because of sampling techniques used in earlier studies, prior researchers likely included some dividend default and loan default/accommodation firms as nonbankrupt firms. To determine the effect of this difference on results, the author reran the models using a bankrupt versus nonbankrupt (dividend reduction, loan default/accommodation and healthy firms combined) sample of firms. Table 6 contains the results using a nonbankrupt versus bankrupt (NB vs. B) response variable.

Table 6: Predictor Variables Significant at P-value $\leq$ .05, using a Nonbankrupt versus Bankrupt Response Measure for Financial Distress											
		Predictor Variables									
Year	Response[1] Variable	SIZE[2]	NITA	SALESCA	CACL	TLOE	CATA	CASHTA	CFFO	CFFI	CFFF
Year 1:											
	NB vs. B			.001		.001		.012		.017	
Year 2:											
	NB vs. B			.001					.035	.047	
Year 3:											
	NB vs. B										
[1] NB vs. B = nonbankrupt versus bankrupt response. [2] SIZE = log (total assets). NITA = net income/total assets. SALESCA = sales/current assets. CACL = current assets/current liabilities. TLOE = total liabilities/owners' equity. CATA = current assets/total assets. CASHTA = cash + marketable securities/total assets. CFFO = cash flow from operating activities. CFFI = cash flow from investing activities. CFFF = cash flow from financing activities.											

Table 6 results show that the results for the NB vs. B (nonbankrupt vs. bankrupt) model are very similar to the results for the H vs. B model reported in Table 2. The primary difference between the two models' results is that CFFF is significant one and two years before financial distress for the NB vs. B response model. Since CFFF was never significant either year using the other three response variables (four-state, H vs. D, and H vs. L), this result further suggests that a binary bankruptcy response variable may measure a different construct than the other response variables.

Summation of Results

Combined, the results of this study suggest that results concerning the predictive usefulness of accrual and cash flow information are very dependent on the response variable used for financial distress. Thus, one cannot validly compare the results of prior financial distress studies that used different measures of financial distress.

The results of this study suggest that the various response variables are not equal measures of financial distress. Thus, one is left wondering which financial distress variable best measures financial distress. Although this study did not specifically attempt to determine which variable best measures financial distress, the results of this study do offer some insights. If theory indicating that cash flow information should have short-term predictive content (in predicting financial distress) is valid, then the results of this study suggest that the four-state response measure is the better response variable. The four-state models consistently show that various cash flows are incrementally important predictors of financial distress in the short-term.

Loan default/accommodation firms appear to be as financially distressed as bankrupt firms two and three years before the event. In fact, predictive models tended to distinguish healthy firms from loan default/accommodation firms easier than they did healthy firms from bankrupt firms. (Classification rates for H vs. L models were normally higher than rates for H vs. B models.) This finding suggests that future applied binary prediction models developed for creditors should be based on a healthy versus loan default/accommodation response instead of a bankrupt response such as Altman's Z-score model. Creditors would benefit more from H vs. L models since loan default/accommodation normally occurs before bankruptcy (Giroux and Wiggins, 1984); thus, prediction models based on loan default/accommodation should provide creditors more time to take action concerning future losses.

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USING PENSION EXPENSE TO MANAGE EARNINGS: IMPLICATIONS FOR FASB STANDARDS

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ABSTRACT

Recent studies provide convincing evidence firms manage reported earnings to achieve certain capital market reporting objectives. However, there is little empirical evidence on what levers firms use to manage their reported earnings.

This paper presents evidence that pension expense is an active lever used by firms to manage bottom-line, reported earnings. Firms with actual reported earnings in a neighborhood relatively close to their capital market earnings benchmark are selected for testing. Based on a proxy for premanaged earnings, firms hypothetically missing their capital market earnings benchmark are predicted to reduce their actual pension expense to increase actual reported earnings; whereas firms hypothetically beating their capital market earnings benchmark are predicted to increase their actual pension expense to reduce their actual reported earnings.

Both groups of firms are predicted to manipulate reported earnings in the direction that will move them closer to their capital market earnings benchmark than they would have otherwise been. Results suggest both groups of firms use pension expense as a lever to manage actual reported earnings.

INTRODUCTION

This study investigates whether or not firms use pension expense as an earnings management tool to maintain a steady stream of earnings. The capital market benchmark in the current year is equal to the prior year earnings. Prior research studies provide mixed evidence that pension expense is used as an earnings management tool to manage reported earnings. This lack of persuasive empirical evidence is puzzling as survey evidence indicates auditors perceive pension expense is a frequently used earnings management tool (Nelson et al. 2000). Most prior studies are unable to consistently detect pension expense manipulation because they focus primarily on *contracting incentives* rather than on *capital market reporting incentives* for explaining earnings management. Another reason may be that most prior studies focus on *pension rate manipulation* rather than on *pension expense manipulation* directly.

Interestingly, one research study (Bergstresser et al. 2006) indicates firms are more aggressive with their assumed expected long-term rate of return on pension assets when the firms are near critical earnings thresholds and this rate assumption has greater potential to impact reported earnings. Since changes in either the discount rate assumption or the compensation rate assumption could offset the impact on pension expense caused by the change in the assumed expected long-term rate of return on pension assets, our study extends prior research by *focusing directly on pension expense* taken as a whole rather than focusing only on the affect of one of the three pension rate assumptions. Therefore, this research takes a more inclusive approach by looking at the cumulative effects of all pension rate assumptions on pension expense.

This study differs from prior studies in that it examines whether or not the prior year earnings benchmark creates an incentive to manipulate pension expense in a rational economic manner. The research findings provide interested parties with relevant information necessary to support the position that pension expense be monitored more carefully in the future by auditors and regulators to prevent its misuse in financial statement reporting.

One obstacle associated with attempting to test for pension expense manipulation is that of determining what a firm's pension expense would be absent the manipulation. The Statement of Financial Accounting Standards No. 87, *Employers' Accounting for Pensions* (SFAS No. 87), provides a unique measure of what pension expense should be from year to year based on the corridor approach. Accordingly, firms are allowed to spread pension expense over time in order to avoid the immediate recognition of wide swing market fluctuations that affect pension investments. The reason regulation allows firms to spread pension expense is a long-term view whereby market fluctuations are expected to average out over the long-term. Firms are not forced to recognize short-term market fluctuations unless the aggregated unrecognized fluctuations exceed a 10% corridor (10% of the larger of the market related value of pension assets or the projected benefit obligation measured at the beginning of the period). Therefore, we are able to reasonably estimate what a firm's pension expense would be absent the manipulation.

Theoretically, pension expense should be approximately the same from year to year unless there is a change in the number of employees, industry effects, and or time fixed effects. The industry effects and time fixed effects are captured in the model by using dummy variables for each industry and for each year. Therefore, the proxy for pension expense, absent manipulation, is the prior year pension expense.

Managers run "what if analyses" at the end of the year to determine whether or not earnings benchmarks will be achieved. It is common practice to substitute the prior year pension expense as the current year pension expense in these analyses. So, the logic behind common practice supports our proxy for current year pension expense. In addition, actual pension expense is one of the last general ledger accounts that can be adjusted or manipulated at year-end in an attempt to meet the actual current year earnings benchmark.

For a number of reasons, pension expense is an ideal general ledger account for manipulating. The first reason is the lack of precision in the guidelines as set forth in SFAS No. 87 which allows firms great flexibility in choosing their assumed discount rate, compensation rate, and expected rate of return on pension assets. In addition, it is highly probable that firms have access to and authority over superior information regarding their applicable pension plans than is readily available to the public or to other interested parties. Another reason is the lack of timely verification of the rate assumptions and estimates because they cover discounted projections out in the future generally for 20 plus years.

This research design models the behavior of pension expense to identify its discretionary and nondiscretionary components. Therefore by design, *any change in pension expense* from year to year is considered discretionary and *is the primary focus* of *explanation*.

The benchmark test addresses whether or not firms use pension expense in an attempt to continue a steady stream of earnings. Barth et al. (1999) show evidence those firms with consecutive earnings increases experience higher stock prices, and when those firms encounter declines in reported earnings, the premium stock prices fall tremendously. As a result, firms have strong incentives to continue a steady stream of earnings to acquire market approbation and to avoid market devaluation.

The remainder of this paper is organized into four sections. The first section describes the background and the earnings-based benchmark. The second section provides the research design, hypothesis development, sample selection and other statistical considerations. The third section provides the results, interpretations, sensitivity analyses, and limitations. The fourth section provides the summary conclusions.

PRIOR LITERATURE AND EARNINGS-BASED BENCHMARKS

In 1985, the FASB issued SFAS No. 87, *Employers' Accounting for Pensions*, which is currently the primary standard influencing financial measurement for defined benefit pension plans. In 1998, the FASB issued SFAS No. 132, *Employers' Disclosures about Pensions and Other Postretirement Benefits,* which is currently the primary standard influencing pension disclosure. In early 2006, FASB proposed changes to the current pension standards by issuing the exposure draft, *Employer's Accounting for Defined Benefit Pension and Other Postretirement Plans – an amendment of FASB Statements No. 87, 88, 106, and 132®.*

For the last two decades pension research (Kwon, 1989; Blankley, 1992; Ali and Kumar, 1993; Weishar, 1997; Brown, 2001 and Bergstresser et al., 2006) focuses primarily on the explanation of pension rates and how and why firms' select the particular pension rates disclosed in their financial statements. Improved disclosures required by SFAS No. 132 now provide enough information to recalculate pension expense using the three pension rate assumptions. So that,

research in the area of pension accounting may experience a paradigm shift where pension rates are no longer the primary focus of explanation.

Kwon's (1989) research focuses only on the explanation of the discount rate. Blankley's (1992) research focuses individually on the explanation of the discount rate, compensation rate, and expected long-term rate of return on plan assets. Weishar's (1997) research focuses on the explanation of the simultaneous effects of the discount rate, compensation rate, and expected long-term rate of return on plan assets. Brown (2001) not only focuses on explaining the three pension rates but somewhat changes the direction of research by including a market valuation model to examine the value relevance of economic factors and reporting incentive factors.

In prior studies, the *only explanatory variable* that is *consistently significant* in explaining pension rate assumptions is the *funding ratio variable*. Other variables such as leverage, unrestricted retained earnings, cash constraints, manager control, size, unionization, tax loss, and change in CEO are not consistently significant from study to study. Possible explanations for the inconsistent findings may be due to omitted variables, measurement error, lack of power, and or misspecified models. Therefore, these models explaining pension rates may not fully capture the impact of pension expense manipulation as it relates to financial statement reporting.

We contend that a more complete research approach is needed to examine pension expense explicitly in relation to capital market based incentives. Whether managers act in self-interest or in the interest of shareholders, their performance is monitored by directors, auditors, investors, creditors, and regulators, which creates strong incentives to manage earnings. Capital market based incentives are expected to capture more fully financial statement manipulation as it relates to pension expense.

Burgstahler and Dichev (1997) theorize that investors in publicly traded firms use simple low-cost heuristics, such as earnings-based benchmarks, in determining firm value. In addition, prospect theory is informative as another reason for using benchmarks, whereby investors value gains and losses using a reference point rather than by an absolute level of worth. Prospect theory (Kahneman and Tversky 1979) is defined differently than expected utility theory. Utility is generally defined in terms of net wealth and value is defined in terms of gains and losses representing deviations from a reference point. The value function in prospect theory comprises a different shape for gains and losses. The value function is relatively steep and convex for losses whereas it is concave and less steep for gains. This occurs because people are risk seeking when faced with a loss but risk averse when faced with a gain. Using this theory, if zero is a natural reference point for change in earnings, then firms have incentives to manipulate earnings for a positive rather than negative earnings outcome. Burgstahler and Dichev (1997) use *frequency distribution* as a method for demonstrating the existence of earnings management. Evidence indicates a disproportionally low incidence of firms reporting small decreases in earnings and small losses relative to a high incidence of firms reporting small increases in earnings and small positive earnings.

DeGeorge et al. (1999) use a similar research design as Burgstahler and Dichev (1997) and report earnings are the single most value relevant item provided to investors in financial statement

reporting. Earnings are used as performance measures, which in turn, provide the enticement for firms to manipulate earnings. Their research reveals how efforts to exceed thresholds, that is, to sustain recent performance, to report positive earnings, and or to meet analysts' expectations, induce particular patterns of earnings management. Clearly emerging patterns show earnings falling just short of thresholds are managed upward. Additional evidence suggests future performances of firms just achieving thresholds are poorer than performances for control firms that are less suspect of managing earnings (DeGeorge et al. 1999).

Barth et al. (1999) depict firms with longer strings of repeated earnings increases are priced at a premium but when these firms experience declines in earnings, the premiums fall intensely. Moehrle (2002) finds evidence suggesting some firms record restructuring charge reversals to avoid earnings declines, to avoid reporting net losses, and to meet analysts' earnings forecasts.

In aggregate, prior benchmark studies suggest that firms manage earnings to avoid an earnings decline, to avoid reporting losses, and to meet analysts' earnings forecasts. Based on the logic of prior studies, our study tests whether firms use the discretionary portion of pension expense in a rational economic manner to meet their current year earnings benchmark which is established as their prior year earnings.

RESEARCH DESIGN

The primary objectives of investigating the phenomenon of earnings management are to discover how firms manipulate earnings, to determine what motivates firms to manipulate earnings, and to evaluate what costs and benefits are associated with firm manipulation. The *aggregate accruals method*, the *specific accruals method*, and the *earnings-based distribution method* are the three research designs prevalent in the earnings management literature (McNichols 2000). Each research design is operationally equipped with its own advantages, disadvantages, and tradeoffs.

Healy and Wahlen (1999) conjecture future research contributions in the area of earnings management will come primarily from documenting the extent and magnitude of the effects of specific accruals and from identifying factors that limit firm ability to manage earnings. The specific accruals research method is based on a disaggregated approach that examines individual accounting items that are subject to substantial manager judgment and are able to significantly impact reported earnings. The most important advantage of the specific accruals research method is the provision for yielding directional predictions based on researcher knowledge and skill. Whereas, the core disadvantage of the specific accruals research method is its inability to analyze simultaneously aggregated effects of accounting levers used by managers in managing earnings (McNichols 2000, Fields et al. 2000, Francis 2001).

We use a specific accruals research model with an earnings-based benchmark as the explanatory variable. The research design is an amalgamation of prior research fundamentals that

provide discovery, understanding, and explanation as to whether pension expense is manipulated in a rational economic manner to achieve the earnings-based benchmark. The distinction from prior research is determining whether or not there is an association between the change in pension expense and the amount that firms hypothetically beat or hypothetically miss their benchmark based on premanaged earnings.

The theoretical concepts are operationalized. Whereby, the hypothesis is formalized and stated below in alternate form.

> H1: Pension expense is manipulated in a rational economic manner to achieve the current year earnings benchmark, which is the prior year reported earnings.

The hypothesis tests for benchmark behavior. However, an analysis of smoothing behavior is also included in the research. Benchmark behavior is where a firm decreases actual pension expense to increase actual current year earnings in an attempt to reach their earnings benchmark (i.e., prior year earnings). Smoothing behavior exists when firms store up reserves for meeting their earnings benchmark in future periods.

Lagged assets are used to scale variables in an attempt to control for size variations in firms. This procedure works much like common size financial statements for comparative analyses of small firms with large firms and vice versa. The primary cross sectional regression model used to test the hypothesis is presented below.

$$ChgPE = \alpha_0 + \alpha_1 Miss\_Dummy + \alpha_2 Incent + \alpha_3 Interact + \alpha_4 ChgEmp + \sum_{t=1996}^{t=2001} \alpha_t \text{ x } yrD_t + \sum_{i=1}^{i=41} \alpha i \text{ x } indD_i + \varepsilon$$

- ChgPE is the change in pension expense equal to current year pension expnse minus prior year pension expense all scalled by lagged assets.
- Miss_Dummy is a dummy variable that equals 1 if the continuous variable, Incent < 0, and 0 otherwise.
- Incent is a continuous variable equal to pretax income absent manipulation minus the applicable benchmark all scaled by lagged assets.
- Interact is an interacton variable equal to Miss_Dummy times Incent.
- ChangEmp 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.
- yrD_t is a dummy variable for each applicable year 1995-2001 with the 1995 dummy effects captured in the intercept.
- IndDi is a dummy variable representing each applicable industry.
- α_0 is the intercept for Incent $\geq$ 0 where Miss_Dummy = 0.
- $\alpha_0 + \alpha_1$ is the intercept for Incent < 0 where Miss_Dummy = 1.

ChgPE is our measure of earnings management. The proxy development is accomplished by using the feature of SFAS No. 87 whereby the prior year pension expense provides a logical

approximation for the firm's premanaged or premanipulated pension expense. That is assuming the number of employees remains constant from year to year. ChgPE is defined as the current year pension expense minus the prior year pension expense all scaled by lagged assets. Thus, ChgPE is the proxy for the extent of manipulation in pension expense after controlling for any change in the number of employees.

Premanipulated actual earnings relative to the earnings benchmark (i.e., prior year earnings) represents the level of capital market incentive for earnings management. The capital market based incentive measure to manipulate earnings is represented by the continuous scaled variable, Incent. Premanipulated actual earnings are derived by adding current year pension expense back to current year earnings to zero-out the effect of current year pension expense and then subtracting prior year pension expense. In essence, prior year pension expense is simply substituted in place of current year pension expense to calculate earnings absent pension manipulation.

Following Burgstahler and Eames (2002), benchmark earnings, as well as premanipulated actual earnings, are reported on a pretax basis rather than an after tax basis because pension expense is reported in financial statements on a pretax basis. Again, the proxy measure for pension expense absent pension manipulation is the prior year pension expense.

Because both benchmark and smoothing incentives exist, it is important to distinguish firms that hypothetically miss their benchmark from firms that hypothetically beat their benchmark. Therefore, a dummy variable (i.e., Miss_Dummy) for hypothetically missing the benchmark is included in the analysis. Miss_Dummy is coded zero for firms that hypothetically beat their benchmark using premanaged earnings. Whereas, Miss_Dummy is coded one for firms that hypothetically miss their benchmark using premanaged earnings. If α_1 is significant and positive, firms missing their benchmark have a higher intercept than the other firms. If α_1 is significant and negative, firms missing their benchmark have a lower intercept than the other firms. If α_1 is insignificant, there is no difference between the two groups of firms.

After controlling for the change in the number of employees, industry effects, and time fixed effects, the association between ChgPE and the level of capital market incentives (i.e., Incent) for earnings management constitutes this study's test of interest. ChgPE is expected to be positively correlated with the incentive variable, Incent. The slope coefficient for the group of firms that hypothetically beat their benchmark is represented by α_2. The slope coefficient for the group of firms that hypothetically miss their benchmark is represented by $\alpha_2 + \alpha_3$. Thus, we predict that $\alpha_2 > 0$, and that $\alpha_2 + \alpha_3$ is > 0.

If $\alpha_2 + \alpha_3$ is significant and positive, this suggests the primary firms of interest hypothetically missing their benchmark are actually decreasing pension expense to increase reported earnings to avoid missing their benchmark. If $\alpha_2 + \alpha_3$ is significant and negative, this suggests firms hypothetically missing their benchmark are not actually decreasing pension expense.

If α_2 is significant and positive, this suggests the secondary firms of interest hypothetically beating their benchmark are actually increasing pension expense to decrease earnings to move closer

to their benchmark than they would otherwise be. If α_2 is significant and negative, this suggests firms hypothetically beating their benchmark are not actually increasing pension expense.

The logic behind the predictions for α_2 and $\alpha_2 + \alpha_3$ is that ChgPE is expected to move in the same direction as Incent. For example, if a firm has premanaged earnings equal to $.25 per share and benchmark earnings (i.e., prior year earnings) equal to $.23 per share, the firm is expected to manipulate actual earnings by increasing pension expense by $.02 in order to offset the $.02 excess in premanaged earnings. In this situation, there is a positive $.02 excess in premanaged earnings and the change in pension expense (i.e., ChgPE) is expected to move $.02 in a positive direction as well. Incent (i.e. α_2) captures the positive $.02 excess in premanaged earnings. Therefore, because ChgPE and Incent move together in the same direction, a positive correlation is predicted.

On the other hand, if a firm has premanaged earnings equal to $.23 per share and benchmark earnings (i.e., prior year earnings) equal to $.25 per share, the firm is expected to decrease pension expense by $.02 to offset the $.02 negative premanaged earnings. Incent (i.e., $\alpha_2 + \alpha_3$) captures the negative $.02 deficiency in premanaged earnings. Here again, because ChgPE and Incent move together in the same direction, a positive correlation is predicted.

So in summary, the prior year earnings (i.e., benchmark) create incentives for firms that are in opposite directions depending on their level of premanaged earnings. Therefore, firms hypothetically missing their benchmark are expected to exhibit benchmark behavior by manipulating pension expense to increase actual earnings in order to reach their benchmark earnings. On the other hand, firms hypothetically beating their prior year earnings (i.e., benchmark) are expected to exhibit smoothing behavior by manipulating pension expense to decrease actual earnings so that their actual earnings are closer to their benchmark earnings than they would otherwise be.

Another research consideration is big bath behavior where firms write off excessively large losses in a one time hit against earnings rather than take these losses over time because capital markets place a high premium on firms with steady growth in earnings. Firms generally take a big bath when they will miss reaching their target earnings by a significant amount. Supposedly, these excessively large one time write offs clean up the balance sheet, which in turn, allows these firms to once again produce a steady stream of earnings out in the future. Big bath behavior is not expected to be dominant in the present study because the research design uses a sample screening process that should filter out most, if not all, of these firms. The screening process eliminates firms whose actual earnings performance is not close to their prior year earnings (i.e., benchmark). Benchmark behavior is where a firm decreases actual current year pension expense to increase actual current year earnings in an attempt to reach their target performance. Here target performance is prior year earnings. Smoothing behavior is where a firm increases pension expense to decrease actual earnings in an attempt to store up reserves and be closer to their target performance than they would otherwise be. The logic is that firms closer to their benchmark earnings are more likely to exhibit sensitivity to earnings management incentives such as benchmark behavior and smoothing behavior, whereas; firms missing their benchmark earnings by a large amount are expected to exhibit big bath behavior.

ChgEmp is a control variable that accounts for any variation in the dependent variable (i.e., ChgPE) caused by the change in the number of employees from year to year. ChgEmp is calculated as the current year number of employees minus the prior year number of employees all scaled by lagged assets. In addition, the inclusion of the control variable, ChgEmp, should mitigate confounding results attributable to changes in organizational structure such as mergers and acquisitions. A positive relationship is expected between the change in pension expense (i.e., ChgPE) and the change in the number of employees from year to year (i.e., ChgEmp). The reasoning is plausible because an increase in the number of employees is expected to result in an increase in pension expense, whereas a decrease in the number of employees is expected to result in a decrease in pension expense. Therefore, a positive slope coefficient is predicted for ChgEmp.

Sensitivity tests are performed to examine the robustness of the regression results from equation one. A detailed discussion of the sensitivity test results are presented later in the paper.

The initial sample consists of 4,203 cross-sectional firm observations with applicable data for the period 1995 through 2001 which are derived from the Compustat database. The data is selected because it is cost effective. At the time the sample is selected, it includes all years for which pension data is available from the data source.

Earnings manipulation is expected to be toward the benchmark earnings for levels of actual earnings within a neighborhood near the benchmark earnings amount. So following the concept in Dhaliwal et al. (2002), the final sample consists of 315 firm observations whose difference between the actual earnings per share and the benchmark earnings per share are within a specified range. These firms are more suspect of managing earnings in response to capital market incentives. The pattern of manipulation is considered indeterminate outside the neighborhood near the benchmark earnings amount because incentives for big-bath behavior arise outside the neighborhood.

Dhaliwal et al. (2002) use a five cent after tax earnings per share screen to analyze whether or not firms manipulate taxes in any predictable manner in managing earnings. After consideration of tax effects on earnings, a twelve cent pretax earnings per share screen for the benchmark is initially selected for the present study. However, since the selection of a twelve cent pretax earnings per share screen may be considered as ad hoc, additional sensitivity tests are conducted using both a ten cent pretax earnings per share screen and a fourteen cent pretax earnings per share screen.

The screening process is done on a firm by firm per share pretax basis. To be included in the sample, a firm's pretax actual earnings per share amount must be within $.12 of the pretax benchmark earnings per share amount.

Outlier observations are windsorized so that large and small outlier values are still large and small values within the dataset but are less likely to disrupt the mean, standard estimates, and other statistics that depend upon them. The action taken to address outlier observations should mitigate the possible influence these observations bias the overall statistical outcome.

Multicollinearity diagnostics indicate no problem exists with independent variables being highly collinear. Based on White's joint test for model misspecification and heteroscedasticity, t-

statistics are reported using White's corrected t-statistics where applicable, and are otherwise reported using the OLS t-statistics.

RESULTS, INTERPRETATIONS, AND SENSITIVITY ANALYSES

The sample begins with the total number of firms with defined benefit pension plans and no missing data from the Compustat files. After applying the twelve cent earnings per share screening process, there are 315 firms in the final sample. The data is cross-sectional and covers the seven-year period 1995-2001. There are 42 industries in the final sample. Of the sample, 138 firms hypothetically missed their earnings benchmark (i.e., prior year earnings) whereas 177 firms met or exceeded their earnings benchmark. Out of the 138 firms that hypothetically missed their earnings benchmark 95 reduced their actual pension expense as we predicted. So that actual earnings for the 95 firms were closer to their earnings benchmark than they would have been otherwise. Of the 177 firm that hypothetically met or exceeded their earnings benchmark 68 increased their actual pension expense as we predicted. So that actual earnings for these 68 firms were closer to their earnings benchmark than they would have been otherwise.

Table 1 summarizes the sample observations, mean values, standard deviations, minimums, medians, and maximums for selected variables.

Table 1: Descriptive Statistics From Regression Analysis						
Variable	n	Mean	Standard Deviation	Median	Minimum	Maximum
ChgPE	315	-0.000124	0.006041	-0.000028	-0.054763	0.078231
incent	315	-0.000178	0.019516	0.000456	-0.248927	0.078475
ChgEmp	315	0.000001	0.000003	0.000000	-0.000018	0.000031
miss_dummy	315	0.438095	0.496942	0.000000	0.000000	1.000000

In analyzing the information provided in Table 1, a positive mean value for ChgPE implies that on average pension expense increases which decreases earnings; whereas a negative mean value implies that on average pension expense decreases which increases earnings. A positive mean value for Incent indicates that on average firms hypothetically beat their benchmark earnings; whereas a negative value indicates that on average firms hypothetically miss their benchmark earnings. A positive mean value for ChgEmp indicates that on average firms increase in the number of employees in the current year from the prior year; whereas a negative mean value for ChgEmp indicates that on average firms decrease the number of employees in the current year from the prior year. A positive

mean value for Miss_Dummy indicates the percentage of firms in the sample that hypothetically miss their benchmark earnings.

The regression results reported in Table 2 use the equation (1) regression model. ChgPE, representing firm manipulation, is expected to be positively correlated with the incentive variable of interest, Incent. The incentive slope is captured in the model for the firms that hypothetically beat their benchmark by α_2 and for the firms that hypothetically miss their benchmark by $\alpha_2 + \alpha_3$. The slope on Incent (i.e., α_2 and $\alpha_2 + \alpha_3$) represents the estimated average change in pension expense when the applicable incentive variable increases or decreases by one unit. If firms are more concerned with reaching their benchmark than smoothing, we predict that $\alpha_3 > 0$.

The slope coefficient (i.e., $\alpha_2 > 0$) for the firms that hypothetically beat their benchmark earnings is expected to be statistically significant. The slope coefficient (i.e., $\alpha_2 + \alpha_3 > 0$) for the firms that hypothetically miss their benchmark earnings is expected to be statistically significant as well and is our key variable of interest α.

Table 2: CrossSectional pooled Effects Estimation Using $.12 Screen with Time and Industry Fixed Effects			
Variable	Prediction	Coefficient	One Tail p-value
intercept	+	-0.0058	.9994
miss_dummy	-	-0.0002	.3937
incent	+	0.2450	.0001
interact	+ / -	-0.1854	.0001
$\alpha_0 + \alpha_1$	-	-0.0060	.0003
$\alpha_2 + \alpha_3$	+	0.0596	.0006
F-statistic as p-value	.0001		
R^2	.5004		
Adjusted R^2	.4035		

The foregoing rationale is based on our belief that pension manipulation is a function of the value of the magnitude of hypothetically missing or hypothetically beating the benchmark earnings (i.e., prior year earnings) based on premanaged earnings. The economic substance is captured in the regression model by the main effects of the incentive variable for the two distinct groups of firms. Thus the results on the control variables are not important for interpretation and are not reported.

Table 2 reports the results of the association test using the twelve cent pretax earnings per share screen. The significant F-statistic (i.e., p-value = .0001) for the model indicates strong evidence of linearity. The R^2 and Adjusted R^2 are .5004 and .4035 respectively, which indicate a high proportion of the change in pension expense is explained by the combination of independent variables.

The slope on Incent captures the average magnitude of the change in pension expense when there is a one unit change in the incentive variable for the two distinct groups of interest. As predicted, the incentive variable for both groups of firms is positive and significant. This pattern of evidence supports the notion that both groups of firms are using pension expense in a predictable rational economic manner based on the magnitude of hypothetically missing or hypothetically beating their benchmark earnings.

The results further indicate smoothing behavior is dominant. For every $1 that premanaged earnings are above the earnings benchmark (i.e., prior year pretax earnings), pension expense increases by $.25 to reduce actual earnings. Whereas, for every $1 that premanaged earnings are below the earnings benchmark (i.e., prior year pretax earnings), pension expense decreases by $.06 to increase actual earnings. One plausible explanation is that *auditors may be more vigilant in constraining upward earnings manipulation (i.e., benchmark behavior) than downward earnings manipulation (i.e., smoothing behavior)*.

It is interesting to note the reported results are in agreement with the findings in the Nelson et al. (2000) survey study where evidence suggests income-decreasing earnings management attempts are more likely to occur with respect to imprecise financial standards. SFAS No. 87 can be classified as an imprecise financial standard partly because of the allowed firm flexibility in choosing the discount rate, the compensation rate, and the expected rate of return on plan assets. Assuming the incentive to manipulate earnings upward to meet benchmark earnings is at least equal to the incentive to manipulate earnings downward to meet benchmark earnings, the pattern of evidence from Table 2 suggests auditors are more vigilant in constraining upward earnings management.

To test the robustness of the primary regression analysis reported in Table 2, the regression analysis is repeated using two additional screens. The additional screens are on opposite sides of the ad hoc twelve cent pretax earnings per share screen. Although the results are not reported, the results are similar which indicate a consistent pattern of association between ChgPE and the incentive variable, Incent.

Since some of the models are heteroscedastic, another sensitivity analysis is performed. Based on the studentized residuals, the most extreme observations within each dataset are eliminated with the end results producing desired homoscedastic models. Although these results are not reported, the results indicate a *consistent pattern of association between ChgPE and the incentive variable, Incent*. The evidence supports both incentive groups of interest are statistically manipulating pension expense in the predicted direction based on their economic conditions and market incentive.

CONCLUSIONS

Managers have incentives to use discretionary accounting levers to manage earnings to continue a steady stream of earnings to reap stock price advantage and to avoid market devaluation. In addition, many contracting incentives are tied directly or indirectly to earnings based measures which also provide incentives for earnings management.

Our study contributes to the literature by helping to resolve the puzzling lack of significance in prior earnings management studies related to pension accounting. Our study provides some evidence that managers are, in fact, using pension expense in a rational economic manner in regard to prior year pretax earnings. The research provides evidence that prior year earnings (i.e., benchmark earnings) create capital markets incentives for firms in opposite directions depending on their economic status as measured by whether or not firms will miss or beat their benchmark earnings based on premanipulated earnings. So by using "what if" analyses, firms that hypothetically miss their benchmark earnings are predicted and shown to manipulate actual pension expense downward to increase actual earnings; whereas, firms that hypothetically beat their benchmark earnings are predicted and shown to manipulate actual pension expense upward to decrease actual earnings. Therefore as we predicted, *both groups of interest are successfully manipulating pension expense in the direction that moves their actual earnings closer to their benchmark earnings (i.e., prior year earnings) than they would otherwise be.* The results suggest that smoothing behavior is stronger than benchmark behavior. A plausible explanation is that auditors may be more vigilant in constraining efforts to manage earnings upward than in constraining efforts to manage earnings downward.

Rationale is provided that pension expense is likely the earnings management lever of choice as it allows managers to manipulate earnings directionally as needed without easily being detected by interested outside parties. Furthermore, sensitivity analyses support the research findings are robust to controls for industry and time effects, as well as to the change in the number of employees. Sensitivity analyses further support the results are not driven by a few influential outlier observations.

Our research should, therefore, be of interest to a wide audience such as investors, directors, creditors, auditors, and regulators because it provides relevant information about how managers are using pension expense to manipulate the most value relevant amount (i.e., actual earnings) reported to investors.

Since financial statement integrity is vitally important to capital markets and to the accounting profession as a whole, perhaps our research will be a stimulus for the FASB to continue rethinking its current position regarding pension standards on pension measurement and reporting. Public interest in pension accounting is widespread and futile ground for future research.

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DO FIRMS MANAGE THEIR EARNINGS PRIOR TO FILING FOR BANKRUPTCY?

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ABSTRACT

We investigate the earnings management behavior of firms that file for bankruptcy and find that firms, which eventually file for bankruptcy, attempt to manage their earnings in order to make their financial statements appear more favorable over the years prior to filing for bankruptcy. Eventually, as the need to file for bankruptcy becomes imminent, they reverse their earnings management. More interestingly, the earnings management behavior of those bankrupt firms convicted of fraud versus those not convicted of fraud is different. Whereas non-fraudulent bankrupt firms reverse their earnings management prior to filing, fraudulent bankrupt firms do not. We also compare the earnings management behavior of bankrupt firms to an industry matched control sample. We find that the control firms do not engage in similar earnings management, even though they too are experiencing similar stock price performance and are of similar size.

INTRODUCTION

U.S. generally accepted accounting principles allow managers of firms considerable discretion with respect to how revenues and expenses are reported. In turn, this affords management the opportunity to engage in minor to severe earnings management practices with respect to how financial statements are prepared. Schilit (2002) claims that managers misreport the financial performance of their firm (i.e., manipulate earnings) for several reasons: (1) it is profitable to do it, (2) it is relatively easy to do it, and (3) it is highly unlikely that they will get caught. We investigate whether firms filing for bankruptcy manage their earnings in reporting periods leading up to the bankruptcy filing date. The sole objective of this paper is to address the question of whether firms manage their earnings prior to filing for bankruptcy.

One plausible explanation for why managers of firms that eventually file for bankruptcy manage their earnings is to mask poor operating performance. Hopefully this makes financial statement users believe that their firm's problems are insignificant and supports the firm's stock price. In this case we would expect to see our bankrupt sample to be recording revenue prematurely (or fictitiously) in periods prior to the bankruptcy filing date, and subsequently incurring a disproportionate amount of accounts receivable for a given level of sales. Likewise, managers of

firms could make favorable adjustments to their schedule of aging accounts receivables to boost sales and net income. When managers make their financial statements look better, we call this positive earnings management.

If operating performance does not eventually improve (which is usually the case for bankrupt firms), then attempts to make the financial statements look better in prior periods will eventually have to be reversed. The reversal of earnings management is a result of the accounting process. A good example of the affects of earnings management on later reporting periods occurred over the period 1995-1997 when Sunbeam Corporation booked about $50 million in sales of barbeque grills in the winter, which boosted sales and profits, but subsequently caused sales and profits in the spring to be lower. Earnings over this period eventually had to be restated. Faced with a heavy debt load, shareholder lawsuits, and an investigation into its accounting practices, Sunbeam filed for bankruptcy on February 1, 2001. When managers make their financial statements look worse, we call this negative earnings management. In this case we would expect to see our bankrupt sample to be incurring negative earnings management in periods prior to the bankruptcy filing date.

BRIEF LITERATURE REVIEW OF EARNINGS MANAGEMENT & BANKRUPTCY

It is well publicized in the press that firms manage earnings and it is not uncommon for some managers to engage in fraudulent activities. Schilit (2002) discusses earnings management techniques, illustrates how managers use them in practice, and gives numerous examples of fraudulent earnings management behavior. Briefly, generally accepted accounting principles permit accrual adjustments for credit sales and purchases, estimates for uncollectible accounts, estimates for write-offs of inventory and fixed assets, and depreciation policy.

Healy and Wahlen (1999) report that managers manipulate earnings to intentionally mislead investors and Yermack (1997) shows that chief executive officers influence the terms of their own compensation by timing their option grant dates before favorable firm news is announced. Rangan (1998) and Teoh, Welch, and Wong (1998) show that firms manage their earnings surrounding seasoned common stock offerings in order to receive a higher share price. They show that the under performance of seasoned common stock offerings is a result of firms reversing their earnings management in reporting periods after the offering.

Degeorge, Patel, and Zechhauser (1999) show that managers manipulate earnings to report positive profits, sustain recent performance, and meet analysts' expectations. In addition, Teoh and Wong (2002) show that common stock offerings for high accrual firms in the year of issue significantly predict the magnitude that subsequent earnings fall short of analysts' forecasts in the four years after the offering. In other words, analysts are too optimistic about the future earning potential of firms with larger accruals in the year of the offering. These studies show it is common for firms to manage earnings. Healy and Wahlen (1999) provide an excellent comprehensive review of earnings management literature.

Indro, Leach, and Lee (1999) document the negative impact of fraud on shareholders wealth during the bankruptcy process. They note that firms engaging in fraudulent activities are primarily earnings manipulators. Kahl (2002) argues that because information asymmetry problems between the firm and external parties may be severe, Chapter 11 provides a means by which outside interested parties can better assess the firm's actual financial position and future viability.

THE 1978 BANKRUPTCY REFORM ACT

Chapter 11 under the 1978 Bankruptcy Reform Act was intended to eliminate the numerous litigations over the appropriateness of the firm's choice of Chapter X or XI bankruptcy filing under the Chandler Act. Under Chapter 11 of the 1978 Act the eventual resolution of bankruptcy can take three forms. When reorganization is successful, the firm either emerges as an independent operating entity, or is acquired/merged. When reorganization is unsuccessful, the firm subsequently files for liquidation. There must be general agreement on the reorganization plan among all claimholders in order for a firm to successfully exit from Chapter 11 bankruptcy. Specifically, over one half of all voting classes of creditors must approve the plan with at least two thirds of each class of impaired creditors voting to adopt the plan. In addition, unless the appraised value of the liabilities exceeds that of the assets, shareholders are included in the voting process.

An incentive to avoid the need for filing Chapter 11 can stem from the costs associated with bankruptcy. Franks and Torous (1989) note the direct and indirect costs of bankruptcy. Direct costs are the costs associated with legal and administrative expenses that accrue over the bankruptcy proceeding. Indirect costs are the costs of underinvestment (Myers, 1977) which ensue from missed opportunities to invest in positive net present value projects because the benefits may be captured exclusively by the creditors.

SAMPLE CONSTRUCTION AND DATA SOURCES

Our analysis focuses on earnings management resulting from impending bankruptcy of publicly traded firms (NYSE, AMEX, NASDAQ) which voluntarily or involuntarily file for Chapter 11 from 1980 through 2000. The 21-year sample cutoff dates are selected to ensure that all the provisions of the 1978 Bankruptcy Reform Act had been fully implemented, and that the disposition of all firms in the final sample can be established by the 2004 year end. We searched for firms that filed for Chapter 11 during the sample period from a list of all publicly traded bankrupt firms compiled (and provided upon request) by the Office of the General Counsel of the SEC. Supplementary information was obtained from the *Wall Street Journal Index* and the Commerce Clearing House's *Capital Changes Reporter*. Company descriptions and characteristics useful in identifying important event dates and company outcomes were obtained from in-depth reviews of LEXIS/NEXIS news reports which contained annual, quarterly, 8-K and 10-K statements, as well as

other SEC filings. Other studies such as Eberhart, Moore, and Roenfeldt (1990), Franks and Torous (1989), Gilson, John, and Lang (1990), Johnson (1989), and Weiss (1990) were used to check the consistency of information across different data sources. In the event any two or more sources yielded inconsistent dates, only the earliest date was retained.

Firms that: *(i)* operated in a regulated industry (utility, health-care, non-profit, airline, railroad, trucking, or other transportation companies, and financial institutions); *(ii)* were foreign based entities trading publicly in the U.S.; *(iii)* filed bankruptcy more than once; and *(iv)* filed for Chapter 7 and did not subsequently convert to Chapter 11, were excluded to form an initial sample of 419 firms.

Out of the 419 firms in the initial sample, 114 firms had a complete set of required accounting information on Compustat over the five fiscal years prior to filing for bankruptcy. We impose the five year data restriction because our focus is on the earnings management behavior of 'seasoned' firms and want to avoid including newly listed firms that may unexpectedly experience poor operating performance immediately after going public. Moreover, it has been shown that bankruptcy tends to be the result of poor management decisions over multiple reporting periods, Altman (1993) or fraud, Indro, Leach, and Lee (1999).

METHOD OF COMPUTING EARNINGS MANAGEMENT

We compute a measure of earnings management using current accruals. Changes in current accruals can occur because of managements' subjective discretion over the recording of revenue and expenses, and are reflected as changes in non-cash current asset and current liability accounts. Sloan (1996) shows that most of the variability in total accruals is related to current accruals and Teoh, Welch, and Wong (1998) state that current accruals are the component of total accruals that can be manipulated the most by managers. Moreover, Guenther (1994) argues that managers have more discretion over current accruals. For these reasons, we focus on the earnings management of current accruals using a method developed by Teoh, Welch, and Wong (1998) where current accruals (CA) is the change in non-cash current assets minus the change in current liabilities:

$$CA = (\Delta CURRENT\ ASSET - \Delta CASH) - (\Delta CL - \Delta STD) \qquad (1)$$

where

ΔCURRENT ASSET = change in total current assets (Compustat #4),

ΔCASH = change in cash and short-term investments (Compustat #1),

ΔCL = change in current liabilities (Compustat #5),

ΔSTD = change in current portion of long-term debt (Compustat #44).

To compute nondiscretionary current accruals (NDCA) or "normal" accruals, we first run a cross-sectional regression of current accruals for all firms matching each bankrupt firm's two-digit SIC, excluding the bankrupt firms, by year:

$$\frac{CA_{j,t}}{TA_{j,t-1}} = a_0\left(\frac{1}{TA_{j,t-1}}\right) + a_1\left(\frac{\Delta SALES_{j,t}}{TA_{j,t-1}}\right) + \varepsilon_{j,t}, \qquad (2)$$

where j firms are in the same two-digit SIC code (excluding bankrupt firms), TA_{jt-1} is total asset (Compustat #6) in the previous year for firm j, and $\Delta SALES_{j,t}$ is the change in sales (Compustat #12) in year t for firm j. The regression is scaled by beginning of period total assets to be consistent with other earnings management models (see e.g., Jones, 1991; and Dechow, Sloan, and Sweeney, 1995). We align years for all firms in the same two-digit SIC by assigning the bankrupt firm's filing date to each firm in the same two-digit SIC. Essentially, equation (2) states that changes in sales cause changes in spontaneously created current assets and current liabilities. For example, as sales increase firms will need more inventory, and incur more accounts receivables.

The estimated coefficients from equation (2) are then input into the following equation to compute non-discretionary current accruals (NDCA) for each bankrupt firm:

$$NDCA_{i,t} = \hat{a}_0\left(\frac{1}{TA_{i,t-1}}\right) + \hat{a}_1\left(\frac{\Delta SALES_{i,t} - \Delta AR_{i,t}}{TA_{i,t-1}}\right), \qquad (3)$$

where $\Delta AR_{i,t}$ is the change in accounts receivables (Compustat #2) in year t for bankrupt firm i and $\Delta SALES_{i,t}$ is the change in sales in year t for bankrupt firm i. The change in sales is reduced by the change in accounts receivables to account for the possibility of credit sales management by the bankrupt firm.

We compute the portion of current accruals that are subject to managerial discretion as:

$$DCA_{i,t} = \frac{CA_{i,t}}{TA_{i,t-1}} - NDCA_{i,t} \qquad (4)$$

where $DCA_{i,t}$ is the discretionary current accruals in year t for bankrupt firm I.

In sum, the discretionary current accrual measure proxies for earnings management inside managements' control and is the variable of interest, whereas the nondiscretionary current accrual measure proxies for earnings management outside managements' control.

EMPIRICAL RESULTS

Table 1 reports the pattern of DCA for the last five fiscal years prior to filing for bankruptcy. In year -5 the measure is positive and significant at the 10 percent level. This result is consistent with

Degeorge, Patel, and Zechhauser (1999). They show that firms manage earnings to sustain recent performance. Our result supports the idea that firms who eventually file for bankruptcy are attempting to make their income statement look better many years before they file. Next, the accruals measure decreases in magnitude in year -4. This could be a result of firms exhausting their earnings management capacity and still comply with U.S. GAAP. In year -3, the sign on the DCA changes from positive to negative. Finally, in years -2 and -1, the DCA measure becomes much lower and is significant at the 5 percent and 1 percent, respectively. One interpretation of the results in the last two reporting periods prior to bankruptcy is that firms finally start to write-off uncollectible receivables.

Table 1					
This table presents discretionary current accruals for firms that file for bankruptcy between 1980 and 2000 and have a complete set of accounting information on Compustat for five years prior to bankruptcy. We compute discretionary current accruals following Teoh, Welch, and Wong's (1998) method. Time -1 is the last fiscal year prior to bankruptcy.					
Time					
	-5	-4	-3	-2	-1
DCA					
mean	**0.02982***	0.01174	-0.01102	**-0.03006****	**-0.08624*****
median	0.00146	0.01163	-0.00132	**-0.02559*****	**-0.04372*****
n	114	114	114	114	114
*, ** ,***	denote significance at the 10%, 5%, and 1% level, respectively. A t-test and Wilcoxon sign rank test are used to test means and medians, respectively.				

Table 2 shows the pattern of DCA for the last five fiscal years prior to filing for bankruptcy based on whether the firm is convicted of fraud during the bankruptcy process. For the fraud sample, none of the years are significant. Because of the small sample size for the fraudulent firms, we focus on the results for the median. In three of the five years (-5, -3, and -2) the DCA measure is positive and much larger in magnitude than in the two years (-4 and -1) when the DCA measure is negative. These results suggest that fraudulent firms do not reverse their earnings management (manipulation) prior to filing for bankruptcy. The pattern for the bankrupt firms not convicted of fraud is similar to the pattern reported in table 1. Bankrupt firms not convicted of fraud do reverse their earnings management prior to filing for bankruptcy. The results for the non-fraudulent bankrupt sample suggests that these firms attempt to hide poor performance many years prior to filing for bankruptcy (-5 and -4) when the DCA is positive but eventually report their poor operating performance in the financial statements up to two years prior to filing for bankruptcy when the DCA becomes significantly negative.

Table 2					
This table presents discretionary current accruals for firms that file for bankruptcy from 1980 to 2000 and have a complete set of accounting information on Compustat for the five years prior to bankruptcy based on whether the firm was convicted of fraud. We compute discretionary current accruals following Teoh, Welch, and Wong's (1998) method. Time -1 is the last fiscal year prior to bankruptcy. Fraud_dummy is a dummy variable that is equal to one if the bankrupt firm is convicted of fraud and zero otherwise.					
	Time				
	-5	-4	-3	-2	-1
DCA-FRAUD					
mean	0.10763	-0.00438	-0.04773	0.06143	-0.02992
median	0.03754	-0.00615	0.04086	0.02224	-0.00013
	8	8	8	8	8
DCA-NO FRAUD					
mean	0.02394	0.01234	-0.00825	**-0.03697***	**-0.09049***
median	0.00093	0.01602	-0.00357	**-0.03027***	**-0.04648***
n	106	106	106	106	106
REGRESSION					
intercept	0.02394	0.01234	-0.00825	**-0.03697***	**-0.09049***
fraud_dummy	0.08369	-0.01673	-0.03948	**0.09840**	0.06056
r-square	0.0132	0.0007	0.008	0.0337	0.0061
n	114	114	114	114	114
*, **, ***	denote significance at the 10%, 5%, and 1% level, respectively.				
	A t-test and Wilcoxon sign rank test are used to test means and medians, respectively.				

To investigate whether there is a significant difference between the earnings management behavior of the two samples, we run a simple linear regression where the dependent variable is DCA and the single independent variable denotes the existence of fraud. A dummy variable is used for fraud and is set equal to one if the firm is convicted of fraud and zero otherwise. In period -2, the fraud dummy coefficient is positive and significant at the 5 percent level. This result shows that two years prior to filing for bankruptcy, fraudulent firms are still attempting to make their income statement look relatively more appealing, while the non-fraudulent firms are starting to reverse their DCA. In period -1, the fraud dummy coefficient is positive but not significant. This may be a result of the small sample size for the firms convicted of fraud.

Table 3 reports cumulative DCA for five years prior to the bankruptcy filing date. Period -1 to -1 is the DCA for period -1, period -2 to -1 is the DCA for period -1 plus the DCA for period -2, etcetera. This table shows that cumulative DCA is significantly negative in the year prior to

bankruptcy filing (period -1 to -1) and that cumulative DCA continues to decrease from period -1 to -1, to period -3 to -1 where it reaches a minimum of -0.12732, and increases thereafter.

Table 3					
This table presents cumulative discretionary current accruals for firms that file for bankruptcy from 1980 to 2000 and have a complete set of accounting information on Compustat for the five years prior to bankruptcy. We compute discretionary current accruals following Teoh, Welch, and Wong's (1998) method. Time -5 to -1 is the sum of the discretionary current accruals for the last five fiscal years before bankruptcy, time -4 to -1 is the sum of the discretionary current accruals for the last four fiscal years before bankruptcy, and so on.					
	Time				
	-5 to -1	-4 to -1	-3 to -1	-2 to -1	-1 to -1
DCA					
mean	**-0.08633***	**-0.11615***	**-0.12732***	**-0.11630***	**-0.08624***
median	**-0.08728***	**-0.07301***	**-0.07214***	**-0.06731***	**-0.04372***
n	114	114	114	114	114
*, **, ***	denotes significance at the 10%, 5%, and 1% level, respectively. A t-test and Wilcoxon sign rank test is used to test means and medians, respectively.				

Table 4 shows the pattern of cumulative DCA for the last five fiscal years prior to filing for bankruptcy based on whether the firm is convicted of fraud. The results for firms convicted of fraud are not significant. However, the results for non-fraudulent firms are significant at the 1 percent level for all periods. This result suggests the negative cumulative DCA in table 3 is the result of the non-fraudulent firms undoing their earnings management. To test this, we run a simple linear regression to see if there is a significant difference between the cumulative earnings management behavior of the two samples where the dependent variable is the cumulative DCA and the single independent variable is a fraud dummy variable. Again, the dummy variable equals one if the firm is convicted of fraud and zero otherwise. In all five regressions the fraud coefficient is positive and in two out of five regressions it is significant. These results suggest that the cumulative earnings management behavior between the two samples differ. Firms convicted of fraud do not write-off accounts receivables in years prior to filing for bankruptcy whereas non-fraudulent firms do. Interestingly, the results have another interpretation as well. This interpretation suggests that fraudulent firms continue manipulating earnings up to the filing date.

In sum, our results show that (1) firms filing for bankruptcy from 1980 to 2000 begin to reverse their earnings management up to two years prior to filing, and (2) there is a difference in the earnings management behavior between those firms convicted of fraud and those that are not convicted of fraud. This latter result suggests and is consistent with the idea that non-fraudulent firms align with a higher level of earnings quality, albeit lower, in their financial statements prior to filing for bankruptcy whereas firms convicted of fraud during the bankruptcy process do not.

Table 4					
This table presents cumulative discretionary current accruals for firms that file for bankruptcy from 1980 to 2000 and have a complete set of accounting information on Compustat for the five years prior to bankruptcy. We compute discretionary current accruals following Teoh, Welch, and Wong's (1998) method. Time -5 to -1 is the sum of the discretionary current accruals for the last five fiscal years before bankruptcy, time -4 to -1 is the sum of the discretionary current accruals for the last four fiscal years before bankruptcy, and so on. Fraud_dummy is a dummy variable that is equal to one if the bankrupt firm is convicted of fraud and zero otherwise.					
Time					
	-5 to -1	-4 to -1	-3 to -1	-2 to -1	-1 to -1
DCA-FRAUD					
mean	0.08704	-0.02060	-0.01622	0.03151	-0.02992
median	0.00490	-0.03265	-0.06092	0.00899	-0.00013
n	8	8	8	8	8
DCA-NO FRAUD					
mean	**-0.09941*****	**-0.12336*****	**-0.13571*****	**-0.12746*****	**-0.09049*****
median	**-0.09487*****	**-0.07864*****	**-0.07866*****	**-0.06955*****	**-0.04648*****
n	106	106	106	106	106
REGRESSION					
intercept	**-0.09941*****	**-0.12336*****	**-0.13571*****	**-0.12746*****	**-0.09049*****
fraud_dummy	**0.18645***	0.10276	0.11949	**0.15896****	0.06056
r-square	0.0248	0.0110	0.0175	0.0338	0.0061
n	114	114	114	114	114
*, **, *** denote significance at the 10%, 5%, and 1% level, respectively. A t-test and Wilcoxon sign rank test are used to test means and medians, respectively.					

To investigate if similar firms that do not file for bankruptcy during the sample period also manage their earnings in a similar way, we utilize a control sample of firms. The control sample is matched on 2-digit SIC code, two-year prior stock returns, and total market capitalization. The sample size in this section is reduced from 114 to 99 because some firms in the bankrupt sample do not have a complete set of stock return data in CRSP. After the matching procedure is complete, we have one control firm for every bankrupt firm and these firms have the same 2-digit SIC code, and similar two-year prior stock returns and size.

Table 5 reports the results for the control sample and bankrupt sample for five years prior to bankruptcy. We compute DCA for the control sample using the same method we did for the bankrupt sample by assigning the bankruptcy filing date of each bankrupt firm to their matched control firm. The results for the control sample show that there is no consistent earnings management behavior. In four out of five reported periods the control sample does not significantly engage in earnings

management. Moreover, there is no consistent pattern to the changes in DCA. Moving from period -5 to period -1, the DCA increases, then decreases, then increase, and then decreases. The pattern for the bankrupt sample is consistent, however, and the results in this section are similar to those reported in table 1. To investigate if there is a significant difference between the earnings management behavior of the two samples we run a simple linear regression where the dependent variable is DCA and the single independent variable is a bankrupt dummy variable. The dummy variable equals one if the firm files for bankruptcy and zero otherwise. The results show that for the last two periods, period -2 and -1, bankrupt firms significantly reverse their earnings management. The coefficient on bankrupt dummy for period -2 and period -1 is significant at the 5 percent and 1 percent level, respectively.

Table 5					
This table presents discretionary current accruals for the control and bankrupt sample of firms that have a complete set of accounting information on Compustat for five years prior to bankruptcy and a complete set of return information on CRSP for two years prior to bankruptcy. The control sample of firms are matched on 2-digit SIC, two-year prior returns, and total market capitalization. We compute discretionary current accruals following Teoh, Welch, and Wong's (1998) method. Bankrupt_dummy is a dummy variable that is equal to 1 if the firm is in the bankrupt sample and 0 otherwise. Time -1 is the last fiscal year prior to bankruptcy. The sample period is from 1980 to 2000.					
	Time				
	-5	-4	-3	-2	-1
DCA-CONTROL					
mean	0.00877	**0.04029****	0.01205	0.02424	-0.00735
median	-0.00378	**0.02232*****	-0.00912	0.00869	-0.00415
n	99	99	99	99	99
DCA-BANKRUPT					
mean	**0.03246***	0.00948	-0.00906	**-0.02503***	**-0.09354*****
median	0.00197	0.01065	-0.00185	**-0.02098****	**-0.04453*****
n	99	99	99	99	99
REGRESSION					
intercept	0.00877	**0.04029****	0.01205	0.02425	-0.00735
bankrupt_dummy	0.02369	-0.03081	-0.02110	**-0.04928****	**-0.08619*****
r-square	0.0051	0.0086	0.0036	0.0253	0.0532
n	198	198	198	198	198
*,**,*** denote significance at the 10%, 5%, and 1% level, respectively. A t-test and Wilcoxon sign rank test are used to test means and medians, respectively.					

Table 6 reports cumulative DCA for the control sample, the original bankrupt sample of 114 firms (these results are presented in table 3), and the new bankrupt sample of 99 firms. We include the original bankrupt sample results for reference only. These results show a cumulative DCA pattern for the control sample where in the year prior to "bankruptcy" (period -1 to -1) the control sample has a negative DCA, and as you go back in time the cumulative DCA continues to get larger. In fact, in period -4 to -1 and period -5 to -1 the cumulative DCA becomes significantly positive at the 5 percent and 10 percent level, respectively. The pattern of cumulative DCA is the opposite for both bankrupt samples, however. For these two samples the cumulative DCA are significantly negative at the 1 percent level, for all periods.

Table 6					
This table presents cumulative discretionary accruals for the control and bankrupt sample of firms that have a complete set of accounting information on Compustat for five years prior to bankruptcy a complete set of returns on CRSP for two years prior to bankruptcy. Time -5 to -1 is the sum of the discretionary current accruals for the last five fiscal years before bankruptcy, time -4 to -1 is the sum of the discretionary current accruals for the last four fiscal years before bankruptcy, and so on. Bankrupt_dummy is a dummy variable that is equal to 1 if the firm is in the bankrupt sample and 0 otherwise. The sample period is from 1980 to 2000.					
	Time				
	-5 to -1	-4 to -1	-3 to -1	-2 to -1	-1 to -1
DCA-CONTROL SAMPLE					
mean	**0.07801****	**0.06923***	0.02895	0.01690	-0.00735
median	0.01320	0.01542	-0.01217	-0.00182	-0.00415
n	99	99	99	99	99
DCA-BANKRUPT					
mean	**-0.08633*****	**-0.11615*****	**-0.12732*****	**-0.11630*****	**-0.08624*****
median	**-0.08728*****	**-0.07301*****	**-0.07214*****	**-0.06731*****	**-0.04372*****
n	114	114	114	114	114
DCA-BANKRUPT					
mean	**-0.08568*****	**-0.11814*****	**-0.12763*****	**-0.11857*****	**-0.09354*****
median	**-0.08340*****	**-0.06971*****	**-0.06888*****	**-0.06688*****	**-0.04453*****
n	99	99	99	99	99
REGRESSION					
intercept	**0.07801****	**0.06923****	0.02895	0.01690	-0.00735
bankrupt_dummy	**-0.16369*****	**-0.18738*****	**-0.15657*****	**-0.13547*****	**-0.08619*****
r-square	0.0559	0.084	0.076	0.0874	0.0532
n	198	198	198	198	198
*,**,*** denote significance at the 10%, 5%, and 1% level, respectively. A t-test and Wilcoxon sign rank test are used to test means and medians, respectively.					

To investigate if there is a difference between the cumulative DCA behavior of the control and bankrupt samples, we estimate a simple linear regression where the dependent variable is cumulative DCA and the independent variable is a bankrupt dummy variable. The bankrupt dummy variable is equal to 1, if the firm files for bankruptcy and 0, otherwise. These results show that in all periods, there is a difference between the cumulative DCA behavior of the two samples, with the bankrupt sample having a lower DCA. Moreover, these results suggest that for the bankrupt sample, the poor stock price performance prior to filing for bankruptcy is associated with a negative DCA but for the control sample, their poor stock price performance is not associated with a negative DCA.

CONCLUSION

Our results show that firms do manage their earnings prior to filing for bankruptcy. Five years before filing, firms cause their financial statements to look better by forcing their discretionary current accruals to be significantly positive. A positive DCA is a direct result of earnings management within the control of managers, and causes sales and net income on the income statement to be higher. However, this earnings management behavior is reversed as bankrupt firms near their filing date. In the two years prior to filing, bankrupt firms reverse their DCA, and this causes sales and net income on the income statement to be lower.

Interestingly, our results show the earnings management behavior of bankrupt firms is not consistent between those firms convicted of fraud and those that are not. The cumulative DCA behavior of fraudulent firms is significantly higher than non-fraudulent firms in 2 out 5 periods. Perhaps this is a contributing factor of the firms being convicted of fraud. This interpretation is consistent with Indro, Leach, and Lee (1999) who find that fraud is a contributing factor in bankruptcy.

Finally, we show that an industry matched control sample of similar firms with similar size do not attempt to make their financial statements look better, even though they too are experiencing poor stock price performance. Thus, the earnings management behavior that we have documented is unique to firms who eventually file for bankruptcy.

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