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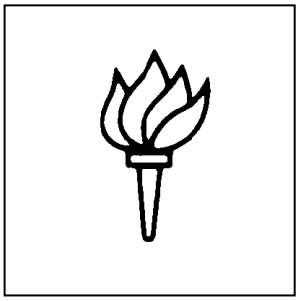

Mechanisms to Meet/Beat Analyst Earnings Expectations in the Pre- and Post-Sarbanes-Oxley Eras

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MECHANISMS TO MEET/BEAT ANALYST EARNINGS EXPECTATIONS IN THE PRE- AND POST-SARBANES-OXLEY ERAS*

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ABSTRACT

This paper asks two questions. First, has the prevalence of expectations management to meet/beat analyst expectations changed in the aftermath of the 2001-2002 accounting scandals and the passage of the 2002 Sarbanes-Oxley Act (SOX)? Second, has the mix among the three mechanisms used for meeting earnings targets: accrual earnings management, real earnings management, and earnings expectations management shifted in the Post-SOX Period? We document that the propensity to meet/beat analyst expectations has declined significantly in the Post-SOX Period. Our primary findings explain this pattern. In particular, we find a decline in the use of expectations management and accrual management, and no change in real earnings management in the Post-SOX Period relative to the preceding seven-year period. Our results are robust to controlling for varying macro economic conditions. These findings contribute to the academic literature, investors, and regulators.

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I. INTRODUCTION

The accounting literature has documented that companies employ a variety of strategies to meet or beat analyst earnings expectations. One strategy concerns taking accounting actions, also known as accrual-based earnings management (e.g., Dhaliwal et al. 2004). A second strategy involves taking real economic actions, also known as real or transaction-based earnings management (e.g., Roychowdhury 2006). A third strategy relates to managing analyst earnings expectations (e.g., Bartov et al. 2002).

The purpose of this study is twofold. The first is to test for any change in the prevalence of earnings expectations management following the major accounting scandals of 2001-2002 at Enron, WorldCom, and Global Crossing, to name just a few, and the new requirements introduced by the 2002 Sarbanes Oxley Act (SOX). The second purpose is to test for a blend shift in the Post-SOX Period among the three mechanisms used for meeting or beating analyst earnings targets: accrual earnings management, real earnings management, and earnings expectations management.

The aftermath of the passage of the Sarbanes-Oxley Act on July 30, 2002, changed the financial reporting environment significantly. Specifically, Section 201 of SOX prohibits outside auditors from providing nine nonaudit services to their audit clients (e.g., bookkeeping, appraisals, actuarial services, and investment-advisory work), and requires that other nonaudit services (e.g., tax services) be approved in advance by the audit committee. These measures should increase auditors' independence and thus result in higher quality of the audit reports. In addition, companies must provide in their

annual reports an assessment of the effectiveness of internal controls for financial reporting (Section 404), and CEOs/CFOs must certify under oath annual and quarterly reports (Section 302) and are subject to significant penalties for false certification (Section 906). These measures should further deter management from fraudulent financial reporting. Given this, we expect accrual earnings management in general and to meat/beat analysts' earnings expectations in particular to decline in the Post-SOX period.[1]

With respect to changes in expectations management and real earnings management our predictions are not straightforward. Earnings expectations management may decrease or increase in the Post-SOX Period. It may decrease as a result of the significant attention earnings expectations management received from the academic literature (e.g., Bartov et al. 2002), the financial press (e.g., McGee 1997), and regulators (e.g., Levitt 1998) in the period leading to the passage of SOX. Still, expectations management may increase due to a substitution effect (e.g., Zang 2005). Indeed, Koh et al. (2006) document an increase in expectations management in the Post-SOX Period, and conjecture that managers substitute accrual management with expectations management in that period.

Real earnings management to meet/beat analyst earnings expectations is not expected to decline in the Post-SOX Period because auditors are unlikely to question this type of activity. For example, according to CFOs interviewed by Graham et al. (2005, p. 36), auditors "cannot readily challenge real economic actions to meet earnings targets that are taken in ordinary course of action." Should we expect an increase in real

[1] Two points to note: (1) Statement on Auditing Standard No. 99 guides auditors to consider the frequency a firm meets earnings expectations when evaluating the risks of fraudulent financial reporting; (2) throughout the paper we use the term Post-Scandal Period and Post-SOX Period interchangeably.

earnings management in the Post-SOX Period? The answer to this question is largely empirical as two conflicting forces may be at work and it is not clear which one dominates. On one hand, the substitution effect (e.g., Cohen et al. 2006) suggests real earnings management will increase to compensate for the decreases in expectations management and accrual management. On the other hand, according to Zang (2005), managers employ earnings management strategies sequentially, i.e., they select real manipulation before resorting to accrual manipulation. This raises the possibility that real manipulation opportunities might have been exhausted in the Pre-Scandal Period, and thus no increase in that activity should be expected in the Post-Scandal Period notwithstanding the decreases in earnings and expectations management.

Like related research (Koh et al. 2006) we find that the frequency of just meeting/beating analyst earnings expectations diminished in the Post-SOX period and similar to Cohen et al. (2006) and Lobo and Zhou (2006) we find that accrual earnings management has increased over time prior to the passage of SOX and has decreased significantly thereafter. More importantly, we find what has not been documented before. First, the propensity to manage analyst earnings expectations to meet/beat earnings expectations, which has increased over time prior to SOX, has significantly decreased in the Post-SOX period. Second and more important, the mix among the three mechanisms used to meet/beat earnings expectations, accrual management, expectations management, and real earnings management, has changed significantly in the Post-SOX period. Specifically, we find a decline in the use of expectations management and accrual management but no change in real earnings management in the Post-SOX period to meet/beat earnings expectations. This last result, which is robust to specifications that

consider changes in macro-economic variables, is important because it explains the observed decline in the tendency to meet/beat analyst earnings expectations in the Post-SOX period.

Our findings make two specific contributions. First, they contribute to the extant academic literature on the earnings expectations game. Our results suggest that expectations management has decreased rather than increased in the Post-SOX period. Second and more importantly, while related research demonstrates the frequency of just meeting/beating analyst expectations diminishing in the Post-SOX period our results explain this finding. By being the first to simultaneously consider all three mechanisms used to meet/beat analysts' expectations, we show that accrual earnings management and expectations management both declined, whereas real earnings management remained unchanged. This change in the relative importance of the three mechanisms implies that in the Post-SOX period investors should pay more attention to real earnings management than in the Pre-SOX period. It also implies that regulators should enhance scrutiny of the reported results from these transactions (e.g., to ensure correct classification on the income statement), and perhaps require companies to provide better disclosures of results from such activities.[2]

The next section surveys extant literature on mechanisms to meet/beat analyst earnings expectations and contrasts it with our work. Section III outlines the sample selection procedure, defines the varibles, and describes the data. Section IV outlines the tests and reports the results. The final section summarizes our main findings and states our conclusions.

[2] For example, in 1999 IBM recorded a pre-tax gain of $4,057 million from disposition of a variety of assets as a reduction of selling, general, and administrative (SG&A) expense, rather than as a special gain above the line.

II. BACKGROUND AND MOTIVATION

Earnings management to influence accounting appearances has been drawing substantial attention from accounting researchers for decades. While early studies have sought to document the existence of real earnings management (e.g., Bartov 1993) and accrual earnings management (e.g., McNichols and Wilson 1998; DeFond and Jiambalvo 1994), more recent studies investigated a new form of management, earnings expectations management (e.g., Bartov et al. 2002). Generally, these studies demonstrated that companies use all three mechanisms to meet earnings benchmarks.

Related studies also investigated a possible substitution effect between accrual earnings management and real earnings management. Zang (2005) investigates whether managers use real and accrual manipulations in managing earnings as substitutes, and also the order in which these mechanisms are employed. She finds that there is a substitution effect between the two and that managers employ these strategies sequentially, i.e., they select real earnings manipulation before resorting to accrual manipulation. Cohen et al. (2006) document generally without reference to any particular earnings target that accrual earnings management increased steadily in the Pre-SOX period, but decreased significantly thereafter, while real earnings management declined in the Pre-SOX period and increased significantly in the Post-SOX period. They interpret their results as suggesting that firms switched from accrual to real earnings management in the Post-SOX period, a behavior consistent with the substitution effect found by Zang (2005).

Koh et al. (2006) also test for a possible substitution effect in the Post-SOX

period between mechanisms affecting accounting appearances. Their approach differs from that of Cohen et al. (2006) in two ways. First, they investigate the substitution between accrual management and earnings expectations management to meet analysts' expectations; however, they do not investigate the role of real earnings management to meet/beat earnings targets. Second, they focus on accrual management to meet a particular earnings benchmark, analysts' earnings expectations, while Cohen et al. have not considered explicitly any specific earnings benchmark. Koh et al. (2006) find that the mix between the two mechanisms used to meet analysts' expectations they investigated – discretionary accruals and earnings expectations management – has changed in the Post-SOX period. While managers' reliance on income-increasing discretionary accruals has declined, the frequency of forecast walk-downs (earnings expectations management) has increased in the Post-SOX period. This last result seems disconcerting in light of the increased attention earnings expectations management received from the academic literature, the financial press, and regulators in the Pre-Scandal and Scandal periods, and the corporate governance improvements introduced by SOX.[3]

Finally, Graham et al. (2005), in their survey study, report "strong evidence" that managers engage in real management activities to meet accounting targets. In particular, 80% of survey participants report that they would decrease discretionary spending on R&D, advertising, and maintenance to meet an earnings benchmark. More than half state that they would delay starting a new project to meet an earnings target, even if such a delay entailed a small sacrifice in value. They observe that (p. 36) "the aftermath of accounting scandals at Enron and WorldCom and the certification requirements imposed

[3] We define the Scandal period as beginning in the third quarter of 2001 and lasting through the second quarter of 2002.

by the Sarbanes–Oxley Act may have changed managers' preferences for the mix between taking accounting versus real actions to manage earnings," but provide little empirical evidence to support this statement.

In summary, related research documented an increase in real earnings management and a decrease in accrual earnings management in a setting where a particular earnings target was not specified, and a decrease in accrual management and increase in earnings expectations management in a setting where meeting analyst earnings expectations was the specific earnings target.

We address two research questions left unanswered by prior research. First, we test for a change in the prevalence of expectations management to meet or beat earnings expectations between the Pre- and Post-SOX periods (our first hypothesis). By carefully measuring expectations management and by dividing our sample period into four subperiods, instead of three, we are able to demonstrate that expectations management diminished rather than increased in the Post-SOX period.

Second and more important, we document a decline in the frequency of just meeting/beating analyst earnings expectations in the Post-SOX period, and then in an attempt to explain this decline test simultaneously for a shift in the mix among the three mechanisms used to just meet or beat earnings expectations, accrual earnings management, real earnings management, and earnings expectations management. We hypothesize that accrual management has decreased, earnings expectations management may have increased or decreased, and real earnings management may have increased or remained unchanged between the Late Pre- and Post SOX periods (our second hypothesis). By considering all three mechanisms simultaneously, our results are able to

explain the observed decline in the tendency to just meet/beat analysts' expectations observed in the Post-SOX period.

III. DATA

Sample Selection

We obtain our data from the COMPUSTAT quarterly files and the I/B/E/S detail files. In order to be included in our sample, a firm-quarter observation must first satisfy the following three criteria:[4]

1. There exist at least two individual earnings forecasts (not necessarily by the same individual analyst) for the quarter, which are at least 20 trading days apart.
2. The release date of the first earnings forecast we use occurs at least three trading days after the release of the previous quarter's earnings report.
3. The release date of the second earnings forecast we use precedes the release of the current quarter's earnings report by at least three trading days.

The first criterion ensures that there is an initial forecast and a subsequent forecast revision. These are required to be separated in time by at least 20 days so that the second forecast is more likely to represent a true revision reflecting news arriving to the market after the initial forecast was issued. The purpose of the second criterion is to prevent ''stale'' forecasts (i.e., those that are not revised following the previous quarter's earnings announcement) from being included in the analysis. The third criterion ensures that the latest forecast is not ''contaminated'' by knowledge of the actual earnings number. The total number of firm-quarter observations meeting the above three criteria

[4] These selection criteria are consistent with previous research (e.g., Bartov et al. 2002).

is 245,113 spanning the period from January 1987 to December 2005, representing 11,061 distinct firms. We refer to this sample as the I/B/E/S Sample.

Tests in the second part of our analysis concerning accruals earnings management and real earnings management require financial statement information in addition to the I/B/E/S data. For these tests we impose on our sample firms three more restrictions:

1. The required financial statement information is available on the quarterly COMPUSTAT database.
2. The firm does not belong to one of the following three industries: financial institutions (SIC codes 6000-6999), utilities (SIC codes 4800-4999), or other regulated industries (SIC codes 4000-4499).
3. The quarterly earnings surprise relative to the latest analyst earnings forecast is non-negative.

Similar to previous studies, we imposed the second and third criteria, respectively, because the empirical models we use to estimate accruals and real earnings management do not apply to firms in these industries and because the second set of tests focuses on firms that meat or beat analysts' earnings forecasts. The intersection of these criteria yields a second sample (the Merged Sample) of 84,754 firm-quarter observations, representing 6,228 distinct firms.

Variable Definitions

In order to measure the revision in the analyst earnings forecasts, REV, we identify the first forecast and the last forecast for the quarter. The earliest earnings forecast for the quarter, $F_{earliest}$, is the first forecast for the quarter made subsequent to the

announcement of the previous quarter's earnings.[5] The latest forecast for the quarter, F_{latest}, is the last forecast for the quarter made prior to the release of the earnings announcement for that quarter. REV is the difference between the latest earnings forecast and the earliest earnings forecast. The earnings surprise for the quarter, SURP, is defined as the difference between the actual earnings per share number and the latest forecast for the quarter, EPS - F_{latest}, both taken from I/B/E/S. Earnings forecast error for the quarter is the difference between the actual earnings per share number and the earliest forecast for the quarter, EPS - $F_{earliest}$. To avoid classification errors, we used the unadjusted (for stock dividends and split) analyst earnings forecast per share and unadjusted reported earnings per share to compute the earnings surprise and earnings forecast error, both taken from I/B/E/S.

Meeting/Beating analyst earnings expectations is defined as a zero or positive (non-negative) earnings surprise, which is the difference between the actual earnings and the latest forecast for the quarter, SURP = EPS - $F_{latest} \geq 0$. Just meeting/beating analyst earnings expectations are firm-quarters observations for which the earnings surprise exceeds analysts' expectations by a cent per share or less, i.e., $\$0.00 \leq SURP \leq \$0.01$.

Accrual Management Proxy

We use a cross-sectional model of discretionary accruals, where for each quarter we estimate the model for every industry classified by its 2 digit SIC code. We estimate the model cross-sectionally to control for industry-wide changes in economic conditions that affect total accruals and allow the coefficients to vary across time (Kasznik 1999;

[5] We did not consider earnings forecasts for the current quarter made prior to the release of the previous quarter's earnings report since their subsequent revision is likely to be correlated with the content of this report rather than with new information about the current quarter's results.

DeFond and Jiambalvo 1994).

Our primary model is the modified cross-sectional Jones model (Jones 1991) as described in Dechow et al. (1995), applied for quarterly data. The modified Jones model is estimated for each 2 digit SIC-quarter grouping as follows:

$$\frac{TA_{jq}}{Asset_{jq-1}} = \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{PPE_{jq}}{Asset_{jq-1}} + \varepsilon_{jq} \quad (1)$$

Where:

TA_{jq} total accruals, defined as earnings minus cash flow for firm j in quarter q;

A_{jq} total assets for firm j in quarter q;

$\Delta Sales_{jq}$ change in sales for firm j in quarter q;

ΔAR_{jq} change in accounts receivables for firm j in quarter q;

PPE_{jq} gross property, plant, and equipment for firm j in quarter q;

We use current cash flows from operations, excluding extraordinary items and discontinued operations (*CFO*), to calculate accruals. The industry-quarter specific parameters obtained from equation (1) are used to estimate firm-quarter specific nondiscretionary accruals (*NDA*) as a percent of lagged total assets, adjusting for the change in receivables, ΔAR_{jq}, (Dechow et al. 1995):

$$NDA_{jq} = \hat{\alpha}_0 \frac{1}{Asset_{jq-1}} + \hat{\beta}_1 \frac{(\Delta Sales_{jq} - \Delta AR_{jq})}{Asset_{jq-1}} + \hat{\beta}_2 \frac{PPE_{jq}}{Asset_{jq-1}} \quad (2)$$

Our measure of discretionary accruals, *DA*, is the difference between $\frac{TA_{jq}}{Asset_{jq-1}}$ and NDA_{jq}.

Real Earnings Management Proxies

One proxy for real earnings management is abnormal gain on asset sales, which is the difference between the actual gains on asset sales minus the industry-quarter median gain.[6]

A second proxy is abnormal level of production costs, defined as the residual from the following cross-sectional regression estimated quarterly for each 2 digit SIC code:

$$\frac{PROD_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq} \qquad (3)$$

Where:

$PROD_{jq}$ is the sum of costs of goods sold and the change in inventories for firm *j* in quarter *q*; and the other variables are as in Equation (1).

The third empirical proxy for real earnings management is abnormal SG&A expenses, defined as the residual from the following cross-sectional regression estimated quarterly for each 2 digit SIC code:

$$\frac{SGA_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq} \qquad (4)$$

As an overall proxy for real earnings management activities, we add the three variables (which are all defined as a percentage of total assets).[7]

Descriptive Statistics

Table 1 presents descriptive statistics for the I/B/E/S Sample (Panel A) and for the

[6] Quarterly gains from asset sales are Compustat quarterly data item #102, multiplied by (-1). We multiply this by (-1) since Compustat reports losses as a positive numbers for gain or losses from the sale of assets.
[7] We also used standardized residuals and summed them up and repeated the analysis. The results are not sensitive to this alternative method.

Merged Sample (Panel B). Similar to findings in previous studies, the results in Panel A show that our sample firms are more likely to deliver a positive earnings surprise than a negative one. Specifically, while 65.3 percent of firm-quarters meat or beat analysts' earnings expectations, only 34.6 percent miss expectations. In addition, firms are more likely to exhibit a negative forecast error (42.9 percent of firm-quarters) than a negative earnings surprise (34.6 percent). Such difference is an indication of earnings expectations management, as it is likely achieved by talking-down expectations. The observed negative forecast revision (mean = -0.112) is a further indication of earnings expectations management, as in the absence of such activity the average revision is expected to be zero, not negative. The results also show that the mean, median, 25 percentile, and 75 percentile of firm-size (market capitalization) are, respectively (in $million), 2,851.44, 395.666, 125.164 and 1,389.26. This indicates that our I/B/E/S sample contains a wide range of firm sizes.

Like the results in Panel A, the results in Panel B show that the Merged Sample is also well diversified in terms of firm-size, and that the two samples are quite similar in terms of this variable. The results also demonstrate that the variables underlying the estimation of our earnings management proxies, discretionary accruals, inventory changes, gains on assets sales, and SG&A, all scaled by lagged total assets, posses well-behaved properties. That is, their distributions are symmetric around the mean and an outlying-observations problem is not a serious problem.

IV. TESTS AND RESULTS

Subperiod Analyzed

We partition our sample period into four subperiods (see figure 1). The first subperiod analyzed is the Early Pre-Accounting Scandal period extending from the beginning of the sample period (January 1987) through the end of 1993. The second subperiod is the Late Pre-Accounting Scandal period from the beginning of 1994 through the second quarter of 2001. The third subperiod is the Scandal period, from the beginning of third quarter of 2001 through the second quarter of 2002, and the fourth subperiod is the Post-SOX (Post-Scandal) period, from the beginning of the third quarter of 2002 through the end of our sample period (December 2005).

Related research (e.g., Koh et al. 2006) partitioned their sample period into only three subperiods: The pre-Scandal period, the Scandal period, and the Post-SOX (Post Scandal) period. We further partition the Pre-Scandal Period into two periods, the Early and Late Pre-Scandal periods, because findings in prior research (e.g., Bartov et al. 2002, and Brown and Caylor 2005), as well as anecdotal evidence, suggest there was a substantial increase in the use of analysts' estimates as a benchmark for firm performance and in the prevalence of the "expectations game" in the mid-1990s.[8] For the purpose of testing our two hypotheses, the two subperiods of interest are thus the Late Pre-Scandal period and the Post-SOX period.

Changes in Expectations Management

Our first set of tests for a change in earnings expectations management in the

[8] Several sources began providing earnings benchmarks based on analysts' forecasts on the Internet only in the mid-1990s. Perhaps the best known, First Call, introduced its service to the web in 1994.

Post-SOX period (our first hypothesis) concerns examining the role interim analyst forecast revisions plays in affecting the sign of the end-of-quarter earnings surprise. To increase power, we restrict the analysis to a subsample consisting of firm-quarters that are most likely or least likely to be affected by expectations management. Specifically, we compare the observed sign of an earnings surprise with the sign of the earnings surprise that would have resulted in the absence of an interim forecast revision. In the absence of an interim revision, the sign of the quarterly earnings surprise would be the same as the sign of the quarterly forecast error. Observing a negative forecast error that turns into a positive earnings surprise is thus consistent with expectations management (talking-down expectations), as it must result from an excessive downward forecast revision. Likewise, a zero or positive forecast error that turns into a negative earnings surprise (due to an excessive upward forecast revision) is inconsistent with expectations management. In the absence of management intervention, the proportion of observations in which the interim forecast revision offsets the sign of the earnings surprise should be identical between cases with negative errors and cases with positive errors.

Tables 2, 3, and 4 display the results from tests for a change in earnings expectations management in the Post-SOX period. Consider the results in Table 2 first. The percentage of negative earnings surprises over the entire sample, 37.06 percent, is significantly smaller at the one percent significance level than the percentage of negative forecast errors, 44.70 percent. This result is consistent with expectations management during the whole sample period whereby analyst earnings forecasts are dampened during the quarter so as to increase the likelihood of a positive earnings surprise.

Examining the change in the frequency of negative earnings surprises across our

sample subperiods, we note a monotonic increase in the excess of negative earnings errors over negative earnings surprises in the first three subperiods: from 5.39 percent in the Early Pre-Scandal period, to 9.66 percent in the Late Pre-Scandal period, and to 12.41 percent in the Scandal period. However, this trend reverses in the Post-Scandal period, where the percentage of negative forecast errors declines, not increases, to 6.43 percent from 12.41 percent in the Scandal period. Tests for statistical significance show that the differences in the excess of negative earnings errors over negative earnings surprises between each two consecutive subperiods (4.27 percent, 2.75 percent, and -5.98 percent), as well as between the Post-Scandal period and the Late Pre-Scandal period (-3.23 percent), are all highly significant (significance level better than 1 percent). This observed pattern in the excess of negative earnings errors over negative earnings surprises over our sample period is consistent with the hypothesis that earnings expectations management has become less prevalent in the Post-SOX period.

The results in Table 3 corroborate our inference of declined expectations management in the Post-SOX period. In this table, we determine the proportion of firm-quarters with a negative forecast error that end with a positive or zero earnings surprise, and the proportion of firm-quarter observations with a positive or zero forecast error that end with a negative earnings surprise. Observations that belong to the first group are more likely to result from expectations management than those in the second group. To test for a decline in expectations management, we examine the difference between these two proportions. Similar to the pattern observed in Table 2, the difference in proportions increases in the first three subperiods and decreases in the fourth. More specifically, in the Late Pre-Scandal period 37.03 percent of the firm-quarters with a negative forecast

error ended with a positive earnings surprise (as a result of an excessive downward revision in earnings forecasts). In contrast, only 8.50 percent of observations with a positive or zero forecast error ended with a negative earnings surprise (due to an excessively positive forecast revision that "spoiled" what otherwise would have been a positive earnings surprise). The statistically significant difference between the two of 28.53 percent, shown in the rightmost column, suggests the presence of expectations management in the Late Pre-Scandal period. In the Post-SOX period forecast revisions are also more likely to turn a negative forecast error into a positive or zero surprise than to turn a positive or zero forecast error into a negative earnings surprise (33.06 percent vis-à-vis 10.01 percent). However, the difference between the two is only 23.05 percent, lower by 5.47 percent than the 28.53 percent difference observed for the Late Pre-Scandal period. The last line of the rightmost column shows that this 5.47 percent decline is statistically significant at the one percent level. Thus, similar to the results displayed in Table 2, the results in Table 3 also suggest a lower propensity to manage analysts' expectations in the Post-SOX period.

Recall that Koh et al. (2006) find the opposite result. They find that expectations management increased, not decreased, in the Post-SOX period. The difference in findings follows from our design choice to divide the Pre-Scandal period into two subperiods and to compare the Post-SOX period to the Latter rather than to the whole Pre-Scandal period. We made this choice since, as discussed above, the Early and Late Pre-Scandal periods are inherently different (Bartov et al. 2002, Brown and Caylor 2005). To see this, note that the percentage of cases likely to be affected by expectations management has declined between the Late Pre-Scandal period and the Post-SOX period,

from 37.03 percent to 33.06 percent, consistent with a decline in expectations management. However, this percentage has increased, not decreased, between the Early Pre-Scandal period (22.41 percent) and the Post-SOX period (33.06 percent). Similarly, the percentage of cases less likely to be affected by expectations management has decreased from 13.72 to 10.01 percent, not increased, between the Early Pre-Scandal period and the Post-SOX period. Given these differences between the Early and Late Pre-Scandal periods, combining the two together and then comparing them to the Post-SOX period should lead to the inference that expectations management has increased in the Post-SOX period, rather than decreased. This intuition is confirmed by the numbers displayed in the last two lines of the rightmost column. While the difference in the proportions is significantly negative (-5.47 percent) when the Late Pre-Scandal period is compared to the Post-SOX period, it is significantly positive (4.44 percent) when the Pre-Scandal period as a whole is compared to the Post-SOX period. This analysis reconciles the contradictory findings of the current study and Koh el al. (2006), and highlights the importance of dividing the Pre-Scandal period into two subperiods to avoid contamination by low expectations management frequency in the Early Pre-Scandal period, where the use of analyst estimates as a benchmark for firm performance and the "expectations game," were both at their infancy.

To further test for a decline in expectations management, we estimate the following regression model:

$$EXP\_M\_I_t = \alpha_0 + \beta_1 PRE94_t + \beta_2 SCAN_t + \beta_3 POST_t + \varepsilon_t \qquad (5)$$

Where:

$EXP\_M\_I_t$, the dependent variable, is the proportion of firm-quarters likely to be affected

by expectations management in quarter *t*; $PRE94_t$ is a dummy variable which takes the value of one if quarter *t* falls before the first quarter of 1994 (i.e., within the Early Pre-Scandal period), and zero otherwise; $SCAN_t$ is a dummy variable which takes the value of one if quarter *t* falls within the second quarter of 2001 through the second quarter of 2002 (i.e., within the Scandal period), and zero otherwise; $POST_t$ is a dummy variable which takes the value of one if the quarter *t* is after the third quarter of 2002 (i.e., within the Post-SOX period).

In terms of Equation (5), the intercept, α_0, measures the proportion of firm-quarters likely to be affected by expectations management in the Late Pre-Scandal period, and the slope coefficients, β_1, β_2, and β_3, measure the difference in proportion between the Late Pre-Scandal period, and the Early Pre-Scandal period, the Scandal period, and the Post-SOX period, respectively. The hypothesis of a decline in expectations management in the Post-SOX period relative to the Late Pre-Scandal period implies: $\beta_3 < 0$.

The regression results are reported in Table 4. Note that the dependent variable is measured in three alternative ways. For consistency across tables, EXP_M_2 is similar to our definition of the percentage of cases likely to be affected by expectations management in the previous table (Table 3). In addition, we consider two alternative measures, EXP_M_1, where the deflator is the total number of quarterly observations, rather than total number of quarterly observations with negative forecast errors, and EXP_M_3, which is defined as the percentage of firm-quarters with a zero or positive earnings surprise and a negative forecast revision, relative to total number of quarterly observations. We estimate Equation (5) over our full sample period that spans the 19-

year period, January 1987 through December 2005, and thus use 76 quarterly observations. The results in Table 4 reinforce the results from the univariate results in Tables 2 and 3. As hypothesized, β_3, the coefficient on POST, is significantly negative for all three specifications of the dependent variable.

In summary, the results in Tables 2, 3, and 4 are all consistent with earnings expectations being managed so as to result in positive earnings surprises in both the Late Pre-Scandal period and the Post-SOX period. In particular, downward revisions are encouraged when, in their absence, the earnings surprise is expected to be negative, while upward revisions are discouraged if they might lead to a negative earnings surprise. More important, the results in all three tables are consistent with the hypothesis of a significant decline in expectations management in the Post-SOX period relative to the Late Pre-Scandal period.

Changes in Frequency of Meeting/Beating Analyst Earnings Expectations

Before testing our second hypothesis, we examine changes in the frequency of meeting/beating analysts' earnings expectations between the Late Pre-Scandal period and the Post-SOX period. Based on findings of related research (e.g., Koh et al. 2006), we expect the frequency of meeting/beating analysts' expectation to decline in the Post-SOX Period. We test this prediction by using both univariate tests and regression tests. The univariate tests concerns comparing the quarterly frequency of firms that meet or just beat analysts' expectations across our four sample periods. The results in Panel A of Table 5 show that the frequency of just meeting/beating increased between the Early and Late Pre-Scandal periods, from 18.12 percent to 26.81 percent, and that this increase of

8.68 percent is significant at the one percent significance level. This result is consistent with findings in Bartov et al. (2002) and further highlights that the overall Pre-Scandal period (1987 - 2001) is not homogeneous and thus must be disaggregated into the two subperiods. Turning to our prediction, there is a substantial decline in the frequency of just meeting/beating analysts' earnings expectations between the Late Pre-Scandal period and the Post-SOX (Post-Scandal) period, from 26.81 percent to 21.63 percent, and this decline of 5.18 percent is significant at the one percent significance level.

The regression tests for changes in the frequency of meeting/beating analysts' earnings expectations between the four sample subperiods involve estimating the following model:

$$\text{Model: } FREQ_t = \beta_0 + \beta_1 PRE94_t + \beta_2 SCAN_t + \beta_3 POST_t + \varepsilon_t \quad (6)$$

Where:

$FREQ_t$, the dependent variable, is the frequency of firms just meeting/beating analysts' earnings expectations in quarter *t*; $PRE94_t$ is a dummy variable which takes the value of one if quarter *t* is before the first quarter of 1994 and zero otherwise; $SCAN_t$ is a dummy variable which takes the value of one if quarter *t* falls within the second quarter of 2001 and the second quarter of 2002, and zero otherwise; $POST_t$ is a dummy variable, which takes the value of one if quarter *t* is after the third quarter of 2002, and zero otherwise.

In terms of equation (6), the intercept, β_0, measures the frequency of just meeting/beating analysts' earnings expectations in the Late Pre-Scandal period, and the slope coefficients, β_1, β_2, and β_3 measure the difference in frequency between the Late Pre-Scandal period, and the Early Pre-Scandal period, the Scandal period, and the Post-SOX period, respectively. Our hypothesis predicts a decline in the frequency between

the Late Pre-Scandal period and the Post-SOX period, i.e., $\beta_3 < 0$. We estimate Equation (6) over our full sample period, the 19 years spanning from January 1987 through December 2005, and thus use 76 quarterly observations. The results displayed in Panel B of Table 5 are similar to those of the univariate tests reported in Panel A. Specifically, as predicted, the coefficient on POST is negative, -0.051, and highly significant (t-statistic = -6.86) indicating a decline in the frequency of just meeting/beating analysts' earnings expectations in the Post-SOX period relative to the Late Pre-Scandal period. Like the univariate results, the regression results also show an increase in the frequency of just meeting/beating analysts' expectations between the Early and Late Pre-Scandal periods and Late, indicated by a significantly negative coefficient (-0.087) on PRE94. The only difference between the univariate and regression results is that the coefficient on SCAN is statistically insignificant, while the univariate tests indicated a significant decline in the frequency of just meeting/beating analysts' expectations between the Late Pre-Scandal period and the Scandal period. Overall, the results in Table 5 are consistent with the prediction that in the Post-SOX (Post-Scandal) period the frequency of just meeting/beating analysts' expectations declined relative to the Late Pre-Scandal period.

What may explain this observed decline? Our second hypothesis predicts that the decline in the frequency of just meeting/beating analysts' expectations mirrors a mix shift among the mechanisms used to meet or just beat analysts' earnings expectations. In the next section, we explicitly test this hypothesis by simultaneously considering three mechanisms: accrual earnings management, expectations management, and real earnings management.

Changes in the Blend among the Three Mechanisms to Meet/Beat Analysts' Expectations

To test our second hypothesis, we estimate the following Logit model:

$$\begin{aligned}\Pr ob(JUSTBEAT = 1)_{it} &= \alpha_0 + \beta_1 PRE94_{it} + \beta_2 SCAN_{it} + \beta_3 POST_{it} + \beta_4 DA_{it} + \beta_5 EXP\_M_{it} + \\ &+ \beta_6 REAL\_EM_{it} + \beta_7 DA * PRE94_{it} + \beta_8 DA * SCAN_{it} + \beta_9 DA * POST_{it} + \beta_{10} EXP\_M * PRE94_{it} \\ &+ \beta_{11} EXP\_M * SCAN_{it} + \beta_{12} EXP\_M * POST_{it} + \beta_{13} REAL\_EM * PRE94_{it} \\ &+ \beta_{14} REAL\_EM * SCAN_{it} + \beta_{15} REAL\_EM * POST_{it} + \varepsilon_{it}\end{aligned} \quad (7)$$

Where:

JUSTBEAT, the dependent variable, is a binary variable taking the value of one if the firm-quarter observation beats/meets analyst earnings expectations by a cent per share or less, and zero otherwise; $PRE94_t$ is a dummy variable which takes the value of one if quarter *t* falls before the first quarter of 1994 (i.e., within the Early Pre-Scandal period), and zero otherwise; $SCAN_t$ is a dummy variable which takes the value of one if quarter *t* falls within the second quarter of 2001 through the second quarter of 2002 (i.e., within the Scandal period), and zero otherwise; $POST_t$ is a dummy variable which takes the value of one if the quarter *t* is after the end of the second quarter of 2002 (i.e., in the Post-SOX period); DA is discretionary accruals calculated using the modified Jones-model; EXP_M is a dummy variable taking the value of one if earnings surprise for the quarter is zero or positive and analyst earnings forecast revision is negative, and zero otherwise, where earnings surprise is the difference between the actual earnings number and the latest earnings forecast for the quarter, and forecast revision is the difference between the last earnings forecast and the first earnings forecast for the quarter; REAL_EM is a proxy for real earnings management and is either: A_GAINA, A_PROD or A_SGA, where A_GAINA is abnormal gain on asset sales, measured as the difference between the actual gain on asset sales minus the industry-quarter median, A_PROD is abnormal production

costs, measured as the deviations from its predicted values from the corresponding industry-quarter regression:

$$\frac{PROD_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta\ Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq} \quad (8)$$

and A_SGA is abnormal SG&A expense, measured as the deviation from its predicted value based on an industry-quarter regression:

$$\frac{SGA_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta\ Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq} \quad (9)$$

R_M_PROXY is an aggregate real earnings management score, which is the sum of A_GAINA, A_PROD, and A_SGA. Dummy variables for fiscal quarters Q1, Q2, Q3 are included (not tabulated) in each of the estimated models.

In testing for a mix shift among the three mechanisms used to meet or just beat analysts' earnings expectations between the Late Pre-Scandal period and Post-SOX period, the variables of interests in terms of Equation (7) are: β_9, the coefficient on DA*POST, β_{12}, the coefficient on EXP_M*POST, and β_{15}, the coefficient on REAL_M*POST. Our second hypothesis predicts: $\beta_9 < 0$, $\beta_{12} < 0$, and $\beta_{15} \geq 0$. Reading across Table 6 we note three salient points. First, the results reported in all four columns are similar indicating they are robust to the proxy used for real earnings management. Second, the coefficients on DA, EXP_M, and REAL_EM are all significantly positive. This suggests that in the Late Pre-Scandal period all three mechanisms, accrual earnings management, expectations management, and real earnings management were used to meet/beat analysts' earnings expectations. Third, as predicted β_9, ranging from -1.271 to -1.400 depending on the proxy used for real earnings management, and β_{12}, ranging from -0.161 to -0.168, are both statistically significantly negative, and β_{15} is insignificant.

These results suggest that relative to the Late Pre-Scandal period, in the Post-SOX period there have been a significant decrease in both accrual and expectations management, whereas real earnings management has not changed.

Robustness Tests

In this section we assess the reliability of our findings by considering two types of sensitivity tests. First, a criticism of discretionary accruals models is their classification of nondiscretionary accruals as discretionary. To address this concern, we assess the sensitivity of our findings in Table 6 after computing discretionary accruals using two alternative models. First, previous research has shown that measures of unexpected accruals are more likely to be mis-specified for firms with extreme levels of performance. In particular, Dechow et al. (1995) and Kasznik (1999) document that estimated discretionary accruals are negative for firms with low earnings and positive for firms with high earnings. To address this concern, we adjust the modified Jones model by including a measure of current operating performance, i.e., the current cash flows from operations excluding extraordinary items, as a control variable. Our discretionary accrual model becomes:

$$\frac{TA_{jq}}{Asset_{jq-1}} = \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{\Delta Sales_{jq}}{Asset_{jq-1}} + \beta_2 \frac{PPE_{jq}}{Asset_{jq-1}} + \beta_3 \frac{CFO_{jq}}{Asset_{jq-1}} + \varepsilon_{jq} \qquad (10)$$

A second alternative builds on the discussion in McNichols (2002), Dechow et al. (2003), and Larcker and Richardson (2003). Since accruals are changes in working capital accounts, one would expect fast growing firms to have larger accruals (McNichols 2002). In line with this prediction, we include the book-to-market ratio (*BM*) as a proxy for expected growth in firm's operations. *BM* is measured as the ratio of the book value

of common equity to the market value of common equity:

$$\frac{TA_{jq}}{Asset_{jq-1}} = \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{\Delta Sales_{jq}}{Asset_{jq-1}} + \beta_2 \frac{PPE_{jq}}{Asset_{jq-1}} + \beta_3 \frac{CFO_{jq}}{Asset_{jq-1}} + \beta_4 BM_{jq} + \varepsilon_{jq} \quad (11)$$

The industry-quarter specific parameters obtained from equations (10) and (11), respectively, are used to estimate firm-quarter specific nondiscretionary accruals as a percent of lagged total assets, as in the first model specified in equation (1), which we used throughout the analysis. The results of these sensitivity checks (not tabulated for parsimony) show that the results in Table 6 are robust to alternative measures of discretionary accruals.

Our second sensitivity test assesses the effect of varying macro economic conditions on our findings. Along the lines of Cohen et al. (2005), we replicate the results reported in Table 6 after adding two variables, GDP and IND_ROA, to control for varying real economic activity, which may affect earnings management and expectation management strategies. While some of our measures of earnings management adjust for changes in real activity by construction (e.g., discretionary accruals), others do not (e.g., write-offs). As a result, what might be classified as opportunistic earnings management may in fact be a consequence of changing economic conditions, either because the metric itself has not been adjusted for real activity, or because the adjustment was not adequate. In other words, discretionary accruals, write-offs, etc. may also reflect firms' responses to and representations of changes in economic conditions. If this were true, then changes in earnings management metrics will coincide with changes in measures of economic activity such as operating cash flows, revenues, prior stock returns, industry performance, changes in gross domestic product, etc.

GDP is the percentage change in seasonally adjusted Gross Domestic Products over the previous quarter (a proxy of overall economic activity); and IND_ROA_{jq} is the average return on assets of firm *i*'s two-digit industry (a proxy for industry-specific economic activity), computed after excluding the return on assets of firm *i*. Guenther and Young (2000) provide evidence of a high association between ROA and the economic growth rate, indicating that ROA reflects real economic activity in a timely manner. We exclude the firm in calculating the average industry ROA in order to avoid any mechanical associations among the variables in the regression.

Table 7 reports the results from this sensitivity test. Reading across Table 7, we notice two salient points. First, the two control variables, GDP and IND_ROA, are significant for all four specifications (the only exception is IND_ROA, which is only marginally significant in the rightmost column). Second, the results are not sensitive to the inclusion of controls for macro economic effects. Specifically, in testing for a mix shift among the three mechanisms used to meet or just beat analysts' earnings expectations between the Late Pre-Scandal period and Post-SOX period, the variables of interests in terms of the Equation tested in Table 7 are: β_{11}, the coefficient on DA*POST, β_{14}, the coefficient on EXP_M*POST, and β_{17}, the coefficient on REAL_M*POST. Our second hypothesis predicts: $\beta_{11} < 0$, $\beta_{14} < 0$, and $\beta_{17} \geq 0$. The results in Table 7 support the first two predictions, consistent with the findings in Table 6.

V. CONCLUSION

In this study we test for a change in the frequency of expectation management to meet/beat analysts' earnings forecasts following the major accounting scandals of 2001-

2002 and the regulatory reforms introduced by SOX. We find evidence suggesting that expectation management has decreased significantly in the Post-SOX pPeriod compared to the late 1990's suggesting that managers have reduced their reliance on such a mechanism to meet/beat analysts' earnings expectations. We also find that the frequency of meeting/beating analysts' earnings expectation has declined in the Post-SOX period.

Next, we examine what might explain the observed decline in the tendency to meet/beat expectations. We acknowledge that managers can simultaneously use a mix of actions to meet/beat analysts' earnings expectations, namely accruals management, expectation management, and real earnings management. In fact, one feature underlying our research design that distinguishes our work from related studies is our use of a specification that considers simultaneously these three mechanisms. Our results suggest that while all three mechanisms are used to meet/beat earnings expectations, relative to the Late-Pre-Scandal period, in the Post-SOX period there has been a significant decline both in accruals management and expectations management, whereas real earnings management has not changed.

Our study makes an important contribution to the extant literature. We not only document that the frequency to meet/beat analysts' earnings expectations has diminished in the Post-SOX period, but also explain this finding by considering simultaneously all three mechanisms used to meet or beat analysts' expectations. We find that accrual earnings management and expectations management declined while real earnings management remained unchanged. By documenting this change in the relative use of the three mechanisms our results imply that in the Post-SOX period investors and regulators should pay more attention to real earnings management than in the Pre-SOX Period.

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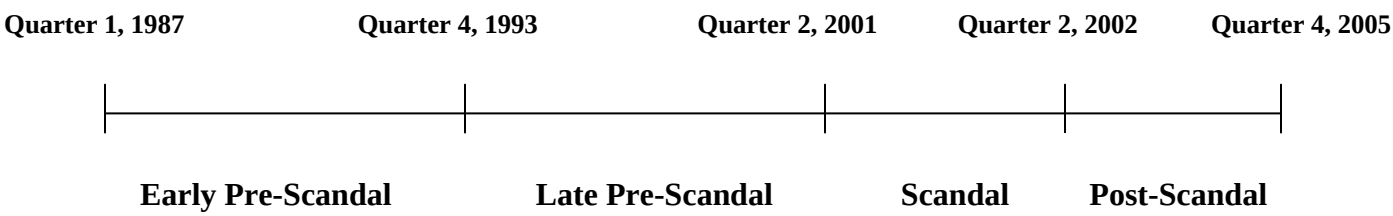
FIGURE 1

TIMELINE OF SAMPLE SUBPERIODS ANALYZED



Notes to Figure 1: The sample period begins in January 1987 and ends in December 2005.

TABLE 1
Summary Statistics of Sample Firms
(1987 – 2005)

Panel A: Summary Statistics, I/B/E/S Sample

	N	Mean	Std. Dev.	25%	Median	75%
NEG_SURP	245,113	0.346	0.475	0	0.475	1
NEG_FE	245,113	0.429	0.494	0	0	1.000
REV	245,113	-0.112	33.003	-0.020	0	0.005
MBE	245,113	0.653	0.476	0	1.000	1.000
JUSTBEAT	245,113	0.236	0.424	0	0	0
MKTVL	245,113	2851.44	24763.49	125.164	395.666	1389.26

Panel B: Summary Statistics, Merged Sample (I/B/E/S and COMPUSTAT)

	N	Mean	Std. Dev.	25%	Median	75%
ACCRUALS	84,754	-0.015	0.061	-0.034	-0.013	0.008
DA	84,754	0.004	0.048	-0.006	0.008	0.023
ABS_DA	84,754	0.027	0.040	0.007	0.016	0.033
C_INV	84,754	0.004	0.031	-0.003	0	0.009
GAINA	84,754	0.001	0.016	0	0	0
MKTVL	84,754	2965.06	15284.13	118.33	372.49	1284.50
SGA_A	84,754	0.084	0.069	0.036	0.069	0.116

Notes to Table 1:
NEG_SURP is a dummy variable which takes the value of one if earnings surprise for the quarter is negative, and zero otherwise.
NEG_FE is a dummy variable which takes the value of one if forecast error is negative, and zero otherwise.
REV is forecast revision defined as the difference between the last earnings forecast and the first earnings forecast for the quarter, $F_{latest} - F_{earliest}$.
MBE is a dummy variable which takes the value of one if the firm meets and/or beats analysts' expectations (SURP≥0), and zero otherwise.
JUSTBEAT is a dummy variable which takes the value of one if the firm beats analysts' expectations by a cent per share or less ($\$0.00 \leq EPS\text{-}F_{latest} \leq \$0.01$), and zero otherwise.
MKTVL is the market value of equity calculated as the share price times the number of shares outstanding.
ACCRUALS are defined as the difference between income before extraordinary items and cash flows from operations, adjusted for extraordinary items and discontinued operations.
DA is discretionary accruals, calculated using the modified Jones model.
ABS_DA is the absolute value of discretionary accruals.
C_INV is the change in inventory, scaled by lagged total assets.
GAINA is the gain on sale of assets, scaled by lagged total assets.
SGA_A are SG&A expenses scaled by lagged total assets.

TABLE 2
Relative frequency of negative forecast errors and negative earnings surprises
(1987 - 2005)

	Percentage of negative earnings surprises (%)	Percentage of negative forecast errors (%)	Excess of negative earnings errors over negative surprise cases (%)
	(A)	(B)	(C) = (B) - (A)
All years	37.06	44.70	7.64*
By Sub-periods			
1987:Q1 – 1993:Q4 (1)	48.11	53.50	5.39*
1994:Q1 – 2001:Q2 (2)	31.10	40.76	9.66*
2001:Q3 - 2002:Q2 (3)	26.63	39.04	12.41*
2002:Q3 – 2005:Q4 (4)	30.72	37.15	6.43*
Differences			
(2) – (1)	-17.01	-12.74*	4.27*
(3) – (2)	-4.47*	-1.72**	2.75*
(4) – (3)	4.09*	-1.89*	-5.98*
(4) – (2)	-0.37	-3.61*	-3.23*

Notes to Table 2:
* Significant at the 1% level, using the test of proportions; ** Significant at the 5% level, using the test of proportions. The sample consists of 245,113 firm-quarter observations for 1987-2005.
Earnings surprise is the difference between the actual earnings and the latest forecast for the quarter, EPS - F_{latest}.
Forecast error is the difference between the actual earnings and the earliest forecast for the quarter, EPS - $F_{earliest}$.

TABLE 3
Expectation Management: frequency of selected expectations paths, by period (1987 - 2005)

	Cases likely to be affected by expectations management (%)	Cases less likely to be affected by expectations management (%)	Difference in proportions (%)
All years	31.18	10.68	20.50*
By Subperiod			
1987:Q1 – 1993:Q4 (1)	22.41	13.72	8.69*
1994:Q1 – 2001:Q2 (2)	37.03	8.50	28.53*
2001:Q3 - 2002:Q2 (3)	42.07	8.16	33.91*
2002:Q3 – 2005:Q4 (4)	33.06	10.01	23.05*
Differences			
(2) – (1)	14.62*	-5.22*	19.84*
(3) – (2)	5.04*	-0.34	5.38*
(4) – (3)	-9.01*	1.85**	-10.86*
(4) – (2)	-3.96*	1.51**	-5.47*
(4) – (1+2)	3.34*	1.10**	4.44*

Notes to Table 3:
* Significant at the 1% level, using the test of proportions; ** Significant at the 5% level, using the test of proportions. The sample consists of 245,113 firm-quarter observations for 1987 - 2005.
Cases likely to be affected by expectation management are cases where the forecast revision turns a negative forecast error into a positive or zero earnings surprise, scaled by all cases with a negative forecast error.
Cases less likely to be affected by expectation management are cases where the forecast revision turns a positive or zero forecast error into a negative earnings surprise, scaled by all cases with a positive or zero-forecast error.
The forecast revision is the difference between the latest forecast and the earlier forecast for the quarter, $F_{latest} - F_{earliest}$.
The earnings surprise is the difference between the actual earnings and the latest forecast for the period, $EPS - F_{latest}$.
The forecast error is the difference between the actual earnings and the earliest forecast for the quarter, $EPS - F_{earliest}$.

TABLE 4
Temporal Analysis of Expectations Management
(1987 - 2005)

Model: $EXP\_M\_I_t = \alpha_0 + \beta_1 PRE94_t + \beta_2 SCAN_t + \beta_3 POST_t + \varepsilon_t$

	EXP_M_1	EXP_M_2	EXP_M_3
Intercept	0.148 (35.62)	0.366 (45.89)	0.269 (65.27)
PRE94	-0.028 (-4.78)	-0.142 (-12.49)	-0.055 (-9.39)
SCAN	0.018 (1.75)	0.067 (3.21)	0.054 (5.07)
POST	-0.024 (-3.31)	-0.035 (-2.56)	-0.020 (-2.87)
N (Quarters)	76	76	76
Adj. R^2	0.58	0.86	0.82

Notes to Table 4:
t-statistics are reported in parentheses.
EXP_M1 is the percentage of firm-quarters with a zero or positive earnings surprise and a negative forecast error, relative to total number of quarterly observations.
EXP_M2 is the percentage of firm-quarters with a zero or positive earnings surprise and a negative forecast error, relative to total number of quarterly observations with negative forecast errors.
EXP_M3 is the percentage of firm-quarters with a zero or positive earnings surprise and a negative forecast revision, relative to total number of quarterly observations.
Earnings surprise is the difference between the actual earnings and the latest forecast for the quarter, EPS - F_{latest}.
Forecast error is the difference between the actual earnings and the earliest forecast for the quarter, EPS - $F_{earliest}$
Forecast revision is the difference between the last earnings forecast and the first earnings forecast for the quarter, F_{latest} - $F_{earliest}$.
PRE94 is a dummy variable which takes the value of one if the observation is before the first quarter of 1994, and zero otherwise.
SCAN is a dummy variable which takes the value of one if the observation falls within the period, third quarter of 2001 through the second quarter of 2002, and zero otherwise.
POST is a dummy variable which takes the value of one if the observation is after the end of the second quarter of 2002, and zero otherwise.

TABLE 5
Temporal Analysis of Frequency of Firms Beating Analyst Expectations by One Cent Per Share or Less
(1987 - 2005)

Panel A: Univariate Analysis of Frequencies

	1987:Q1-1993:Q4 (%) (A)	1994:Q1-2001:Q1 (%) (B)	2001:Q2-2002:Q2 (%) (C)	2002:Q3-2005:Q4 (%) (D)
Frequency of Firms Just Meet/Beat	18.12	26.81	25.22	21.63
Differences				
(B) – (A)	8.69%*			
(C) – (B)	-1.59%*			
(D) – (C)	-3.59%*			
(D) – (B)	-5.18%*			

Panel B: Regression Analysis of the Frequencies

Model: $FREQ_t = \beta_0 + \beta_1 PRE94_t + \beta_2 SCAN_t + \beta_3 POST_t + \varepsilon_t$

Variable	Estimate (t-statistic)
Intercept	0.268 (62.05)
PRE94	-0.087 (-14.11)
SCAN	-0.041 (-1.26)
POST	-0.051 (-6.86)
N (Quarters)	76
Adj. R^2	0.86

Notes to Table 5:
*Significant at the 1% level, using the test of proportions.
FREQ is the frequency of firms beating analysts' expectations by a cent per share or less, i.e.,
$\$0.00 \leq \text{EPS} - F_{latest} \leq \$0.01$
PRE94 is a dummy variable which takes the value of one if the observation is before the first quarter of 1994, and zero otherwise.
SCAN is a dummy variable which takes the value of one if the observation falls within the third quarter of 2001 through the second quarter of 2002, and zero otherwise.
POST is a dummy variable which takes the value of one if the observation is after the end of the second quarter of 2002, and zero otherwise.

TABLE 6
Logit Analysis of firms that Just Meet/Beat Analyst Expectations
(1987 - 2005)

$$\Pr ob(JUSTBEAT = 1)_{it} = F(\alpha_0 + \beta_1 PRE\_94_{it} + \beta_2 SCAN_{it} + \beta_3 POST_{it} + \beta_4 DA_{it} + \beta_5 EXP\_M_{it} + \beta_6 REAL\_EM_{it} + \beta_7 DA * PRE\_94_{it} + \beta_8 DA * SCAN_{it} + \beta_9 DA * POST_{it} + \beta_{10} EXP\_M * PRE\_94_{it} + \beta_{11} EXP\_M * SCAN_{it} + \beta_{12} EXP\_M * POST_{it} + \beta_{13} REAL\_EM * PRE\_94_{it} + \beta_{14} REAL\_EM * SCAN_{it} + \beta_{15} REAL\_EM * POST_{it} + \varepsilon_{it})$$

Variable	A_GAINA	A_PROD	A_SGA	R_M_PROXY
Intercept	-0.662	-0.662	-0.657	-0.658
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
PRE94	-0.334	-0.347	-0.369	-0.365
	(0.011)	(<0.0001)	(0.016)	(<0.0001)
SCAN	0.052	0.056	0.077	0.063
	(0.185)	(0.145)	(0.056)	(0.131)
POST	0.020	0.023	0.011	0.012
	(0.526)	(0.456)	(0.734)	(0.722)
DA	2.114	2.068	2.051	2.046
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
EXP_M	0.279	0.278	0.283	0.284
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
REAL_EM	3.278	0.411	0.114	0.234
	(<0.0001)	(0.004)	(0.216)	(<0.0001)
DA*PRE94	4.862	4.608	5.051	4.944
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
DA*SCAN	-0.838	-0.997	-0.864	-0.999
	(0.095)	(0.041)	(0.005)	(0.013)
DA*POST	-1.400	-1.392	-1.397	-1.271
	(0.0199)	(0.02)	(0.0090	(0.021)
EXP_M*PRE94	-0.393	-0.400	-0.387	-0.386
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
EXP_M*SCAN	-0.214	-0.217	-0.204	-0.194
	(0.002)	(0.001)	(0.004)	(0.008)
EXP_M*POST	-0.165	-0.161	-0.168	-0.165
	(0.004)	(0.005)	(0.005)	(0.006)
REAL_EM*PRE94	4.919	0.192	1.236	0.831
	(0.008)	(0.559)	(<0.0001))	(<0.0001)
REAL_EM*SCAN	-0.656	0.700	-0.223	-0.062
	(0.502)	(0.349)	(0.641)	(0.879)
REAL_EM*POST	4.126	0.127	0.538	0.388
	(0.397)	(0.912)	(0.337)	(0.442)
No. of Observations	84,754	84,754	76,588	76,588
Log-Likelihood Ratio	2164.04	2216.94	2042.74	1976.64

Notes to Table 6:
P-values are reported in parentheses.
JUSTBEAT, the dependent variable is a binary variable taking the value of one if the firm-quarter observation beat/meet analysts' expectations by a cent per share or less ($\$0.00 \leq \text{EPS-F}_{latest} \leq \$0.01$).
PRE94 is a dummy variable which takes the value of one if the observation is before the first quarter of 1994, and zero otherwise.
SCAN is a dummy variable which takes the value of one if the observation falls within the third quarter of 2001 through the second quarter of 2002, and zero otherwise.
POST is a dummy variable which takes the value of one if the observation is after the end of the second quarter of 2002, and zero otherwise.
DA is defined as discretionary accruals calculated using the modified Jones-model.
EXP_M is a dummy variable taking the value of one if earnings surprise for the quarter is zero or positive and analysts' forecast revision is negative.
Earnings surprise is the difference between the actual earnings and the latest forecast for the quarter, EPS-F_{latest}.
Forecast error is the difference between the actual earnings and the earliest forecast for the quarter, $\text{EPS-F}_{earliest}$
Forecast revision is the difference between the last earnings forecast and the first earnings forecast for the quarter, $F_{latest} - F_{earliest}$.
REAL_EM is a proxy for real earnings management activities and is either: A_GAINA, A_PROD or A_SGA.
A_GAINA is defined as abnormal gain on asset sales, which is the difference between the actual gain on sale minus the industry-quarter median.
A_PROD is abnormal production costs, measured as the deviations from the predicted values from the corresponding industry-quarter regression:

$$\frac{PROD_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta\, Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq}$$

A_SGA is abnormal Sales, General and Admin. expense measured as deviations from the predicted values from the corresponding industry-quarter regression:

$$\frac{SGA_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta\, Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq}$$

R_M_PROXY is the aggregate real earnings manipulation score, which is the sum of A_GAINA, A_PROD, and A_SGA.

Dummy variables for fiscal quarters Q1, Q2, Q3 are included (not tabulated) in each of the estimated models.

TABLE 7
Logit Analysis of firms that Just Meet/Beat Analyst Expectations: Controlling for Varying Economic Activities, (1987 - 2005)

$$\Pr ob(JUSTBEAT = 1)_{it} = F(\alpha_0 + \beta_1 PRE\_94_{it} + \beta_2 SCAN_{it} + \beta_3 POST_{it} + \beta_4 GDP_{it} + \beta_5 IND\_ROA_{it} + \beta_6 DA_{it} + \beta_7 EXP\_M_{it} + \beta_8 REAL\_EM_{it} + \beta_9 DA * PRE\_94_{it} + \beta_{10} DA * SCAN_{it} + \beta_{11} DA * POST_{it} + \beta_{12} EXP\_M * PRE\_94_{it} + \beta_{13} EXP\_M * SCAN_{it} + \beta_{14} EXP\_M * POST_{it} + \beta_{15} REAL\_EM * PRE\_94_{it} + \beta_{16} REAL\_EM * SCAN_{it} + \beta_{17} REAL\_EM * POST_{it} + \varepsilon_{it})$$

Variable	A_GAINA	A_PROD	A_SGA	R_M_PROXY
Intercept	-1.086	-1.088	-1.095	-1.094
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
PRE94	-0.357	-0.359	-0.372	-0.371
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
SCAN	0.446	0.458	0.471	0.455
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
POST	0.421	0.427	0.425	0.425
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
GDP	0.013	0.013	0.013	0.013
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
IND_ROA	0.994	1.092	0.136	0.167
	(<0.0001)	(<0.0001)	(<0.0001)	(0.064)
DA	7.241	6.987	7.401	7.234
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
EXP_M	0.657	0.665	0.655	0.675
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
REAL_EM	3.639	0.942	1.501	1.292
	(<0.0001)	(0.004)	(<0.0001)	(<0.0001)
DA*PRE94	5.049	6.351	5.241	4.944
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
DA*SCAN	-5.974	-5.924	-6.223	-6.452
	(0.095)	(<0.0001)	(<0.0001)	(<0.0001)
DA*POST	-6.561	-6.352	-6.752	-6.191
	(0.0199)	(<0.0001)	(<0.0001)	(<0.0001)
EXP_M*PRE94	-0.354	-0.362	-0.351	-0.386
	(<0.0001)	(<0.0001)	(<0.0001)	(<0.0001)
EXP_M*SCAN	-0.593	-0.604	-0.578	-0.568
	(0.002)	(<0.0001)	(<0.0001)	(<0.0001)
EXP_M*POST	-0.544	-0.544	-0.538	-0.535
	(0.004)	(<0.0001)	(<0.0001)	(<0.0001)
REAL_EM*PRE94	0.135	-0.542	-1.351	-1.034
	(0.772)	(0.132)	(<0.0001)	(<0.0001)
REAL_EM*SCAN	-0.734	0.184	-1.612	-1.123
	(0.465)	(0.818)	(<0.0001)	(0.014)
REAL_EM*POST	3.835	-0.403	-0.866	-0.685
	(0.436)	(0.733)	(0.159)	(0.201)
No. of Observations	84,754	84,754	76,588	76,588
Log-Likelihood Ratio	2118.58	2180.55	1996.72	1931.61

Notes to Table 7:
P-values are reported in parentheses.
JUSTBEAT, the dependent variable is a binary variable taking the value of one if the firm-quarter observation beat/meet analysts' expectations by a cent per share or less ($\$0.00 \leq \text{EPS-F}_{latest} \leq \$0.01$).
PRE94 is a dummy variable which takes the value of one if the observation is before the first quarter of 1994, and zero otherwise.
SCAN is a dummy variable which takes the value of one if the observation falls within the third quarter of 2001 through the second quarter of 2002, and zero otherwise.
POST is a dummy variable which takes the value of one if the observation is after the end of the second quarter of 2002, and zero otherwise.
GDP is percentage change in seasonally adjusted GDP over the previous quarter.
IND_ROA is the industry average ROA for the quarter, calculated for each two-digit SIC code.
DA is defined as discretionary accruals calculated using the modified Jones-model.
EXP_M is a dummy variable taking the value of one if earnings surprise for the quarter is zero or positive and analysts' forecast revision is negative.
Earnings surprise is the difference between the actual earnings and the latest forecast for the quarter, EPS-F_{latest}.
Forecast error is the difference between the actual earnings and the earliest forecast for the quarter, EPS-$F_{earliest}$
Forecast revision is the difference between the last earnings forecast and the first earnings forecast for the quarter, F_{latest} - $F_{earliest}$.
REAL_EM is a proxy for real earnings management activities and is either: A_GAINA, A_PROD or A_SGA.
A_GAINA is defined as abnormal gain on asset sales, which is the difference between the actual gain on sale minus the industry-quarter median.
A_PROD is abnormal production costs, measured as the deviations from the predicted values from the corresponding industry-quarter regression:

$$\frac{PROD_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq}$$

A_SGA is abnormal Sales, General and Admin. expense measured as deviations from the predicted values from the corresponding industry-quarter regression:

$$\frac{SGA_{jq}}{Asset_{jq-1}} = \delta_{jq} + \alpha_0 \frac{1}{Asset_{jq-1}} + \beta_1 \frac{(\Delta Sales_{jq})}{Asset_{jq-1}} + \beta_2 \frac{SALES_{jq}}{Asset_{jq-1}} + \varepsilon_{jq}$$

R_M_PROXY is the aggregate real earnings manipulation score, which is the sum of A_GAINA, A_PROD, and A_SGA.

Dummy variables for fiscal quarters Q1, Q2, Q3 are included (not tabulated) in each of the estimated models.