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Asset Writedowns: Managerial Incentives and Security Returns

JOHN S. STRONG and JOHN R. MEYER*

OVER THE PAST FIVE YEARS, American corporations have taken aftertax writeoffs of over \$10 billion dollars from discontinued operations and reductions in the book value of assets. During 1985 alone, over \$5.6 billion in writedowns were recorded. If the sheer size of this restructuring is stunning, so too is the speed at which this practice has grown. According to COMPUSTAT data, aggregate writeoffs for all corporations totaled only \$400 million in 1980.¹ This practice of writing down assets has been widely heralded by the financial media. However, with the exception of a few papers on the effects of spinoffs and divestitures,² there has been little research on the writedown decision and its effect on security values.

This paper is divided into six sections. The first section describes how the substantial flexibility accorded by current accounting standards shapes managerial incentives to concentrate writeoffs and establish large reserves with probability of subsequent reversal. The second section discusses capital budgeting aspects of asset writedowns. To understand how the operating and financial environment influences the writedown decision, the third section analyzes the *ex ante* financial performance (relative to their respective industries) of a sample of 120 firms which announced writedowns between 1981 and 1985. Part four employs multiple discriminant analysis using a paired case control sample to study the determinants of writedowns. The fifth section uses event study methodology to analyze the effects of 78 writedown announcements on shareholder wealth. In addition, effects on the value of senior securities are examined. The final section summarizes the findings.

I. The Rules: Accountants, Auditors, and Managerial Incentives

Traditionally, the accounting profession's historical cost orientation led to a balance sheet concept that did not purport to show either present values of assets or liquidation values. The notion of market value estimates, as applied to securities and inventories, has found little application to fixed assets. The main accounting application involves policies for recording retirements of plant and equipment. Only those assets which are "used and useful to enterprise" are to be carried on the balance sheet; the remainder are to be written off. If plant and

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¹ COMPUSTAT data understates the actual amount of writeoffs, to the extent that such charges are classified as "non-material" for financial reporting purposes.

² See Hite and Owers (1983); Miles and Rosenfeld (1983); Schipper and Smith (1983); Klein (1985); Linn and Rozeff (1985); Owers and Rogers (1986).

equipment is deemed only temporarily idle or on reserve, however, such assets may continue to be carried on the books.

The problem arises when such fixed assets become obsolete and remain idle for a protracted period. In theory, the notion of "permanent asset impairment" is supposed to guide auditors in determining when values should be revised downward. However, this concept has been applied principally to discontinued operations rather than reevaluations of assets that remain on the balance sheet. In contrast, many of the recent restructurings involve partial writedowns of assets whose values have declined but remain in productive use. This results in broad discretion for companies in determining when and how much to write down.³

The size and scope of the current writeoffs suggest to many accountants that companies have been quietly accumulating problems for some time and are only now recognizing them in financial reports. In practice, the deep recession of the early 1980s and the attendant poor financial performance of many firms meant that auditors may not have been aggressive in forcing companies to take writedowns when trouble first became evident. Asset value declines induced by energy adjustments, technological change, or increased import penetration frequently were accompanied by poor operating performance; this combination served to reduce the value of any tax shields that would result from the writedown.⁴ If a firm is concerned about its ability to fully utilize that tax loss, management may choose to defer such recognition until operating performance improves. As a result, considerable initiative for any writedown has shifted from the auditor to management; the auditor has often been removed to an "authorizing" role.

With managerial incentives necessarily playing a major role in determining asset writedown policy, a number of analysts have argued that "the bigger the bath, the better,"—that by cleaning up the balance sheet and reducing equity, a company can boost future profits and increase per-share return. Furthermore, it is argued that a single large writedown signals that past problems have been dealt with aggressively, while a lingering series of writedowns would erode confidence in management and induce declines in a firm's stock price.

The formal accounting treatment reinforces such a perspective. In general, the amount of the writedown is established as a reserve account, with subsequent sale or disposal of the written-down assets charged to this reserve. If subsequent events result in a residual reserve balance, that amount can then be reversed and taken into earnings in some future period. The incentive for senior management, particularly during executive transition, is to take a large reserve now against as many eventualities as possible, believing that the later reserve reversal and higher reported earnings will strengthen the perception of management effectiveness.

A contrasting perspective is skeptical of whether revisions in asset book values and the peculiarities of reserve accounting are important in increasing shareholder wealth. This perspective notes that pure asset writedown decisions do not change real economic values, but recognize declines in asset values which occurred

³ In 1985, the FASB established a task force to study writedown policies. One standard being urged is to require companies to take write-offs when probable future cash flows fall below the carrying cost of the asset.

⁴ See John S. Strong, "The Relation between Financial Valuation and Physical Capital: A Theoretical Framework," unpublished paper, 1986.

in prior periods. To the extent that corporate restructurings appear to have produced gains to stockholders, this view contends that the revaluations are the result of simultaneous actions that often accompany a writedown, such as share repurchases or changes in dividend policy.⁵

II. Writedowns and Capital Budgeting

Robichek and Van Horne (1967) were among the first to point out that consideration of the abandonment option was required if capital is to be efficiently allocated. The capital budgeting decision implicit in a writeoff associated with an abandonment decision is straightforward. Assets should be written off when their abandonment value exceeds the present value of their associated cash flows. However, is the same criterion appropriate when the decision under consideration is a reduction in the carrying value of an asset, rather than its abandonment? This decision involves a comparison of the value of the partial writedown to the value of carrying the asset at the currently recorded net book value. If the book value is to serve as a basis for valuation, writedowns should occur when the net present value of expected future cash flows from the equipment is less than currently recorded net book value. However, other considerations are almost certainly present: for example, writedowns may occur when the expected net present value of using an asset falls well below original expectations.

In either case, though, a decline in the value of asset-based cash flows has occurred, thereby shifting the managerial decision to one of recognition. Since writedowns result in a one-time charge against earnings, tax considerations almost certainly play a major role. Within the firm, the tax issue centers on the ability to use the one-time tax shield versus a continuation of the previous depreciation policy. The decision is complicated by the existence of tax recapture provisions mandated by the IRS in the event of early writedown or abandonment of fixed assets which were eligible for the investment tax credit or various forms of accelerated depreciation. Beyond the specific tax laws, any writedown will almost certainly involve negotiations between the firm and the IRS. This serves to prevent firms from writing off serviceable assets which remained in good order, solely for the tax advantage. Thus, while the tax aspects of a writedown appear straightforward, in practice the tradeoffs are subject to uncertainty at the outset, to be resolved through subsequent negotiation.

This capital budgeting perspective suggests that the partial writedown decision depends on whether the firm can generate tax-associated cash flows and related reinvestment returns in excess of the present value of tax shields emanating from a continuance of prior depreciation policy.⁶ Since the writedown is likely to result in a one-time charge against earnings, partial writedowns are likely to be associated with higher profitability, as reflected in a higher marginal tax rate.⁷

⁵ Security price effects could also result if a writedown releases information about "true" asset values. If shareholders understand managerial incentives to "over-reserve" in recognizing writedowns, then previously unknown lower bounds on asset values may be established.

⁶ A formal model relating the different tax effects, reinvestment aspects, and transactions costs is available from the authors.

⁷ Higher profitability need not be associated with a higher tax rate. However, the value of accelerating tax shields into the current period will increase the higher the current tax rate.

Because a partial writedown is not mandatory, the timing of the charge should be associated with maximizing the value of the asset-based tax shields. This result is consistent with Dyl and Long (1969), who note that abandonment decisions should be calculated over all remaining decision periods, with abandonment occurring at the time in which the differential present value is highest. This hypothesis is also consistent with the increase in writedowns in the last quarter of 1986 given the decrease in statutory corporate tax rates effective in 1987. The result is to shift tax shields into the period of higher marginal tax rates while shifting earnings forward to be taxed at a lower marginal rate.⁸

In addition, the value of any incremental cash flows that are generated by an asset writedown depends on the reinvestment opportunities faced by the firm or its shareholders. This result accords with Gaumnitz and Emery (1981), who note that abandonment is more likely to occur when alternative investment opportunities yield higher returns than existing investments. This result also suggests that writedowns are more likely to occur during economic expansions, when new investment opportunities are likely to be perceived as more profitable. In addition, corporate profits tend to be higher during such periods, thereby increasing effective tax rates and increasing the relative attractiveness of one-time tax shields.⁹

It should be noted that the relevant cash flows are only those associated with the writedown decision. In the case of a total writeoff, the incremental cash flows would include both the value of any foregone output as well as any associated savings in operating costs. In the partial writedown case, it is assumed that the asset will continue to be operated, albeit at a lower utilization or in some reserve capacity.¹⁰

III. The Influence of Prior Financial Performance

Managerial incentives regarding writedown policy obviously are difficult to recreate or proxy empirically. If an asset writedown is at heart a recognition of valuation declines that occurred in the past, the prior effects are likely to be apparent in past financial and operating performance. To the degree that such performance has deteriorated in the time immediately preceding the writedown announcement, it suggests that writedown decisions may be used to signal investors that management has taken action to eliminate those assets generating little or no return.

Data on a sample of 120 firms announcing writedowns between January 1, 1981 and December 31, 1985 were obtained from three sources—*The Wall Street Journal Index*; *The New York Times Index*; and the computerized DISCLOSURE data base.¹¹ Each criterion was then researched to construct a file of the complete

⁸ This is not true for those firms whose tax liabilities increase in 1987 as a result of the alternative corporate minimum tax.

⁹ These effects are reduced by the existence of carryforward provisions.

¹⁰ If the asset continued to be operated at the same level, it would be more difficult to justify the change in depreciation schedule to the IRS.

¹¹ The sample was selected by performing a text search for all stories including the terms writedown, write-off, restructuring, charge against earnings, and seven other terms.

restructuring announcement for each firm. The firms in the sample cover 31 industries, with strong representation among natural resource firms.

In evaluating the *ex ante* financial performance of those firms announcing writedowns, comparisons with the market as a whole are likely to be misleading. In particular, industry performance has varied widely over the past decade. Moreover, since industry norms have been shown to have important influences on managerial behavior, it is useful to construct comparisons relative to industry averages. For each firm in the sample, indices of respective industry performance were constructed by randomly selecting 15 firms in that industry which did not announce writedowns between 1981 and 1985. A variety of accounting and financial data were collected and weighted by total assets to construct an industry average for each measure. The actual measures for each of the 120 firms announcing writedowns were then compared to their industry averages to assess comparative performance. To determine whether relative performance had shifted over time, each measure was calculated for the three year period preceding the writedown as well as for the immediately preceding year.

A subset of these comparative performance measures for the 120 writedown firms is presented in Table 1. The table reports percentile distributions, which provide more information about relative performance than would sample averages alone. By way of illustration, only 6 of the 120 writedown firms (5 percent) ranked in the top 20 percent of their industry in total return to shareholders in the 3 years preceding the writedown announcement. The most striking feature of Table 1 is the indication that along a number of dimensions, writedown firms are neither the strongest nor the weakest firms in their respective industries.

Table 1
Distribution of Comparative Financial Performance (Relative to Respective Industry Distribution) for 120 Firms Announcing Asset Writedown Decisions 1981-1985

	INDUSTRY PERFORMANCE QUINTILE ¹				
	Top 20% (Top Fifth)	60%-80% (Second Fifth)	40%-60% (Third Fifth)	20%-40% (Fourth Fifth)	Bottom 20% (Bottom Fifth)
Total Return to Shareholders:					
Last 3 Years ²	6	27	63	17	7
Last Year Only ²	8	19	49	31	13
Market:Book Ratio					
Last 3 Years	11	40	47	17	5
Last Year Only	4	33	51	16	16
Cash Flow per Share					
Last 3 Years	12	46	41	18	3
Last Year Only	10	43	32	27	8

Notes:

1. Industry quintiles were determined for each variable by calculating total return, market:book ratio, and cash flow per share for a sample of 15 firms in each industry. The sample firms announcing writedowns were then evaluated relative to this industry performance distribution. If the writedown firms exhibited the same characteristics as their respective industries, the expected value in each cell would be 24 (120/5).
2. "Last 3 Years" and "Last Year Only" are relative to the writedown announcement date.

The scarcity of writedowns by firms in the top quintile may result from two sources. First, the superior performance may indicate higher quality assets that have proven less susceptible to valuation declines. Second, the higher profitability of such firms may induce them to adopt an ongoing writedown policy that recognizes value declines over a period of years. If such revaluations are done on an ongoing basis, they are more likely to be classified as "non-material" by auditors, and thus not be reflected in summary financial reports or be publicized by the financial media.

The relative lack of writedowns by the poorest performers in an industry presents a greater puzzle. Presumably, subpar financial performance would indicate a surplus of overvalued assets. However, the lack of writedowns by these firms may be explained by tax status and considerations of book equity. In general, the poorest performers have been consistently unprofitable in prior periods, suggesting that the tax benefits of recognizing declines in the value of capital assets may be small. In addition, if such firms are interested in being acquired, any pre-acquisition restructuring may reduce the value to a potential suitor.¹² Finally, since writedowns involve a charge to retained earnings, firms which have experienced substantial declines in net worth due to operating losses may be reluctant to further reduce their equity base. This would appear to characterize the steel industry, where only two companies announced writedowns in 1985.

IV. Incorporating Managerial Effects: A Paired Case Control Discriminant Analysis

This section assesses differences in the financial characteristics of writedown and non-writedown firms using discriminant analysis and a paired case-control methodology. In constructing a control sample, a particular concern is the problem of choosing characteristics on which control and writedown samples should be matched. If a variable is used as a matching measure, its effects will largely be excluded from the analysis. As Hasbrouck (1985) points out, however, the quality of the estimates from other variables may be enhanced, since the methodology reduces interactions with the controlled variable.

Each of the 120 writedown firms was matched by industry with two control (non-writedown) firms.¹³ Beyond the industry matching, the control firms were selected by size (measured by total assets), to match the writedown firms as closely as possible.¹⁴ The result is a matched sample of writedown and non-writedown firms in the same industry and of approximately the same size. This

¹² The use of an acquired firm's loss carryforwards by an acquiring firm is restricted. The incentives to delay writedowns to enhance acquisition likelihood were increased by the 1986 tax law, which sharply reduces the maximum allowable use of carryforwards subsequent to a merger.

¹³ The industry classification involved matching at the 4 digit SIC level in 94 of the 120 cases; the remaining 26 cases required matching at the 3 digit SIC level. Exclusion of these 26 cases had no material effect on the results, so they are included here.

¹⁴ Given the wide disparity in firm size within some industries, a random matching process within each industry was rejected and total assets used as a secondary matching criterion. Total assets was chosen to reflect relative size while avoiding problems with other size measures. For example, market value equity is involved in the security price analysis, while book equity interacts with the size of the writedown and also has concurrent effects on capital structure influences.

Table 2
Selected Financial Data for Paired Case Control Analysis of
Writedown and Non-Writedown Firms, 1981–1985 (mean values)

Variable	Writedown Firms	Non-Writedown Firms	Difference of Means <i>t</i> -statistic
Internal Management Change	.375	.159	2.35
Outside Management Change	.250	.016	3.67
Total Return to Shareholders (relative to Standard and Poor's 500)	.801	.948	-2.85
Percent Institutional Owner- ship	.407	.406	0.03
Ratio Institutional Buy/Sell Decisions Prior 2 Years	.908	.954	-0.71
Debt:Asset Ratio	.223	.194	1.14
Market:Book Ratio	1.319	1.501	-1.01
Cash Flow per Share	2.229	3.947	-2.02
Tax Loss Carryforward as % Operating Income	.130	.092	0.74
Current Ratio	1.768	1.993	-1.24
Tax Rate	.173	.234	-0.46
Dividend	1.126	.815	1.73
Change from Prior Year:			
Debt:Asset Ratio	-.002	-.007	0.38
Market:Book Ratio	.122	.008	0.53
Cash Flow per Share	.752	.825	-0.14
Tax Loss Carryforward Ra- tio	.037	.030	0.26
Current Ratio	.099	.057	0.43
Tax Rate	.114	.182	-0.58
Price:Cash Flow Ratio	.308	-.153	2.28

results in some degree of similarity across the sample with regard to product market and scale. Financial data were collected for all firms and an analysis was made of the systematic differences between target and control groups. The results for a subset of these variables are reported in Table 2, which presents mean values for target and control groups, and also the *t*-statistics for the difference between the means. The most significant difference between the writedown and non-writedown groups is a change in senior management. The managerial effect is most pronounced when the new executive comes from outside the company. This relation is consistent with the hypothesis that managerial change induces restructurings, and that writedowns are more likely to occur when incoming management was not associated with prior investment and asset management decisions. By contrast, neither the size of the institutional equity holding nor the recent pattern of buy/sell decisions by institutional investors appear to be associated with the writedown decision. This suggests that the impetus for writedowns is likely to emerge from within the firm, rather than from outside investor influences.¹⁵

Financial performance appears related to the writedown decision as well. The

¹⁵ However, writedowns and associated restructurings could also occur as a reaction to a perceived external threat to corporate control, so that environmental influences remain potentially important.

strongest differentiation is in total return to shareholders, where writedown firms have been substantially below the control group. This result is particularly interesting because writedown firms seem to be paying higher dividends.¹⁶ Writedown firms also exhibit subpar performance on cash flow per share and market-to-book ratio; the firms are also slightly more leveraged and less liquid (as indicated by the current ratio). As expected, the writedown firms faced a lower effective tax rate, and were more likely to have a tax loss carryforward available.

There are few significant differences between writedown and control groups on virtually all of the variables measuring changes in financial status in the year prior to the writedown, suggesting that the decision and its timing are little influenced by short-term behavior. It should be noted, however, that the differences in these changes between writedown and non-writedown firms are somewhat positive in character, with greater improvements in the current ratio, price-to-cash flow ratio, and market-to-book ratio for writedown firms. Taken together, this does lend minor support for the notion that writeoffs occur when business is improving and the (market value) equity base is growing.

To further study the writedown context, multiple discriminant analysis (MDA) was used to examine a profile of variables. MDA is well-suited to many problems where the dependent variable is nonmetric. The primary objective of MDA is to classify entries correctly into mutually exclusive groups by maximizing the ratio of inter-group to intra-group variance-covariance from a set of independent variables (other than those used to make the classification). In addition, MDA reveals which individual variables have the greatest discriminating power within a multivariate context.

Table 3 summarizes the standardized discriminant function coefficients, structure matrix, and canonical discriminant function evaluated at the group means. A change in senior management again was the most important factor, with this influence most pronounced if the new executive came from outside the firm. The model also indicates that the overall level of financial performance, as proxied by cash flow per share and total return to shareholders, was lower for writedown firms (both coefficients are negative). However, unlike the bivariate analysis above, the discriminant function suggests that changes in the relative levels of financial variables do influence writedown activity. For example, writedowns are associated with higher levels of the debt-to-asset ratio, but with decreases in the amount of leverage in the most recent period (as shown by the negative coefficient). Furthermore, writedowns appear to be linked to decreases in the amount of tax loss carryforwards. Again, this suggests that writedowns occur during improving operating environments.

The canonical correlation for the discriminant function was .597, significant at the $p = .001$ level. This indicates a strong relation between writedowns and the factors contained in the model. Separation between the writedown and control groups, measured by the distance between the centroids, is again significant at the $p = .001$ level. The measure of residual discrimination, Wilks' lambda, is .64. This is reasonably large, so that other influences on the writedown decision

¹⁶ One possible explanation is that firms may be using dividend policy as a response to poor stock performance, or as a disinvestment strategy.

Table 3
Multiple Discriminant Analysis of Asset Writedown Decisions,
1981–1985 Summary Tables

I. Variable Analysis		
Variable	Standard Canonical Discriminant Function Coefficient	Structure Matrix Pooled Within- Group Correlation
Outside Mgmt. Change	0.694	.549
Inside Mgmt. Change	0.533	.410
Cash Flow per Share	−0.507	−.286
Dividend	.472	.244
Total Return to Shareholders (rela- tive to S&P 500)	−.293	−.392
Price:Cash Flow Ratio	.234	.008
Change Price:Cash Flow Ratio	.336	.052
Debt:Asset Ratio	.255	.161
Change in Debt:Asset Ratio	−.344	−.054
Change in Tax Loss Carryforward Ratio (percent of operating in- come)	−.228	−.037
II. Canonical Discriminant Function at Centroid (Grand mean)		
Group	Function	
Writedown firms	1.032	
Non-Writedown firms	−.524	
III. Other Measures		
Canonical correlation for Discriminant Function	.5965	
Eigenvalue	.5524	
Wilks' Lambda	.6440	
Chi-Square	38.7 (Significant at $p = .001$ level)	

apparently remain outside the model.¹⁷ To summarize, the analysis supports the hypothesis that writedowns are associated with: managerial transition, particularly from outside; below average financial performance, but in most cases not involving severe financial distress; and recent improvements in operating performance which are reflected in both cash flows and market values.¹⁸

V. Security Price Effects of Writedowns

The effect of asset writedowns on shareholder wealth can be estimated by evaluating the market-adjusted returns to the common shares of sample firms.

¹⁷ The existence of residual influences is also evident in an *ex post* classification analysis. While the model is reasonably accurate in classifying 72.5 percent of the actual writedown firms, it is much less effective in classifying non-writedown firms (only 62 percent accuracy). These results, though, are subject to a potential upward bias in reported classifying ability, due to the absence of a holdout sample.

¹⁸ A parallel analysis was conducted using multinomial logit methodology, with similar results as reported here. Managerial transition, total return, and recent improvements in operating performance were found to have the strongest effects on the writedown decision.

The test is carried out as an event study of the initial public announcement of the writedown decision. However, estimation of the market response to this form of corporate restructuring is particularly difficult, especially in comparison to other forms of reorganization such as spin-offs and divestitures. The principal problem is that event studies must be free of potentially contaminating contemporaneous announcements. This is particularly problematic with writedowns, since they are generally announced as part of a larger restructuring which frequently involves changes in dividend policy, share repurchases, and employment adjustments. To create a sample which is comparatively clean of such concurrent events, *The Wall Street Journal Index* was examined and all events with contaminating announcements during the five days just prior to and the five days following the writedown announcement were eliminated. The resulting reduction in sample size was dramatic, leaving only 78 firms for analysis.¹⁹ However, the smaller sample should provide a better indication of the direct effects of writedowns on security values; in particular, it should provide a better means of evaluating the efficiency of financial markets in incorporating asset value changes in security prices prior to formal accounting recognition by firms.

The event-time methodology used to study security returns during the event period follows the approach discussed at length in the appendix to Dodd and Warner (1983). If we assume that security returns are generated by a single-index model, then the daily abnormal stock return for firm i on day t is defined as:

$$e_{it} = R_{it} - (a_i + b_i R_{mt})$$

where e_{it} is the prediction error for stock i on day t ; R_{it} is the realized return to stock i on day t ; a_i and b_i are the single-index model intercept and slope coefficients estimated by OLS for each firm over a 150 day trading period ending 60 days before the announcement of the writedown; and R_{mt} is the realized market rate of return on day t . Given the recent time period of the sample, stock return tapes from the Center for Research in Security Prices (CRSP) were unavailable. As a result, stock returns for the sample were compiled from the NYSE Daily Stock Price Record. Adjustments were made for ex-dividend dates and splits consistent with CRSP methodology. The market index used was the Standard and Poor's 500. The validity of this market measure was evaluated by comparing its performance with the realized CRSP value-weighted index of returns on ASE and NYSE stocks for 1981–1982, with no significant or consistently biased effects apparent.

The event study period runs from $t = -60, \dots, +60$, with the announcement date for each writedown standardized as $t = 0$. The announcement period is defined to include the day the news report appeared in *The Wall Street Journal* plus the preceding day (day 0 plus day -1). This definition of the announcement period is required because it cannot be determined whether the news release was issued while the NYSE was open on day -1 or after its close. The use of a two day

¹⁹ Discriminant analysis was used to check if those firms dropped from the sample differed from those retained. No significant differences were found between the two subsets of the original writedown sample, at least for the variables considered in Table 3.

announcement period may bias any test results toward not rejecting the null hypothesis when it should be rejected.

To control for firm-specific factors, the event methodology used here estimates the market-adjusted excess returns (prediction errors) of the equally-weighted portfolio of announcing firms. The daily average prediction error for day t is defined as

$$\overline{PE}_t = (1/N)(\sum_i e_{it})$$

where N is the number of announcing firms in the sample. Cumulative prediction errors for the portfolio are computed for T days as:

$$\overline{CPE}_T = \sum_{t=-60}^T \overline{PE}_t$$

where T runs from 60 days before to 60 days after the announcement.

Two tests are used to determine the statistical significance of the excess returns: the t -test and the non-parametric sign test. The t -statistic tests the null hypothesis of a zero mean $\overline{CPE}_t$ and the non-parametric sign test is used to test the null hypothesis that the median prediction error across firms on day t is zero. The precise formulas for these significance tests can be found in Klein (1986).

The daily average prediction errors and cumulative prediction errors over the event period are summarized for the 78 sample writedown announcements in Table 4.²⁰ The cumulative abnormal return from 60 days before the press announcement through 60 days following the news release is -0.39 percent, with 42 writedown firms recording negative cumulative prediction errors (54 percent of the sample). Neither the return nor the absolute number of negative abnormal returns is significant. Thus, over the entire pre-defined event period there appears to be no significant change in shareholder wealth due to writedowns.

However, the event period definition may be a critical determinant of this finding. To study this issue further, the event period was subdivided into five intervals:

- 1) The entire pre-announcement period ($t = -60$ to $t = -1$)
- 2) The immediate pre-announcement period ($t = -11$ to $t = -2$)
- 3) The announcement period ($t = -1$ to $t = 0$)
- 4) The immediate post-announcement period ($t = +1$ to $t = +10$)
- 5) The entire post-announcement period ($t = +1$ to $t = +60$)

The results are presented in Table 5. The average abnormal return for the two months prior to the announcement is -2.27 percent. While this is only marginally significant in a statistical sense, it does provide some support for the hypothesis that deteriorating financial performance in the recent past may have some effect on the timing of the writedown. This further suggests that the event period chosen may produce unreliable results if the announcement is determined in part by prior stock market performance reflected in the event period. Given the considerable managerial discretion in the timing of writedown announcements,

²⁰ While the standard market model event study is presented here, the same event analysis was conducted using the comparison period returns approach developed by Masulis (1980). The results are similar, with the mean-adjusted model producing a slightly higher positive prediction error over the event period.

Table 4

Daily average market-adjusted prediction errors ($\overline{PE}$) and cumulative daily average prediction error ($\Sigma \overline{PE}$) from 60 days before through 60 days after announcement of 78 writedowns in the period 1981–1985.

Day	$\overline{PE}$	$\Sigma \overline{PE}$	Day	$\overline{PE}$	$\Sigma \overline{PE}$
-60	-.0021	-.0021			
-50	-.0010	-.0098	+ 1	.0023	-.0203
-40	-.0044	-.0039	+ 2	.0063	-.0141
-30	-.0018	+.0010	+ 3	.0002	-.0139
-20	.0036	-.0108	+ 4	.0122	-.0017
-19	.0052	-.0056	+ 5	.0150	.0133
-18	.0024	-.0032	+ 6	-.0015	.0118
-17	.0019	-.0013	+ 7	-.0040	.0079
-16	.0168	.0154	+ 8	.0038	.0116
-15	.0055	.0209	+ 9	.0052	.0168
-14	-.0057	.0152	+10	-.0007	.0162
-13	-.0039	.0113	+11	-.0031	.0131
-12	-.0028	.0086	+12	.0024	.0155
-11	-.0182	-.0096	+13	.0029	.0184
-10	-.0021	-.0117	+14	-.0038	.0146
- 9	.0083	-.0034	+15	-.0026	.0119
- 8	-.0048	-.0082	+16	-.0057	.0062
- 7	.0026	-.0108	+17	-.0090	-.0028
- 6	.0070	-.0038	+18	-.0057	-.0086
- 5	.0068	.0030	+19	.0030	-.0056
- 4	.0058	.0088	+20	.0067	.0011
- 3	.0052	.0141	+30	.0077	.0178
- 2	.0001	.0142	+40	.0065	-.0008
- 1	-.0178	-.0036	+50	-.0036	.0126
0	-.0191	-.0227	+60	-.0058	-.0039

it is possible that an ongoing discussion of a possible writedown may be transformed into a concrete decision if the stock price slides in the prior quarter.

Table 5 indicates that, on average, there is an average increase in abnormal return of 2.38 percent in the ten days prior to announcement, although statistical significance is low. The announcement period itself, though, is associated with a decline of 3.69 percent (although only weakly significant), which is reversed over the ten days following the announcement, in which the positive abnormal return is 3.89 percent. This return does achieve significance at the 5 percent level. Looking at the post-announcement period as a whole, for 60 days following the announcement, the market-adjusted return remains positive, with shareholder wealth increasing an average of 1.88 percent above expected return.

This interval analysis indicates that there is slight evidence of a positive pre-announcement effect on stock price immediately before the event. In fact, most of the pre-announcement increase in stock returns occurs in the five days prior to the event. To study this further, the distribution of prediction errors for the 78 firms in the five days prior to public disclosure is shown in Table 6, indicating wide sample variation in pre-announcement returns. Indeed, the results are quite

Table 5
Average Cumulative Prediction Errors
for Intervals Surrounding the
Writedown Announcement for 78 firms
for the period 1981–1985

Interval	Average Cumulative Prediction Error
–60 to 0	–.0227 (–1.03)
–11 to –2	+.0238 (+1.31)
– 1 to 0	–.0369 (–1.54)
+ 1 to +10	+.0389 (+2.29)
+ 1 to +60	+.0188 (+1.63)

Notes:

T-statistics in parentheses.

Excess return computed as the sum of the abnormal daily returns (market-adjusted returns) for the specific intervals defined in the left-hand column. Intervals are inclusive.

Table 6
Distribution of Cumulative Prediction
Errors for 5 day period to
Announcement Period
($t = -6$ to $t = -1$)
for 78 writedowns 1981–1985

Σ PE Range (CPE)	Number of Observations
$0.10 \leq \text{CPE}$	14
$0.08 \leq \text{CPE} < 0.10$	5
$0.06 \leq \text{CPE} < 0.08$	4
$0.04 \leq \text{CPE} < 0.06$	6
$0.02 \leq \text{CPE} < 0.04$	9
$0.00 \leq \text{CPE} < 0.02$	7
$-0.02 \leq \text{CPE} < 0.00$	5
$-0.04 \leq \text{CPE} < -0.02$	4
$-0.06 \leq \text{CPE} < -0.04$	5
$-0.08 \leq \text{CPE} < -0.06$	3
$-0.10 \leq \text{CPE} < -0.08$	2
$\text{CPE} < -0.10$	14
Mean + .0249	
Median + .0228	

striking: the distribution has extraordinarily "fat" tails, with 14 firms experiencing *positive* abnormal returns of over 10 percent, and another 14 firms experiencing *negative* abnormal returns of over 10 percent.²¹

The distribution of two-day announcement period prediction errors are presented in Table 7. This distribution exhibits more modality than for the five days preceding the announcement period, but still contains a large group of firms which experienced negative abnormal returns exceeding 10 percent.

An interesting question is whether the "fat tails" in the distributions of the pre-announcement and the announcement period are related in any systematic fashion. *A priori*, it might be expected that since many parties are likely to be involved in the writedown process, leaks might be common. If asymmetric information creates "insiders" with advance knowledge of the decision, a pre-announcement decline could be a source of negative information and drive the price down further. This scenario suggests that the negative excess returns should be correlated with each other across the two periods.

Somewhat surprisingly, the opposite appears to be the case. Ten of the 14 firms experiencing positive excess returns over ten percent during the pre-announcement period map into the 12 firms experiencing announcement period declines exceeding ten percent. This result might be explained by pre-announcement speculation concerning the magnitude and structure of the writedown. For example, analysts might obtain information that a firm was considering a restructuring program but be unable to acquire detailed information concerning its size or character. For firms in financial distress, such advance information could be perceived as good news and lead to price strengthening. However, if the subsequent announcement embodied a program that fell short of expectations, a reversal might be likely.

This explanation raises the question of how to interpret the large number of firms experiencing pre-announcement declines exceeding ten percent. For the most part, these firms tend to have experienced prior financial performance better than the industry average over the prior three years, with little deterioration in the most recent period. If these firms are perceived by analysts as the "better" companies, then information that a writedown announcement is forthcoming may be seen as bad news and induce a pre-announcement decline. The announcement period performance of these firms indicates only a very small positive excess return, suggesting that little incremental information is revealed.

Regression analysis was used to examine both the two-day announcement period returns and the abnormal returns during the ten day period immediately preceding the announcement. The results for the announcement period are shown in Table 8.²² The larger the writedown (relative to book equity), the greater the announcement period excess return. This result lends support to the notion of "the bigger the bath, the better," in the sense of providing information about the

²¹ The "fat tails" do not appear to be an artifact of the classification "greater than plus ten percent" or "less than minus ten percent." The distribution of excess returns is clustered between plus ten percent and plus twenty percent on the right tail, and between minus ten percent and minus twenty percent on the left tail.

²² A number of alternative specifications were evaluated, with little additional explanatory power achieved.

Table 7
Distribution of Two-day (−1 and 0)
cumulative prediction errors at
announcement period for 78
writedowns between 1981 and 1985

Σ PE Range (CPE)	Number of Observations
0.10 ≤ CPE	2
0.08 ≤ CPE < 0.10	2
0.06 ≤ CPE < 0.08	3
0.04 ≤ CPE < 0.06	7
0.02 ≤ CPE < 0.04	4
0.00 ≤ CPE < 0.02	8
−0.02 ≤ CPE < 0.00	12
−0.04 ≤ CPE < −0.02	10
−0.06 ≤ CPE < −0.04	6
−0.08 ≤ CPE < −0.06	7
−0.10 ≤ CPE < −0.08	5
CPE < −0.10	12
Mean −.0369	
Median −.0204	

Table 8
OLS Regression Analysis of Two Day
Announcement Period Return

Dependent Variable: Two Day Announcement Period Excess Return		
Independent Variable	Coefficient	t-statistic
Size of writedown (as % of book equity)	.099	2.20
Previous writedown (dummy variable)	−.029	−1.86
Percent of Stock Held by Insiders	.019	0.36
Total Return to Shareholders (relative to S&P 500)	−.004	−1.28
10 day Pre-Announcement Period Excess Return	−.204	−3.55
$\bar{R}^2 = .28$		
$F = 3.16$ ($p = .01$)		

extent of asset value declines. The negative price effect if the current decision was preceded by a prior writedown also supports this view, in that investors appear more skeptical of the accuracy of both previous and current assessments.

While there is no evidence that insider ownership has any price effect, the announcement period return is strongly negatively correlated with the pre-announcement period return. While the precise mechanism at work is difficult

to specify, Table 8 does support the hypothesis that prior information about an impending restructuring may result in an anticipatory price rise which is often reversed if the investment community feels the action did not go far enough.

A regression analysis of factors influencing the 10 day pre-announcement period return are shown in Table 9. The explanatory power is much less than the announcement period regression. The coefficient for the size of the writedown is of similar magnitude, but is much less significant, perhaps reflecting uncertainty over the extent of the impending decision. Again, the existence of a previous writedown has a significant depressing effect, while the inside ownership variable is insignificant. Price runups, though, were associated with significant increases in trading volume relative to annual average volumes. Finally, in neither of the regressions did managerial transition measures achieve significance, suggesting that while executive changes may be important in the writedown decision, they have little effect on subsequent security price reactions.

The Effects of Writedown Decisions on Bondholders

While it does appear that on average some slight positive revaluations accrue to stockholders as a result of writedowns, the source of these gains is not clear. One possibility is that shareholder gains may result from wealth transfers from bondholders. This hypothesis may be particularly applicable here, since asset writedowns may provide information about reductions in the value of collateral.

Study of the returns to bondholders presents at least three major problems. First, only a subset of firms in the sample have issued an outstanding publicly traded debt. Second, the many different types of debt make it difficult to construct comparable samples of bond portfolios. Third, the volatility of interest rates during the 1981-1985 period requires a means of controlling for general interest rate movements during the event period.

Table 9
OLS Regression Analysis of 10 day Pre-Announcement Period Excess Return

Dependent Variable: 10 Day Pre-Announcement Period Excess Return		
Independent Variable	Coefficient	t-statistic
Size of Writedown (as % book equity)	.089	0.92
Previous Writedown (dummy variable)	-.081	-1.89
10 day trading volume relative to average volume during preceding year	.171	1.69
Percent of stock held by insiders	-.023	-0.15
Total Return to Shareholders (relative to S&P 500)	-.007	-0.81
$\bar{R}^2 = 0.16$		
$F = 1.61$ ($p = .16$)		

To create as similar a sample of bonds as possible, only subordinated debentures were examined.²³ While many firms have multiple debenture issues, it was decided to maintain consistency with the stock returns event study methodology and construct an equally weighted portfolio. This creates a sample of 32 debentures issued by 32 of the sample firms. Given problems of data collection, the event period used to examine bond returns was reduced to 10 days preceding through 10 days following the announcement. Bond price data were collected from *The Wall Street Journal*.²⁴

A methodology based on risk-free duration analysis was developed to control for general interest rate effects. The duration of each bond in the sample was estimated and matched with a Treasury bond of roughly equivalent duration. When more than one Treasury bond had similar duration, the security with the closest maturity to that of the particular sample bond was selected. Thus, 32 Treasury bonds were paired with the 32 debentures in the sample. The T-bond price series over the event period for each firm was collected and used to construct a measure of market interest rate movements, which in turn was used to estimate abnormal bond returns for the subordinated debt sample.

The results are presented in Table 10. While none of the abnormal returns achieve significance at the 5 percent level, the data suggest that bondholders do experience slightly positive excess returns around the writedown announcement. While the two-day announcement period is slightly negative ($-.0007$), the cumulative prediction error for the twenty day period is a positive two-tenths of one percent. Thus, it appears that bondholders are neither greatly harmed nor helped by writedown announcements; there is also no evidence to suggest major wealth transfers away from bondholders.

VI. Summing Up

Firms announcing writedowns are neither the strongest nor the weakest in their respective industries. The strongest firms in an industry perhaps have been more aggressive in recognizing writedowns on an ongoing, "non-material" basis. The poorest performing firms may avoid writedowns due to operating losses, which reduce the equity base available to charge off the writedown; such delays may also be perceived as necessary to avoid technical violations of debt covenants or to delay recognition of tax loss carryforwards until profitability is restored.

The most important determinant of a writedown decision is apparently a change in senior management; this is especially true if the new chief executive comes from outside the company. In addition, writedown firms have been subpar financial performers, with some evidence of improvement in the period immedi-

²³ To the extent that certain senior securities may be collateralized by assets which are being written down, one might expect greater price effects on these issues. However, those senior securities whose collateral is unrelated to the writedown might be expected to show little or no effect. This does not appear to be a serious problem in practice. Discussions with personnel at two investment banking houses revealed that in the event of a writedown, renegotiation of such collateral is mandated.

²⁴ If bonds are not frequently traded, reported bond prices will not accurately reflect information effects. However, all of the bonds in the sample had above-average trading volumes during the 20 day event period.

Table 10

Daily average prediction errors ($\overline{PE}$)
and Cumulative daily average
prediction errors ($\Sigma \overline{PE}$) for 32
subordinated debt issues representing
32 firms announcing writedowns 1981–
1985 (Adjusted for market returns)

Day	$\overline{PE}$	$\Sigma \overline{PE}$
–10	–.0004	–.0004
– 9	–.0007	–.0011
– 8	.0014	.0003
– 7	–.0006	–.0003
– 6	.0010	.0007
– 5	.0014	.0021
– 4	–.0009	.0012
– 3	.0030	.0042
– 2	.0017	.0059
– 1	–.0020	.0039
0	.0013	.0052
+ 1	–.0019	.0033
+ 2	–.0004	.0029
+ 3	–.0003	.0026
+ 4	.0000	.0026
+ 5	–.0001	.0025
+ 6	–.0011	.0014
+ 7	.0006	.0020
+ 8	–.0010	.0010
+ 9	–.0004	.0006
+10	.0016	.0022

ately preceding the announcement. This meshes with the notion that writedowns usually occur during profitable periods and rising values of book and market value equity. The tendency to recognize writedowns during bull markets suggests that the financial press may have overstated the positive price reactions to writedowns.

The distribution of security price returns around the announcement date is strikingly non-normal. Twenty percent of the sample had positive returns of over 10 percent just prior to the announcement, while another 20 percent had negative returns of over ten percent. Positive pre-announcement returns were negatively related to post-announcement returns, suggesting that anticipation of the write-down decision was followed by a consensus opinion that the restructuring had not gone far enough for some firms. Conversely, firms experiencing large pre-announcement declines generally were firms whose relative industry performance was strong, indicating that investors may have been surprised by the writedown action in many instances. In a broader context, this study also has implications for the evaluation of the efficiency of security markets. While aggregate data in the form of equally-weighted portfolios may eliminate some degree of noise, it also serves to eliminate interesting detail—detail that suggests that in individual cases the market may have a bit of difficulty tracking, evaluating, and incorporating information.

REFERENCES

- Dodd, P., and J. Warner, "On Corporate Governance: A Study of Proxy Contests," *Journal of Financial Economics*, 11, (1983), pp. 401-438.
- Dyl, E. A., and H. W. Long, "Abandonment Value and Capital Budgeting: Comment," *Journal of Finance*, 24, (1969), pp. 88-95.
- Gaumnitz, J. E., and D. R. Emery, "Asset Growth, Abandonment Value, and the Replacement Decision of Like-for-Like Capital Assets," *Journal of Financial and Quantitative Analysis*, 15, (1981), pp. 407-417.
- Hasbrouck, Joel, "The Characteristics of Takeover Targets," *Journal of Banking and Finance*, 9, (1985), pp. 351-362.
- Hite, Gailen L., and James E. Owers, "Security Price Reactions around Corporate Spin-Off Announcements," *Journal of Financial Economics*, 12, (1983), pp. 409-436.
- Klein, April, "The Timing and Substance of Divestiture Announcements: Individual, Simultaneous, and Cumulative Effects," *Journal of Finance*, May 1986. (also unpublished paper, December 1985).
- Linn, Scott C., and Michael S. Rozeff, "The Effect of Voluntary Spin-Offs on Stock Prices: The Agency Hypothesis," *Advances in Financial Planning and Forecasting*, 1, (1985), pp. 265-291.
- Masulis, Ronald, "The Effects of Capital Structure Change on Security Prices: A Study of Exchange Offers," *Journal of Financial Economics*, 8, (1980), pp. 139-178.
- Miles, J., and J. Rosenfeld, "The Effect of Voluntary Spin-Off Announcements on Shareholder Wealth," *Journal of Finance*, (December 1983), pp. 1597-1606.
- Owers, James E., and Ronald Rogers, "The Valuation Implications of Abandonment Decisions," unpublished paper, 1986.
- Robichek, A. and J. C. Van Horne, "Abandonment Value and Capital Budgeting," *Journal of Finance*, 22, (1967), pp. 577-598.
- Schipper, Katherine, and Abbie Smith, "Effects of Recontracting on Shareholder Wealth: The Case of Voluntary Spin-Offs," *Journal of Financial Economics*, 12, (1983), pp. 437-467.

DISCUSSION

ANJAN V. THAKOR*: This paper takes a close empirical look at asset writedowns by firms. An asset writedown is simply a downward revision in the value of an asset as it is recorded on the books. Thus, the rich history of market efficiency studies would seem to suggest that, on an *a priori* basis, we should not expect any significant market price reaction to this bookkeeping adjustment. What is (mildly) surprising then is that the empirical analysis in this paper reveals a price reaction. The principal finding is that there is a statistically insignificant average cumulative abnormal return (CAR) prior to the announcement of a writedown, and a statistically significant, positive average CAR after the announcement (Table 7). This is an interesting finding. Moreover, the empirical analysis seems to be carefully done.

The remainder of this discussion revolves mainly around three issues. First, how should we interpret the findings of this study? This is particularly important since the paper—while doing a careful job of analyzing the data—does not offer sufficient help in putting the results in a useful overall perspective. Second, I will have something to say about further analysis that could shed more light on the issues explored here. And finally, I will comment briefly on the exposition and the overall approach in the paper.

It appears that the authors interpret their findings as evidence indicative of the failure of semi-strong form market efficiency. This interpretation is apparent

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