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Earnings management to avoid earnings decreases and losses

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Abstract

This paper provides evidence that firms manage reported earnings to avoid earnings decreases and losses. Specifically, in cross-sectional distributions of earnings changes and earnings, we find unusually low frequencies of small decreases in earnings and small losses and unusually high frequencies of small increases in earnings and small positive income. We find evidence that two components of earnings, cash flow from operations and changes in working capital, are used to achieve increases in earnings. We present two theories, based on stakeholder use of information-processing heuristics and prospect theory, about the motivation for avoidance of earnings decreases and losses.

JEL classification: M4; L14; C89

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1. Introduction and summary

Anecdotal evidence suggests that there are strong incentives to avoid reporting earnings decreases. Frequently, managers emphasize the importance of increases in earnings in the opening lines of the management discussion section of the annual report. For example, in Tenneco's 1994 annual report, CEO Dana Mead states: "I must emphasize that all of our strategic actions are guided by and measured against this goal of delivering consistently high increases in

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earnings over the long term." Similarly, for many years Eli Lilly emphasized a string of earnings increases which reached 33 years before it was broken.[1] Other examples are found in press releases or earnings announcements. For example, in the release of 1994 earnings, Bank of America's CEO Richard Rosenberg commented that "Increasing earnings per share was our most important objective for the year." Thus, much anecdotal evidence suggests that managers try to maintain a pattern of increasing earnings.

Several recent studies offer more systematic evidence of incentives to maintain consistent increases in earnings. Barth et al. (1995) report that firms with a consistent pattern of earnings increases command higher price-to-earnings multiples, after controlling for earnings levels. Additionally, they find that this premium is larger for longer series of earnings increases and that the premium is eliminated or reduced substantially when the established pattern of earnings increases is broken. These findings are similar to those in DeAngelo et al. (1996), who document that firms breaking a pattern of consistent earnings growth experience an average of 14% negative abnormal stock return in the year the pattern is broken. Thus, there seem to be strong incentives for earnings management to avoid the reporting of earnings decreases, and the incentives appear to be increasing in the length of the preceding string of earnings increases.

There is also much anecdotal evidence of incentives to maintain positive earnings. References to the desirability of 'consistent profitability' are commonplace in annual reports, news releases, and press coverage, suggesting that there are incentives to avoid losses. A recent paper by Hayn (1995) reports more direct evidence that firms try to avoid reporting losses:

> Interestingly, there is a point of discontinuity around zero. Specifically, there is a concentration of cases just above zero, while there are fewer than expected cases (assuming the above normal distribution) of small losses (i.e., just below zero). The frequency of observations in both the region just above and that just below zero departs significantly from the expected frequency under the normal distribution at the 1% significance level using the binomial test. These results suggest that firms whose earnings are expected to fall just below the zero earnings point engage in earnings manipulations to help them cross the 'red line' for the year. (p. 132)

Additionally, earlier research (Carslaw, 1988; Thomas, 1989) demonstrates that firms exercise discretion to increase earnings when the level of earnings or earnings per share is slightly below a round number, though neither paper provides specific evidence for earnings near zero.

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[1] The Eli Lilly example is drawn from Barth et al. (1995). Similar examples can be found in many other annual reports (e.g. ConAgra, 1995; Bemis, 1992; Anheuser-Busch, 1994).

In this paper, we provide extensive systematic evidence about whether, how, and why, firms avoid reporting earnings decreases and losses. Section 2 presents pooled cross-sectional distributions which show that the frequencies of small earnings decreases and small losses are abnormally low relative to adjacent regions of the distributions, while the frequencies of small earnings increases and small positive earnings are abnormally high. This evidence of earnings management is robust to a variety of alternative empirical specifications. An investigation of the prevalence of the avoidance of earnings decreases and losses suggests that this is a pervasive phenomenon: We estimate that 8–12% of firms with small pre-managed earnings decreases manipulate earnings to achieve earnings increases, and 30–44% of firms with small pre-managed losses manage earnings to create positive earnings.

Section 3 explores how earnings are managed to avoid earnings decreases and losses. We find evidence that both cash flow from operations and changes in working capital have been manipulated to increase earnings. Section 4 considers two possible explanations for why earnings are managed. The first explanation is that managers opportunistically avoid reporting earnings decreases and losses to decrease the costs imposed in transactions with stakeholders, assuming that stakeholder decisions are often based on heuristic cutoffs at zero changes or levels of earnings. The second explanation is based on prospect theory (Kahneman and Tversky, 1979), which suggests that the largest gains in utility, and hence the largest incentives to manage earnings, occur when moving from a relative or absolute loss to a gain. Finally, Section 5 concludes with a summary and suggestions for future research.

2. Existence and prevalence of earnings management to avoid earnings decreases and losses

This study includes all available observations on the annual industrial and research Compustat databases for the years 1976–1994 which meet minimal data requirements.[2] Banks, financial institutions, and firms in regulated industries (e.g., utilities) were deleted.[3] In the results reported below, we focus on net

[2] Separate analyses of the annual industrial and annual research databases yield results consistent with the reported results which combine both.

[3] For regulated firms, conflicting incentives to report lower earnings or decreases in earnings arise whenever there are economic benefits from reporting lower earnings to regulators. For financial institutions, incentives to avoid earnings decreases or losses may be linked to regulatory oversight. To focus on cases without these complications, firms with SIC codes between 4400 and 5000 and between 6000 and 6500 were deleted from the sample. However, a separate examination of regulated firms (not reported) reveals evidence of earnings management similar to the results reported here.

income (NI, Compustat data item #172). However, the main results were also computed for earnings before extraordinary items (Compustat data item #18) and the results are generally consistent for these two alternative measures of earnings.

The earnings observations are drawn from a broad range of firm sizes and are therefore scaled. A variety of approaches to scaling have been used in the accounting and finance literature including scaling by market value, book value, sales, or total assets. In the results reported here, the earnings variable is scaled by beginning-of-the-year market value of common equity for year t (i.e., Compustat data item #25 × Compustat data item #199) while the change variable (change in earnings between years $t-1$ and t) is scaled by beginning-of-the-year market value of equity from year $t-1$. However, we also calculated the primary results (i.e. those presented in Figs. 1–4 below) scaled by beginning-of-the-year book value of common equity, beginning-of-the-year total assets, or the previous year's net sales and obtained qualitatively similar results.

Earnings management to avoid earnings decreases is likely to be reflected in cross-sectional distributions of earnings changes in the form of unusually low frequencies of small earnings decreases and unusually high frequencies of small earnings increases. Similarly, management to avoid losses will be reflected in the form of unusually low frequencies of small losses and unusually high frequencies of small positive earnings. We present two types of evidence to determine whether earnings management to avoid earnings decreases and losses exists. First, we present graphical evidence in the form of histograms of the pooled cross-sectional empirical distributions of scaled earnings changes and levels of earnings. Second, we present formal statistical tests of the following two hypotheses (in alternative form):

H1: Earnings are managed to avoid earnings decreases.

H2: Earnings are managed to avoid losses.

To test the statistical significance of the hypothesized avoidance of earnings decreases and losses, we construct a statistical test whose only assumption is that, under the null hypothesis of no earnings management, the cross-sectional distributions of earnings changes and earnings levels are relatively smooth.[4] Operationally, our definition of smoothness is that the expected number of observations in any given interval of the distribution is the average of the

[4] In constructing a test of statistical significance, we avoid strong assumptions about the unknown form of the distributions of earnings changes and earnings levels under the null to avoid spurious significance, i.e. significant results attributable to violations of distributional assumptions rather than to a false null hypothesis.

number of observations in the two immediately adjacent intervals.[5] The test statistic used to test the null hypothesis that the distribution is smooth is the difference between the actual number of observations in an interval and the expected number of observations in the interval, divided by the estimated standard deviation of the difference.[6] Under the null hypothesis, these standardized differences will be distributed approximately Normal with mean 0 and standard deviation 1. Note that if the null hypothesis of smoothness does not hold at zero, the standardized differences for the interval immediately left of zero and immediately right of zero will be simultaneously affected and are not independent. Therefore, when we test for a discontinuity at zero, we focus on one standardized difference, arbitrarily selecting the standardized difference left of zero, and report the corresponding standardized difference right of zero in parentheses.

2.1. *Existence of earnings management to avoid decreases in earnings*

Table 1 (Panel A) shows descriptive statistics for the price-scaled earnings change variable.[7] The total number of observations is 64,466 and the number of available observations per year increases from approximately 3,000 for 1977 to almost 4,000 by 1994. The mean and median earnings changes are primarily, but not exclusively, positive throughout the sample period.

Fig. 1 is a histogram of the scaled earnings change variable with histogram interval widths of 0.0025 for the range -0.15 to $+0.15$. The figure shows a single-peaked, bell-shaped distribution with an irregularity near zero which is consistent with earnings management to avoid earnings decreases: Earnings changes slightly less than zero occur less frequently than would be expected given the smoothness of the remainder of the distribution and earnings changes

[5] We also considered several alternative models of expectations and calculated standardized differences for two specific alternatives: 1) the expected number of observations in an interval is the average of the numbers in four adjacent intervals, and 2) the expected number is the average of the next-to-adjacent intervals, i.e. the average of the two closest intervals other than the two immediately adjacent intervals. These alternatives produce results qualitatively similar to those reported in the paper.

[6] Since the number of observations in an interval is a random variable which is approximately independent of the number in adjacent intervals, the variance of the difference between the observed and expected number of observations is approximately the sum of the variances of the components of the difference. Denoting the total number of observations as N and the probability that an observation will fall into interval i by p_i, the variance of the difference between the observed and expected number of observations for interval i is approximately $Np_i(1-p_i) + (1/4)N(p_{i-1}+p_{i+1})(1-p_{i-1}-p_{i+1})$.

[7] A few observations take on extreme values, so the means and standard deviations throughout Table 1 are calculated after eliminating the upper and lower 1% of the observations for each year.

Table 1
Descriptive statistics by year for scaled values of change in earnings and earnings

Panel A: Scaled change in earnings

Year	N	Mean	Std. dev.	25%	50%	75%
1977	2,983	0.041	0.224	−0.02	0.03	0.09
1978	2,912	0.060	0.193	0.00	0.03	0.09
1979	2,858	0.033	0.212	−0.02	0.03	0.09
1980	3,017	−0.009	0.224	−0.05	0.01	0.06
1981	3,239	0.014	0.232	−0.05	0.01	0.07
1982	3,384	−0.029	0.216	−0.07	−0.01	0.03
1983	3,799	0.033	0.249	−0.04	0.02	0.08
1984	3,645	0.026	0.270	−0.04	0.01	0.07
1985	3,781	−0.021	0.173	−0.06	0.00	0.03
1986	3,789	0.007	0.259	−0.06	0.00	0.06
1987	3,779	0.032	0.249	−0.04	0.01	0.07
1988	3,861	0.011	0.199	−0.04	0.01	0.06
1989	3,946	−0.002	0.245	−0.06	0.00	0.05
1990	3,904	−0.020	0.257	−0.07	0.00	0.05
1991	3,917	−0.001	0.266	−0.06	0.00	0.05
1992	3,923	0.026	0.408	−0.06	0.01	0.08
1993	3,976	0.022	0.315	−0.04	0.01	0.07
1994	3,753	0.026	0.239	−0.03	0.01	0.07
Total	64,466					

Panel B: Scaled earnings

Year	N	Mean	Std. dev.	25%	50%	75%
1976	3,168	0.140	0.271	0.08	0.16	0.25
1977	3,131	0.126	0.209	0.08	0.14	0.21
1978	3,060	0.154	0.183	0.10	0.16	0.23
1979	3,213	0.142	0.204	0.08	0.15	0.23
1980	3,494	0.097	0.230	0.05	0.12	0.19
1981	3,651	0.070	0.210	0.02	0.09	0.16
1982	4,156	0.020	0.265	−0.03	0.07	0.13
1983	4,093	0.010	0.300	−0.03	0.07	0.13
1984	4,266	0.010	0.196	−0.03	0.05	0.10
1985	4,267	−0.042	0.300	−0.08	0.05	0.10
1986	4,275	−0.052	0.298	−0.08	0.04	0.09
1987	4,464	−0.025	0.236	−0.06	0.04	0.09
1988	4,485	−0.030	0.290	−0.08	0.05	0.10
1989	4,344	−0.045	0.290	−0.08	0.04	0.10
1990	4,294	−0.078	0.349	−0.10	0.03	0.08
1991	4,276	−0.135	0.546	−0.14	0.03	0.09
1992	4,383	−0.071	0.368	−0.08	0.03	0.08
1993	4,543	−0.034	0.258	−0.07	0.04	0.08
1994	4,436	−0.007	0.175	−0.04	0.04	0.08
Total	75,999					

Notes: MV_t: Market value at the end of fiscal year t (Compustat item #25 × Compustat item #199)
Earnings$_t$: Net income (Compustat item #172) in period t
Scaled change in Earnings$_t$: $(Earnings_t - Earnings_{t-1})/MV_{t-2}$.
Scaled earnings$_t$: $Earnings_t/MV_{t-1}$.

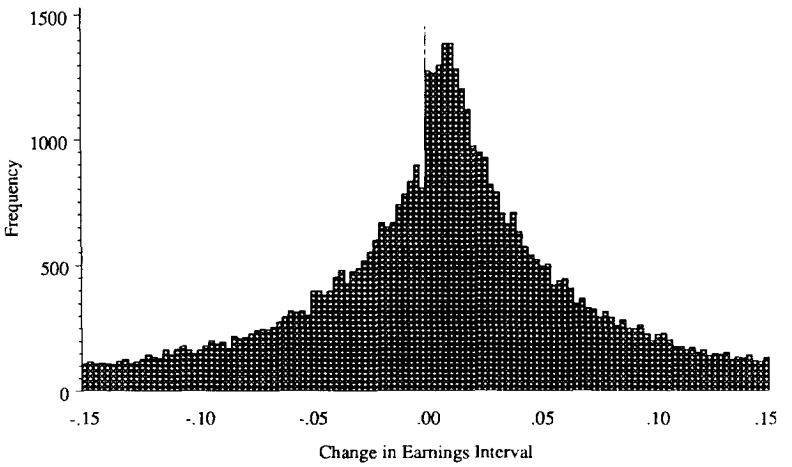

Fig. 1. Empirical distribution of changes in annual net income (Compustat item #172) scaled by market value (Compustat item #25 × Compustat item #199) as of the beginning of the first year, $(Earnings_t - Earnings_{t-1})/MV_{t-2}$. The distribution interval widths are 0.0025 and the location of zero on the horizontal axis is marked by the dashed line. For example, the first interval to the right of zero contains all scaled changes in earnings in the interval [0.0000, 0.0025), the second interval contains [0.0025, 0.0050), and so on. The vertical axis labeled frequency represents the number of observations in each earnings change interval.

slightly greater than zero occur more frequently than would be expected. The significance of the irregularity near zero is confirmed by the statistical tests. The standardized difference for the interval immediately to the left of zero is −8.00. (The difference for the interval immediately to the right of zero is 5.88.) Thus, under the assumption that the standardized differences are approximately normal, the test statistics are extremely significant, i.e. significant at a level lower than the lowest level found in typical tables.

Anecdotal evidence and evidence from previous papers suggest that incentives to avoid earnings decreases become stronger with the length of the previous run of earnings increases. These stronger incentives should lead to a more pronounced effect of earnings management in the intervals close to zero. To investigate, we categorize observations based on the length of the preceding string of earnings increases. The three categories are observations (a) following earnings decreases, (b) following one or two consecutive years of earnings increases, and (c) following three or more years of earnings increases. Fig. 2 shows the resulting distributions of earnings changes. For all three categories, the evidence of earnings management to avoid earnings decreases is statistically significant – the standardized differences for the intervals left of zero in Panels A, B and C are, respectively, −4.53, −4.17 and −5.48 (and, for the interval right of zero, 2.83, 3.57 and 4.12). The magnitudes of the standardized differences

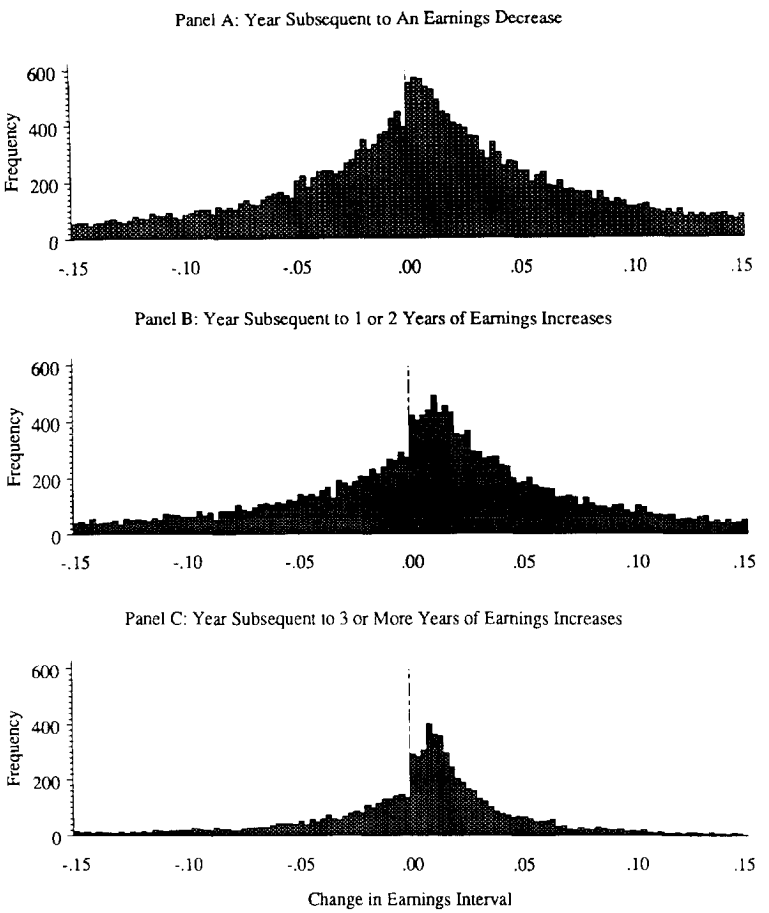

Fig. 2. Three empirical distributions of changes in earnings scaled by market value categorized according to the pattern of preceding earnings changes for the firm. Panel A: the distribution for the years immediately following an earnings decrease; Panel B: the distribution for the years following one or two years of earnings increases; Panel C: the distribution for the years following three or more years of earnings increases. (See Fig. 1 for detailed definitions of variables.)

increase from Panel A to Panel B to Panel C in a pattern roughly consistent with the prediction that incentives are increasing in the length of the previous run of consecutive earnings increases. However, visual inspection more strongly confirms the prediction. Moving from Panel A to Panel B to Panel C, there is evidence of a pattern of both an increase in the proportionate change in frequency at zero (which is reflected in the standardized differences) and an increase in the effects of earnings management in intervals near, but not

immediately adjacent to, zero (which is not reflected in the standardized differences).

2.2. Prevalence of earnings management to avoid earnings decreases

The results in Section 2.1 imply that the null hypothesis that the density of the distribution of earnings changes does not change at zero should be rejected. We next turn to the problem of estimating the frequency of earnings management to avoid earnings decreases, i.e. calculating the difference between observed frequencies of earnings changes and frequencies which would have been expected in the absence of earnings management. Note that the model of expectations used to *test* the null hypothesis of no earnings management (where the expected number of observations in an interval was defined as the average of the observed numbers in the two adjacent intervals) is not appropriate for *estimating* the frequency of earnings management because we now have evidence that the null hypothesis does not hold. Also, while tests of significance focused on the change in density at zero (in order to minimize the assumptions required for the test), estimates of the frequency of earnings management should allow for the fact that earnings management is not necessarily confined to just the two intervals adjacent to zero.

With these considerations in mind, we adopt the following model for the purpose of estimating the frequency of earnings management. We assume that in the absence of earnings management, the distribution of earnings changes would be approximately symmetric and that the right half of the empirical distribution is largely unaffected by earnings management to avoid earnings decreases. Using this model, the observed frequencies from intervals in the right half of the empirical distribution serve as measures of the expected frequencies in the corresponding interval in the left half of the distribution. Operationally, we assume that in the absence of earnings management, the distribution of earnings changes in Fig. 1 would be symmetric around 0.01 and that managed values of earnings changes do not fall to the right of 0.01.

The estimated number of cases where firms have engaged in earnings management is the difference between the expected and the observed number of observations. We report estimates of the number of cases of earnings management related to three regions of increasing width, i.e. three intervals defined to include earnings decreases ranging from: (− 0.005, 0.00), (− 0.010, 0.00) and (− 0.015, 0.00).[8] The estimates for the three increasingly broad intervals are,

[8] If earnings are being managed out of the region of small earnings decreases into regions of small increases, an assessment of the number of cases of earnings management should either cumulate the deficiency of observations (below the number expected) in the region of small earnings decreases *or* the excess of observations (above the number expected) in the regions of small increases, but not both. We examine the region of small earnings decreases.

respectively, 238, 385, and 454. We provide three bases of comparison to evaluate the magnitude of these estimates. First, these estimates represent approximately 0.4%–0.7% of the 64,466 available observations. Second, the estimates are approximately 0.9%–1.7% of the 27,459 observations of negative earnings changes. Finally, focusing on just the three increasingly broad negative earnings change intervals closest to zero (where earnings management to avoid earnings decreases is expected to be least costly), the cases of earnings management to avoid losses appear to be 12.4%, 10.5%, and 8.8% of the observations expected in the respective intervals in the absence of earnings management. (Note that as the intervals become broader and take in cases with higher expected costs of managing earnings to avoid earnings decreases, the estimated *proportion* of cases of earnings management is expected to decline even though the *number* of cases is expected to increase.) In sum, whatever base of comparison is adopted, the estimates suggest that earnings management to avoid earnings decreases is commonplace.

2.3. Existence of earnings management to avoid losses

Table 1 (Panel B) shows descriptive statistics for level of earnings scaled by beginning-of-the-year market value. The total number of observations is 75,999 and the number of available observations per year increases steadily from about 3,100 for 1976 to about 4,400 for 1994. The mean and median earnings both decrease throughout the sample period with the median always greater than the mean. These statistics, as well as inspection of the data, reveal that extreme negative scaled earnings observations are more common in later years.

Fig. 3 shows the distribution of earnings scaled by beginning market value with histogram interval widths of 0.005 for scaled earnings ranging from -0.25 to $+0.35$. The histogram shows a single-peaked, bell-shaped distribution which is relatively smooth except in the area of zero earnings: Earnings slightly less than zero occur much less frequently than would be expected given the smoothness of the remainder of the distribution and earnings slightly greater than zero occur much more frequently than would be expected.[9] This phenomenon seems

[9] Net income on Compustat was exactly zero for 25 observations in the sample. We investigated these cases further by examining printed copies of the annual reports or calling the company for additional information. Some of these cases were true (probably rounded) zeros, some were mistakes, and in many cases, it was impossible to obtain any information. Since it is impossible to verify that these cases of exactly zero earnings are correct, all observations with a value of exactly zero were deleted. Because these observations fall in the interval immediately to the right of zero, deletion of these observations likely results in a small understatement of earnings management to avoid losses in the reported results.

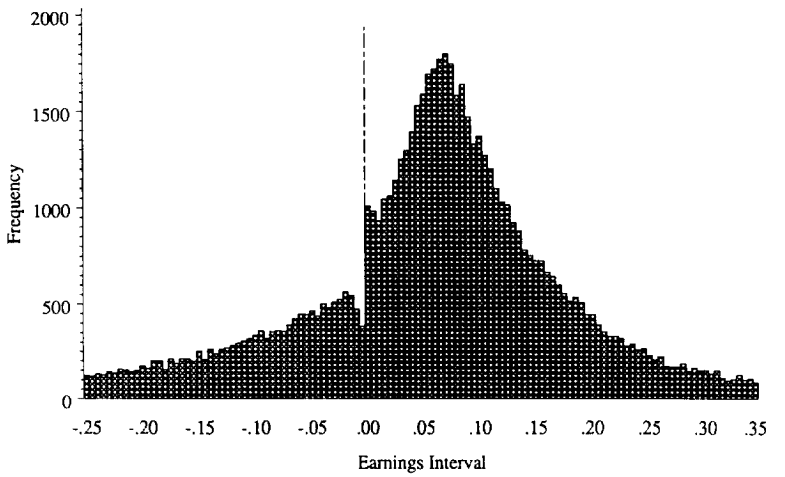

Fig. 3. The distribution of annual net income (Compustat item #172) scaled by beginning of the year market value (Compustat item #25 × Compustat item #199). The distribution interval widths are 0.005 and the location of zero on the horizontal axis is marked by the dashed line. When the interval width is 0.005, the first interval to the right of zero contains all observations in the interval [0.000, 0.005), the second interval contains [0.005, 0.010), and so on. 'Frequency' is the number of observations in a given earnings interval.

even more pronounced than for the distribution of earnings changes in Fig. 1.[10] The significance of the irregularity near zero is confirmed by the statistical tests. The standardized difference for the interval immediately to the left of zero is −13.16. (The standardized difference for the interval immediately to the right of zero is 8.92.) Thus, by virtually any standard, the irregularity around zero earnings apparent in Fig. 3 is statistically significant.

As with earnings decreases, there is reason to believe that incentives to avoid losses might be increasing in the length of the preceding string of positive earnings. We again divide the observations into categories, this time based on the preceding string of positive earnings. The three categories are observations (a) following negative earnings, (b) following one or two consecutive years of positive earnings, and (c) following three or more years of positive earnings. Fig. 4 shows distributions of earnings for each of these categories. For the categories represented in all three panels, the evidence of earnings management to avoid earnings decreases is clearly significant – the standardized differences for the intervals left of zero in Panels A, B and C are, respectively, −7.41,

[10] Additional investigation provided no evidence that the unusual pattern around zero is attributable to a small number of unusual years or unusual industries.

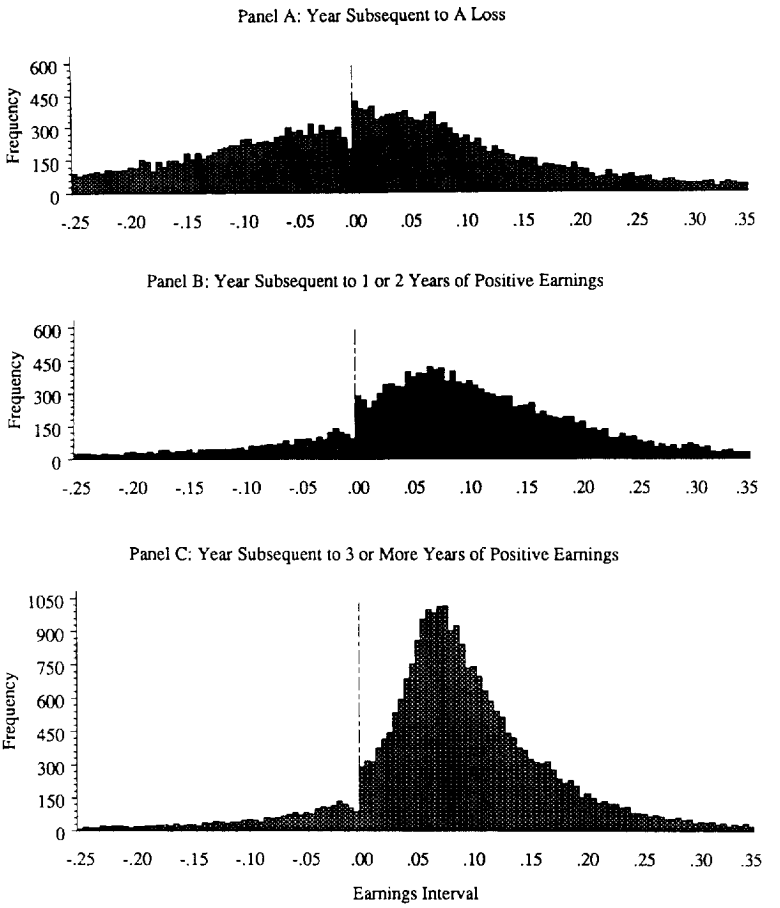

Fig. 4. Three empirical distributions of earnings scaled by market value categorized according to the pattern of preceding earnings for the firm. Panel A: the distribution for the years immediately following a loss; Panel B: the distribution for the years following exactly one or two years of positive earnings; and Panel C: the distribution for the years following three or more years of positive earnings. (See Fig. 3 for detailed definitions of variables.)

− 7.70 and − 8.21 (and, for the intervals right of zero, 5.54, 5.58 and 4.50). The magnitudes of the standard differences are roughly constant, and thus provide little evidence of a pattern consistent with the prediction that incentives are increasing in the length of the previous run of consecutive positive earnings. Note that comparisons of the relative magnitudes of the standard differences are subject to two important limitations as measures of the extent of earnings

management. First, while standardized differences reflect the proportionate discontinuity, they also depend on the number of observations, which varies across the earnings intervals. Second, standardized differences by definition focus on effects concentrated in just the intervals immediately adjacent to zero yet there are theoretical and empirical reasons to expect some effects of earnings management in other intervals near, but not immediately adjacent to, zero. Visual inspection of the distributions can compensate for both of these limitations and, in this case, provides evidence consistent with the prediction. Moving from Panel A to Panel C, there is evidence of an increase in both the proportion of observations managed and the extent to which earnings management affects intervals other than the two intervals immediately adjacent to zero. Thus, the ratio of the frequency right of zero to the frequency left of zero increases substantially moving from Panel A to Panel B and increases slightly moving from Panel B to Panel C.

2.4. *Prevalence of earnings management to avoid losses*

To assess the prevalence of earnings management to avoid losses, we adopt the operational assumption, analogous to the assumption in Section 2.2, that in the absence of earnings management, the distribution in Fig. 3 would be symmetric around the point 0.07 and that the values of earnings which have been managed do not fall to the right of this point. Thus, the expected number of observations in an interval to the left of 0.07 is assumed to be the observed number in the corresponding interval to the right of 0.07.

We report estimates of the frequency of earnings management to avoid losses for three negative earnings intervals of increasing width near zero: (− 0.01, 0.00), (− 0.02, 0.00) and (− 0.03, 0.00). The estimates for the three increasingly broad intervals are, respectively, 685, 1,039 and 1,311. These estimates are approximately 0.9%–1.7% of the 75,999 observations with available earnings data. Second, these estimates represent approximately 3.0%–5.8% of the 22,510 negative earnings observations. Finally, focusing on just the three increasingly broad negative earnings intervals closest to zero, the cases of earnings management to avoid losses appear to be 44%, 35% and 30% of the observations expected in the respective intervals in the absence of earnings management. In sum, this assessment suggests that earnings management to avoid losses is pervasive. Additionally, earnings management to avoid losses is more pervasive than earnings management to avoid earnings decreases.

These estimates also imply that the magnitude of earnings management to avoid losses is economically significant, especially in light of the fact that typical levels of earnings are on the order of 7% of the market value of equity. Management of earnings equal to even 0.5% of the market value of equity is of economic significance relative to this reference point; the estimates in this section suggest that there are hundreds more cases where earnings

management has changed earnings by more than 1% of the market value of equity.[11]

3. Evidence on the methods of earnings management to avoid losses

Studies of earnings management typically consider a specific incentive for earnings management (e.g. incentives related to executive bonus plans) and then test whether earnings have been managed assuming a particular earnings management method (e.g. management of accruals).[12] In contrast, the cross-sectional approach employed here allows us to identify a large set of potential earnings manipulators before invoking specific assumptions about earnings management motivation or methods. Consequently, we can use information about the prevalence of earnings management near zero changes and levels of earnings to explore how earnings are managed and assess the relative importance of potential earnings management methods. In this section, we focus on avoidance of losses because the evidence in Section 2 shows a more concentrated effect for management to avoid losses than for management to avoid earnings decreases. Nonetheless, a similar methodology could be used to explore earnings management to avoid earnings decreases.

We present two types of evidence, *ex ante* and *ex post*, about the manipulation of earnings to avoid losses. The first type of evidence is related to the ex ante costs of earnings management. Holding the benefits of earnings management to avoid losses constant, we conjecture that the extent of earnings management is likely to be a function of the ex ante costs of earnings management. In other words, earnings manipulators are likely to be firms which faced relatively lower ex ante costs of earnings management. Therefore, given that earnings manipulators moved from slightly negative earnings to slightly positive earnings, firms with slightly negative earnings likely are those which faced higher ex ante earnings management costs than firms with slightly positive earnings. The

[11] We also examined the relation of earnings management to firm size by classifying firms into three groups with equal numbers of observations by year, based on beginning-of-the-year market value of equity. There is clear statistical evidence of earnings management to avoid earnings decreases and losses for all three size groups. Further, there is statistical evidence of more extensive earnings management to avoid earnings decreases for medium and large firms and visual evidence (but no clear statistical evidence) that earnings management to avoid losses is more prevalent among medium and large firms.

[12] Two exceptions which start with established evidence of earnings management are DeFond and Jiambalvo (1994) where the prior evidence of earnings management is obtained from SEC filings and Dechow et al. (1996) where the prior evidence is from SEC enforcement actions. Also, see Dechow et al. (1995) for a more extensive discussion of problems and methods of detecting earnings management.

second type of evidence is related to the ex post results of earnings management, i.e. evidence reflected in the components of income after the earnings manipulation. As explained in more detail later, ceteris paribus, we expect the manipulated components of income to be higher for firms with slightly positive earnings as compared to firms with slightly negative earnings.

3.1. Evidence on the ex ante costs of earnings management

Relying on previous research that has identified the manipulation of working capital accruals as a common method of earnings management (e.g. DeFond and Jiambalvo, 1994), we identify two proxies for the ex ante costs of earnings management. Firms with high *levels* of current assets and current liabilities before the earnings manipulation are likely to find it relatively less costly to manage earnings through *changes* in working capital than firms with low *levels* of current assets and current liabilities. For example, a firm which has high levels of receivables is likely to find it less costly to manage earnings through changes in receivables. Firms that can manage earnings at low cost are more likely to manage earnings to move from negative pre-managed earnings to positive post-managed earnings. If the levels of current assets and current liabilities serve as proxies for the cost of earnings management through changes in working capital, we expect to find lower pre-managed levels of current assets and current liabilities for firms in the intervals immediately to the left of zero post-managed earnings and higher levels in the intervals immediately to the right of zero.

While this reasoning leads to specific predictions about the beginning-of-year distributions of current assets and current liabilities conditional on the level of earnings, we do not test statistical hypotheses here (and in Section 3.2) for two reasons: First, there is little guidance in the accounting literature about the relation between levels of working capital and levels of earnings; while the results below show that the conditional distributions are related to the level of earnings, the relation is not linear and the variances of the conditional distributions are not constant. Second, the theory does not specify where differences in the costs of earnings management will be reflected in the conditional distributions. Thus, it is necessary to examine multiple attributes of the distribution, e.g. the quartiles of the conditional distributions presented in the figures below. For these reasons, we decided against imposing the additional structure required for formal statistical tests. Instead, for the predictions outlined above, we present descriptive evidence in the form of quartiles of the conditional distributions of current assets and current liabilities.

We examine the pre-manipulation distributions of beginning-of-the-year current assets and current liabilities conditional on the level of earnings. The observations are sorted on the earnings variable to form equal-sized portfolios of 1,000 observations per portfolio. The portfolio boundaries are defined relative to zero: The first portfolio right of zero consists of the 1,000 smallest positive

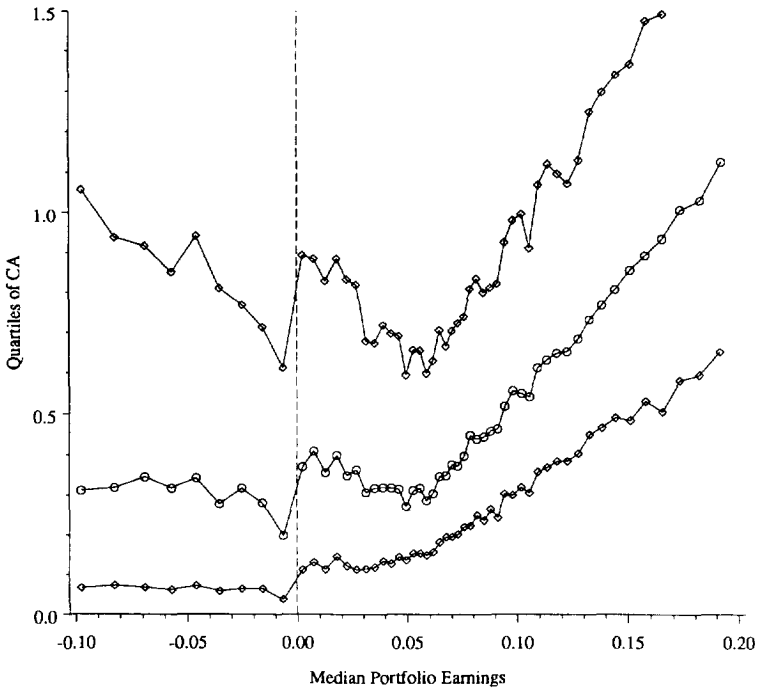

Fig. 5. Earnings portfolios of 1,000 observations each are formed based on the magnitude of scaled earnings. Median portfolio earnings on the horizontal axis represent the median earnings for each portfolio. Three quartiles (the 25th, 50th and 75th percentiles) of the distribution of beginning-of-the-year current assets scaled by market value for each portfolio are plotted against the median earnings for each portfolio. Beginning-of-the-year current assets are defined as the sum of accounts receivable (Compustat item #2), inventory (item #3), and other current assets (item #68).

earnings observations, the second portfolio right of zero consists of the 1,000 next smallest positive earnings, and so on. Similarly, the first portfolio left of zero consists of the 1,000 smallest magnitude negative earnings observations. Thus, within each portfolio, the earnings variable is approximately constant.[13] In order to keep the reported results manageable, we present only the quartiles

[13] Construction of portfolios with equal numbers of observations approximately equalizes the variance of the quartile statistics across portfolios, making it easier to compare quartiles across portfolios. An alternative approach would be to form portfolios consisting of all observations in equally-spaced earnings intervals, e.g. 120 portfolios defined for the 120 earnings intervals shown in Fig. 3. However, this approach results in substantial variation in the variance of the quartile statistics.

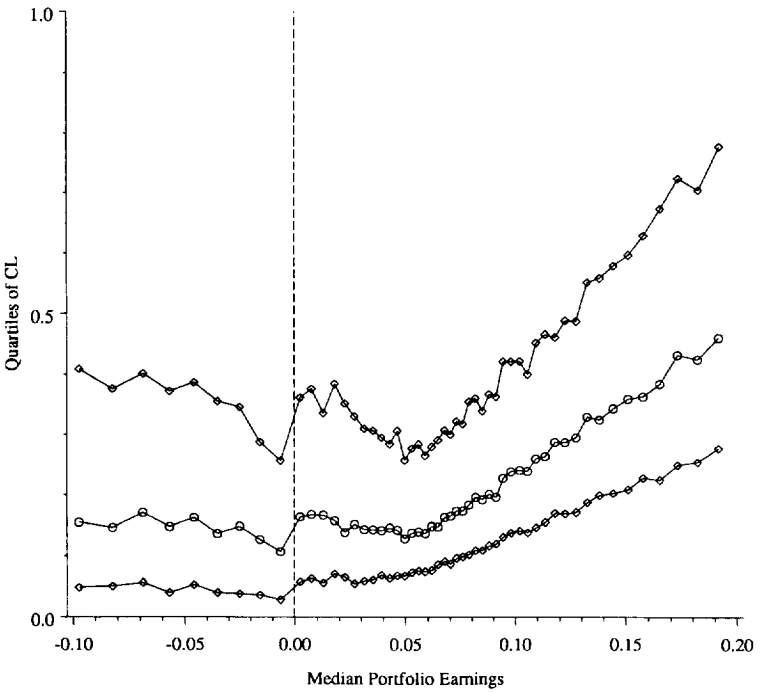

Fig. 6. Earnings portfolios of 1,000 observations each are formed based on the magnitude of scaled earnings. Median portfolio earnings on the horizontal axis represent the median earnings for each portfolio. Three quartiles (the 25th, 50th and 75th percentiles) of the distribution of beginning-of-the-year current liabilities scaled by market value for each portfolio are plotted against the median earnings for each portfolio. Beginning-of-the-year current liabilities are defined as the sum of accounts payable (Compustat item #70), taxes payable (item #71), and other current liabilities (item #72).

of the conditional distributions, though we also examined the 10th and 90th percentiles of the distributions and found similar results.

Fig. 5 shows the conditional distribution of the beginning-of-the-year level of current assets. In the figure, the three quartiles of the distribution of current assets for each portfolio are plotted against the median earnings for the portfolio. Fig. 6 shows the conditional distribution of the beginning-of-the-year level of current liabilities. Both figures show a clear downward shift in the conditional distributions for the portfolio immediately to the left of zero, and an upward shift in the distributions for the portfolio immediately to the right of zero, particularly for the upper quartiles of the distributions. Thus, firms which had a higher level of beginning-of-year current assets or current liabilities were more

likely to manage earnings from a negative to a positive level. This suggests that changes in working capital play a role in earnings management to avoid losses.

3.2. Evidence on the ex post results of earnings management

For purposes of this analysis, we decompose earnings into three exhaustive and mutually exclusive components, closely related to components considered in previous research: Cash flow from operations, change in working capital other than cash, and a residual component, labeled other accruals.[14] The first two components, cash flow from operations and changes in working capital, are widely regarded in the literature as variables subject to management discretion.

We examine the conditional empirical distributions of each of the three components of earnings for ex post evidence of a role in earnings management to avoid losses. If earnings management to avoid losses is concentrated in a component of earnings, we expect the conditional distributions of the managed component for slightly positive earnings levels to reflect a larger proportion of income increasing values. Thus, we expect to see an upward (income increasing) shift in the distribution for slightly positive earnings relative to the conditional distributions for firms with slightly negative earnings and possibly (but not necessarily because of the overall positive relation between earnings levels and the components of earnings we consider) relative to the conditional distributions for firms in the adjacent regions with more positive earnings.

Note that the interpretation of ex post evidence from components of earnings is complicated by a number of factors. First, if earnings management is not differentially concentrated in a subset of components of earnings, the effect of earnings management might be hard to detect in the conditional distributions of components of earnings. For example, individual firms might choose to manage only one component of earnings, but if different firms manage different components, there might be little or no effect on the cross-sectional distributions. Second, interdependencies among the components of earnings (illustrated by the results below) can alter the simple prediction about an upward shift in the managed component of income. For example, an increase in cash from operations through additional cash sales is likely to be accompanied by a decrease in

[14] We also examined conditional distributions of three other components which involve discretionary timing decisions: Non-operating income, special items, and extraordinary items. Previous research suggests that these components play a role in earnings management in other contexts. For example, Bartov (1993) presents evidence that timing of asset sales is used to manage earnings and DeAngelo et al. (1996) find evidence that noncash write-offs are used to manage earnings. However, we found no evidence that they are significant factors in the earnings management identified here.

working capital (inventory). Thus, the analysis for any single component of earnings should take into consideration the results for other related components of earnings. Finally, the analysis can be complicated by relations between ex ante costs and ex post values of components of earnings (also illustrated below).

3.2.1. Cash flow from operations

Fig. 7 shows quartiles of the conditional distributions of cash flow from operations for portfolios formed on the earnings variable.[15] Consistent with the prediction, the quartiles of the distribution shift upward between the portfolio immediately to the left of zero and the portfolio immediately to the right of zero, particularly for the median and the upper quartile. Thus, we find evidence consistent with the manipulation of cash flow from operations to effectively move observations from small losses to small positive earnings. However, a closer examination of Fig. 7 reveals that if one considers an extrapolation of the trend from adjacent earnings intervals, the upward shift for the median and the upper quartile of cash from operations for slightly positive earnings is at least partly due to the preceding downward shifts for the portfolios with slightly negative earnings. We interpret this evidence as combining features of both the results and the costs of earnings management. The firms that manipulate earnings through increases in cash flow from operations are likely to be the firms with the highest pre-managed cash flow from operations, i.e. these firms are likely to be concentrated in the upper half of the conditional distributions. The move of these firms from slightly negative earnings to slightly positive earnings explains the upward shift in quartiles between the left and the right side of zero. The absence of the manipulator firms from the portfolios of slightly negative post-managed earnings explains the downward jumps in the distributions of cash flows for these portfolios. This interpretation is further supported by the fact that medians and upper quartiles of conditional distributions of cash flows from the previous year (not presented here) show the same downward shift for intervals immediately left of zero, suggesting that firms which did not manage earnings tend to have lower levels of cash flows and presumably faced higher costs to manipulate earnings upwards.

[15] For years 1987 and later, we define the measure of cash flow from operations as the amount reported in the Statement of Cash Flows (Compustat item #308). For years prior to 1987, we construct a measure of cash flow from operations using the Statement of Changes in Financial Position. For firms preparing their statement using the working capital format, the approximation is working capital from operations (Compustat item #110) less the change in non-cash working capital accounts excluding the change in short-term debt. This measure of cash from operations has been used in a number of previous studies, e.g. Bowen et al. (1986), DeAngelo (1988) and DeAngelo et al. (1996). For firms using a cash basis statement of changes, cash from operations is taken directly from the statement (Compustat item #110).

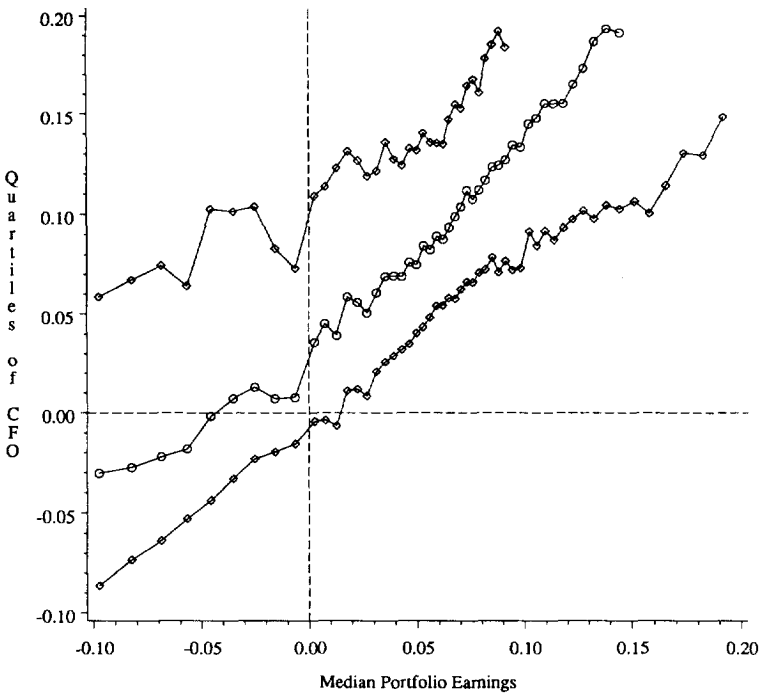

Fig. 7. Earnings portfolios of 1,000 observations each are formed based on the magnitude of scaled earnings. Median portfolio earnings on the horizontal axis represent the median earnings for each portfolio. Three quartiles (the 25th, 50th and 75th percentiles) of the distribution of cash flow from operations scaled by market value for each portfolio are plotted against the median earnings for each portfolio. For years 1987 and after, cash flow from operations is the amount reported in the statement of cash flows (Compustat item #308). For years prior to 1987, cash flow from operations for firms preparing their Statement of Changes in Financial Position using the working capital format is working capital from operations (item #110) *less* the change in non-cash working capital accounts excluding the change in short-term debt. For firms using a cash basis Statement of Changes, cash from operations is taken directly from the statement (item #110). (See text for further details.)

3.2.2. Changes in working capital

Fig. 8 shows the quartiles of the conditional distributions of changes in working capital other than cash.[16] Consistent with the prediction, there appears to be an upward shift of the conditional distribution between the portfolio

[16] The change in working capital other than cash is defined as the changes in accounts receivable (Compustat item #2), inventory (item #3), other current assets (item #68) less the changes in accounts payable (item #70), taxes payable (item #71), and other current liabilities (item #72). The conditional distributions of each of the individual components of the change in working capital (not presented) show patterns similar to, but less clear-cut than, those shown in Fig. 8. For the individual components, the patterns are most clear for accounts receivable, inventory, and accounts payable.

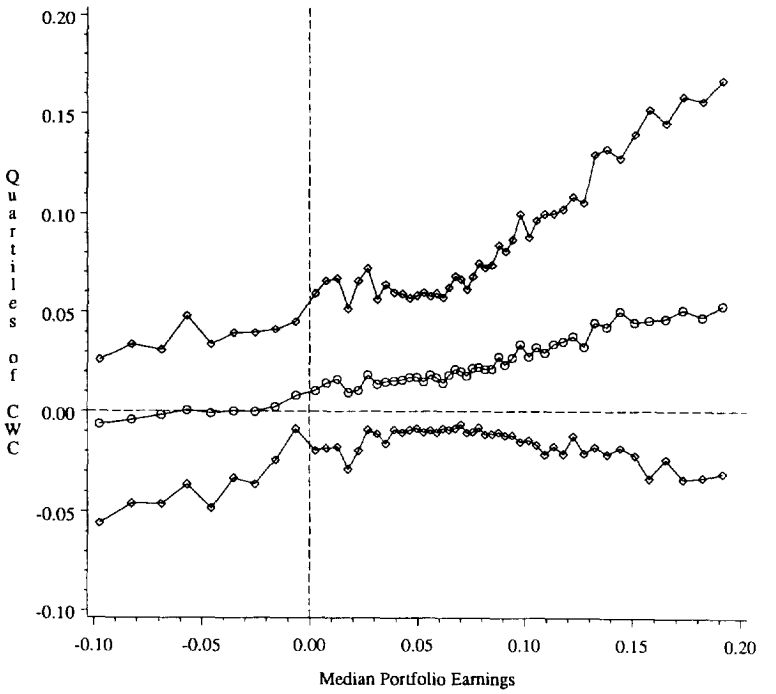

Fig. 8. Earnings portfolios of 1,000 observations each are formed based on the magnitude of scaled earnings. Median portfolio earnings on the horizontal axis represent the median earnings for each portfolio. Three quartiles (the 25th, 50th, and 75th percentiles) of the distribution of change in working capital scaled by market value for each portfolio are plotted against the median earnings for each portfolio. The change in working capital is defined as the changes in accounts receivable (Compustat item #2), inventory (item #3), other current assets (item #68) less the changes in accounts payable (item #70), taxes payable (item #71), and other current liabilities (item #72).

immediately to the left of zero and the portfolio immediately to the right of zero, for the upper end of the conditional distribution. However, inconsistent with the prediction, the lower quartile of the distribution shifts downward for slightly positive observations. This inconsistency seems surprising given the evidence from ex ante levels of current assets and current liabilities, which strongly suggests that working capital is used in earnings manipulation.

However, this apparent inconsistency can be explained by the interdependence of cash flow from operations and changes in working capital. Consistent with previous research (e.g. Rayburn, 1986; McNichols and Wilson, 1988; Dechow, 1994), our sample exhibits a strong negative correlation (-0.41) between cash flow from operations and changes in working capital. This negative correlation also holds for fixed levels of earnings and specifically for

slightly positive earnings, which implies that the observations with the highest cash flow from operations tend to be those with the lowest changes in working capital.

Thus, as mentioned earlier, a possible explanation for the pattern of results for changes in working capital could be clientele effects. Some firms choose to manage earnings through methods reflected in a marked increase in cash flow from operations, and the increase tends to be accompanied by a decrease in changes in working capital. For example, some firms increase cash sales which increases cash from operations but decreases non-cash working capital because of the decrease in inventory. These firms tend to appear in the upper ranges of the conditional distribution of cash flows in Fig. 7, *and* in the lower ranges of the distribution of changes in working capital in Fig. 8, which explains the downward shift for the lower quartile of Fig. 8. Alternatively, other firms choose to manage earnings through increases in working capital. For example, some firms make additional credit sales which do not affect cash from operations but increase receivables and decrease inventory for a net increase in working capital. These firms tend to appear in the upper ranges of the distribution of Fig. 8, where we observe evidence of earnings management using changes of working capital, *and* in the lower quartiles in Fig. 7, where the evidence of manipulation of cash flow from operations is less pronounced.

3.2.3. Other accruals

Fig. 9 shows the quartiles of the conditional distribution of other accruals by earnings portfolio. Other accruals are defined here as net income minus cash flow minus the change in non-cash working capital. The evidence shows a pronounced downward shift in the distribution of other accruals. A downward shift would not be expected if other accruals are used to manage earnings upward, but it would be expected if other accruals are not used to manage income *and* other accruals are negatively related to cash flow from operations. Indeed, there is a strong negative correlation (-0.36) between cash flows from operations and other accruals in our sample, and specifically within the interval of slightly positive earnings.[17] The negative correlation between cash flow from operations and other accruals accounts for both the average downward direction of the shift, and for the magnitude of the shift across quartiles (the most pronounced downward shift occurs for the lower quartile of the distribution of other accruals

[17] A more detailed investigation of other accruals reveals that depreciation accounts for most of the variation in other accruals. Thus, the negative correlation between cash flow from operations and other accruals is mostly due to the negative correlation between cash flow from operations and depreciation. Cross-sectionally, cash flow from operations is negatively correlated with depreciation because, holding profitability constant, firms with higher depreciation (e.g. more capital-intensive firms) tend to have higher cash flow from operations.

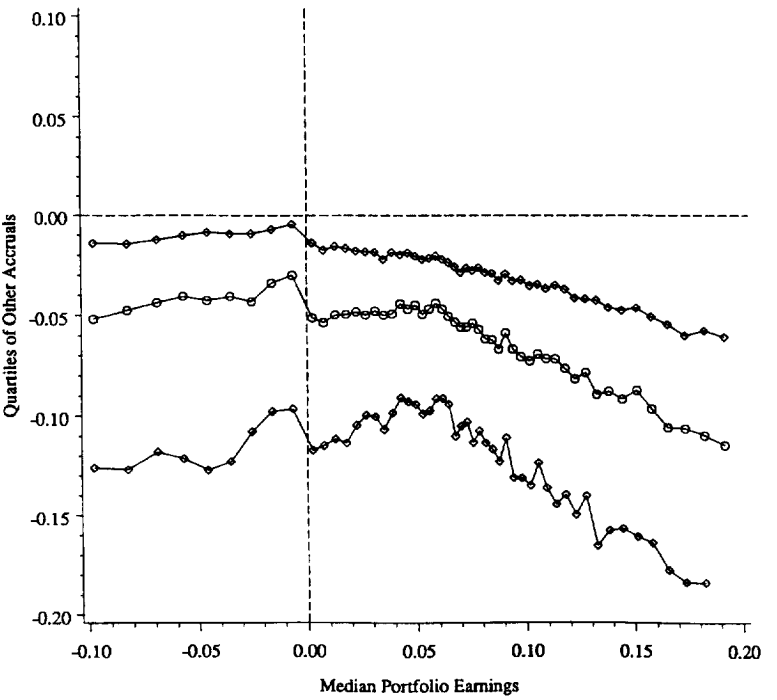

Fig. 9. Earnings portfolios of 1,000 observations each are formed based on the magnitude of scaled earnings. Median portfolio earnings on the horizontal axis represent the median earnings for each portfolio. Three quartiles (the 25th, 50th, and 75th percentiles) of the distribution of other accruals scaled by market value for each portfolio are plotted against the median earnings for each portfolio. Other Accruals = Net Income – Cash Flow from Operations – Change in Working Capital.

in Fig. 9 because the observations around this quartile tend to be the same as those around the upper quartile of the distribution of cash flow from operations from Fig. 7).[18]

4. Motivation for earnings management to avoid earnings decreases and losses

Assuming that the cost of a given amount of earnings management is approximately independent of the pre-managed change in earnings (or level of earnings),

[18] The correlation between changes in working capital and other accruals is substantially smaller, – 0.09. This fact, combined with the observation that the magnitude of the shifts in changes in working capital are much smaller than the shifts for cash from operations, suggests that the relation of other accruals and working capital is only a second-order effect.

the results in Section 2 suggest that the marginal benefits of earnings management increase sharply as earnings are managed from a small decrease in earnings to a small increase in earnings (or as earnings are managed from a small loss to small positive earnings). We present two theories, the first based on costs in transactions with stakeholders, and the second based on prospect theory, that could account for sharply increasing benefits around both zero changes in earnings and zero levels of earnings. We do not consider earnings management theories related to explicit contracts because we have little evidence that such contracts are sufficiently common to explain the pervasive avoidance of earnings decreases and losses documented in Section 2.

The transactions costs theory relies on two assumptions:

i) Information about earnings affects the terms of transactions between the firm and its stakeholders and, more specifically, terms of transactions are generally more favorable for firms with higher, rather than lower, earnings.
ii) The costs of storing, retrieving, and processing information are sufficiently high that at least some stakeholders determine the terms of transactions with the firm based on heuristic cutoffs at zero levels or zero changes in earnings.

The assumption that firms with higher earnings face lower costs in transactions with stakeholders is consistent with other research. Cornell and Shapiro (1987) contend that the value of stakeholders' implicit claims (which is directly related to the market value of the firm) is sensitive to information about the firm's financial condition. More specifically, Bowen et al. (1995), (especially Section II) discuss incentives to report higher earnings with respect to employees, customers, suppliers, lenders, and other stakeholders. Examples of incentives to report higher earnings include the following:

- Customers are willing to pay a higher price for goods because the firm is assumed more likely to honor implicit warranty and service commitments.
- Suppliers offer better terms, both because the firm is more likely to make payments due for current purchases and because the firm is more likely to make larger future purchases.
- Lenders offer better terms because the firm is less likely to either default or delay loan payments.
- Valuable employees are less likely either to leave or to demand higher salaries to stay.

While there may also be factors which imply disincentives to report higher earnings (e.g., for regulated firms or for firms engaged in wage negotiations with unions), the first assumption is that the overall net effect is an incentive to report higher earnings.

The second assumption is that stakeholders use heuristics to determine the terms of transactions with the firm. The use of heuristics often arises as a response to information costs in economic models (Conlisk, 1996). When it is

costly for stakeholders to retrieve and process detailed information about earnings for all of the firms with which they transact (explicitly and implicitly), we conjecture that some stakeholders use heuristic cutoffs at zero changes in earnings or zero earnings. This conjecture is consistent with the anecdotal and systematic evidence discussed in the introduction and with the evidence in DeAngelo (1988), who examines accounting choices by incumbent managers during proxy fights. DeAngelo concludes that incumbents avoid earnings decreases and also reports evidence "... consistent with the hypothesis that incumbents exercise their accounting discretion to avoid reporting a net loss during an election campaign, perhaps because of the emphasis that dissidents accord these losses." (p. 26)

Together, these two assumptions imply that a firm reporting an earnings decrease (or reporting a loss) bears sharply higher costs in transactions with stakeholders than if the firm had reported an earnings increase (or profit). Thus, these assumptions imply incentives to avoid earnings decreases and losses.

Finally, note that costs imposed at heuristic cutoffs are likely to be more substantial for losses than for earnings decreases because the heuristic interpretation of earnings decreases is often mitigated by surrounding circumstances. For example, an earnings decrease may have little adverse effect on customers' assessments of the likelihood that the firm will honor its implicit commitments when the earnings decrease simply reflects normal fluctuation for a firm with a stable earnings stream or when the earnings decrease represents a return to a normal level of profitability after an unusually good year. The assumption that smaller costs are imposed at heuristic cutoffs related to earnings decreases than at heuristic cutoffs related to losses is consistent with our finding that avoidance of losses is more prevalent than avoidance of earnings decreases.

An alternative explanation for the main results in this paper is provided by prospect theory, due to Kahneman and Tversky (1979). Prospect theory postulates that decision-makers derive value from gains and losses with respect to a reference point, rather than from absolute levels of wealth. Prospect theory also suggests that individuals' value functions are concave in gains and convex in losses (S-shaped). In other words, value functions are steepest around wealth reference points. Thus, for a given increase in wealth, the corresponding increase in value is greatest when the increase in wealth moves the individual from a loss to a gain relative to a reference point.[19]

The concepts and predictions of prospect theory have natural counterparts in our paper. Different decision-makers likely have different reference points. Zero change in earnings is a natural reference point for decision-makers who estimate

[19] See Kahneman et al. (1991) and Tversky and Kahneman (1991) for further discussion and examples.

wealth as a multiple of earnings. Zero level of earnings is a natural reference point if wealth is measured by (or is a multiple of) net accounting assets. Assuming that the cost of earnings management to achieve a given amount of earnings increase is approximately constant, and that managers manipulate wealth measures (earnings and changes in earnings) to affect the value perceived by stockholders and other stakeholders, we expect to observe earnings-increasing management around wealth reference points – in this case, in the vicinity of zero changes of earnings and zero levels of earnings. Thus, the main results reported in this paper are consistent with the predictions of prospect theory. However, a more direct and careful examination of the prospect theory explanation is needed and is left for future research.

5. Conclusion, implications, and suggestions for further research

This paper provides compelling empirical evidence that earnings decreases and losses are frequently managed away. The evidence suggests that 8% to 12% of the firms with small pre-managed earnings decreases exercise discretion to report earnings increases. Similarly, 30% to 44% of the firms with slightly negative pre-managed earnings exercise discretion to report positive earnings. The results are robust to alternative methods of scaling earnings and various ways of subdividing the population. Concentrating on earnings management to avoid losses, we find evidence that two components of earnings, cash flow from operations and changes in working capital, have been used to manage earnings. Probing into motivation, we present two theories that could explain the main results of this paper. The first explanation is that managers avoid reporting earnings decreases and losses to decrease the costs imposed on the firm in transactions with stakeholders. The second explanation is based on prospect theory, which postulates an aversion to absolute and relative losses.

The pooled cross-sectional distribution approach employed here could be adapted to detect earnings management in other settings. For example, consider the case of earnings management to meet earlier managerial forecasts of earnings (Kasznik, 1996). If earnings are not managed to meet forecasts, we would expect to observe a relatively smooth cross-sectional distribution of deviations of realized earnings from forecasts. In contrast, if earnings are managed to meet forecast goals, we would expect to observe a sharp discontinuity in the vicinity of zero, i.e. a significantly lower concentration of (small) negative deviations of reported earnings from forecasts and a significantly higher concentration of (small) positive deviations. An important determinant of the effectiveness of the pooled cross-sectional distribution approach in other earnings management settings will be the precision with which the earnings management goal can be defined. The simple goals considered in this paper, avoidance of earnings decreases and losses, have the advantage of being sharply and unambiguously

defined. However, the usefulness of this approach in settings with less sharply defined goals is an empirical issue.

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References

Barth, M., Elliot, J., Finn, M., 1995. Market rewards associated with increasing earnings patterns. Working paper, Cornell University.

Bartov, E., 1993. The timing of asset sales and earnings manipulations. The Accounting Review (October) 840–855.

Bowen, R., Burgstahler, D., Daley, L., 1986. Evidence on the relationships between earnings and various measures of cash flow. The Accounting Review (October) 713–725.

Bowen, R., DuCharme, L., Shores, D., 1995. Stakeholders' implicit claims and accounting method choice. Journal of Accounting and Economics 20 (3), 255–295.

Carslaw, C.A.P.N., 1988. Anomalies in income numbers: Evidence of goal oriented behavior. The Accounting Review (April) 321–327.

Conlisk, J., 1996. Why Bounded Rationality? Journal of Economic Literature (June) 669–700.

Cornell, B., Shapiro, A., 1987. Corporate stakeholders and corporate finance. Financial Management (Spring) 5–14.

DeAngelo, L., 1988. Managerial competition, information costs, and corporate governance: The use of accounting performance measures in proxy contests. Journal of Accounting and Economics 10, 3–36.

DeAngelo, H., DeAngelo, L., Skinner, D., 1996. Reversal of fortune: Dividend signaling and the disappearance of sustained earnings growth. Journal of Financial Economics 40, 341–371.

Dechow, P., 1994. Accounting earnings and cash flows as measures of firm performance: The role of accounting accruals. Journal of Accounting and Economics 18 (July) 3–42.

Dechow, P., Sloan, R., Sweeney, A., 1995. Detecting earnings management. The Accounting Review (April) 193–225.

Dechow, P., Sloan, R., Sweeney, A., 1996. Causes and consequences of earnings management: An analysis of firms subject to enforcement actions by the SEC. Contemporary Accounting Research 13 (2), 1–36.

DeFond, M., Jiambalvo, J., 1994. Debt covenant violation and manipulation of accruals. Journal of Accounting and Economics 17, 145–176.

Hayn, C., 1995. The information content of losses. Journal of Accounting and Economics 20, 125–153.

Kahneman, D., Tversky, A., 1979. Prospect theory: An analysis of decision under risk. Econometrica 47 (2), 263–291.

Kahneman, D., Knetsch, J., Thaler, R., 1991. The endowment effect, loss aversion, and status quo bias. Journal of Economic Perspectives 5 (Winter) 193–206.

Kasznik, R., 1996. On the association between voluntary disclosure and earnings management. Unpublished working paper, Stanford University.

McNichols, M., Wilson, P., 1988. Evidence of earnings management from the provision for bad debts. Journal of Accounting Research 26 (Supplement) 1–31.

Rayburn, J., 1986. The association of operating cash flow and accruals with security returns. Journal of Accounting Research 24 (Supplement) 112–23.

Thomas, J., 1989. Unusual patterns in reported earnings. The Accounting Review (October) 773–787.

Tversky, A., Kahneman, D., 1991. Loss aversion in riskless choice: A reference-dependent model. The Quarterly Journal of Economics 5 (November) 1039–1061.