

An Empirical Analysis of the Impact of Asset Writedown Disclosures on Stockholder Wealth

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There has been a significant increase in the frequency and magnitude of asset writedowns in the 1980s and early 1990s. Consequently, the Financial Accounting Standards Board (FASB, 1990 and 1993) has reconsidered the accounting rules on writedown recognition, measurement, and quantification and recently has issued a new statement on asset impairments (FASB 1995). This study examines the effects of unexpected sales, unexpected cost of goods sold, unexpected writedowns, and unexpected other expenses on abnormal returns. The results indicate that the signs and the magnitude of these explanatory variables contain more information than do the sign and magnitude of unexpected earnings. This study finds that the market reaction to writedowns is positive, on average, unlike that for expenses such as the cost of goods sold. The evidence is consistent with a useful role for an events or circumstances notion as a recognition criterion for asset writedowns.

INTRODUCTION

There has been a significant increase in the frequency and magnitude of asset writedowns¹ in the 1980s and the early 1990s. Grover (1992) reports that S&P 500 companies recorded \$42 billion in writedown charges in 1991. In 1994 Bell Atlantic took a \$3.6 billion writedown charge for outdated equipment, and Sony Corporation wrote down \$3.2 billion for asset impairment in its Hollywood Studios. The incidence of huge writedowns has generated considerable interest and controversy in the financial press.² Consequently, the Financial Accounting Standards Board (FASB, 1990 and 1993) reconsidered the accounting rules on writedown recognition, measurement, and quantification and issued a new statement on asset impairment recently (FASB 1995).

Waymire (1988) argues that delayed write-offs can lead to lawsuits against managers and auditors. In the wake of class action lawsuits under select provisions of federal securities laws, audit firms are under increased pressure to weigh the legal risk of overstating the value of assets when assets clearly are impaired. Feroz, Park, and Pastena (1991)

¹ The terms *writedowns*, *write-offs*, *surprise charges*, and *restructuring charges* are used synonymously in this paper. Webster's New Collegiate Dictionary (1979 edition, p. 1345) defines writedown as "a deliberate reduction in the book value of an asset (as to reflect the effect of obsolescence or deflation)."

² The financial press has reported these huge writedowns with great interest. See for example "Impairment of Value of Long-Lived Assets," *FBI: The Magazine for Financial Executives* (July 1985); "Write-Off Time: Why the Fourth Quarter Was So Bad," *Business Week* (March 17, 1986); "Generally Vague Accounting Principles," *Forbes* (September 14, 1992); "Honesty Isn't Such a Bad Policy," *Forbes* (July 4, 1994; p. 118); and "Much Ado About Write-offs," *CFO: The Magazine for Senior Financial Executives* (March 1995; pp. 61-64). These articles stress the discretionary nature of these writedowns and question whether big bath accounting is being practiced.

examine 224 accounting and auditing enforcement releases by the Securities and Exchange Commission (SEC) and report that 12.3 percent of the errors (29 of 239) are overstatements of long-lived assets, and another 55 percent of the errors (132 of 239) are overstatements of receivables and inventories. St. Pierre and Anderson (1984) examine 334 accounting errors contained in 129 court cases and conclude that none of the suits concern errors in undervaluing assets and that many of the errors are overstatements of assets or revenue. Auditors are interested in the timely recognition of asset impairments through writedowns or some other disclosure mechanism. Financial analysts also are interested in analyzing the impact of writedowns on future earnings and the signaling implications of the writedown phenomenon (Elliott and Shaw, 1988). Professional accounting organizations and regulatory agencies have shown keen interest in the asset impairment and writedown issues, as evidenced by the voluminous literature (AICPA, 1987; SEC, 1986; FASB, 1990, 1993, and 1995; Fried, Schiff, and Sondhi, 1989).

Early writedown studies focus on whether writedown announcements convey information about future cash flows. But the event methodology used in these studies ignores the fact that market agents learn about valuation-relevant events from many sources over a long period of time. Specifying a date when information reaches the market is not always feasible; information can reach the market gradually through many sources. Strong and Meyer (1987), who use the standard event study methodology for a small sample of 78 firms, conclude that the market may have "a bit of difficulty tracking, evaluating, and incorporating information." Also using an event methodology with a larger sample of 240 firms, Elliott and Shaw (1988) find a significant industry-adjusted negative return for the day prior to the announcement date. Lindahl and Ricks (1989) also suggest that the market's reaction to write-offs begins prior to official disclosures. When their sample is partitioned into writedowns with and without operating implications, the former generally are associated with positive returns and the latter are associated with significant negative returns. On the other hand, Johnson (1989) fails to detect a significant price reaction to impairment recognitions in the banking industry and suggests that market agents may have prior information about circumstances that contribute to diminished asset value. Thus, in all prior studies the precise identification of the event date is a problem; the market seems to have alternative sources of information. Therefore, we use an association test in this study that does not rely on a precise announcement date.

Prior studies also suffer from time clustering which can cause cross-sectional dependence in the abnormal returns for the writedown firms. Ignoring dependence in abnormal returns often leads to downward bias in standard errors. Hence, it would be logical to examine writedowns over a longer period and use an alternate methodology such as an association study. In an association study returns over relatively long periods of time are regressed on unexpected earnings or earnings components (Collins and Kothari, 1989 and Bublitz and Etredge, 1989). Association studies recognize that market participants learn about valuation-related events from different sources throughout the period. Abnormal stock returns are accumulated over fiscal quarters or years. Association studies do not imply causality. The focus is whether the valuation-relevant events are captured by the earnings determination process. Earlier writedown studies (Strong and Meyer, 1987; Elliott and Shaw, 1988) use annual data, whereas this study uses quarterly data. Quarterly data allow better expectations for sales, cost of goods sold, and other expenses. Quarterly

data are available to the market on a timely basis, and one would expect that such data are more useful to the market participants than are annual data. Hence, analysis performed with quarterly data and a large sample provides useful insights and robust statistical results.

A key innovation in this study is two explanatory variables (cost of goods sold and writedowns) that have not been examined with quarterly data in earlier studies. Hopwood and McKeown (1985) and Hoskin, Hughes, and Ricks (1986) find that revenues do not have incremental information content over earnings. Using 90 day CARs and quarterly data we report that unexpected sales, unexpected cost of goods sold, unexpected writedowns, and unexpected other expenses have incremental information content over unexpected earnings. While earlier writedown studies (Elliott and Shaw, 1988 and Lindahl and Ricks, 1989) have found mixed evidence, we find that the market reaction to writedowns is, on average, positive.

This research project explores the economic impact of asset writedown disclosures on stockholder wealth. This paper overcomes the limitations of the standard event study methodology with an association test of the relations between unexpected returns and unexpected components of income.

THEORY AND HYPOTHESES

WRITEDOWNS AS GOOD NEWS

An important tenet of rational choice posits that sunk costs should not influence decisions. With regard to capital budgeting decisions, sunk costs must be irrelevant; only incremental costs and benefits must be analyzed. But many experimental studies document the failure of subjects to ignore sunk costs. Using the event study approach DeBondt and Makhija (1988) suggest that nuclear power plant managers of electric utilities have a "tendency to throw good money after bad" because they are influenced by sunk costs. Therefore, when management finally assumes responsibility, reduces impaired assets, and takes a writedown charge, the market may heave a sigh of relief. The writedown disclosure may make cash flow increases possible, and the market may react positively to the writedown disclosure.

Jensen's free cash flow theory suggests that managers have incentives to let their firms grow beyond optimal size (Jensen, 1986). Such growth causes an increase in managers' power by increasing the resources under their control. Similarly, growth in sales is associated positively with increases in manager compensation (Abdel-Khalik *et al.*, 1989). Jensen's free cash flow theory predicts that managers will have incentives to invest in negative net present value projects in order to maintain or increase the size of the firm and their own compensation and status. Hence, when managers decide to cut investments in such value-reducing projects through downsizings and asset writedowns, the market may react favorably to these writedowns. Some writedowns are signals of future value-enhancing events such as corporate restructurings.

Strong and Meyer (1987) report that some writedowns can result in tax benefits. Brennan (1991) argues that writedowns may imply an acceleration of future depreciation expense and, as such, can signal an increase in future operating earnings. There is some anecdotal evidence that suggests positive reaction to writedown disclosures. On October 28, 1983 (Friday) Texas Instruments announced its decision to quit the home computer

market and disclosed writedown charges (*Wall Street Journal*, October 31, 1983). On October 31, 1983 (Monday) the share price shot up 22 percent, from \$101.75 to \$124.50. When Warner Lambert disclosed a \$550 million writedown, the stock price increased 12 percent (*Barron's*, December 30, 1995, pp. 35-36). Similarly, when U.S. West announced a \$5.4 billion charge against earnings in September 1993 the stock price rose 4 percent (*Forbes*, July 4, 1994, p. 118).

WRITEDOWNS AS BAD NEWS

The writedown disclosure can convey new information to the market about the decline in the economic value of assets. Writedown announcements may suggest that assets have become impaired and that future cash flow expectations may be reduced. This can lead to a negative stock price reaction. Pearson and Okubara (1987) suggest that possible indicators of economic impairment include reduction in plant utilization, substantial decline in market value, significant new competition, lack of long-term demand for the product, cuts in federal spending, and the strength of the dollar. All of these indicators convey negative news. For example, the huge \$2.1 billion GM write-off in 1990 (*Wall Street Journal*, November 6, 1990) suggests that product demand had declined, prices had fallen, and prospects for future profits were low.

Johnson (1989) argues that accounting-dominated contractual constraints can be a source of asset revaluation stock price effects. If debt covenants are stated in accounting terms, then writedown announcements can have a negative effect on stock prices. Writedowns will have adverse effects on several ratios and increase the likelihood of costly debt covenant violations.³ In essence, if business firms have tight covenants, writedowns can imply bad news.

WRITEDOWNS AND DISAGGREGATED INFORMATION

Marschak and Radnor (1971) posit that the disaggregation of a complex information signal can lead to increased understanding and hence improve future values of the signal series. Disaggregation also can improve future values of decisions based on such disaggregated knowledge.⁴ Sales, cost of sales, writedown charges, and other expenses provide a finer partitioning of earnings and should contribute more information to the market than earnings alone convey. Sales numbers are less susceptible to managers' manipulation than are earnings numbers. Firms are restricted in shifting revenues from one period to another because of sales cut-off procedures. This paper investigates whether the surprises in earnings components such as sales, cost of sales, writedown charges, and other expenses are value-relevant.

Benston (1968) finds that annual sales are related to the rate of change in stock prices. His estimates indicate that a \$1 increase in sales results in an 18 cent increase in stock

³ Smith and Warner (1979) provide a detailed treatise on the nature and format of debt covenants. Bond covenants often restrict additional debt financings by requiring the maintenance of the ratio of net tangible assets to long-term debt. Also debt covenants usually prescribe ratios between income and interest charges.

⁴ Blackwell's theorem on the fineness of information structure is the basis for their argument (Blackwell and Girshick, 1954). Partitioning earnings into components such as sales, cost of goods sold, and writedowns is a simple disaggregation and does not involve huge costs.

prices. Hopwood and McKeown (1985) investigate the information content of interim expenses and sales. Their results indicate that expense numbers contribute to the information content of interim earnings. Using two day risk-adjusted returns Swaminathan and Weintrop (1991) report that unexpected sales and unexpected expenses have information content. Hopwood and Schaefer (1989) argue that the cost of goods sold is an important economic variable. Unexpected changes in costs and revenues also are reported in the *Wall Street Journal* when quarterly income numbers are released.

Fama (1990) suggests that agents (i.e., suppliers of labor, materials, and other services) contract for fixed payments and that it would be better to analyze capital structures in the context of overall contract structures. Factor inputs receive fixed payoff contracts; they face uncertainty about contract renewal and about future returns on specialized human capital. Fama's analysis indicates that fixed payoff costs account for 90 percent of the cash outflows for U.S. nonfinancial corporations. Fixed payoffs consist of the cost of sales and other selling and administration expenses. Interest payments constitute only 2 percent to 3 percent of total flows. Hence, the cost of goods sold and other expenses are intuitively interesting economic variables that have not been examined separately in prior studies.

HYPOTHESES

Contradicting results about the market reaction to writedowns and recent empirical work disaggregating net income suggest the following hypotheses, in the null form:

- H0-1: There is no association between sales and abnormal returns after controlling for the association of cost of goods sold, writedowns, and other expenses with security returns;
- H0-2: There is no association between the cost of goods sold and abnormal returns after controlling for the association of sales, writedowns, and other expenses with security returns;
- H0-3: There is no association between writedowns and abnormal returns after controlling for the association of sales, cost of goods sold, and other expenses with security returns;
- H0-4: There is no association between other expenses and abnormal returns after controlling for the association of sales, cost of goods sold, and writedowns with security returns.

Sales are expected to be associated positively with abnormal returns, while the cost of goods sold and other operating expenses should be associated negatively with abnormal returns. If writedowns act as other expenses shown in the income statement, then they also will be associated negatively with abnormal returns. If writedowns are associated with events perceived favorably by the market, however, then their association could be positive. Partitioning the sample into good news and bad news is difficult because disclosures are inadequate. Fried, Schiff, and Sondhi (1989) examine 870 writedown disclosures

and conclude that firms tend to group writedowns across different types of writedowns, different valuation methods, and the nature of costs involved. Under the circumstances, partitioning the sample into good and bad news items is arbitrary.

DATA AND THE MODEL

Cumulative abnormal returns (accumulated over a quarter) are regressed on forecast errors of per share sales, cost of goods sold, writedown amounts, and other expenses. Forecast errors are computed on the basis of a naive expectations model; the previous year's corresponding quarter's values represent the expectation for the current quarter's sales, cost of goods sold and other expenses. The expected writedown amount is zero because it is an unusual event (as in Elliott and Shaw, 1988 and Strong and Meyer, 1987). Lack of an extensive time series for writedowns necessitates the use of a naive model to compute forecast errors.

Sales, cost of sales, and other expense numbers are obtained from quarterly Compustat. Market returns and individual firm returns are obtained from the Center for Research in Security Prices (CRSP) tapes. The writedown sample for years 1980 through 1985 are obtained from the National Association of Accountants (NAA-now Institute of Management Accountants) database (Fried, Schiff, and Sondhi, 1989). This database contains writedown amounts on a pre-tax basis, quarter of writedown, quarterly earnings, and the company symbol for 645 firm-quarters for 1980 to 1985. Compustat data from the primary, supplementary, and tertiary tape are available for 357 of these 645 firm-quarters. For years 1986, 1987, and 1988 the Nationally Automated Accounting Research System (NAARS) database provides sample firms, writedown amounts, and the quarter and year of writedowns. Footnotes to annual reports are analyzed carefully, and writedowns of inventory, receivables, debenture issuance costs, capital stock expense, litigation losses, and notes receivables are excluded in order to ensure homogeneity with the NAA database.⁵ The t-test results for mean differences for important financial measures show that the samples drawn from the NAA and the NAARS databases are similar in financial characteristics. (Results are available on request.)

Table 1 contains descriptive data for sample firms in terms of their distribution over time. The mean income for 466 firm-quarters is a negative \$23.38 million, suggesting that write-offs significantly reduce income for the quarter, on average (Table 2, panel A). The sample firms are large, as evidenced by average sales (\$992 million) and average cost of goods sold (\$766 million). The average writedown is also big: \$102.28 million. Most writedown announcements are made in the fourth quarter (329); the first three quarters combined account for 137 writedowns.

The sample contains 466 firm-quarters (280 firms) drawn from 44 two digit SIC industries over 36 quarters. Machinery and equipment manufacturers are represented most frequently in the sample with 56 writedowns, chemicals experienced 53 write-offs, and petroleum refining had 41 announcements. These industries are followed closely by iron and steel foundries (33 writedowns), automobiles (31 write-offs), oil and gas (23 write-

⁵ Following Fried, Schiff, and Sondhi (1989) and Elliott and Shaw (1988), writedowns are defined to include impairments of long-lived assets, write-offs of idle manufacturing capacity, discontinuations, restructurings, and plant closings.

Table 1—Distribution of Writedown Disclosures Over Time

Year	Quarter				Total
	I	II	III	IV	
1980	1	5	2	16	24
1981	2	1	3	20	26
1982	4	6	7	41	58
1983	6	5	9	49	69
1984	1	6	16	65	88
1985	2	7	17	81	107
1986	7	6	5	38	56
1987	0	7	1	17	25
1988	2	5	4	2	13
Total	25	48	64	329	466

Table 2—Summary Statistics

Variables	Mean	Median	Std. Dev.	5 Percent	1 Percent
Panel A: Descriptive Statistics for Key (Uninflated) Variables for 1980-1988 Pooled Quarterly Data (N = 466, \$ millions)					
Sales	992.16	316.20	2,105.60	13.49	3.59
Cogs	766.18	243.91	1,608.53	10.63	2.99
Writedown	102.28	24.15	245.31	1.46	0.22
OExp	147.09	47.64	439.73	-99.90	-511.00
Income	-23.38	-4.17	206.87	-297.90	-835.00
Total Assets	4,172.47	1,202.88	11,524.44	67.08	29.66
Panel B: Descriptive Statistics for Deflated Forecast Errors and Abnormal Returns (N = 466)					
CAR	0.0149*	-0.0054	0.0293	-0.4189	-0.6936
SALFE	-0.0038*	0.0001	0.0615	-0.0579	-0.2312
CGSFE	0.0005*	0.0001	0.0455	-0.0373	-0.1777
WDFE	0.0241*	0.0017	0.4725	-0.0001	-0.0699
OTHFE	-0.0191*	-0.0001	0.3197	-0.0269	-0.2389

SALFE = Deflated sales forecast error per share
 CGSFE = Deflated cost of goods sold forecast error per share
 WDFE = Deflated writedown forecast error per share
 OTHFE = Deflated other expense forecast error per share
 CAR = 90 day cumulative abnormal stock price return
 (The deflator is the book value of stockholders' equity)

*Not significantly different from zero at the 5 percent level

downs), and electricity, gas, and other services (22 write-offs). The remaining 39 industries account for 207 write-offs.

A possible econometric concern is cross-sectional dependence in stock returns data. Bernard (1987) argues that cross-sectional dependence in returns is likely to exist when returns are sampled from common time periods. When the dependent variable is abnormal returns accumulated over a period of time (e.g., a quarter or a year) and the independent variables are firm-specific accounting variables, regression errors potentially could be correlated in cross-section. If regression residuals are cross-correlated OLS regressions can provide unbiased coefficient estimates, but the corresponding standard errors could be biased. The degree of bias, however, is context-specific. An alternative view is proposed

by Christie (1987) who finds that cross-sectional dependence in the returns data causes no serious bias in standard errors.

Bernard (1987) concludes that interindustry cross-sectional correlations are small relative to intraindustry correlations. When the number of sample firms per industry is small, the bias is likely to be small. The average number of sample firms per three digit SIC industry in this study is only 4.18. Based on Bernard's results, this bias appears to be negligible. Bernard (1987) argues that the bias in standard errors caused by cross-sectional dependence in returns is likely to be more serious when return intervals are long. In our study abnormal returns are accumulated over 90 days rather than over the year period often used for association tests using annual data. Hence, potential bias is less serious here than in studies that employ annual return metrics. Moreover, abnormal returns are not accumulated from a common time period here as in event studies. Returns are accumulated from nine different years (i.e., 36 different quarters); hence, time clustering is less of a problem here.

ABNORMAL RETURNS

Market model residuals are used to calculate unsystematic security returns. The market model parameters are estimated using an OLS regression of lagged returns. One hundred-twenty days of data prior to the test period (accumulation period) are used for market model estimation, i.e., to compute the market beta. The accumulation period is 74 days before the earnings announcement date (available on quarterly Compustat tapes) to 15 days after the earnings date. It is estimated that large firms announce writedowns approximately ten to 74 days prior to the earnings announcement (Ragothaman, 1991). To test the robustness of the accumulation period two alternative accumulation periods are used: CARs are accumulated over a 60 day period (-44 to +15 relative to the earnings release date) and a 120 day period (-74 to +45 relative to the earnings release date).

FORECAST ERRORS

Earnings per share can be expressed as:

$$\text{EPS} = \text{SPS} - \text{CGSPS} - \text{WDPS} - \text{OTHPS},$$

where:

- EPS = Compustat quarterly data item 19, primary earnings per share excluding extraordinary items;
- SPS = Compustat quarterly data item 2, net sales, divided by data item 15, common shares adjusted for stock splits and dividends used to calculate primary EPS;
- CGSPS = Compustat quarterly data item 30, cost of goods sold, divided by data item 15, common shares used to calculate EPS;
- WDPS = WRITEDOWN amount obtained from NAARS and NAA databases, divided by data item 15, common shares used to calculate EPS; and
- OTHPS = Other expenses and accruals per share, a residual amount (OTHPS = SPS - EPS - CGSPS - WDPS).

The model is:

$$\text{CAR}_{it} = \beta_0 + \beta_1 \text{SALFE}_{iq} + \beta_2 \text{CGSFE}_{iq} + \beta_3 \text{WDFE}_{iq} + \beta_4 \text{OTHFE}_{iq} + e_{iq}$$

where:

$$\begin{aligned} \text{CAR}_{it} &= \text{Cumulative abnormal returns cumulated on the basis described earlier;} \\ \text{SALFE}_{iq} &= (\text{SPS}_{iq} - \text{SPS}_{i,q-4}) / \text{BVE}_{iq}; \\ \text{CGSFE}_{iq} &= (\text{CGSPS}_{iq} - \text{CGSPS}_{i,q-4}) / \text{BVE}_{iq}; \\ \text{WDFE}_{iq} &= (\text{WDPS}_{iq} - 0) / \text{BVE}_{iq}; \\ \text{OTHFE}_{iq} &= (\text{OTHP}_{iq} - \text{OTHP}_{i,q-4}) / \text{BVE}_{iq}; \text{ and} \\ \text{BVE}_{iq} &= \text{Book value of stockholder equity.} \end{aligned}$$

In this pooled cross-sectional regression, division by the book value of stockholder equity is a heteroscedasticity adjustment as used by Beaver *et al.* (1989). To examine the robustness of the deflation scheme, an alternate deflator (namely, the market value of equity) also is used. Unexpected writedowns first are regressed on unexpected earnings for the sample firms. Then, in an expanded model, earnings are partitioned into various components as modeled above, and Goldberger's F-statistic is computed to test whether the expanded model adds any incremental explanatory power (Goldberger, 1964).

EMPIRICAL RESULTS

Table 2 (panel B) provides descriptive statistics for the deflated independent variables and CAR. The mean values of SALFE and OTHFE are negative, possibly suggesting that these sample firms are downsizing their operations, cutting excess capacity, and shutting down their impaired assets. Mean forecast errors for writedowns and other expenses differ from zero at conventional significance levels.

Table 3 presents Pearson product moment correlations for CAR and all explanatory variables. This table indicates that sales and other expense forecast errors are correlated significantly. Because multicollinearity may be present in the data, diagnostic measures of collinearity are obtained. Collinearity diagnostics are based on procedures recommended by Belsley *et al.* (1980) who suggest that condition indexes in excess of 30 indicate moderate to strong dependencies. The largest condition index observed in the regression with pooled data is 7.587. Another rule of thumb is suggested by Judge *et al.* (1980, p. 459) to assess the impact of multicollinearity. They argue that a serious multicollinearity problem arises only when correlations among the explanatory variables are higher than 0.8. The highest correlation is between sales forecast error and other expenses forecast at 0.56. Hence, the degree of collinearity present appears to be too small to invalidate estimation results.

Table 4 presents the results for the basic multiple regression equation. Overall, the results indicate that incremental information is observed by considering both the sign and the magnitude of explanatory variables. The adjusted R^2 is 10.5 percent which is higher than the typical 2 percent to 5 percent (Lev, 1989) for 90 day CARs when the explanatory variable is just earnings forecast error. When 90 day CARs are regressed on just the unexpected earnings before writedowns for this sample of 466 firm-quarters, the adjusted R^2 is 2.85 percent. Goldberger's F-statistic ($F = 13.17$) indicates that the expanded model adds

Table 3—Pearson Correlation Coefficients (N = 466)

	SALFE	CGSFE	WDFE	OTHFE	CAR
SALFE	1.000				
CGSFE	0.553 (0.000)	1.000			
WDFE	-0.428 (0.000)	0.093 (0.044)	1.000		
OTHFE	-0.562 (0.000)	-0.428 (0.000)	0.089 (0.054)	1.000	
CAR	0.134 (0.003)	-0.015 (0.746)	0.023 (0.617)	-0.276 (0.000)	1.000

(Significance level in parentheses)

SALFE = Deflated sales forecast error per share

CGSFE = Deflated cost of goods sold forecast error per share

WDFE = Deflated writedown forecast error per share

OTHFE = Deflated other expense forecast error per share

CAR = 90 day cumulative abnormal stock price return

(The deflator is the book value of stockholders' equity)

Table 4—Multiple Regression Results 1980-1988 Pooled Data (N = 466)

Variable	Model 1: $CAR_{it} = \beta_0 + \beta_1 SALFE_{it} + \beta_2 CGSFE_{it} + \beta_3 WDFE_{it} + \beta_4 OTHFE_{it} + e_{it}$			
	Coef. Estimate	Std. Error		p*
INTER	0.011	0.013		0.393
SALFE	0.769	0.342		0.024
CGSFE	-1.601	0.380		0.000
WDFE	0.089	0.034		0.009
OTHFE	-0.282	0.050		0.000
Adjusted R ² = 0.105; F = 14.690				

SALFE = Deflated sales forecast error per share

CGSFE = Deflated cost of goods sold forecast error per share

WDFE = Deflated writedown forecast error per share

OTHFE = Deflated other expense forecast error per share

CAR = 90 day cumulative abnormal stock price return

(The deflator is the book value of stockholders' equity)

*Two tailed significance probability

statistically significant incremental explanatory power. Based on a reviewer's suggestion, we also regress 90 day CARs on the unexpected earnings before writedowns and the writedowns. The results indicate that the coefficients are positive for both the explanatory variables and are significant at the 5 percent level. The adjusted R² is 5.86 percent.⁶

The null hypotheses for all four coefficients are rejected at typical significant levels. The expected sign for sales, cost of goods sold, and other expenses are as predicted. The expected sign for the writedown response coefficient (β_3), however, is not clear. The bad news hypothesis would predict a negative sign, whereas Jensen's free cash flow theory and sunk cost hypotheses and other cost savings arguments would predict a positive sign. The

⁶ When 90 day CARs are regressed on unexpected earnings before writedowns and the writedowns, the coefficients are +0.330 (std. error = 0.159) and +0.107 (std. error = 0.033), respectively. The explanatory variables are scaled by the absolute book value of stockholders equity for heteroscedasticity adjustment. The model F-value is 15.460.

writedown response coefficient is significantly different from zero at the 0.01 level, and the sign of the response coefficient is positive. This result indicates that for the sample firms, the market views these writedowns, on average, as good news. We perform several robustness tests; results are reported in the appendix.

Writedowns convey good news when they tell stockholders that managers will discontinue unprofitable activities, especially when the poor prospects of impaired assets are already public knowledge. Brennan (1991) argues that writedowns signal better prospects for future operating income because of future decreases in depreciation expenses. Jensen's free cash flow theory (1986) predicts that the market may view managers' decisions to cut investments in negative net present value projects as good news. Strong and Meyer (1987) suggest that writedowns can result in tax savings.⁷ This result reaffirms one of the findings of Lindahl and Ricks (1989) and the findings of Statman and Sepe (1986).⁸

CONCLUSION

This study examines the effects of unexpected sales, unexpected cost of goods sold, unexpected writedowns, and unexpected other expenses on abnormal returns. Unexpected returns are accumulated over a 90 day period. The results indicate that the signs and the magnitude of these explanatory variables contain information over and above what is contained in the sign and magnitude of unexpected earnings. This study documents the association between unexpected components of income and unexpected returns, but no causality is implied. The study does provide strong evidence supporting the conclusion that the components of net income provide additional information above that of the bottom line. Adding explanatory variables such as size, levels of earnings, and time dummies to the regression does not degrade the results. Earlier studies have used data from all quarters or all years—for example, Bublitz and Ettredge (1989) look at annual data with an association test, and Swaminathan and Weintrop (1991) look at quarterly data with an event methodology. This paper examines quarterly data with an association test and finds support for incremental information content for earnings components (including writedowns and the cost of goods sold) that are not examined in earlier studies.

This study also finds that the market reaction to writedowns is positive, on average, unlike that for expenses such as the cost of goods sold. This finding is consistent with the hypothesis that the market already has adjusted to the reduced market value of assets. Instead, the market may be reacting to actions taken by management resulting from its

⁷ Income Tax Code Section 165 generally allows as a deduction any loss sustained during the taxable year (e.g. loss on asset sales) and not compensated for by insurance or otherwise. Deduction for abandonment of machinery and equipment, of goodwill, of worthless leases, of oil and gas property etc. and deductions for loss of useful value of property were allowed (see #1535.01, #1535.016, #1535.18, #1535.0711, #1535.0713, #1535.2401, and #1535.2411, CCH, 1987 and Rev. Rul. 57-503, 1957- 2 CB 139); Code Section 167, Reg. 1-167(a)-8, provides for retirement of depreciable property (see #1727, CCH, 1987); Reg. 1-167(a)-9 provides for obsolescence deduction for operating facilities and other depreciable property (see #1729, 1730, CCH, 1987).

⁸ Lindahl and Ricks (1989) partition their sample into write-offs with no operating implications and write-offs that are associated with some change in operations. The former group is associated with negative announcement period abnormal returns while the later group is associated with positive returns. Their sample comes from the period 1984-1985. Project terminations are one form of write-offs. Statman and Sepe (1986) report positive returns for project termination announcements.

recognition of current market conditions. The evidence is consistent with a useful role for an events or circumstances notion as a recognition criterion for asset writedowns.⁹

These conclusions should be considered in context of the methodology employed. A major limitation of association tests is that they do not imply causality. Another limitation is that the cross-sectional model imposes common coefficients across firms, whereas the market response may be firm-specific. Coefficients also may be time-specific, whereas the research employed here combines financial data drawn from several years. A naive forecasting model has been used here, with the expected writedown assumed to be zero. Market participants are probably not totally surprised by a writedown announcement. The long window used for abnormal returns compensates for this naive expectations model, but reduces confidence in a causal relationship existing.

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⁹ See Financial Accounting Standards Board (1990), pp. 15-17.

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APPENDIX A--ROBUSTNESS TESTS

ALTERNATIVE ACCUMULATION PERIODS

The above regression also is run for a shorter 60 day and longer 120 day accumulation periods. The general conclusions are not affected. The R^2 is reduced for the longer accumulation period, but is larger for the shorter period. All coefficients are similar, however, to the above results. Writedown coefficients remain positive and significant.

BEGINNING PRICE DEFLATOR

Christie (1987) advocates the use of the beginning market price as the proper deflator. Although the use of the beginning of quarter market price reduces the R^2 to just less than 10 percent, the coefficient of writedowns remains positive and significant. All other coefficients remain the same as with the book value deflator; only the coefficient of sales fails to be significant at traditional levels.

PROXY FOR SIZE

Prior research suggests that stockholders have more information about large firms than about small firms and that they react differently to accounting information releases for small and large firms (Collins *et al.*, 1987). It is possible that the explanatory variables examined above could proxy for firm size. Chen, Roll, and Ross (1986) argue that "... size may be the best theory we now have of expected returns." Hence, we add a size variable (i.e., log of sales for the quarter) and rerun the regression. While the adjusted R^2 slightly improves from 10.5 percent to 11 percent, the coefficient of the size variable is not significant at the conventional level. More importantly, the earlier explanatory variables do not appear to proxy for firm size.

We partition the sample into small and large firms and rerun the regression. Firms are designated as large ($N = 110$) if their sales exceed the mean sales of \$992.16 million. Firms are placed in the small group ($N = 356$) if their sales are less than \$992.16 million. The results are identical (coefficients of all four explanatory variables are significant and have the right signs) to results reported in Table 4 in the paper for the small group. For the large group, however, none of the coefficients for the four variables is significant, even though the signs are in the right direction. These findings are consistent with the results reported by Brown and Kim (1993) that suggest that nonearnings news releases of small (but not large) firms are associated with positive abnormal returns.

EARNINGS LEVELS & FORECAST ERRORS

Ohlson (1988) argues that the theoretically correct returns-earnings specification includes both the earnings levels and earnings changes as explanatory variables. Incorporating this suggestion, we include earnings (levels of earnings) as an additional explanatory variable and rerun the regression. None of the conclusions change, except for a small increase in adjusted R^2 .

TIME DUMMIES

The methodology imposes common intercepts across time periods. But intercepts may vary over time. Because this is a longitudinal study and the sample writedowns occur over nine years (1980 through 1988), adding time dummies as independent variables may

be desirable. Previous results still hold, except for sales forecast error which has the right sign but is only significant at the 12 percent level. The adjusted R^2 increases from 10.5 percent to 14.1 percent.