



Why Are Earnings Kinky? An Examination of the Earnings Management Explanation

PATRICIA M. DECHOW*

dechow@umich.edu

University of Michigan Business School, 701 Tappan Street, Ann Arbor, MI 48109-1234

SCOTT A. RICHARDSON

The Wharton School, University of Pennsylvania

İREM TUNA

The Wharton School, University of Pennsylvania

Abstract. Prior research has documented a “kink” in the earnings distribution: too few firms report small losses, too many firms report small profits. We investigate whether boosting of discretionary accruals to report a small profit is a reasonable explanation for this “kink.” Overall, we are unable to confirm that boosting of discretionary accruals is the key driver of the kink. We caution the use of the ratio of small profit firms to small loss firms as a measure of earnings management. We investigate and discuss a number of alternative explanations for the kink.

Keywords: accruals, earnings distribution, discretionary accruals, earnings management

JEL Classification: M4

An empirical regularity documented by Hayn (1995) is that there is a “kink” in the earnings distribution: too few firms report small losses and too many firms report small profits. Burgstahler and Dichev (1997a) build on Hayn by showing a kink in both the earnings change and the earnings level distributions and suggesting the cause of the kink is earnings management.¹ However, a closer look at the evidence of earnings management they provide leaves open the question of whether earnings management is a complete explanation.

Burgstahler and Dichev (1997a), provide two tests to support the contention that the kink is driven by earnings management. First, they show an increase in the level of cash flows around the zero earnings reference point (see their Figure 7), and suggest that this is consistent with cash flow manipulation to boost earnings (Burgstahler and Dichev, 1997a, p. 117). However, given the well-known positive relation between cash flows and earnings, an increase in cash flows is expected around the kink. In addition, the traditional view in accounting is that because accruals contain estimates and forecasts, they are easier to manipulate than cash flows. If the kink is due to earnings manipulation it would seem reasonable to assume that managers would use the flexibility offered by accruals to achieve this goal.

*Corresponding author.

The second test performed by Burgstahler and Dichev (1997a), is to investigate whether accruals are higher around the zero reference point. The results of these tests are inconsistent and difficult to interpret. Burgstahler and Dichev (1997a), find a slight increase in the median change in working capital at the zero reference point (see their Figure 8). This finding by itself is not surprising since there is a well-known positive relation between working capital accruals and earnings. Burgstahler and Dichev (1997a), also investigate whether “other accruals” increase for the small profit group relative to the small loss group. Inconsistent with earnings management, they find that “other accruals” decrease for the small profit group relative to the small loss group (see their Figure 9).

Overall, Burgstahler and Dichev’s (1997a), strongest result in support of earnings management is that cash flows increase for the small profit group relative to the small loss group. However, observing an increase in cash flows could be the result of firms taking *real* actions (and employees working harder) to improve firm performance. Therefore, an alternative explanation for this finding is that it is easier to motivate employees, set bonuses, and define budgets when there is a clearly defined goal (i.e., report a profit). Cash flows could improve even in the absence of earnings management. Without further evidence, it is difficult to interpret the cash flow finding.

The objective of our paper is to build on Burgstahler and Dichev (1997a), by reexamining the earnings management explanation. Specifically, we focus on whether earnings management is a complete or a partial explanation for the kink. Our tests focus on “discretionary” accruals and we investigate whether small profit firms have high discretionary accruals relative to two groups: (i) all other firms and (ii) small loss firms. We use all other firms to determine whether small profit firms have unusual discretionary accruals relative to the general population. We compare small profit firms to small loss firms to directly test whether boosting of discretionary accruals causes the kink.

If earnings management to avoid reporting a loss is the reason for the kink, then we expect firms that report small profits to have higher discretionary accruals than small loss firms. The idea here is that by managing earnings up, firms move from reporting a small loss to a small profit, and this explains the low proportion of firms in the small loss group and the high proportion of firms in the small profit group. Firms in the small loss group are predicted to have discretionary accruals similar to the average firm. Under a simple loss avoidance story, there is no reason why a firm with a large loss will boost earnings to report a smaller loss. (If this incentive existed then the loss avoidance story would “unravel” and we would not observe too few firms reporting small losses.) Firms reporting small losses are therefore not predicted to be managing earnings in a specific direction. In addition, loss avoidance is a directional prediction: managers use discretionary accruals to increase earnings to report a small profit. Therefore, we expect to observe a decline in the kink after excluding firms with income increasing discretionary accruals from the earnings distribution.

Our evidence indicates that small profit firms have high discretionary accruals relative to other firms. This is consistent with small profit firms engaging in earnings

management, but it is not sufficient evidence to explain the kink. In our tests comparing small profit firms to small loss firms, we find that both sets of firms (i) have high discretionary accruals; and (ii) have a similar proportion of positive discretionary accrual firms. In addition, the kink does not disappear or decline when we focus on the distribution of firms with income decreasing discretionary accruals. Since small loss firms have, on average, positive discretionary accruals this suggests that they also face incentives to boost earnings even though they reported a loss.

Our results are inconsistent with the joint hypothesis that our discretionary accrual model detects earnings management and that the kink is caused by earnings management. Thus our lack of findings could either be because (i) the kink is driven by earnings management but our model lacks the power to identify the earnings management taking place; or (ii) our model correctly identifies earnings management, but boosting of discretionary accruals does not explain the kink.

We address the first explanation that our model lacks power in four ways. (1) We use a revised model of discretionary accruals that has twice the explanatory power of the cross-sectional modified Jones model that is commonly used in empirical research (e.g., DeFond and Subramanyam, 1998). (2) We show that discretionary accruals are less persistent than other components of earnings. (3) We show that discretionary accruals detect earnings manipulation identified in SEC enforcement actions. (4) We show that consistent with earnings being temporarily high, firms with positive discretionary accruals have lower future earnings and lower future stock returns (e.g., Sloan, 1996, and Xie, 2001). However, we acknowledge that low power could still be an explanation and so our lack of findings can be interpreted as bringing into question the validity of the Jones-type discretionary accrual models.

We also consider the possibility that the second explanation is correct (i.e., that earnings management does not completely explain the kink). We provide preliminary evidence on some hypotheses and discuss (but do not test) other explanations. Our alternative explanations include (i) managers taking real actions to ensure that they report a profit rather than a loss; (ii) exchange listing requirements having a selection bias towards profitable firms; (iii) investors applying different valuation methods to profit versus loss firms and so scaling earnings by market value accentuates the kink; (iv) accounting rules and conservatism precluding the recording of small losses and encouraging the recording of small profits; and (v) the market-wide use of financial assets with return distributions truncated at zero inducing a greater proportion of small profit firms. Our preliminary evidence on explanations (ii) and (iii) suggest that selection biases provide a partial explanation and that scaling also influences the magnitude of the kink.

Finally, we examine whether the kink has changed through time and whether it continues to be an important empirical regularity. We document that the earnings kink and the earnings change kink have declined over time, whereas the analyst forecast error kink has increased. These results suggest a reinterpretation of Degeorge et al. (1999) claim that the hierarchy of thresholds is first to report a profit, second to report an increase in profits, and third to meet analysts' forecasts. Our results suggest that in more recent years, meeting analysts' consensus forecasts is becoming the more important hurdle.

Based on our findings we suggest that researchers consider the following when constructing tests of earnings management that use either small profit firms or the ratio of small profit to small loss firms as a proxy for earnings management. First, managers can take real actions to avoid reporting a loss and these observations will add noise to tests of earnings management. Second, we find that small profit firms differ from firms in the general population in terms of leverage, earnings, and age. Ignoring these characteristics could result in correlated omitted variable problems. Finally, our results suggest that small loss firms also appear to boost discretionary accruals. Without a more complicated loss avoidance story, it is difficult to reconcile this result with the earnings management explanation for the kink.

Our paper proceeds in three sections. The next section describes our accrual model and provides some results on the power of this model. Section 2 describes our sample, provides our predictions, and reports our results. Our conclusions are in Section 3.

1. Model of Discretionary Accruals

1.1. Modeling Accruals

In this section we extend the Jones model with the objective of producing an accrual model with higher explanatory power. All models of discretionary accruals can be criticized for misclassifying nondiscretionary accruals as discretionary. Our objective is to provide some additional variables that at an intuitive level are expected to vary with nondiscretionary accruals.

We consider four accrual models, each building on the one before. The first model is the modified cross-sectional Jones model discussed in Defond and Subramanyam (1998). The simple Jones (1991) model assumes that the entire change in revenues is free from managerial discretion. The modified Jones model backs out credit sales from the change in revenues. The modified Jones model is estimated for each two-digit SIC-year grouping as follows:

$$Total\ Accruals = \alpha + \beta_1(\Delta Sales - \Delta REC) + \beta_2 PPE + \varepsilon, \quad (1)$$

where *Total Accruals* is the difference between operating cash flows (Compustat item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. $\Delta Sales$ is the change in sales (item 12) from the previous year to the current year, ΔREC is the difference in accounts receivable (item 302) from the start to the end of the year, and *PPE* is the end of year property, plant and equipment (item 7). All variables are scaled by average total assets (item 6).

For our second model, we make an adjustment for the expected increase in credit sales. The modified Jones model assumes all credit sales in each period are discretionary and induces a positive correlation between discretionary accruals and

current sales growth. We estimate the following regression for each two-digit SIC-year grouping:

$$\Delta REC = \alpha + k\Delta Sales + \varepsilon. \quad (2a)$$

The slope coefficient (k) from this regression captures the expected change in accounts receivable for a given change in sales. The median (mean) value for the slope coefficient is 0.070 (0.068). The maximum value is 0.391 and the minimum value is 0.² On average a \$100 change in sales will result in a \$7 increase in accounts receivable. The cross-sectional modified Jones model classifies this \$7 as discretionary, whereas our adapted Jones model will classify this as nondiscretionary. Our adapted model includes only the unexpected portion of the change in accounts receivable in discretionary accruals. So we subtract the full amount of the change and add back the expected change (which is k multiplied by the change in sales). This model is estimated for each two-digit SIC-year group as follows:

$$Total\ Accruals = \alpha + \beta_1((1 + k)\Delta Sales - \Delta REC) + \beta_2 PPE + \varepsilon. \quad (2b)$$

Accruals by definition reverse through time and are less persistent than cash flows. However, some proportion of accruals is predictable based on last year's accruals. Similar to Chambers (1999), we include the lagged value of total accruals ($LagTA$) to capture the predictable component. We estimate this lagged model as follows:

$$Total\ Accruals = \alpha + \beta_1((1 + k)\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 LagTA + \varepsilon. \quad (3)$$

As a final adjustment we include future sales growth in the model. Accruals by their nature are designed to smooth the reporting of financial transactions. For example, a firm that is growing and anticipates future sales will rationally increase inventory balances. Observing an increase in inventory in this circumstance is not due to managers manipulating earnings by not writing-off obsolete inventory. However, the Jones model classifies such increases as earnings management. We include a measure of future sales growth, GR_Sales , to identify this aspect of accruals (see also McNichols, 2000). We estimate the forward-looking model as follows:

$$Total\ Accruals = \alpha + \beta_1((1 + k)\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 LagTA + \beta_4 GR_Sales + \varepsilon. \quad (4)$$

We measure GR_Sales as the change in sales (item 12) from the current year to next year scaled by current sales. Note that information on GR_Sales is not available to financial statement readers until the following year. This is not problematic when the objective is purely to decompose accruals into discretionary and non-discretionary components. However, for our predictive tests reported in Table 4 we use the lagged model.

Table 1. Analysis of various models of discretionary accruals using data from 1988–2000.

Panel A: Mean coefficient estimates for accrual models based on 637 two-digit SIC-year regressions

Model	Independent Variables ^a					Adj. R ²
	$\Delta Sales-\Delta REC$	$(1+k)$ $\Delta Sales-\Delta REC$	PPE	LagTA	GR_Sales	
Modified	0.043 (8.11)		-0.051 (-14.88)			0.092
Adapted		0.040 (8.29)	-0.051 (-14.82)			0.093
Lagged		0.033 (6.81)	-0.037 (-10.87)	0.221 (16.58)		0.172
Fwd. Look		0.022 (4.27)	-0.037 (-10.51)	0.212 (16.35)	0.042 (8.98)	0.200

Panel B: Adjusted R² descriptives across accrual models

Model	Distribution Statistics				
	Mean	Std. Dev.	Q1	Median	Q3
Modified	0.092	0.153	-0.004	0.060	0.147
Adapted	0.093	0.153	-0.003	0.062	0.147
Lagged	0.172	0.172	0.046	0.125	0.276
Fwd. Look	0.200	0.214	0.066	0.148	0.311

Panel C: Correlations between total accruals and discretionary accrual estimates^b

Model	Accrual Model				
	Modified	Adapted	Lagged	Fwd. Look	Total Acc.
Modified		0.999	0.951	0.931	0.849
Adapted	0.999		0.951	0.930	0.847
Lagged	0.967	0.967		0.977	0.813
Fwd. look	0.954	0.954	0.987		0.798
Total Accruals	0.926	0.924	0.894	0.882	

^aParameter estimates are averages from the respective 637 two-digit SIC-year regressions. *T*-statistics are reported in parentheses below parameter estimates. Standard errors are based on the distribution of two-digit SIC-year parameter estimates.

^bPearson correlation coefficients are reported below the diagonal and Spearman above.

Each of the four accrual models are estimated using the Jones (1991) technique of decomposing total accruals into a non-discretionary and a discretionary component. The method of decomposition for each model is as follows: *Modified*: $TA = \alpha + \beta_1(\Delta Sales-\Delta REC) + \beta_2 PPE + \varepsilon$; *Adapted*: $TA = \alpha + \beta_1((1+k)\Delta Sales-\Delta REC) + \beta_2 PPE + \varepsilon$; *Lagged*: $TA = \alpha + \beta_1((1+k)\Delta Sales-\Delta REC) + \beta_2 PPE + \beta_3 LagTA + \varepsilon$; *Forward Looking (Fwd. Look)*: $TA = \alpha + \beta_1((1+k)\Delta Sales-\Delta REC) + \beta_2 PPE + \beta_3 LagTA + \beta_4 GR_Sales + \varepsilon$. *TA* is the difference between operating cash flows (item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. This variable is scaled by average total assets (item 6).

LagTA is the lagged value of *TA*.

$\Delta Sales$ is the change in sales (item 12) for the year. This variable is scaled by average total assets (item 6).

1.2. Explanatory Power of Accrual Models

We investigate the relative explanatory power of these models using all firm-years from 1988–2000 on Compustat that have the required information to calculate an estimate of current and lagged accruals from the statement of cash flows along with estimates of property, plant and equipment and growth in sales.³ Consistent with DeFond and Subramanyam (1998) we exclude financial institutions from the sample (SICs between 6000 and 6999). We estimate all of our models by year for each two-digit SIC and report mean coefficients based on 637 industry-year regressions. We require at least 10 observations in each SIC-year grouping. The median number of observations in a SIC-year grouping is 36, the lower quartile is 20, and the upper quartile is 84.

Panel A of Table 1 reports the mean coefficient estimates for the parameters for each of the models. Firm-years with total accruals or any of the independent variables in the extreme 1% tails of their respective distributions are deleted from the sample. The final column reports the mean explanatory power (adjusted R^2) for each of the models.

Consistent with prior research we find a positive coefficient on $(\Delta Sales - \Delta REC)$ and a negative coefficient on PPE for the modified Jones model. The results for the adapted Jones model indicate only a slight improvement in explanatory power over the modified Jones model from making the adjustment for credit sales. This is because the coefficient on $((1 + k)\Delta Sales - \Delta REC)$ is only 0.040 and so the $(1 + k)$ adjustment to $\Delta Sales$ only has a minimal impact on the magnitude of the residual. The results for the lagged model indicate that about 22% of last year's accrual persists into the following year. The mean adjusted R^2 increases from 9.2% for the modified Jones model to 17.2% for the lagged model. Finally, including future sales growth (GR_Sales) has incremental explanatory power. The coefficient on GR_Sales is 0.042 and the mean adjusted R^2 increases to 20%, over double that of the modified Jones model.⁴

Panel B of Table 1 provides additional descriptive statistics on the adjusted R^2 for each model. The forward-looking model consistently has more than double the explanatory power of the modified Jones model in all areas of the distribution. The R^2 s for the forward-looking model compare favorably to other industry-specific models. For example Beatty et al. (2002, p. 564) report an R^2 of 21% and 10% respectively for their models of the loan loss provision and realized security gains

Table 1. Continued.

ΔREC is the change in receivables reported on the statement of cash flows (item 302) for the year. This variable is scaled by average total assets (item 6).

PPE is the gross amount of property, plant and equipment (item 7). This variable is scaled by average total assets (item 6).

GR_Sales is the change in sales for the following year. This variable is scaled by current sales.

k is calculated from the following regression for each two-digit SIC-year grouping

$$\Delta REC = \alpha + k\Delta Sales + \varepsilon.$$

k is restricted to be between 0 and 1.

and losses in the banking industry. Panel C reports the correlations between the discretionary accrual estimates. As expected, these are all very high and are over 0.9. Total accruals are less strongly correlated with the discretionary accrual estimates but the correlation is still high and around 0.8.

1.3. *Discretionary Component of Accruals and Ability to Detect Earnings Management*

One concern with discretionary accrual models is whether the models can detect earnings management when it actually occurs (e.g., Dechow et al., 1995 and McNichols, 2000). In Section 1.2 we developed the forward-looking model that explains more of the variation in accruals than the modified Jones model. This should improve our ability to distinguish nondiscretionary from discretionary accruals and increase the power of our tests. In this section we provide three tests to validate that our discretionary accrual proxy reflects earnings management.

The first test is to investigate whether the discretionary component is more transitory than other components for predicting future earnings (e.g., Sloan, 1996, and Xie, 2001). Table 2 provides the following base regression:

$$Earnings_{t+1} = \alpha + \beta Earnings_t + \varepsilon_t. \quad (5)$$

We then decompose $Earnings_t$ into cash from operations (CFO), nondiscretionary accruals (NDA), and discretionary accruals (DA):

$$Earnings_{t+1} = \alpha + \beta_1 CFO_t + \beta_2 NDA_t + \beta_3 DA_t + \varepsilon_t. \quad (6)$$

We predict that the discretionary component will have a lower coefficient than other components of earnings. The results in Table 2 indicate that for all models the coefficient on the discretionary component is significantly lower than that on either cash flows or the nondiscretionary component. These results suggest that more of the transitory components of earnings are reflected in our discretionary accrual measures.

The second test follows that provided by Dechow et al. (1995) and Bradshaw et al. (2001). If discretionary accruals have power to detect earnings management, then they should identify extreme examples of earnings management such as those identified by the SEC in its accounting and auditing enforcement releases (AAERs). We use the sample of AAERs identified in Bradshaw et al. (2001) that consists of 48 AAERs all involving allegations of income increasing manipulations (see Bradshaw, Richardson and Sloan for details on sample formation). Figure 1 provides the results of this test. We form deciles based on the magnitude of discretionary accruals. If each model did a perfect job at detecting the earnings management identified by the SEC, then we would expect AAER manipulation years to be concentrated in portfolio 10. Consistent with our models detecting earnings manipulation, the figure indicates that a greater proportion of AAER manipulation years are in portfolio 10. We find no significant difference between the models in detecting the earnings manipulations. Thus, the forward-looking model explains more of the variation in accruals (as

indicated by the R^2 s in Table 1) but this does not compromise its ability to detect the earnings manipulation identified by the SEC relative to the other models.

The final test we use is to examine future earnings and stock returns. One implication of earnings management is that it temporarily boosts earnings. If small profit firms temporarily boost earnings to avoid a loss, then we should observe earnings declines over the following year as accruals reverse. In addition, if discretionary accruals are the key way of engaging in earnings management, then the earnings declines should be concentrated in the positive discretionary accrual firms. Further, if the market does not anticipate this decline in future earnings, then we should observe stock price declines concentrated in the positive discretionary accrual firms. Examining earnings declines is a stricter test of earnings management than the persistence tests reported in Table 2 because persistence is also affected by changes in the asset base (e.g., Fairfield et al., 2003). The result of this test is provided later in the paper in Table 4.

2. Sample, Predictions, and Results

Section 2.1 presents our sample selection and the earnings distribution and Section 2.2 discusses our prediction. Section 2.3 provides our tests of discretionary accruals. Section 2.4 provides a discussion of alternative explanations for the kink and Section 2.5 provides our analysis of the time-series trend of the kink.

2.1. Sample Selection of the Earnings Distribution

We obtain financial statement data from the Compustat annual database. We form our small profit sample consistent with Burgstahler and Dichev (1997a). We scale net income (Compustat item #172) by beginning market value of equity, MVE , (item # 25 \times item # 199), hereafter NI . We group firms into net income classes ($niclass$). The range of each $niclass$ is 0.005. For example $niclass -30$ includes all firm-years where $-0.15 \leq NI < -0.145$. Therefore, our benchmark beater class, $niclass 0$, includes all firm-years where $0 \leq NI < 0.005$. We have six observations where earnings are exactly equal to zero. Excluding these observations has no impact on the results. Our final sample consists of 47,847 firm-years.

Figure 2 replicates the findings in Hayn (1995) and Burgstahler and Dichev (1997a) for our sample of firms. As documented in these papers, a much greater proportion of firms are in $niclass 0$ and $+1$ than in $niclass -1$ and -2 . $Niclass 0$ and $+1$ are shaded differently to emphasize that they are the focus of our tests. This figure excludes extreme observations in the tails.⁵ We use two methods to gauge how many firms are expected in $niclass 0$ and $+1$ by chance: a linear approximation and an exponential approximation. To do these we estimate the slope between $niclass -4$ to $+4$. Using a linear (exponential) approximation, 90% (85%) of the observations are expected to be in $niclass 0$ and $+1$ by chance and 10% (15%) of observations have potentially “managed” earnings to avoid a loss. This is an important point to

Table 2. Persistence of earnings components using 47,847 firm-years from 1988–2000.

$Earnings_{t+1} = \beta(Earnings_t)$						
	Accrual Measure					
	None	Total Accruals	Modified	Adapted	Lagged	Fwd. Look
<i>Intercept</i>	-0.012 (-18.64)	-0.028 (-39.84)	-0.017 (-16.38)	-0.017 (-16.51)	-0.017 (-18.47)	-0.016 (-17.28)
<i>Earnings_t</i>	0.708 (186.88)					
<i>CFO_t</i>		0.814 (187.87)	0.814 (188.25)	0.814 (188.20)	0.812 (187.82)	0.812 (188.08)
<i>Total Accruals_t</i>		0.515 (93.41)				
<i>Modjones_DA_t</i>			0.482 (81.02)			
<i>Modjones_NDA_t</i>			0.700 (51.40)			
<i>Adapted_DA_t</i>				0.481 (80.84)		
<i>Adapted_NDA_t</i>				0.699 (51.69)		
<i>Lagged_DA_t</i>					0.468 (76.25)	
<i>Lagged_NDA_t</i>					0.692 (59.57)	
<i>Fwd. Look_DA_t</i>						0.455 (73.44)
<i>Fwd. Look_NDA_t</i>						0.718 (64.76)
Adjusted R^2	0.427	0.453	0.455	0.455	0.456	0.458
<i>F</i> -tests comparing relative persistence of earnings components:						
Cash Flows = Total Accruals		2222.49*				
<i>DA</i> = Cash Flows			2450.75*	2451.75*	2531.22*	2685.77*
<i>NDA</i> = Cash Flows			65.79*	67.72*	97.43*	65.35*
<i>DA</i> = <i>NDA</i>			220.80*	221.86*	298.43*	442.51*

T-statistics are reported in parentheses below parameter estimates.

*Indicates *F*-test significant at better than the 1% level.

Each of the four Accrual Models are estimated using the Jones (1991) technique of decomposing total accruals into a non-discretionary and an discretionary component. The method of decomposition for each model is as follows: *Modified*: $TA = \alpha + \beta_1(\Delta Sales - \Delta REC) + \beta_2 PPE + \varepsilon$; *Adapted*: $TA = \alpha + \beta_1((1+k)\Delta Sales - \Delta REC) + \beta_2 PPE + \varepsilon$; *Lagged*: $TA = \alpha + \beta_1((1+k)\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 LagTA + \varepsilon$; *Forward Looking (Fwd. Look)*: $TA = \alpha + \beta_1((1+k)\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 LagTA + \beta_4 GR_Sales + \varepsilon$.

CFO is the operating cash flows (item 308). It is scaled by average total assets. *TA* is the difference between operating cash flows (item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. This variable is scaled by average total assets (item 6).

Earnings is income before extraordinary items (item 123) as reported on the statement of cash flows scaled by average total assets.

LagTA is the lagged value of *TA*.

$\Delta Sales$ is the change in sales (item 12) for the year. This variable is scaled by average total assets (item 6).

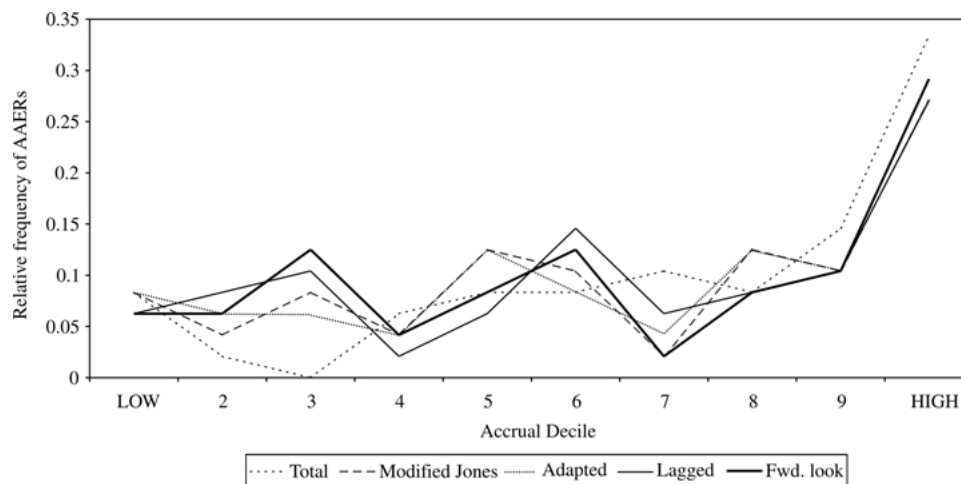


Figure 1. The relative frequency of earnings manipulation years identified in 48 accounting and auditing enforcement releases (AAERs) for each decile formed on the magnitude of discretionary accruals.

consider when researchers assume that all small profit firms have managed earnings, since approximately 85 to 90% of the observations are adding noise to such tests.

2.2. Prediction

Figure 2 indicates that there are 1646 small profit firms (firms in *niclass* 0 or +1) and 797 small loss firms (firms in *niclass* -1 or -2). If boosting of discretionary accruals explains the kink, then we expect firms with small profits to have higher discretionary accruals than firms with small losses (i.e., firms boost accruals and move out of the

Table 2. Continued.

ΔREC is the change in receivables reported on the statement of cash flows (item 302) for the year. This variable is scaled by average total assets (item 6).

PPE is the gross amount of property, plant and equipment (item 7). This variable is scaled by average total assets (item 6).

GR_Sales is the change in sales for the following year. This variable is scaled by current sales.

k is calculated from the following regression for each two-digit SIC-year grouping

$$\Delta REC = \alpha + k\Delta Sales + \varepsilon$$

k is restricted to be between 0 and 1.

The earnings components in the above regressions are mutually exclusive and collectively exhaustive.

$_DA$ represents the discretionary accruals and is the difference between *Total Accruals* and *Non-discretionary Accruals (NDA)*.

$_NDA$ represents the nondiscretionary accruals and is computed using the coefficients from the respective accrual model.

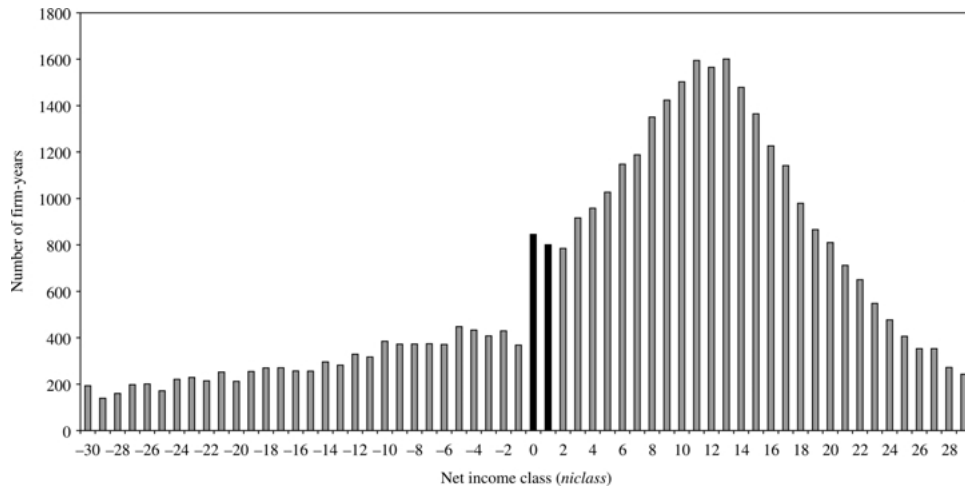


Figure 2. The distribution of net income scaled by market value (tails truncated).

small loss class and into the small profit class). Our joint hypothesis stated in alternative form is:

H1: *The kink is caused by earnings management to avoid a loss and our discretionary accrual proxy reflects earnings management.*

Observing significantly higher discretionary accruals for the small profit group relative to the small loss group is consistent with this hypothesis. If both groups have similar levels of discretionary accruals then either (i) earnings management causes the kink but our model lacks the power to detect it, or (ii) our model reflects earnings management but the kink is not caused by earnings management.

2.3. Discretionary Accruals and the Kink

Table 3 investigates whether small profit firms are different from all other firms, and small loss firms. Panel A of Table 3 compares small profit firms to all other firms. Consistent with earnings management, discretionary accruals calculated using either the forward-looking model or the lagged model are significantly higher for the small profit group. In addition, total accruals, and operating cash flows are significantly higher for small profit firms. Similar to Burgstahler and Dichev (1997a) we examine the ex ante flexibility to boost accruals. The larger a firm's current assets and liabilities relative to its asset base, the greater the potential ability to boost earnings. We find that small profit firms have similar levels of current assets and slightly lower levels of current liabilities relative to other firms. In addition, we find that small profit firms are slightly smaller, younger and less levered than other firms.

Panel B of Table 3 investigates whether discretionary accruals are higher for firms reporting small profits relative to firms reporting small losses. This is a direct test of whether managers boost discretionary accruals to avoid reporting a loss. Discretionary accruals using the forward-looking model for small profit firms are 0.022 and insignificantly different from 0.017 reported for the small loss group. Using the sample sizes, and sample variances for the small profit and small loss firms we can determine the difference in discretionary accruals required to reject the null (obtain a *t*-statistic greater than 1.96). The required difference in discretionary accruals is 0.007. A difference of 0.007 is feasible given the difference in earnings across the two groups of firms, since 0.007 translates to less than 1% of the asset base. When we compare small profit firms to small loss firms we are comparing firms whose earnings on average differ by 1% of market value. Hence, the failure to find a difference in discretionary accruals is not due purely to low power tests.

In Panel B we also find that cash flows and total accruals are significantly higher for the small profit group. However, this is to be expected given that there is a positive relation between earnings, total accruals and cash flows. Consistent with Burgstahler and Dichev (1997a), we find that small profit firms have significantly higher current assets and liabilities. We also find that small loss firms are significantly larger in size than small profit firms.

Panel C compares small loss firms to all other firms. The results indicate that small loss firms have significantly higher discretionary accruals than the average firm. Small loss and small profit firms both have high discretionary accruals relative to the average of the entire distribution. It does not appear to be the case that the loss versus profit distinction is important for separating the accrual behavior of the two groups.

One potential reason that we find no significant difference between the discretionary accruals for small profit versus small loss firms is that discretionary accruals are measured with error. In Table 4 we provide our final test to validate that our measure of discretionary accruals detects earnings management. Table 4 examines whether small profit firms have larger earnings declines and poorer stock price performance than other firms or small loss firms. We also examine whether the poor performance is concentrated in the positive discretionary accrual firms.

Table 4 Panel A compares small profit firms to all other firms and indicates that small profit firms have earnings changes of -0.038 . This is significantly lower than the earnings changes documented for other firms of 0.001 . Small profit firms also have significantly lower future returns than other firms (-0.056 vs. 0.002).⁶ Panel B decomposes small profit firms into those with positive discretionary accruals versus zero or negative discretionary accruals (using the lagged model). The results indicate that the poor future performance is most acute for positive discretionary accrual firms. Firms in the small profit group with positive discretionary accruals have earnings changes of -0.050 vs. -0.020 for all other small profit firms. Positive discretionary accrual firms have future returns of -0.091 vs. -0.002 for other small profit firms.

Panel C compares small loss firms to all other firms. The results indicate that small loss firms also have significant earnings declines of -0.033 vs. 0.000 for all other firms. Small loss firms also have negative future returns of -0.043 vs. the 0.001

Table 3. Firm characteristics and accruals for small profit firms (net income class 0 and 1 from Figure 2) compared to all other firms and small loss firms (net income class -1 and -2 from Figure 2).

Panel A: Methods of reporting small profits—comparison with all others

	Small Profit Firms		All Others		Test	
	Number	Mean	Number	Mean	Statistic	(p-value)
Lagged Discretionary Accruals	1646	0.022	46,201	0.000	11.27	(0.001)
Fwd. Look Discretionary Accruals	1646	0.022	46,201	0.000	11.35	(0.001)
Total Accruals	1646	-0.038	46,201	-0.061	10.86	(0.001)
Cash Flows	1646	0.049	46,201	0.037	5.52	(0.001)
Current Assets	1639	0.370	45,821	0.371	-0.15	(0.882)
Current Liabilities	1636	0.195	45,628	0.202	-2.15	(0.032)
Size	1646	4.624	46,201	4.720	-1.71	(0.087)
Firm Age	1483	11.97	41,515	14.39	-6.90	(0.001)
Leverage	1646	0.032	46,201	0.041	-1.84	(0.066)

Panel B: Methods of reporting small profits—comparison with small loss firms

	Small Profit Firms		Small Loss Firms		Test	
	Number	Mean	Number	Mean	Statistic	(p-value)
Lagged Discretionary Accruals	1646	0.022	797	0.017	1.42	(0.156)
Fwd. Look Discretionary Accruals	1646	0.022	797	0.017	1.51	(0.132)
Total Accruals	1646	-0.038	797	-0.046	2.24	(0.025)
Cash Flows	1646	0.049	797	0.033	4.02	(0.001)
Current Assets	1639	0.370	791	0.330	4.31	(0.001)
Current Liabilities	1636	0.195	788	0.182	2.58	(0.010)
Size	1646	4.624	797	4.924	-3.16	(0.002)
Firm Age	1483	11.97	722	11.45	0.88	(0.381)
Leverage	1646	0.032	797	0.029	0.34	(0.732)

Panel C: Comparison of accruals for small loss firms versus all other firms

	Small Loss Firms		Other Firms		Test	
	Number	Mean	Number	Mean	Statistic	(p-value)
Lagged Discretionary Accruals	797	0.017	47,050	0.000	5.86	(0.001)
Fwd. Look Discretionary Accruals	797	0.017	47,050	0.000	4.55	(0.001)
Total Accruals	797	-0.046	47,050	-0.061	3.45	(0.001)
Cash Flows	797	0.033	47,050	0.037	0.58	(0.562)

Test statistic is based on a difference in means across samples (*t*-test) with *p*-values reported in parentheses.

Total Accruals (TA) is the difference between operating cash flows (item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. This variable is scaled by average total assets (item 6).

Fwd-Look Discretionary Accruals is the difference between *Total Accruals* and *Non-Discretionary accruals (NDA)*, where *NDA* are estimated using the coefficients from the following regression:

$$TA = \alpha + \beta_1((1+k)\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 LagTA + \beta_4 GR_Sales + \varepsilon$$

Lagged Discretionary Accruals (DA) is the difference between *Total Accruals* and *Non-Discretionary*

return to all other firms (but the difference is not statistically significant). Panel D compares small loss firms to small profit firms. We find no difference in their future performance. Panel E compares the positive discretionary accrual firms in the small profit sample to the positive discretionary accrual firms in the small loss sample. We find no significant difference in their future performance. Overall the results in Table 4 are consistent with our discretionary accrual proxy detecting earnings management. However, the results also indicate that there is no significant difference in the extent of earnings management in the small profit and small loss firms.

We next plot discretionary accruals across the earnings distribution to see if the increase in discretionary accruals around the kink is unusual even if it is not statistically significant. We use the forward-looking model in all figures (results are similar using the lagged model). Figure 3 reports the median, upper and lower quartile of discretionary accruals for each net income class. If boosting of discretionary accruals explains the kink, we expect firms in *niclass* 0 to have higher discretionary accruals than firms in *niclass* - 1. Contrary to this prediction, Figure 3 indicates that the upper quartile is constant, while the median and lower quartile of discretionary accruals decrease from *niclass* - 1 to *niclass* 0.⁷

Table 3. Continued.

Accruals (NDA), where *NDA* are estimated using the coefficients from the following regression:

$$TA = \alpha + \beta_1((1 + k)\Delta Sales - \Delta REC) + \beta_2 PPE + \beta_3 LagTA + \varepsilon.$$

We estimate this regression across 637 two-digit SIC-year groups.

Other variables used in the above regression are defined as follows:

LagTA is the lagged value of *TA*.

$\Delta Sales$ is the change in sales (item 12) for the year. This variable is scaled by average total assets (item 6).

ΔREC is the change in receivables reported on the statement of cash flows (item 302) for the year. This variable is scaled by average total assets (item 6).

PPE is the gross amount of property, plant and equipment (item 7). This variable is scaled by average total assets (item 6).

GR_Sales is the change in sales for the following year. This variable is scaled by current sales.

k is calculated from the following regression for each two-digit SIC-year grouping

$$\Delta REC = \alpha + k\Delta Sales + \varepsilon,$$

k is restricted to be between 0 and 1.

Current Assets are defined as the sum of accounts receivable (item 2), inventory (item 3) and other current assets (item 68). This variable is scaled by beginning-of-the-year total assets.

Current Liabilities are defined as the sum of accounts payable (item 70), taxes payable (item 71) and other current liabilities (item 72). This variable is scaled by beginning-of-the-year total assets.

Cash Flows is operating cash flows as reported on the Statement of Cash Flows (item 308). It is scaled by average total assets.

Size is the log of market value of equity at the end of the year. It is calculated as stock price (item 199) * shares outstanding (item 25).

Leverage is calculated as leverage less the median leverage for the two-digit SIC-year group. Leverage is the book value of debt (item 9 + item 34) divided by total assets (item 6).

Firm Age is the number of years for which the firm is listed on an exchange.

Table 4. Future performance for firms reporting small profits (net income class 0 and 1 from Figure 2) compared to all other firms and small loss firms (net income class -1 and -2 from Figure 2). Discretionary accruals (DA) are measured using the lagged model.

Panel A: Future performance for small profit firms compared to all other firms

	Small Profit Firms		All Other Firms		Test Statistic	
	Number	Value	Number	Value		
Δ Earnings	1625	-0.038	44,256	0.001	-8.84	(0.001)
Future Return	1324	-0.056	36,466	0.002	-2.82	(0.005)

Panel B: Future performance of positive discretionary accrual small profit firms compared to other small profit firms

	Small Profit Firms— Positive DA		Small Profit Firms— Non-positive DA		Test Statistic	
	Number	Value	Number	Value		
Δ Earnings	999	-0.050	626	-0.020	-3.51	(0.001)
Future Return	808	-0.091	516	-0.002	-2.03	(0.043)

Panel C: Future performance of small loss firms compared to all other firms

	Small Loss Firms		All Other Firms		Test Statistic	
	Number	Value	Number	Value		
Δ Earnings	787	-0.033	45,094	0.000	-5.54	(0.001)
Future Return	606	-0.043	37,184	0.001	-1.22	(0.223)

Panel D: Future performance for small profit firms compared to small loss firms

	Small Profit Firms		Small Loss Firms		Test Statistic	
	Number	Value	Number	Value		
Δ Earnings	1625	-0.038	787	-0.033	-0.83	(0.408)
Future Return	1324	-0.056	606	-0.043	-0.33	(0.739)

Panel E: Future performance of positive discretionary accrual small profit firms compared to positive discretionary accrual small loss firms

	Small Profit Firms— Positive DA		Small Loss Firms— Positive DA		Test Statistic	
	Number	Value	Number	Value		
Δ Earnings	999	-0.050	481	-0.040	-1.05	(0.294)
Future Return	808	-0.091	364	-0.052	-0.78	(0.434)

Test statistic is based on a difference in means across samples (*t*-test) with *p*-values reported in parentheses.

Δ Earnings is the change in net income (item 172) over the following year. Net income is scaled by opening market value of equity.

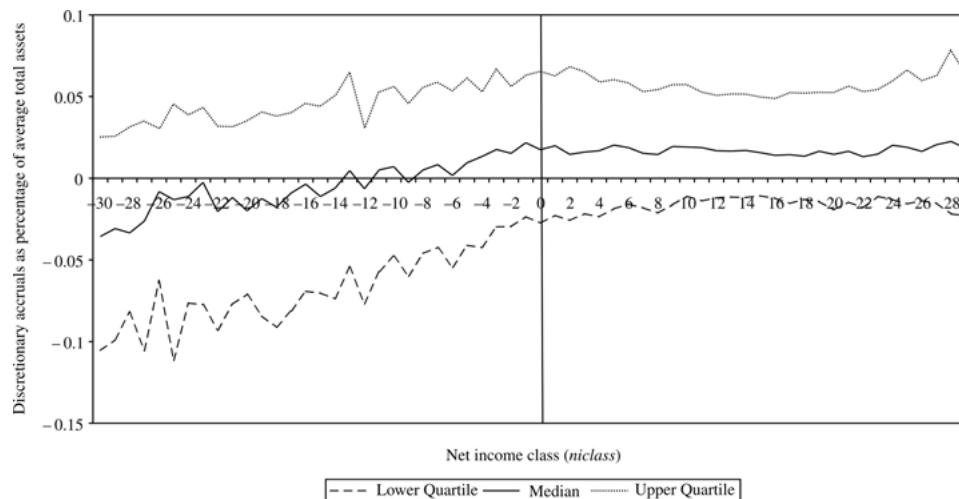


Figure 3. Discretionary accruals measured using the forward-looking model across net income classes.

We also note that despite our effort to control for performance, there is still a positive relation between earnings and discretionary accruals for extreme loss firms.⁸ This relation has been noted by prior research (e.g., Dechow et al., 1995). This

Table 4. Continued.

Future Return is one-year-ahead market adjusted returns. Returns are calculated starting four months after the end of the fiscal year. For example, company XYZ has a December 31, 1995 fiscal year end. We calculate net income and accrual information for the fiscal year ended 1995. Our return window is from April 1, 1996 to March 31, 1997.

The discretionary accrual breakdown is based on our Lagged model. Using this model *Discretionary Accruals (DA)* is the difference between *Total Accruals* and *Non-discretionary accruals (NDA)*. *Total Accruals (TA)* is the difference between operating cash flows (item 308) and income before extraordinary items (item 123) as reported on the statement of cash flows. This variable is scaled by average total assets (item 6). *NDA* are estimated using the coefficients from the following regression:

$$TA = \alpha + \beta_1((1+k)\Delta\text{Sales} - \Delta\text{REC}) + \beta_2\text{PPE} + \beta_3\text{LagTA}.$$

We estimate this regression across 637 two-digit SIC-year groups.

Other variables used in the above regression are defined as follows:

LagTA is the lagged value of *TA*.

ΔSales is the change in sales (item 12) for the year. This variable is scaled by average total assets (item 6).

ΔREC is the change in receivables reported on the statement of cash flows (item 302) for the year. This variable is scaled by average total assets (item 6).

PPE is the gross amount of property, plant and equipment (item 7). This variable is scaled by average total assets (item 6).

k is calculated from the following regression for each two-digit SIC-year grouping

$$\Delta\text{REC} = \alpha + k\Delta\text{Sales} + \varepsilon,$$

k is restricted to be between 0 and 1.

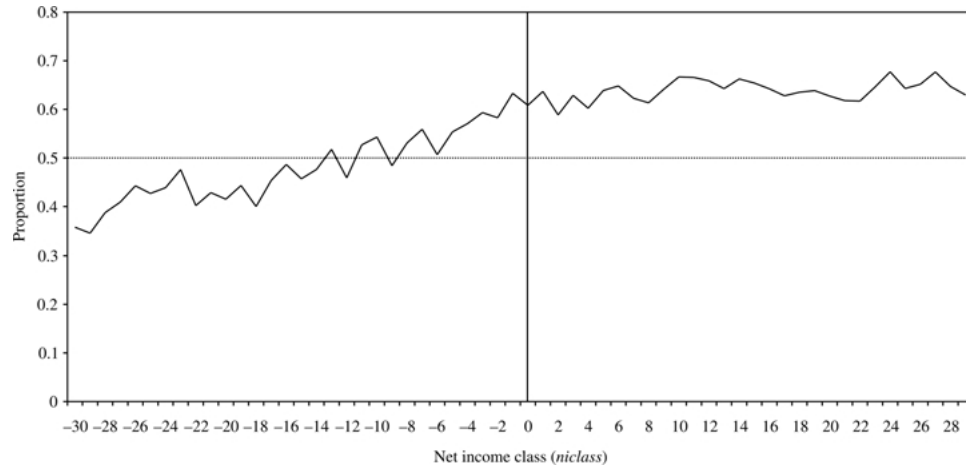


Figure 4. Proportion of positive discretionary accrual firms in each net income class. Discretionary accruals are measured using the forward-looking model.

suggests that our results in Table 3 Panel A comparing small profit firms to all other firms are biased in favor of finding positive discretionary accruals.

One explanation for our lack of findings in Table 3 Panel B is that a greater proportion of firms in the small profit group manage earnings, even though the mean level of discretionary accrual is not significantly different from the small loss group. Figure 4 reports the proportion of firms in each *niclass* that have positive discretionary accruals. If discretionary accrual behavior occurs randomly, we expect each *niclass* to have a ratio equal to 0.50. Figure 4 indicates that approximately 61% of firms in *niclass* 0 and 63% of firms in *niclass* -1 have positive discretionary accruals. Under an earnings management explanation for the kink we would expect a greater proportion in *niclass* 0, not *niclass* -1. Figure 4 also shows a positive relation between the proportion of discretionary accruals and the level of earnings, particularly in the loss region, again suggesting that our model reduces but does not eliminate the positive relation between earnings and discretionary accruals.

Figure 5 provides another test of whether discretionary accruals explain the kink. The loss avoidance story is directional, in the sense that firms boost discretionary accruals to move from reporting a loss to a profit. We therefore expect the kink to be less obvious in the distribution of firms with negative discretionary accruals. Figure 5 indicates that the kink is still obvious for firms with negative discretionary accruals. In Figure 2, the ratio of *niclass* 0 to *niclass* -1 is 2.30 (845/368), in Figure 5 this ratio is 2.45 (331/135). Thus, the kink increases when we exclude positive discretionary accrual firms from the earnings distribution. This is not predicted under a simple loss avoidance story.

An alternative research design to identify the impact of earnings management on the earnings distribution is to examine the pre-managed earnings distribution. To calculate pre-managed net income we subtract discretionary accruals from net income (scaled by average total assets). We then group firms into pre-managed net

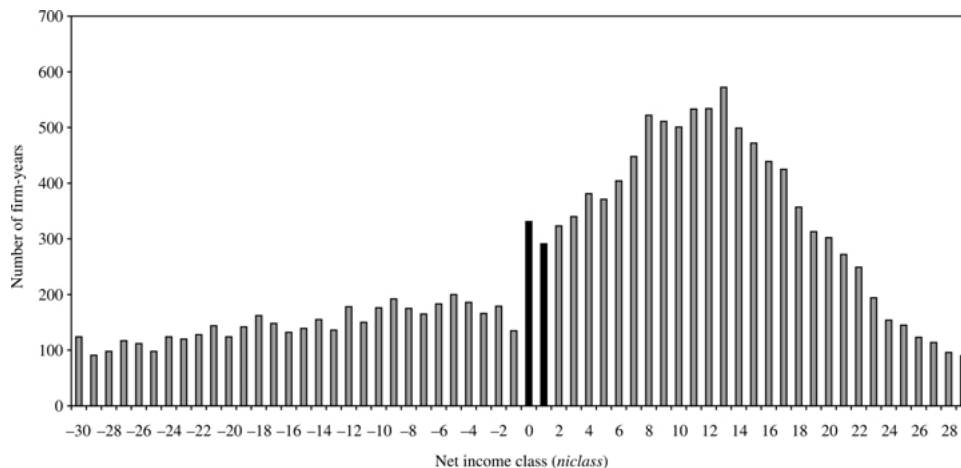


Figure 5. The distribution of net income scaled by market value for firm-years with income decreasing discretionary accruals (using the forward-looking model).

income classes in the same manner as done in Figure 2. Figure 6(a) documents this distribution.

There is no observable kink in Figure 6(a). This is consistent with earnings management causing the kink in the earnings distribution. However, when we subtract a random number drawn from a normal distribution with the same mean (zero) and variance (0.01155) as our measure of discretionary accruals we obtain a similar smooth “pre-managed” distribution. Figure 6(b) documents the pre-managed distribution using the random number in place of our estimate of discretionary accruals.

The “pre-managed” earnings research design has a simple problem. By deducting a number from net income (whether it be a random number or otherwise), the result is an “unmixing” of two distributions. As shown in Figure 6(b) this generates a smooth “pre-managed” net income distribution. This research design has the potential to falsely reject the null hypothesis of no earnings management. Finding a smooth pre-managed net income distribution is a necessary condition for documenting an earnings management explanation for the kink, but it is not a sufficient condition.⁹

The overall takeaway from our tests of earnings management is that small profit and small loss firms have similar levels of discretionary accruals and a similar proportion of positive discretionary accrual firms. Therefore, we are unable to explain the kink with the story that firms boost earnings to move from reporting a small loss to reporting a small profit.

2.4. Alternative Explanations for the Kink

In this section we provide a discussion of some non-earnings management explanations for the kink.

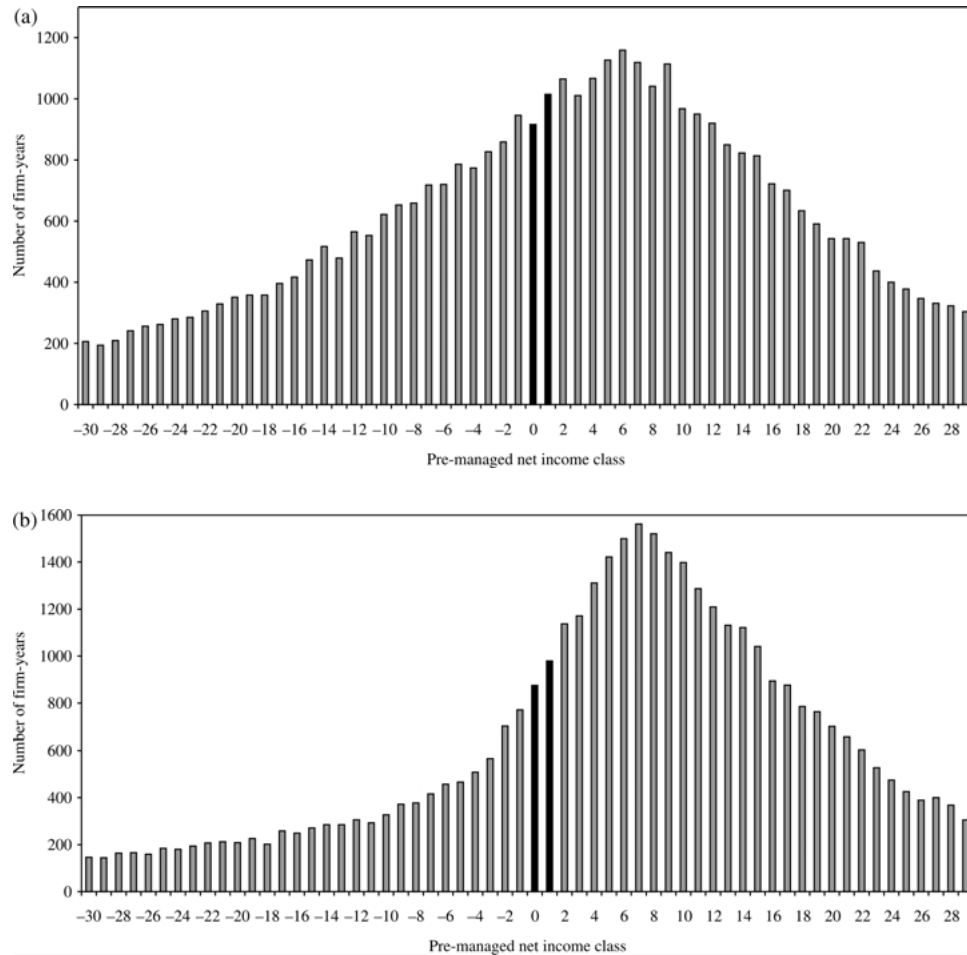


Figure 6. (a) Distribution of pre-managed net income. Pre-managed net income is calculated as net income scaled by average total assets less discretionary accruals measured using the forward-looking model. (b) Distribution of pre-managed net income. Pre-managed net income is calculated as net income scaled by average total assets less a random number drawn from a normal distribution with mean zero, variance 0.01155.

2.4.1. Management Taking Real Actions to Improve Performance

One of the objectives of a firm is to produce a profit. Managers could set targets and employees could work harder when there is a clearly defined objective (i.e., to be profitable). When firms are ranked on earnings, we can observe the effect of this incentive in the data at the zero earnings reference point. The kink could be reflecting efficient contracting. The first-order effect of setting a target is people work harder to achieve the target. The second-order effect is earnings management.

2.4.2. Selection Bias Due to Exchange Listing Requirements

Stock exchanges often have a stated preference for listing profitable firms. For example, the New York Stock Exchange requires firms to have \$2.5 million in profits in the listing year or have \$6.5 million in profits over the previous three years and a market value of at least \$60 million. The American Stock Exchange requires \$750,000 in the latest fiscal year or two of the most recent three years and a market value of \$15 million. The NASDAQ Stock Market requires pretax income of \$1 million in the latest fiscal year or two of the last three fiscal years and a market value of \$8 million.

Figure 7(a) provides a plot for firms that have been listed on an exchange for two years or less. Consistent with a listing bias, the kink is more extreme for newly listed firms. Figure 7(b) presents a plot of firms that are over twenty years of age. A smaller kink is observable for these firms, but the kink is still there. This suggests that exchange-listing requirements provide a partial but not complete explanation for the kink.

2.4.3. Scaling by Market Value

Investors could use different valuation approaches for loss versus profit firms (e.g., Hayn, 1995). For example, investors could place more weight on the balance sheet and liquidation values when a firm reports a loss (e.g., Burgstahler and Dichev, 1997b). This could in turn affect the denominator (market value) used to create the distribution of earnings presented in Figure 2. The results in Table 3 indicate that small loss firms have significantly higher market values than small profit firms. This is consistent with different valuation methods being applied to profit versus loss firms. Perhaps the kink just indicates that there are more high price-earnings ratio firms than one would expect by chance.

We provide two figures to investigate whether scaling affects the kink in earnings. Figure 8 reports earnings-per-share (Compustat data item 58) and Figure 9(a) reports unscaled earnings in \$100,000 increments. What is noticeable in both figures is that the distribution changes in shape to be more bell-like, with the mode being at zero. This makes interpretation of the kink more difficult since it is unclear what number to expect at the peak of the distribution.

Figure 8 indicates that scaling earnings by the number of shares outstanding considerably mitigates the kink. For example, the ratio of firms with EPS of 0 cents to firms with EPS of -1 cent is 1.18 (804/682), and the ratio of firms with EPS of +1 cent to EPS of -1 cent is 1.11 (762/682). Thus the kink at zero does not appear to be too unusual. In fact, larger kinks are observable at other points such as 39 versus 40 cents, 79 versus 80 cents, and 99 cents versus \$1.00. However, these other kinks are not due to loss avoidance. The preponderance of observations at cents ending in zero in the profit region is discussed in Thomas (1989) and Carlsaw (1988).

Figure 9(a) (examining earnings in \$100,000 increments) provides evidence of a kink. The ratio of *dollar net income class 0* firms to *dollar net income class -1* firms is

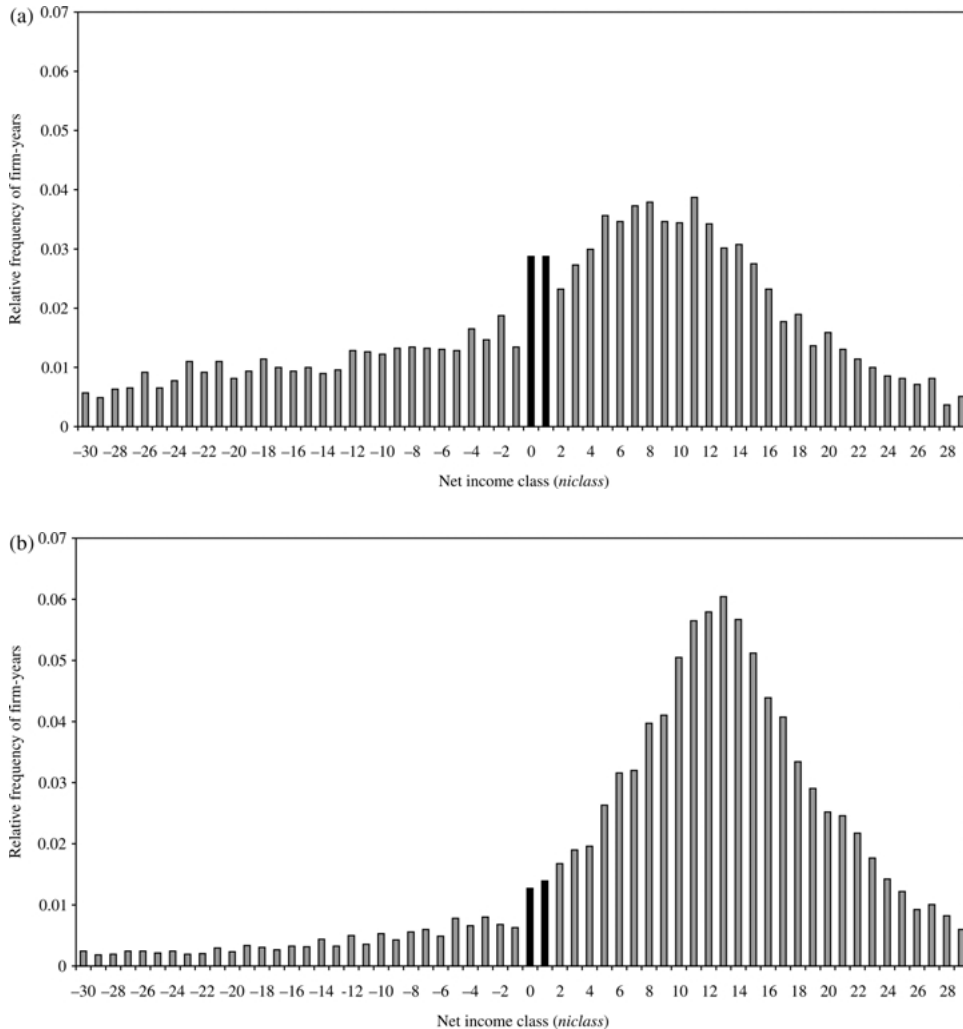


Figure 7. (a) The distribution of net income scaled by market value for firms listed for two years or less (4454 firm-years). (b) The distribution of net income scaled by market value for firms listed for more than twenty years (9016 firm-years).

1.81 (1189/654). In Figure 2, the ratio of *niclass* 0 to *niclass* - 1 is 2.30 (845/368). Thus, even though the kink looks quite extreme in Figure 9(a) it is smaller than that presented in Figure 2.¹⁰ Although not easily discernible in Figure 9(a), we find that similar to the EPS distribution, there are also “kinks” just above earnings numbers ending with zero, such as 1 million, 2 million, 3 million, etc.

Figure 9(b) reports the distribution of cash from operations in \$100,000 increments. What is noticeable here is that the mode is now in the group with

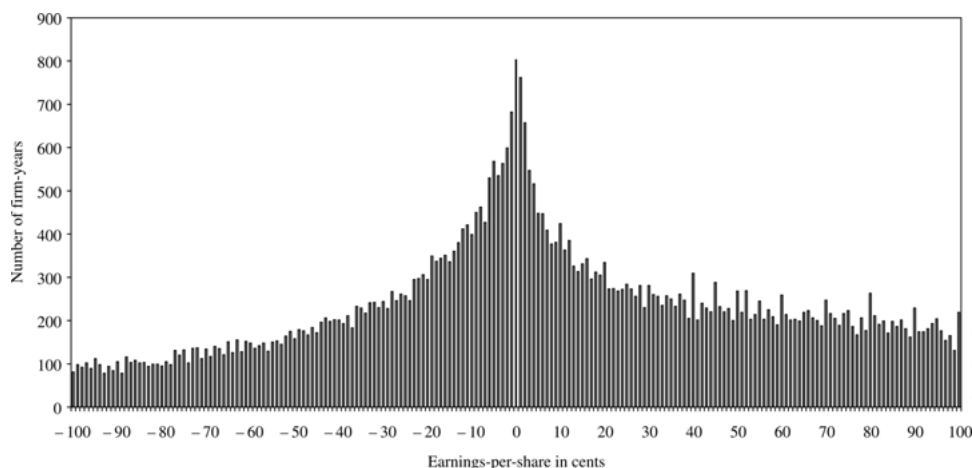


Figure 8. Distribution of earnings-per-share (tails truncated). There are 804 firms reporting EPS between 0 and 1 cent, and 682 firms reporting EPS less than 0 but greater than -1 cent.

slightly negative cash from operations (i.e., *CFO class* -1). The figure also indicates a “kink” on either side of the mode. This highlights the difficulty in interpreting the kink at the mode. We next investigate whether the 1189 small profit firms in Figure 9(a) are clustered in *CFO class* -1 . This would be consistent with small profit firms using accruals to move from a cash flow loss to a profit and would also explain the differences in the kinks we observe in Figure 9(a) and 9(b). Figure 9(c) reports the distribution of cash from operations for the 1189 firms. What is noticeable in Figure 9(c) is the preponderance of firms in *CFO class* 0. We find that the mean and median cash from operations for the 1189 firms are positive. Therefore the difference in the kinks in Figures 9(a) and 9(b) is not explained by a simple story that firms use accruals to move from *CFO class* -1 into *dollar net income class* 0.

In summary, Figures 8 and 9 suggest that scaling by market value alters the shape of the earnings distribution. When the mode is at zero it is much more difficult to evaluate whether the “kink” is unusual. Figures 8 and 9 suggest that scaling by market value emphasizes the kink around zero.

2.4.4. Accounting Rules and Conservatism

Another reason a kink could be observed in earnings is because of accounting rules that encourage immediate loss recognition but prorate gain recognition. An example of this is asset impairment tests. If a firm purchases an asset that is expected to earn a high return, this gain is not recognized immediately, but instead is recognized as earned over the life of the asset. However, if the same firm purchases an asset that is

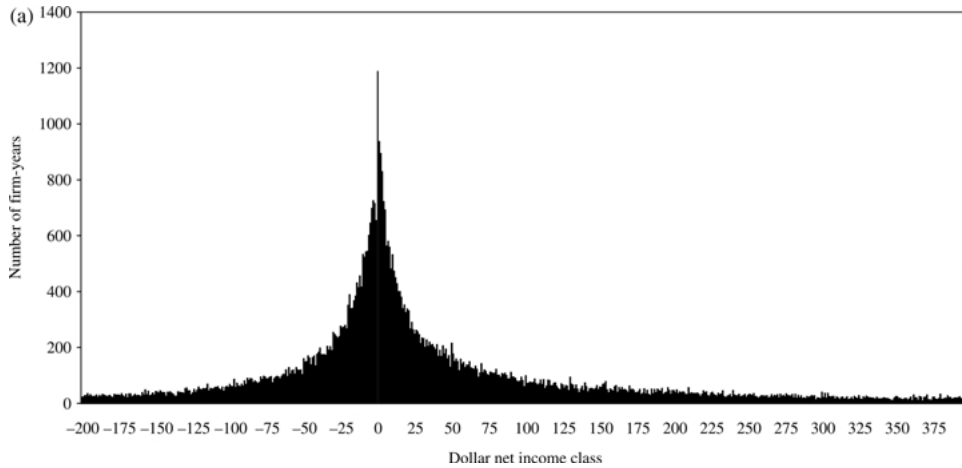


Figure 9(a). The distribution of net income in \$100,000 class intervals (tails truncated). There are 1189 observations with net income between 0 and \$100,000 and 654 with income between \$-100,000 and 0.

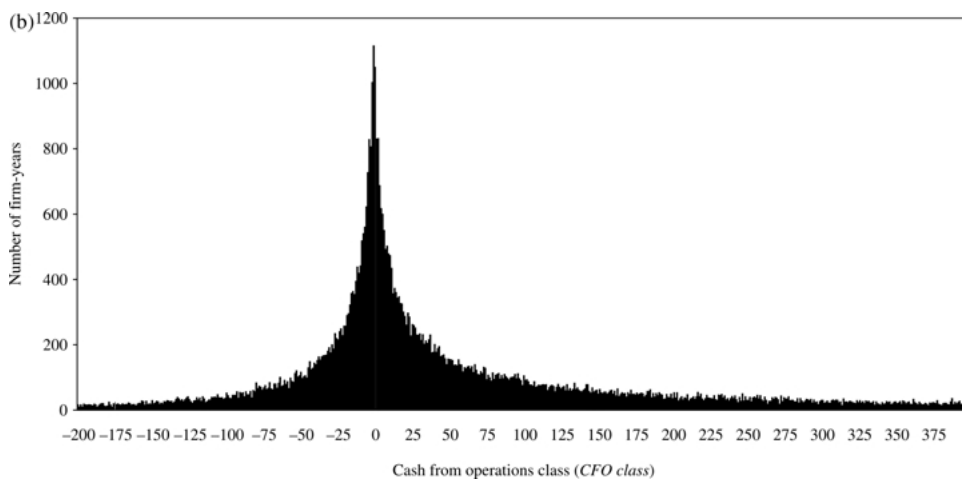


Figure 9(b). The distribution of cash from operations in \$100,000 class intervals (tails truncated). There are 1051 observations with cash from operations between 0 and \$100,000 and 1115 observations with cash from operations between \$-100,000 and 0.

not productive (i.e., will result in small future losses over its life), the firm is required to recognize the full extent of the losses immediately. Similarly, the lower of cost or market rule for inventory results in prorating profits but immediate recognition of future losses. The effect of these asymmetric accounting treatments is to shift potential small loss firms to the left tail of the distribution and profitable firms to the small profit region. We provide no formal tests of this explanation.

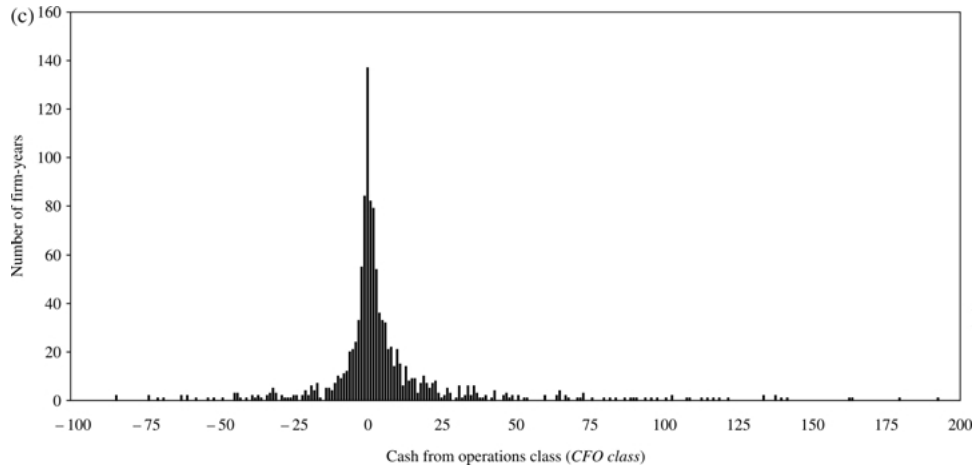


Figure 9(c). The distribution of cash flows from operations in \$100,000 class intervals for the 1189 observations with net income between 0 and \$100,000.

2.4.5. Financial Assets

The presence of financial assets on the balance sheet could contribute to a concentrated mass of small profit firms. Financial assets earn dividends or interest, neither of which can be negative. Adding the distribution of returns to financial assets to the distribution of returns generated by net operating assets could induce a kink in earnings.

2.5. Has the Earnings Kink Changed Through Time?

There has been a general shift away from focusing on bottom-line earnings in recent years. For example the listing requirements for the New York Stock Exchange have changed to de-emphasize the focus on earnings. Prior to 1995, the NYSE had a strong focus on positive income as a pre-requisite for listing on the exchange. In 1995, the NYSE allowed firms to list with losses as long as revenues, market capitalization and operating cash flows exceeded certain thresholds. In 1999, the NYSE allowed firms to list solely on the basis of reported revenues and market capitalization. This shift away from an “income” focus has had a dramatic effect on the distribution of net income for NYSE firms. In unreported tests we find that the ratio of small profit to small loss firms for NYSE firms for the entire 1988–2000 period is 2.13. Prior to the listing requirement change at the end of 1995, the ratio was 2.68 and after the change the ratio dropped to 1.76.

A decline in the earnings kink could also occur if management placed more emphasis on meeting analysts’ forecasts. Firms often set internal budgets and targets

and then provide guidance to analysts on these numbers. Empirical evidence suggests that the tendency to meet or beat analysts' forecasts has increased in recent years (e.g., Burgstahler and Eames, 1998; Brown, 2001; DeGeorge et al. 1999). Alternatively, with the advent of "pro forma earnings," managers now have more flexibility to report a "street earnings" number they desire without concern for the level of GAAP earnings (e.g., Bradshaw and Sloan, 2002).

Table 5 indicates that the proportion of small profit firms (*niclass* 0 and +1) to small loss firms (*niclass* -1 and -2) has declined over time and the regression results show a significant decline in the kink. In addition, the earnings per share change ratio has declined substantially. The results also indicate that the ratio of firms meeting or just beating analyst forecasts has considerably strengthened in recent years.

Table 5. A temporal examination of three earnings thresholds: reporting positive earnings, reporting earnings that exceed last year's earnings, and reporting earnings that exceed analyst expectations.

Panel A: Trends in the relative importance of the three earnings thresholds over the 1989–2001

Year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Trend	0	1	2	3	4	5	6	7	8	9	10	11	12
$RATIO_{EARNINGS}$	2.09	2.78	4.26	2.85	2.79	2.34	1.79	1.66	2.27	2.09	1.68	1.31	n/a
$RATIO_{\Delta EPS}$	n/a	2.06	1.83	2.12	1.56	1.68	1.67	1.30	1.36	1.42	1.14	1.24	1.05
$RATIO_{ANALYSTS}$	1.21	1.21	1.05	1.13	1.09	1.50	1.58	1.58	1.94	1.90	1.98	1.88	1.98

Panel B: Regression of the three ratio measures over 1989–2001 on time trend

$$RATIO = \alpha + \beta Trend + \varepsilon$$

Earnings Threshold	α	β	Adjusted R^2
Positive Earnings ($RATIO_{EARNINGS}$)	3.245 (8.48)	-0.141 (-2.72)	0.368
Last Year's Earnings ($RATIO_{\Delta EPS}$)	2.11 (24.44)	-0.088 (-7.54)	0.836
Analyst Expectations ($RATIO_{ANALYSTS}$)	1.019 (12.76)	0.086 (7.69)	0.829

T-statistics are reported in parentheses below parameter estimates.

$RATIO_{EARNINGS}$ is calculated each year as the number of small profit firms (classes 0 and 1) divided by the number of small loss firms (classes -2 and -1) using data from Compustat.

$RATIO_{\Delta EPS}$ is calculated each year as the number of small positive changes in reported EPS (ΔEPS is positive 1 or 2 cents) divided by the number of small negative changes in reported EPS (ΔEPS is negative 1 or 2 cents). This ratio is calculated using EPS figures as reported on I/B/E/S (after correcting for the split adjustment issue documented in Baber and Kang, 2002).

$RATIO_{ANALYSTS}$ is calculated each year as the number of small positive forecast errors (i.e., where reported EPS exceeds the most recent consensus forecast by 1 or 2 cents) divided by the number of small negative forecast errors (i.e., where reported EPS falls short of the most recent consensus forecast by 1 or 2 cents). This measure is calculated in the same way as Abarbanell and Lehavy (2003, Table 8).

3. Summary and Conclusion

We investigate whether the boosting of discretionary accruals explains the “kink” in the earnings distribution identified by Hayn (1995) and Burgstahler and Dichev (1997a). The “earnings management to avoid a loss” explanation for the kink predicts that firms with small (premanaged) losses boost earnings to report a profit. This results in fewer firms than expected in the small loss group and more firms than expected in the small profit group. One implication of this story is that small profit firms will have higher discretionary accruals than small loss firms. In addition, the earnings management explanation is directional: small loss firms manage earnings *up* to report a small profit. Therefore, another implication is that after removing from the earnings distribution firms that have positive discretionary accruals, one should see the kink decline.

Our results testing these implications are not compelling. We find that small profit and small loss firms have similar levels of discretionary accruals and both groups have similar proportions of positive discretionary accrual firms. In addition, the kink increases when we examine the distribution of earnings for negative discretionary accrual firms.

One explanation for our lack of results is that earnings management explains the kink but our tests lack power. To mitigate this concern, we provide a multitude of tests examining the power of our model. Another possibility is that we are measuring discretionary accruals correctly, but that the earnings management story is more complex than the one we test. For example, perhaps small loss firms boost earnings in the first three quarters, but in the fourth quarter their auditors do not allow some vital adjustments. This would suggest that the actions of auditors, rather than earnings management, explains the kink. We leave the examination of more complex earnings management stories to future research.

Ultimately, the importance of our finding of no significant difference in discretionary accruals between small profit and small loss firms comes down to the reader’s priors on the cause of the kink. If the reader’s null hypothesis is that the kink is caused by earnings management, then our results have little impact on this maintained hypothesis. Instead, they suggest that researchers should be wary of using Jones-type discretionary accrual models. If the reader’s null hypothesis is that the cause of the kink is unknown, then our inability to reject the null in favor of earnings management leaves open the question of what causes the kink.

We discuss five non-earnings management explanations for the kink in earnings. These include: (i) managers taking real actions to improve performance; (ii) exchange listing preferences for profitable firms; (iii) the possibility that the kink is driven by the denominator (market value) rather than the numerator (earnings) due to investors applying different valuation methods to loss versus profit firms; (iv) the role of accounting rules and conservatism; and (v) the role of financial assets. We do not test all of these explanations, but our tests of (ii) and (iii) suggest that selection biases play a partial role and that scaling issues influence the magnitude of the kink.

We suggest researchers proceed with caution when using the ratio of small profit to small loss firms as a measure of earnings management. First, it is not clear what

this ratio should be in the absence of earnings management. This problem was accentuated when we examined the EPS and unscaled earnings distribution. In these distributions, small profits are the mode and it is unclear how large the mode should be. Second, if managers take real actions to improve performance or there are selection biases in favor of small profit firms, then the use of this ratio could be noisy or biased. Third, small profit and loss firms differ from firms in the general population on a number of dimensions and so this raises concerns about potential correlated omitted variables. Fourth, our results suggest that the kink has declined over time. Finally, since we find that small loss firms also appear to be managing earnings, this brings into question whether loss avoidance is the primary motivation for the accrual management we detect in small profit firms. Contracts such as bonus plans that are conditional on earnings could create incentives for firms with small earnings (either positive or negative) to engage in income-increasing earnings management (e.g., Watts and Zimmerman, 1986, p. 208).

Acknowledgments

We appreciate the comments of Maureen McNichols (our discussant), Stephen Penman (editor), Irene Kim, Christian Leuz, Jim Ohlson, Richard Sloan, Phil Stocken, Wei Tang, Jake Thomas, Scott Whisenant, Peter Wysocki, participants at the 2002 *Review of Accounting Studies* Conference, and an anonymous referee. Patricia M. Dechow appreciates the financial support from the Michael A. Sakkinen Scholar fund and Deloitte & Touche. An earlier version of this paper was titled "Are Benchmark Beaters Doing Anything Wrong?"

Notes

1. Burgstahler and Dichev (1997a) received the American Accounting Association Notable Contributions to Accounting Literature Award in 2002 for their work.
2. There are 52 (out of 637) instances where the slope estimate is negative. These estimates are re-coded as zero.
3. The main reason we restrict our sample to post-1987 data is so that we can consistently measure our cash flow and accruals using data from the statement of cash flows. Collins and Hribar (2002) suggest that more accurate and less biased estimates of accruals are obtained from the statement of cash flows.
4. Prior research has frequently scaled the intercept in the Jones model by lagged assets. We did not adopt this approach for two reasons. First, allowing the intercept to vary with the magnitude of lagged asset is essentially a control for heteroskedasticity (the magnitude of discretionary accruals is a function of firm size). Heteroskedasticity affects the standard error but does not bias coefficient estimates. We do not use the standard errors obtained from the industry-year regressions but instead calculate standard errors based on the distribution of the 637 industry-year coefficient estimates. Second, we are interested in comparing the explanatory power of the models. Scaling the intercept by lagged assets is essentially the same thing as running a regression with no intercept and so the resulting R^2 s are no longer meaningful (Greene, 1997, p. 255).
5. The number of observations for *niclass* > 30 is 3649 and for *niclass* < -30 is 6925. The tails have been excluded for graphical representation only. All observations are used in our statistical tests.

6. Data on stock returns are obtained from the CRSP daily stock return files. We use compounded buy-hold returns, inclusive of dividends and other distributions obtained from CRSP. Market-adjusted returns are calculated by deducting the corresponding return on an equal-weighted market portfolio. Return results are robust to alternative specifications including size-adjusted returns and value-weighted returns. Future returns are cumulated over a one-year period beginning four months after the fiscal year-end. There are 37,790 firm-years available with Compustat and CRSP data.
7. In unreported tests we examine whether specific accruals such as deferred tax expense (Compustat item 50 deflated by the lagged assets) is used to avoid a loss (e.g., Phillips et al. 2003). We find no significant difference in deferred tax expense for small loss versus small profit firms. Our results are consistent with Bauman et al. (2001, p. 38) who find no significant evidence that the deferred tax asset valuation account is used to avoid losses. These results are available from the authors upon request.
8. In unreported tests, we find this relation even when we back-out negative special items that are included in our measures of discretionary accruals. It is possible that extreme loss firms are taking discretionary “earnings baths.” However, the alternative explanation is that we are including nondiscretionary negative accruals in our discretionary accrual measure for these firms.
9. Our test examining the net income distribution, after excluding firms with positive discretionary accruals, does not suffer from a tendency to falsely reject the null (see Figure 5). Instead, this test could suffer from low power. The kink is still observed when firms are randomly selected from Compustat. To the extent that our measure of discretionary accruals is random we could still end up observing the kink in Figure 5.
10. In unreported tests we examine the kink for earnings increments of \$50,000 and \$10,000. We find that the kink increases as we decrease the size of the dollar increment. For example, 180 firms report profits less than \$10,000, while 39 firms report losses greater than $-\$10,000$. We report \$100,000 increments because it produces a similar number of observations in net income class 0 to that reported in Figure 2. In addition, at the \$10,000 level the earnings distribution is flat and has many “kinks” which makes interpretation difficult.

References

- Abarbanell, J. and R. Lehavy. (2003). “Biased Forecasts or Biased Earnings? The Role of Reported Earnings in Explaining Apparent Bias and Over/Underreaction in Analysts’ Earnings Forecasts.” Working Paper, University of Michigan.
- Baber, W. R. and S.-H. Kang. (2002). “The Impact of Split Adjusting and Rounding on Analysts’ Forecast Error Calculations.” *Accounting Horizons* 16, 277–289.
- Bauman, C. C., M. P. Bauman and R. F. Halsey. (2001). “Do Firms Use the Deferred Tax Asset Valuation Allowance to Manage Earnings?” *Journal of the American Tax Association* 23, Supplement, 27–48.
- Beatty, A., B. Ke and K. Petroni. (2002). “Earnings Management to Avoid Earnings Declines and Losses Across Publicly and Privately Held Banks.” *The Accounting Review* 77, 547–570.
- Bradshaw, M. T., S. A. Richardson and R. G. Sloan. (2001). “Do Analysts and Auditors Understand Information in Accruals?” *Journal of Accounting Research* 39, 45–74.
- Bradshaw, M. T. and R. G. Sloan. (2002). “GAAP versus the Street: An Empirical Assessment of Two Alternative Definitions of Earnings.” *Journal of Accounting Research* 40, 41–66.
- Brown, L. D. (2001). “A Temporal Analysis of Earnings Surprises: Profits versus Losses.” *Journal of Accounting Research* 39, 221–241.
- Burgstahler, D. C. and I. D. Dichev. (1997a). “Earnings Management to Avoid Earnings Decreases and Losses.” *Journal of Accounting and Economics* 24, 99–126.
- Burgstahler, D. C. and I. D. Dichev. (1997b). “Earnings, Adaptation and Equity Value.” *The Accounting Review* 72, 187–215.
- Burgstahler, D. C. and M. J. Eames. (1998). “Management of Earnings and Analyst Forecasts.” Working Paper, University of Washington and Santa Clara University.

- Carslaw, Charles A.P.N. (1988). "Anomalies in Income Numbers: Evidence of Goal Oriented Behavior." *The Accounting Review* 63, 321–327.
- Chambers, D. J. (1999). "Earnings Management and Capital Market Misallocation." Working Paper, University of Illinois.
- Collins, D. W. and P. S. Hribar. (2002). "Errors in Estimating Accruals: Implications for Empirical Research." *Journal of Accounting Research* 40, 105–134.
- Dechow, P. M., R. G. Sloan and A. P. Sweeney. (1995). "Detecting Earnings Management." *The Accounting Review* 70, 193–225.
- Dechow, P. M., R. G. Sloan and A. P. Sweeney. (1996). "Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC." *Contemporary Accounting Research* 13, 1–36.
- DeFond, M. L. and K. R. Subramanyam. (1998). "Auditor Changes and Discretionary Accruals." *Journal of Accounting and Economics* 25, 35–67.
- DeGeorge, F., J. Patel and R. Zeckhauser. (1999). "Earnings Management to Exceed Thresholds." *The Journal of Business* 72, 1–33.
- Fairfield, P. M., S. Whisenant and T. L. Yohn. (2003). "The Differential Persistence of Accruals and Cash Flows for Future Operating Income versus Future Profitability." *Review of Accounting Studies* 8, 221–243.
- Greene, W. H. (1997). *Econometric Analysis*. Third Edition. Englewood Cliffs, New Jersey: Prentice Hall.
- Hayn, C. (1995). "The Information Content of Losses." *Journal of Accounting and Economics* 20, 125–153.
- Jones, J. (1991). "Earnings Management During Import Relief Investigations." *Journal of Accounting Research* 29, 193–228.
- McNichols, M. F. (2000). "Research Design Issues in Earnings Management Studies." *Journal of Accounting and Public Policy* 19, 313–345.
- Phillips, J., M. Pincus and S. O. Rego. (2003). "Earnings Management: New Evidence Based on Deferred Tax Expense." *The Accounting Review* 78, 491–521.
- Sloan, R. G. (1996). "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings?" *The Accounting Review* 71, 289–315.
- Thomas, J. K. (1989). "Unusual Patterns in Reported Earnings." *The Accounting Review* 64, 773–787.
- Xie, H. (2001). "Are Discretionary Accruals Mispriced? A Reexamination." *The Accounting Review* 76, 357–373.
- Watts, R. L. and J. L. Zimmerman. (1986). *Positive Accounting Theory*. Englewood Cliffs, New Jersey: Prentice-Hall.