The Rewards to Meeting or Beating Earnings Expectations

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Abstract

The paper studies the manner by which earnings expectations are met, measures the rewards to meeting or beating earnings expectations (MBE) formed just prior to the release of quarterly earnings, and tests alternative explanations for this reward. The evidence supports the claims that the MBE phenomenon has become more widespread in recent years and that the pattern by which MBE is obtained is consistent with both earnings management and expectation management. More importantly, the evidence shows that after controlling for the overall earnings performance in the quarter, firms that manage to meet or beat their earnings expectations enjoy an average quarterly return that is higher by almost 3% than their peers that fail to do so. While investors appear to discount MBE cases that are likely to result from expectation or earnings management, the premium in these cases is still significant. Finally, the results are consistent with an economic explanation for the premium placed on earnings surprises, namely that MBE are informative of the firm's future performance.

Key Words: Earnings expectations, analysts' forecasts, expectation management, earnings management, losses

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1. Introduction

Meeting or beating analysts' forecasts of earnings is a notion well entrenched in today's corporate culture. From corporate boards' deliberations to financial press reporting and Internet chats, emphasis is placed on whether the company meets its earnings forecasts. The following comment typifies the view of the financial press regarding the importance of meeting Wall Street's expectations:

> "In January, for the 41st time in 42 quarters since it went public, Microsoft reported earnings that meet or beat Wall Street estimates…. This is what chief executives and chief financial officers dream of: quarter after blessed quarter of not disappointing Wall Street. Sure, they dream about other things… But the simplest, most visible, most merciless measure of corporate success in the 1990s has become this one: Did you make your earnings last quarter?" (See Fox [1997], p. 77.)

The importance assigned to meeting earnings expectations is not surprising given the valuation relevance of earnings information. Recent anecdotal evidence, however, suggests that companies are not merely passive observers in the game of meeting or beating contemporaneous analysts' expectations (hereafter referred to as MBE). Rather, they are active players who try to win the game by altering reported earnings or managing analysts' expectations (see for example McGee [1997] and Vickers [1999]). The motivations often suggested for such behavior are to maximize the share price, to boost management's credibility for being able to meet the expectations of the company's constituents (e.g., stockholders and creditors), and to avoid litigation costs that could potentially be triggered by unfavorable earnings surprises.

The purpose of this paper is threefold. The first objective of the paper is to test whether, after controlling for the earnings forecast error for the period, there is a market premium to firms that meet or beat their earnings expectations formed just prior to the release of quarterly earnings. The second objective is to determine whether the data on earnings forecast revisions and earnings surprises are consistent with expectation or earnings management and, if so, whether the market premium to MBE exists even in cases where earnings or expectations are likely to have been managed. Finally, the paper attempts to provide explanations for the potential payoffs from an MBE strategy that are consistent with investor rationality.

Based on a sample of over 150,000 quarterly earnings forecasts made between the years 1983 to 1997 and covering approximately 75,000 firm-quarters, the paper finds that, in line with previous research, instances in which companies meet or beat contemporaneous analysts' estimates have increased considerably in recent years. The trend is common to all four quarterly reporting periods and is present also in the annual period. It is observed for both large and small firms. On average, analysts' forecasts made at the beginning of the period overestimate earnings (see similar findings by Barefield and Comiskey [1975] and Brown [1997], among others). However as the end of the reporting period approaches analysts' optimism (i.e., their overestimation) turns, through the predominance of downward revisions in earnings estimates, into pessimism (i.e., underestimation). Furthermore, the proportion of negative forecast error cases (measured relative to analysts' earnings forecasts made at the beginning of the quarter) that ends with a zero or positive earnings surprise (measured relative to the most recent analysts' earnings estimate) is greater than the proportion of positive or zero forecast error cases that ends with a negative surprise. These findings are consistent with expectation management that takes place late in the reporting period.

Our primary findings show that investors reward firms whose earnings meet or beat analysts' estimates. After controlling for the quarterly forecast error (measured relative to analysts' earnings forecasts made at the beginning of the quarter), the quarter's abnormal returns (measured over the same period as the corresponding quarterly forecast errors) are positively and significantly associated with the earnings surprise for the quarter (measured relative to the most recent estimate). The average return over quarters associated with a positive earnings surprise is significantly higher, by almost 3%, than the return over quarters that have the same overall quarterly earnings forecast error but end with a negative earnings surprise. These results suggest that, independent of the market valuation of the earnings level, there is a reward (penalty) to beating (failing to meet) analysts' earnings expectation. Furthermore, our tests, based on accrual analysis, show that the premium to MBE is only slightly reduced when earnings or expectations appear to have been managed.

In examining alternative explanations for the premium, our tests do not support the notion that investors overreact to earnings surprises (see, e.g., Zarowin 1989, and DeBondt and Thaler 1990). Such overreaction, if present, should lead to subsequent market reversals of the abnormal returns generated by the earnings surprise. Yet our tests, based on the examination of abnormal return over both a short window (consisting of the following quarter) and longer windows (up to three years following the earnings announcement), do not detect such a reversal. We further rule out several sources of measurement errors in analysts' forecasts, the proxy used for the unobservable market expectations of earnings, as potential explanations for the premium to earnings surprises.

The premium to earnings surprises, however, appears to be justified on economic grounds: Earnings surprises apparently possess greater information content with respect to future earnings. This is evident from the positive association between earnings surprises and future firm performance. While the reasons for this association are not investigated here, its presence suggests that investors rationally react to earnings surprises.

The paper is organized as follows: The next section reviews the recent research on the issue of MBE. Section 3 presents the empirical design, followed by a description of the sample and the data. Results are provided in Section 5. The paper concludes with a short summary and suggestions for future research.

2. Recent studies on MBE

The phenomenon of MBE has recently attracted interest among researchers. Brown [2000] finds a disproportional number of cases in recent years where earnings per share are slightly (by a few cents) above analysts' forecasts. He further finds an increase over the years in the number of cases where actual earnings per share are exactly on target. Degeorge et al. [1999] ascertain that the MBE strategy is one of three performance thresholds that management tries to meet. Evidence provided by other studies suggests that both earnings manipulation and expectation management are used to meet that end. Burgstahler and Eames [1998] provide evidence that downward revisions of forecasts occur more frequently when the revision would be sufficient to avoid a negative earnings surprise, suggesting managers' influence on analysts' forecast revisions. Further, they conclude that the time-series behavior of earnings is consistent with companies managing their earnings so as to meet analysts' expectations. Evidence consistent with earnings management to meet earnings forecasts is provided also by Kasznik [1999] and Payne and Robb [1997]. On the other hand, Skinner [1995], Kasznik and Lev [1995], Francis et al. [1994] and Soffer et al. [2000] show that companies increasingly tend to pre-warn investors about forthcoming unfavorable earnings. That is, the MBE strategy is accomplished through expectation management.

Whether carried out through earnings manipulation, expectation management or both, the benefits from an MBE strategy are not immediately apparent, unless MBE acts as a predictor of the future prospects of the firm. Specifically, for a policy of MBE carried out through earnings management to be successful, investors must be incapable of detecting management's reporting objectives. Likewise, for an MBE policy achieved through expectation management to be successful, investors must be incapable of correcting for an extractable past pattern of forecast errors.

A net reward from MBE through managing earnings expectations is questionable for yet another reason. Dampening earnings expectations so as to preempt an expected unfavorable earnings surprise would result in a negative price effect that should negate the positive announcement period return, leaving the total return for the period unchanged. In fact, past research (see Kasznik and Lev [1995] and Soffer et al. [2000]) shows a significant decline in the stock price of companies who pre-warn investors about forthcoming unfavorable disclosures (thus lowering investors' earnings expectations).

In a related study, Kasznik and McNichols [1999] examine whether MBE results in a higher firm valuation and higher forecasted earnings. Regressing stock prices on book values, the estimated present value of future abnormal income and a dummy variable capturing whether or not expectations were met, they find that firms which consistently (i.e., over three successive years) meet earnings expectations enjoy a valuation premium. Furthermore, firms that meet or beat earnings expectations report higher earnings in future periods (after controlling for current earnings). Yet, the higher future earnings of these firms are not fully incorporated in the earnings forecasts made by analysts for these future periods. No significant market premium is found, however, for firms that met or exceeded expectations only in the most recent year. Lopez and Rees [2000] find a premium to MBE: after controlling for the magnitude of unexpected earnings, the stock return during the earnings announcement period is affected by whether or not the analysts' forecasts are met.

Our analysis differs from the concurrent studies by Kasznik and McNichols [1999] and Lopez and Rees [2000] in several respects. First, by providing information on and analyzing the expectation paths, we examine the manner by which management accomplishes the task of MBE, contributing to the research on management of earnings expectations. In particular, our research method allows us to distinguish between the two managerial tools for achieving MBE: earnings management and expectations management. Second, we provide evidence on the increase in the premium to MBE over recent years, thus suggesting an incentive for the increased frequency of the MBE over time, a phenomenon documented by this as well as other studies. Third, we examine the relation between the premium to MBE and the presence of expectation and earnings management. Finally, whereas Kasznik and McNichols use a valuation test focusing on price levels, we use an information-content/event study paradigm, focusing on returns. Concentration on the exact arrival time of information to the market (in an event study design) regarding whether the earnings forecast has been met or exceeded improves the power of our tests. In addition, unlike tests based on valuation models (such as that by Ohlson [1995]), this approach avoids the measurement problems associated with estimating basic parameters such as abnormal earnings, terminal value and the cost of capital.

Indeed, the event-study methodology provides more conclusive results. While Kasznik and McNichols [1999] find a premium to MBE only in cases of "habitual beaters," our findings detect such a premium in all MBE cases. The excess average abnormal return in firm-quarters that end with favorable earnings surprises relative to those in which earnings fell short of expectations is almost 3%.

3. Hypotheses Development

The following description of the chronology of the earnings forecasts and the earnings announcements, illustrated in Figure 1, is helpful in understanding the hypotheses and tests of the paper.

Over the course of the current quarter and surrounding days, the earnings announcement of the preceding quarter is issued and, subsequently, an earnings forecast for the current quarter is made, forecast revisions occur and, following the end of the quarter, the actual earnings number is released. We define the net revision in analysts' forecasts of earnings during the quarter (REV_Q), as the difference between the latest earnings forecast available for that quarter and the earliest earnings forecast made after the release of the preceding quarter's earnings and (hereafter F_{latest} and $F_{earliest}$, respectively). We further define the earnings surprise for the quarter ($SURP_Q$) as the difference between the actual earnings number for the quarter and $F_{latest.}$ The forecast error for the quarter ($ERROR_Q$) is the difference between the actual earnings number and $F_{earliest}$.

For ease of exposition, we denote the combination of the direction of the net revision (up, down or zero) and the sign of the earnings surprise (positive, negative or zero) as the "expectation path." Because the set of possible expectation paths is somewhat different for cases with positive, zero or negative errors, we examine the paths separately for each error-sign group. Specifically, the following paths are examined:

Error-Sign Group	Revision: F_{latest} - $F_{earliest}$	Surprise: EPS - F_{latest}	Expectations Path
Positive Forecast Errors	+	+	Up – Up
(EPS - $F_{earliest} > 0$)	+	-	Up – Down
	-	+	Down – Up
	+	0	Up – No Change
	0	+	No Change – Up
Negative Forecast Errors	-	-	Down – Down
(EPS - $F_{earliest} < 0$)	-	+	Down – Up
	+	-	Up – Down
	-	0	Down – No Change
	0	-	No Change – Down
Zero Forecast Errors	+	-	Up – Down
(EPS - $F_{earliest} = 0$)	-	+	Down – Up
	0	0	No Change – No Change

Note that meeting or beating expectations corresponds to paths that end with "No Change" and "Up," respectively.

We conduct analyses designed to: (1) document the pattern of an increased frequency of MBE over time, (2) test for the presence of expectation management, as evidenced by the behavior of mid-period analysts' revisions and (3) establish whether there is a premium associated with MBE.

3.1. Hypotheses relating to expectation management

To test for the presence of expectation management, we perform two tests. First, we contrast the actual earnings surprise distribution with the hypothetical distribution assuming no interim revision in analysts' earnings forecasts. Note that the latter distribution is identical to that of the forecast error. If expectation management occurs, specifically, if expectations are dampened leading to downward revisions in earnings estimates, we would expect to find a lower frequency of negative earnings surprises than negative forecast errors. Conversely, if interim forecast revisions only represent the arrival of information without any managerial effort to manage expectations, no difference should be observed between the frequency of negative earnings surprises and negative forecast errors. Accordingly, the following hypothesis is tested (all hypotheses are expressed in their alternative form):

H_{1a}: The relative frequency of negative earnings surprises is smaller than the relative frequency of negative forecast errors.

If expectation management has become more pronounced in recent years, we further expect the excess frequency of negative forecast errors over negative earnings surprises to have increased over time.

H_{1b}: The excess of the relative frequency of negative forecast errors over negative earnings surprises has increased over time.

In a second, related test of the expectation management hypothesis, we examine more closely the role of the interim forecast revision in affecting the sign of the end-of-quarter earnings surprise. Our examination is based on a comparison of the observed sign of the earnings surprise with the sign of the earnings surprise that *would have been observed* in the absence of an interim forecast revision. As explained above, in the absence of an interim revision, the sign of the earnings surprise would be the same as the sign of the quarterly forecast error. Observing a negative forecast error that ends, through a sufficiently large downward revision, with a positive earnings surprise is thus consistent with expectation management. In the same vein, an observation with a zero or positive forecast error that ends, due to a sufficiently large upward forecast revision, with a negative earnings surprise is inconsistent with expectation management. If there is no management intervention, the proportion of observations in which the interim forecast revision offsets the sign of the forecast error so as to change the sign of the earnings surprise should be identical between cases with negative errors and cases with positive errors. Our hypothesis is stated in terms of the difference between these proportions. Specifically:

H_{2a}: The proportion of negative forecast error cases that ends with a zero or positive surprise (i.e., a Down-Zero or Down-Up path) is greater than the proportion of positive or zero forecast error cases that ends with a negative surprise (i.e., an Up-Down path).

If expectation management has become more prevalent recently, we expect an increase over time in the excess of the proportion of cases with the Down-Zero or Down-Up paths among negative forecast errors compared with the proportion of cases with the Up-Down path among positive or zero forecast errors. That is:

H_{2b}: The difference between the proportion of negative forecast error cases that end with a zero or positive surprise and the proportion of positive or zero forecast error cases that end with a negative surprise has increased over time.

3.2 Hypotheses regarding the premium to MBE

If the expectation path is not informative with respect to future firm performance and investors are rational, the course of the expectation path should not affect the abnormal return for the quarter. In particular, there should be no reward to an MBE strategy. Accordingly, the following hypothesis is advanced (again, expressed in its alternative form):

H_{3a}: After controlling for the forecast error, there is a premium to MBE.

Consistent with Hypotheses 1b and 2b regarding the increasing prevalence of the MBE phenomenon, we examine the behavior of the premium to MBE over time, by testing the following hypothesis:

H_{3b}: After controlling for the forecast error, the premium to MBE has increased over time.

To better understand the nature of the premium (if any), we further test two additional hypotheses. One is that the premium to MBE and the penalty for failing to meet expectations are, per unit of surprise, of the same magnitude. The second is that the premium to meeting expectations is similar to that associated with beating expectations. Stated in their alternative forms, these hypotheses are thus that, after controlling for the forecast error for the period:

H_4: The premium to MBE is different from the penalty for failing to meet expectations.

H_5: The premium to meeting expectations is different from the premium to beating expectations.

3.3. Hypotheses regarding factors influencing the premium to MBE

3.3.1. Earnings persistence

Previous research has documented a differential stock price response to earnings depending on whether earnings are positive or negative (e.g., Hayn [1995]). Further evidence suggests that the persistence of earnings decreases is significantly lower than the persistence of earnings increases (see for example, Brooks and Buckmaster [1976], Elgers and Lo [1994], and Basu [1997].). If investors perceive losses and earnings declines as transitory, then their response to MBE in these instances may also be muted. However, if investors value MBE more in cases of losses or declining profits than in cases of profits or increased earnings due to a reduction in expected bankruptcy costs, the premium to MBE should be larger for the former cases. Accordingly, we test the following hypotheses (stated in their alternative form) that, after controlling for the forecast error for the period:

H_6: The premium to MBE in loss cases is different from the premium to MBE in profit cases.

H_7: The premium to MBE in cases of decreasing earnings is different from the premium to MBE in cases of increasing earnings.

3.3.2. MBE persistence

Depending on the cause for the premium to MBE, the intensity of investors' response to instances of MBE may be influenced by the track record of the firm. If MBE is perceived to be a signal of future performance, repeated instances of MBE would indicate earnings momentum and produce a greater premium than isolated cases of MBE. On the other hand, an observed pattern of successive instances of MBE may indicate to investors the presence of management intervention and thus be associated with a lower premium. Persistent MBE behavior may result in a lower premium for yet another reason: It may indicate a bias in the forecasts used in this study that is unlikely to be present in an efficient market. The forecasts that we use, obtained from I/B/E/S (as described in the following section), may measure the true, unobservable, market expectations of earnings with error. This would, in turn, result in a lower or no observed premium to MBE.

The evidence provided by Kasznik and McNichols [1999] is consistent with the first prediction of a greater premium to firms that consistently meet or beat expectations. In fact, their tests fail to detect a significant premium to "one-time beaters." The event-study methodology used here may be more powerful in detecting a market premium if it exists. The above considerations lead to the following hypothesis (expressed in alternative form):

H_8: The premium to MBE of "habitual beaters" of expectations is different from the premium to MBE of "sporadic beaters."

3.4. Hypotheses regarding the association between the premium to MBE, expectation management and earnings management

MBE may be achieved in some cases through expectation management or earnings management. If investors can trace the MBE to management intervention, they may not reward such cases with the same premium, or not reward them any premium at all. Accordingly, we test two additional hypotheses:

H_9: The premium to MBE is larger for cases that are less likely to be driven by expectation management.

H_{10}: The premium to MBE is larger for cases that are less likely to be driven by earnings management.

4. Sample and Data

The sample consists of firm-quarter observations on the I/B/E/S database that satisfy the following criteria:

1) There are at least two individual earnings forecasts (not necessarily by the same analyst) for the quarter that are at least three days apart from each other.
2) The release date of the earliest forecast occurs at least three days after the release of the previous quarter's earnings.
3) The release date of the latest forecast precedes the earnings release by at least three 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 three days so that the second forecast represents a revision rather than a forecast issued almost concurrently with the initial forecast. The average length of time separating the two forecasts in our sample is about 47 days.

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 data. The third criterion is an attempt to ensure that the latest forecast is not "contaminated" by knowledge of the actual earnings number.

The total number of firm-quarters in the sample is 76,265 (containing at least twice as many individual forecasts since our test design requires that there be both $F_{earliest}$ and F_{latest} for each firm-quarter), spanning the period from January 1983 to December 1997. The number of firm-quarters increases steadily from an average of about 500 per fiscal quarter in the first five years of the sample period to over 2,000 per fiscal quarter in the last five years of the period.

We repeat the tests, using consensus forecasts to define the expectation paths. In so doing, we impose the restriction that each forecast reflect at least two individual analysts' forecasts in order to ensure that there really is a "consensus" forecast rather than that of an individual analyst. The results were essentially the same as those when the expectation paths were based on individual analysts' forecasts. For the sake of parsimony, we present only the results based on the individual forecasts.

Actual earnings numbers were retrieved from the I/B/E/S database. Other financial accounting data were retrieved from Compustat. In those instances where the I/B/E/S earnings number differed substantially (by more than 50%) from the earnings number reported by Compustat and the difference could not be explained by a special item (since I/B/E/S reports an "adjusted" earnings number), we eliminated the observation. Return data were obtained from the Center for Research on Security Prices (CRSP) database.

5. Tests and Results

5.1. Forecast revision paths and the earnings surprise

To ascertain whether our sample is comparable to those employed by previous research with respect to the time series pattern of MBE, we produced the distribution of earnings surprises over time. Our results (not presented here) show that both meeting and beating expectations have become more prevalent in recent years, as documented by previous research (see, for example, Brown [1997]) as well as current studies (see Brown [2000] and Lopez and Rees [2000]). Specifically, we find that the proportion of unfavorable earnings surprises dropped from about 48% in the years 1983-1993 to only 31% in the more recent period of 1994 to 1997. Over these subperiods, the relative frequency of meeting earnings expectations (i.e., a zero surprise) or beating them (a positive surprise) increased from 12% and 40% to 19% and 50%, respectively.

5.2. Tests of expectation management

The results of the tests of hypotheses 1a and 1b are provided in table 1. As shown in the table, the percentage of negative earnings surprises over the entire sample is 43.08%, which is significantly smaller (at the 1% confidence level, using the test of proportions) than the percentage of negative forecast errors, 50.68%.

We further examine the change in the frequency of negative earnings surprises in two subperiods, 1983-1993 and 1994-1997. These two subperiods are also used in other analyses in the paper. Their selection is motivated by the introduction of First Call forecasts in the early 1990s and their first appearance on the Web in 1994, developments that are likely to have widened the dissemination of analyst forecasts and increased their use as a benchmark for firm performance.[1] The conclusions and

[1] Note also that the emergence of the "expectations game" seems to have taken place in the mid-1990s. A search of the key words "met expectations" or "beat expectations" in the financial turns up revealed a sharp increase around that time. Further, Brown [1997] and [2000], as well as our unreported results, show that the average analyst forecast error has become negative in recent years.

inferences are essentially the same when other partitions of the period (such as dividing it into two equal-length subperiods) are used.

The difference between the relative frequencies of negative forecast errors and negative earnings surprises increases from the early subperiod to the second subperiod, from 4.96% to 11.71%. This increase in the difference is also significant at the 1% level, leading to the rejection of Hypothesis 1b.

These results are consistent with the expectation management hypothesis. This conclusion is reinforced by the tests of Hypothesis 2a, whose results are provided in Table 2. The table shows the proportion of firm-quarters with a negative forecast error that end with a positive surprise, and the proportion of firm-quarters with a positive or zero error that end with a negative surprise. Observations that belong to the first group are more likely to result from expectation manipulation than those in the second group. Hypothesis 2A is based on the difference between these two proportions. As the table shows, 35.68% of the firm-quarters with a negative forecast error ended, nonetheless (as a result of a sufficiently large downward revision in earnings forecasts), with a positive earnings surprise. In contrast, only 15.85% of the quarters with a positive, or zero, forecast error ended (due to a forecast revision that "spoiled" what otherwise could have been a positive earnings surprise) with a negative earnings surprise. This difference, which is statistically significant (at the 1% significance level, using the test of proportions), suggests the presence of expectation management and the rejection of Hypothesis 2a. The table also shows that the difference between the above relative frequencies, which is 19.83% for the entire period (35.68% - 15.85%), increased sharply from 10.41% (29.93% - 19.52%) in the first subperiod to 32.16% (44.58% - 12.42%) in the second subperiod. These results suggest a stronger propensity to manage expectations in recent years (a rejection of Hypothesis 2b).

All of the above findings are consistent with revisions in earnings forecasts being managed so as to result in MBE at the end of the 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 are expected to lead to a negative earnings surprise.

5.3. The reward to MBE

The evidence that expectations are managed implies that managers believe that there is a reward to this activity in the form of a premium to MBE. To test for the existence of a premium to MBE (hypothesis H_{3a}), we measure the incremental quarterly abnormal return of instances in which expectations are being met or beaten after controlling for the magnitude of the quarterly forecast error.

The return measure that we use is the beta-adjusted cumulative abnormal return, CAR, over the period beginning one day prior to the date of $F_{earliest}$ and ending one day after the release of the quarter's results.[2]

In testing H_{3a}, we control for the magnitude of the forecast error by placing firm-quarters within each error-sign group into portfolios based on the size of the forecast error. Using 5% intervals, this results in nine equal-error-size portfolios for each of the positive and negative error groups, and one portfolio for the zero error group.[3]

Hypothesis H_{3a} is also tested (along with hypotheses H_{3b}, H_4, and H_5,) by estimating the following regressions:

$$CAR_{i,Q} = \beta_0 + \beta_1 DMBE_{i,Q} + \beta_2 DBEAT_{i,Q} + \beta_3 ERROR_{i,Q} + \beta_4 SURP_{i,Q} + \beta_5 DBEAT_{i,Q} * SURP_{i,Q} + \varepsilon_{i,Q}, \quad (1)$$

where i is the firm index and Q is a quarter notation. DMBE and DBEAT are dummy variables that receive the value of 1 if, respectively, $SURP \geq 0$ and $SURP > 0$. Otherwise, these variables receive the value of zero. The overall forecast error for the quarter, ERROR, and the end-of-quarter earnings surprise, SURP, are measured as described above and deflated by the firm's stock price at the beginning of the quarter.

We expect β_3 to be positive and significant, in line with the findings of the vast body of research on the information content of earnings. Under the null of $H_{3a,}$ the coefficients $\beta_{1,}$ and β_4 are not expected to be significantly different from zero. Similarly, under the null of H_{3b} the coefficients $\beta_{1,}$ and β_4 are not expected to significantly vary over time. Under the null of H_4, β_5 should not be different from zero and under the null hypothesis H_5, β_2 should not be significantly different from zero.

Table 3 reports the results of testing Hypothesis 3a (premium to MBE) and Hypothesis 5 (differential premium to beating versus merely meeting expectations). The table presents the period abnormal returns by path, controlling for the period's forecast error. As noted earlier, this control is obtained through the construction of equal error-size portfolios, in 5% increments.[4] The table shows that within almost every error-size portfolio, the period abnormal return, CAR_Q, associated with paths

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[2] We calculate several alternative measures of "abnormal return" for a period: the cumulative beta-adjusted abnormal return (which assumes daily re-balancing) over the period, the period's "buy-and-hold" beta-adjusted abnormal return, and the period's cumulative size-adjusted returns. All three measures led to essentially the same results. In addition, to account for return intervals of different length, we also used an average "per-day" measure of abnormal return. The use of this measure did not materially alter the results.

[3] The portfolios are based on the percentage forecast errors, $(EPS - F_{earliest})/|EPS|$, where EPS is the actual earnings per share.

[4] Forming portfolios based on smaller error increments yields essentially similar results.

ending with a favorable earnings surprise (•-Up paths) is significantly higher than that associated with paths ending with an unfavorable earnings surprise (•-Down paths).[5]

Panel B of table 3 summarizes the path results in Panel A across portfolios. Each value in this summary panel is the simple average of the CAR_Q pertaining to the expectation path, across the nine equal error-size portfolios.[6] As the results for the positive error cases show, after controlling for the magnitude of the forecast error for the quarter, the •-Up paths are associated with the highest CAR_Q, having an average CAR_Q of 0.073 as compared with 0.040 for the Up-Zero path and 0.028 for the Up-Down path. Similar results are obtained for cases with a negative forecast error, with the Down-Up path having an average CAR_Q of -0.028 while the •-Down paths and the Down-Zero path have considerably lower CAR_Q, of –0.047 and –0.074, respectively. Likewise, within the zero-error portfolio, the CAR_Q for the expectation path that ends with a positive earnings surprise (Zero-Up) is larger by 1.3% (0.010 versus –0.003) than that ending with a negative earnings surprise[7]. Across all error groups, the average CAR_Q for paths ending with a favorable surprise is greater by almost 3.0% than those ending with an unfavorable surprise. The above differences in CAR_Q are significant at the 1% significance level or higher, using the paired-difference t-test. Our findings (not shown here) also show the existence of premium to MBE in each of the four fiscal quarters and for different firm-size portfolios. The variation of the premium to MBE across quarters and firm size groups is not statistically significant.

Similar findings are reached when Hypotheses 3a and 5 are tested using regression (1). As the results for the full sample indicate, the coefficients β_1, and β_4 are positive and significant, suggesting that the earnings surprise affects the return for the quarter, even after controlling for the overall quarterly forecast error (which is, as expected, a significant variable).[8] The regression results also suggest that beating expectations is associated with a higher return than just meeting expectations. The coefficients of DBEAT (β_2) and DBEAT*SURP (β_5) are positive and significant.

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[5] There is a significant difference (at the 0.01 level or higher) between the average CAR_Q for the •- Down paths and that of the •- Up paths for 16 of the 18 portfolios in Panel A.

[6] For the zero-error cases there is, obviously, only one error-size ($EPS\text{-}F_{earliest}$=0) portfolio.

[7] Finding a premium to the Down-Zero path relative to the Up-Down or Zero-Down paths contradicts, ostensibly, the result of Soffer, Thiagarajan and Walther (STW) [2000]. They find that firms that preannounce negative news experience greater negative returns over the period leading to and including the earnings release date. However, the results of the two studies are not strictly comparable for at least two reasons. First, the number of observations in STW of negative preannouncements and no (neutral) earnings surprise is only about 200 (see their table 4) relative to almost 4,000 cases upon which our result is based. Also, unfavorable preannouncements are likely to represent cases where there is extremely bad news. Such extreme news may overshadow even subsequent positive earnings surprises.

[8] The firm-quarter observations are not strictly independent because of the presence of multi-quarter observations for each firm. The regressions presented in this table were also estimated from a sub-sample in which a single quarter was

To test Hypothesis 3b concerning the equality of the premium over time, we divide the period into the two subperiods (1983-1993 and 1994-1997) and test regression (1) separately for each of the subperiods. The results reported in table 4 lead to the rejection of H_{3a}. While the coefficient of the intercept dummy (DMBE) in the early and recent subperiods is very similar (0.016 versus 0.017), the slope coefficient for SURP is larger in the more recent years (0.675 versus 0.575 for the earlier years). This difference, however, is not statistically significant (using the F test).

The null of H_4, namely, that the premium arising from meeting or beating expectations is identical to the penalty for failing to meet expectations is rejected by the data. As table 4 indicates, the coefficient of the interactive variable DBEAT*SURP, β_5, estimated for the full sample (and for each of the subperiods), is positive and significant. This suggests that the reward (in terms of CAR) to a unit of a favorable earnings surprise is greater than the penalty to an unfavorable earnings surprise.

Table 4 also shows that the premium to MBE is not confined to any fiscal quarter. The coefficients of DMBE and SURP (β_1 and β_4) are positive and significant for each of the quarters, and not significantly different across quarters.

The same results concerning the premium to MBE are obtained when the variables ERROR and SURP are measured based on consensus analysts' forecasts instead of individual analysts' forecasts. For the sake of brevity, the results are not presented here.

5.4. The reward to MBE as a function of earnings persistence and MBE persistence

Hypotheses H_6, H_7 and H_8 predict differential premiums to MBE for, respectively, loss versus profit cases, firms reporting earnings decreases versus those reporting earnings increases, and cases of "habitual beaters" versus "sporadic" beaters." These are tested using the following regression (quarter and firm notations are omitted):

$$CAR = \delta_0 + \delta_1 DMBE + \delta_2 DMBE^{subset} + \delta_3 ERROR + \delta_4 SURP + \delta_5 DMBE*SURP + \delta_6 DMBE^{subset}*SURP + \varepsilon. \quad (2)$$

CAR, ERROR and SURP are as defined in regression (1). DMBE is a dummy variable that receives the value of 1 if SURP $\geq$ 0 and 0 otherwise. $DMBE^{subset}$ is a dummy variable that receives the value of 1 if SURP $\geq$ 0 (i.e., DMBE =1) and, in addition, the case belongs to the subset of observations to which the specific hypothesis refers.[9] Depending on the hypothesis being tested, we

randomly drawn from each of the approximately 6,000 distinct firms in the sample. The results, and in particular the significance of the variables of interest, are similar to those obtained for the full sample.

[9] Note that while the dummy variable DMBE in regression (2) is different from the dummy variable BEAT in regression (1), the interactive variables DMBE*SURP in regression (2) and BEAT*SURP in regression (1) are identical. Both are equal to SURP when SURP >0 and to 0 otherwise.

define that subset alternately as consisting of firm-quarters with a loss (H_6), firm-quarters with an earnings decrease (H_7), and firm-quarters belonging to "habitual" beaters.[10] For the purpose of testing H_7, earnings decreases are defined relative to the same quarter last year.[11] In testing H_8, "habitual beaters" are defined as those firms with at least 20 quarters of forecast data that meet or beat analysts' earnings forecasts for at least 75% of the quarters.

A differential premium to MBE in case of a loss (or an earnings decrease or a habitual beater) will be reflected in δ_2 and δ_6 that are significantly different from zero. The results from testing hypothesis H_6 and H_7 are provided in Table 5. As line 1 indicates, H_6 can be rejected: The coefficient δ_2 of the intercept dummy, $DMBE^{subset}$ (the subset consisting of loss cases), is positive and significant (and δ_6, the coefficient of the related interactive variable, is positive and close to being significant), indicating that the premium to MBE is more pronounced when the announced earnings are a loss. While the magnitude of the coefficients suggests that the excess premium is economically trivial, the finding of a greater premium to MBE in loss cases is consistent with the notion that a smaller than anticipated loss has a greater valuation implication than a larger than anticipated profit. This may be due to the fact that MBE in these cases indicates a reduction in the likelihood of bankruptcy or a perceived turning point in the earnings pattern.

The results from testing H_7 are shown in line 2 of Table 5. The coefficients δ_2 and δ_6 that are associated with $DMBE^{subset}$, where the subset is defined as cases with earnings decreases, are not statistically different from zero, suggesting that the premium to MBE is not a function of whether the quarterly earnings represent an increase or a decrease relative to the same quarter last year. We also tested H_7 using the previous quarter as the benchmark for identifying earnings increases or decreases, reaching essentially the same conclusions.

As line 3 of Table 5 shows, both δ_2 and δ_6 are positive and significant, indicating that the premium to MBE is significantly higher for habitual beaters, thus rejecting H_8. That is, rather than discounting the favorable earnings surprises of firms that consistently produce such surprises, investors value them even more. This finding is consistent with the findings of Kasznik and McNichols [1999] that the premium is more pronounced for "habitual beaters" (in fact, they do not find a significant premium to firms that only sporadically experience MBE) as well as the "momentum" story and the related findings by Barth et al. [1999].

5.5. The reward to MBE as a function of management intervention

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[10] To illustrate, in testing H_6, $DMBE^{subset}$ is set equal to 1 for all MBE cases associated with a loss, and zero otherwise.

In order to test hypotheses relating to management intervention (H_9 and H_{10}), we estimate regression (2), setting $DMBE^{subset}$ equal to 1 alternately for MBE observations that are **more likely** to represent expectation management and for MBE observations that are **more likely** to be driven by earnings manipulation.

In line with the analysis in section 3.1, MBE cases that are more likely than others to result from expectation management are identified as cases with a negative forecast error that end with a zero or positive surprise (e.g., negative forecast error cases with Down-Zero or Down-Up paths). If investors detect expectation management and, further, do not assign a premium, or assign a lower premium, to cases where the MBE is obtained through expectation management (i.e., a rejection of H_9), δ_2 and δ_6 in regression (2) are expected to be negative.

A similar approach is used to test the association between the premium to MBE and earnings management. Specifically, this association is tested by estimating regression (2), setting $DMBE^{subset}$ equal to 1 for all cases in which the MBE is **more likely** to have been driven by earnings management. Such MBE cases are identified through two alternative procedures, both of which are based on the identification of expected and unexpected accruals. Unexpected accruals are assumed to be discretionary.

The first procedure to derive the unexpected discretionary accruals is based on a model that relates the accruals each period to the level of activity (measured by revenues) and investment in property plant and equipment) proposed by Jones (see Jones [1991] and Dechow et al. [1995]). In the second procedure, unexpected discretionary accruals are defined as total accruals less working capital accruals and depreciation. Working capital accruals are defined as:

$$\text{Working Capital Accruals} = \Delta\text{ Accounts Receivable} + \Delta\text{ Inventories} + \Delta\text{ Prepaid Expenses} - \Delta\text{ Accounts Payable} - \Delta\text{ Taxes Payable}$$

Extracting depreciation, amortization and the working capital accrual components from total accruals results in accruals consisting primarily of such items as loss and bad debt provisions (or their reversal), restructuring charges, the effect of changes in estimates, gains or losses on the sale of assets, asset write-downs, the accrual and capitalization of expenses, and the deferral of revenues and their subsequent recognition. We refer to these accruals as "discretionary accruals" since their amount or timing is usually discretionary. In other words:

$$\text{Discretionary Accruals} = \text{Total Accruals} - \text{Working Capital Accruals} - \text{Depn. and Amort.}$$

[11] Defining earnings decreases relative to the previous calendar quarter led to essentially the same results.

Discretionary accruals for each firm-quarter derived using the above model (hereafter, the "extraction model") are scaled by the firm's total assets at the beginning of the quarter; their expected level is estimated as the mean of this ratio over all available quarters. Unexpected discretionary accruals are measured for each firm-quarter as the difference between the firm's discretionary accruals in the quarter and the product of the above mean ratio and total assets of the firm at the end of that quarter.

To examine the effect that earnings management might have on the premium to MBE, we adjust the reported earnings of all the MBE cases by subtracting from the reported earnings the amount of unexpected discretionary accruals (measured by the two alternative models described above). We then recompute the earnings surprise (SURP) for all MBE cases to establish whether or not they still retain their MBE designation after adjusting for unexpected discretionary accruals. We then test H_{10} by estimating regression (2) setting $DMBE^{subset}$ to 1 if the above cases retain their MBE designation without the "help" of unexpected discretionary accruals.

If investors detect earnings management and, further, do not assign a premium, or assign a lower premium, to cases where the MBE is obtained through earnings management (i.e., a rejection of H_{10}), then δ_2 and δ_6 are expected to be negative.

The results of the test of the association between expectation management and the premium (H_9) are provided in line 4 of Table 5. The results are based on estimating regression (2) with $DMBE^{subset}$ set equal to one for all MBE cases where MBE is likely to have been obtained through expectation management and to zero otherwise. As the table shows, the coefficients δ_2 and δ_6 are negative with δ_2 being significantly negative. This result suggests that the premium to MBE is significantly lower in instances in which the MBE is more likely to have been driven by expectation management. Overall, however, the premium to MBE in these cases still exists and is lower by only a small amount from the premium to MBE in other cases. This finding may either reflect investors' inability to discern expectation management or their perception that MBE is a signal about future performance of the firm, independently of how it was accomplished. At any rate, we hesitate to draw strong conclusions from the small effect of expectation management on the premium since it may reflect a weakness of our design in identifying instances where expectation management takes place. Lines 5 of Table 5 show the results from estimating regression (2) with $DMBE^{subset}$ set equal to one for all MBE cases in which MBE is likely to have been obtained through earnings management and to zero otherwise. Since earnings management can be detected through accruals, an assessment regarding the presence or absence of earnings management can be made only when the full quarterly report is publicly available. For this reason, the CAR accumulation period used to test the earnings management-related hypothesis (H_{10}) is extended to 5 days after the latest allowable filing date of the 10Q report, or 50 days after the end of the quarter. Because the fourth quarter's results are published relatively late as part of the annual 10-K (up to 90 days after the end the fiscal year), we elected to drop the fourth quarter observations from the analysis rather than extend the accumulation period further.

Regression (2) is estimated twice, under the two alternative ways of estimating unexpected accruals (the Jones model and the "extraction model") and thus of identifying MBE cases where earnings management is less likely to have occurred. Both models lead to the same conclusion: The premium to MBE in cases where the MBE is achieved only due to sufficiently positive unexpected accruals is significantly lower than the premium to MBE in other cases.

The above finding suggests that investors are capable of discerning the effect of earnings management on the earnings surprise and somewhat discount the resulting surprise. Yet, the extent of the discount is economically minor (the coefficients δ_2 and δ_6 are very close to zero). Like the test on the effect of expectation management on the premium to MBE, the small discount to the premium in cases of earnings management could be due to the difference in the power of the methodology we use to detect expectation management. In addition, while the CAR accumulation period used in this analysis extends to 5 days after the filing date of the 10Q report, investors may not complete their assessment regarding the presence of earnings management within that short period.

5.6. The information content of forecast revisions

The finding of a market reward to the expectation path is consistent with the notion that investors assign less weight to analysts' forecast revisions made during the quarter than to earnings surprises at the earnings announcement time. We test this implication by decomposing the forecast errors into its two components – the earnings forecast revision and the earnings surprise. We assess the incremental contribution of each to the period abnormal return, by estimating the following regression (quarter and firm notations are omitted):

$$CAR = \alpha + \beta_1 REV + \beta_2 SURP + \varepsilon, \qquad (3)$$

where CAR and SURP are as defined in regressions (1). The revision, REV, defined in section 3, is the overall forecast revision during the quarter measured as the difference between the latest forecast in the quarter (F_{latest}) and the initial forecast ($F_{earliest}$). The results for all paths, shown in the first line of table 6, suggest that while revisions in analysts' forecasts are a significant factor in explaining the period return, the effect of the surprise is significantly greater than that of the revision (at the 1% significance level). While the coefficient of the surprise (β_2) is 1.54, the coefficient of the revision (β_1) is only 0.73.

Note that the two independent variables in regression (3) may be positively correlated, making the detection of the contribution of each to the period's return difficult. To alleviate this problem, we separate the observations into two groups: those cases where the revision and surprise form a "monotonic" path (i.e., the revision and surprise are in the same direction) and those cases where they form a "nonmonotonic" path. We then re-estimate regression (3) for each group separately. The results for quarters with a nonmonotonic path are even stronger than the results for all cases. The earnings surprise associated with such paths clearly dominates the quarter's abnormal return, as evidenced by the relative magnitude of the coefficients on SURP (the earnings surprise) and REV (the forecast revision); the coefficient on SURP is almost three times larger than the coefficient on REV (2.12 vs. 0.79).

The finding of a greater weight assigned by investors to earnings surprises than to forecast revisions is reinforced when we compare the stock price reaction to forecast revisions with the response to earnings surprises. The results reported in table 7 show that, after controlling for the magnitude of the revision and the surprise, the stock price response to earnings announcements is, on average, 1.5 times stronger than the response to analysts' forecast revisions. We further find (not reported here) that analyst's revisions are less likely to trigger a revision in next year's earnings forecasts than are earnings surprises. The revision in next year's earnings triggered by an earnings surprise is 1.8 times greater on average than the revision triggered by a forecast revision for the current quarter, controlling for the magnitude of the revision and the surprise. Both of these findings are consistent with the results from regression (3) in which the coefficient for the earnings surprise is twice as large as the coefficient for the revision (1.54 vs. 0.73, see table 6).

The lower weight assigned by investors to revisions in earnings estimates relative to earnings surprises could rationalize an MBE strategy by the firm, whereby negative earnings forecast revisions are induced in order to obtain subsequent favorable earnings surprises.[12]

5.7. Measurement errors in analysts' forecasts

[12] A possible explanation for the heavier weight assigned by investors to the earnings surprise relative to the interim revisions in earnings forecasts is that forecast revisions are more affected than actual earnings by events that have a transitory effect on future earnings. For example, interim revisions in analysts' forecasts might often be triggered by management disclosures relating to the sale of assets, restructuring, layoffs and other publicized transitory events. We tested this conjecture by examining the effect that a forecast revision and an earnings surprise of an equal size in year t have on analysts' earnings forecast for year t+1. The results (not shown) are consistent with this conjecture and thus with the more pronounced market response to earnings surprises than to earnings revisions.

One possible explanation for the dominance of the earnings surprise in explaining the entire period returns is that investors overreact to earnings surprises. Another explanation is that earnings surprises are informative in that they provide an indication of future firm performance. We test these two explanations below. However, before testing these explanations, we attempt to rule out the possibility that the results are driven by errors in estimating the unobservable market expectations of earnings. In general, I/B/E/S forecasts are a good surrogate for the unobservable market expectations of earnings (see Fried and Givoly [1982]; Brown et al. [1987]). Still, certain measurement errors in analysts' forecasts could be correlated with the observed premium to MBE and thus reduce the precision of identifying the sign (and magnitude) of the forecast error and the earnings surprise. We tried to assess the impact of potential measurement errors in two ways. First, we replicate the tests substituting mechanical forecasts (specifically, an AR(1) model in seasonal differences (see Foster [1977])[13] for the beginning-of-the-quarter I/B/E/S forecasts. In the second test we eliminate cases where the magnitude of the revision is minor relative to the magnitude of the error, leading potentially to an incorrect identification of the expectation path. The results from these two tests (not reported here) lead essentially to the original findings, suggesting that these results are unlikely to be driven by measurement errors.

5.8. The overreaction explanation

The incremental abnormal return for meeting or beating analysts' expectations may also be yet another manifestation of investors' overreaction, a phenomenon that has been documented by past research (see, for example, De Bondt and Thaler [1987] and Seyhun [1990]). For this explanation to hold, some reversal of the announcement period abnormal return must occur in subsequent periods.

We examine the abnormal return across the equal-error portfolios of each expectation path over the following quarter and for longer periods of one, two and three years subsequent to the earnings announcement period. If reversal occurs, we would expect to find that the paths ending with a positive earnings surprise would show a lower return in these subsequent periods. As is evident from the results reported in table 8, there is no apparent reversal of the premium to MBE cases in the periods that follows the earnings announcement. The results thus do not support the notion of investors' overreaction to earnings surprises.[14]

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[13] We estimate the following regression from the most recent 10 years: $(EPS_{Qt} - EPS_{Qt-4}) = \delta + \phi(EPS_{Qt-1} - EPS_{Qt-5}) + \varepsilon_t$, leading to the prediction $EPS_{Qt} = EPS_{Qt-4} + \delta + \phi(EPS_{Qt-1} - EPS_{Qt-5})$.

[14] As indicated in section 3.2, we measure "abnormal return" for a period as the cumulative beta-adjusted abnormal return over the quarter. Previous research suggests that this measure provides biased values when accumulated over longer periods, such as a year (see, for example, Barber and Lyon [1996, 1997] and Kothari and Warner [1997]). The abnormal returns resented in table 8 are corrected for this bias using the procedure suggested by Barber and Lyon [1996, 1997].

5.9. The information content explanation

An explanation for a premium to MBE that is consistent with investors' rationality is that the firm's success in meeting or beating its earnings estimates (i.e., the expectation path) is informative with respect to the future performance of the company. To test this explanation, we examine the association between the incidence of MBE and the firms' performance in subsequent quarters and years. Firm performance is gauged by several accounting performance measures: return-on-assets, return-on-equity, prevalence of losses, and sales and earnings growth. The results, shown in table 9, are consistent with the MBE having information content with respect to future performance. Specifically, after controlling for the forecast error, firms that meet or beat analysts' earnings forecasts in a given quarter exhibit significantly better performance over the following two years than firms that fail to meet earnings expectations.

Table 9 shows that for cases with positive quarterly earnings forecast in year t, the return-on-assets in the following year (ROA_{t+1}), the return on equity (ROE_{t+1}) and the growth rate of sales and net income of firms that beat expectations is 5.7%, 11.4%, 23.0% and 49.2% respectively. In contrast, the values for these performance measures are only 2.9%, 1.5%, 16.5% and 7.1%, respectively, for firms with the same forecast error that failed to do so. Other performance measures in year t+1, such as the operating margin and the percentage of losses, show the same superior performance of firms whose quarterly earnings in year t beat analysts' forecasts as compared with those who fell short of these forecasts. Cases with negative quarterly earnings forecasts show the same pattern. Finally, as the table shows, the better performance of the "expectation beaters" extends also to year t+2. All of the above differences in performance between firms that meet or beat earnings expectations and those that do not are significant at the 5% significance level or better.

These results are consistent with the better performance of habitual beaters of earnings expectation documented by Kasznik and McNichols [1999]. To the extent that "buy" recommendations are associated with anticipated positive firm performance, our results are also in line with the finding of a positive correlation between MBE and "buy" recommendations reported by Abarbanell and Lehavy [2000].

6. Conclusions

The paper examines the recent phenomenon of the "expectation game" whereby companies and investors focus on the degree to which reported earnings meet or beat analysts' estimates. Anecdotal and empirical evidence, including evidence provided by this paper, suggest that firms have become more successful in MBE and that this success is achieved in part by managing expectations. The evidence further shows that, after controlling for the absolute earnings performance, firms that manage to meet or beat their earnings expectations, even at the expense of an earlier dampening of those expectations, enjoy a higher return than their peers that fail to do so. While investors appear to apply some discount to MBE cases that are likely to result from expectation or earnings management, the premium in these cases is still significant. This finding, while rationalizing an MBE behavior by firms, raises the question of investor rationality.

Further analyses indicate, however, that the emphasis placed by investors on the earnings surprise is justified on economic grounds. The earnings surprise is more informative than the revisions in earnings forecasts in predicting future earnings. Specifically, we find that earnings surprises are more likely to trigger revisions in future annual earnings than are quarterly earnings revisions. Moreover, earnings surprises are a reliable predictor of the firm's future performance, after controlling for the earnings performance. Firms whose quarterly earnings releases constitute a favorable surprise show, in subsequent years, a higher growth in sales and earnings and a higher ROA and ROE than firms with the same earnings performance but with unfavorable earnings surprises.

One of the interesting questions that still remains unanswered by the findings is why analysts do not correct their forecasts for what appears to be a systematic downward bias in their late-in-the-period forecasts. Or, to put it in more concrete terms, how could analysts underestimate Microsoft's quarterly earnings 47 times in a row?

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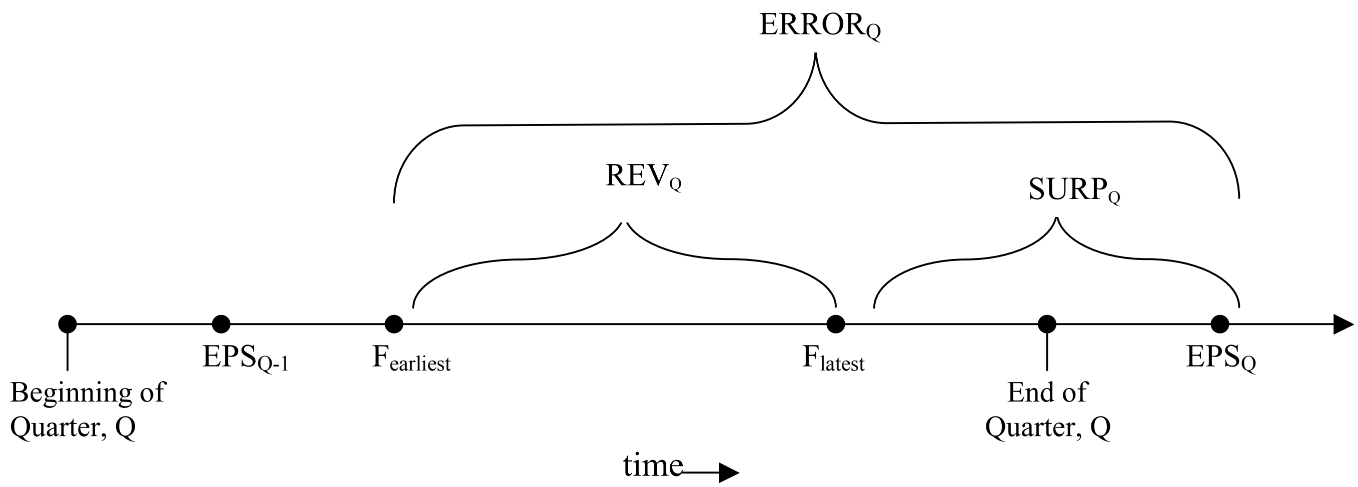
Figure 1



<u>Legend</u>:

EPS_{Q-1} and EPS_Q: the actual earnings announcements for quarters Q-1 and Q, respectively.

$F_{earliest}$: the first forecast for quarter Q following the earnings announcement for quarter Q-1.

F_{latest}: the last forecast for quarter Q prior to the release of the earnings announcement for quarter Q.

$ERROR_Q$: the overall forecast error for the quarter, measured as $EPS_Q - F_{earliest}$.

REV_Q: the forecast revision for the quarter, measured as $F_{latest} - F_{earliest}$.

$SURP_Q$: the earnings surprise for quarter Q, measured as $EPS_Q - F_{latest}$.

Table 1
Relative Frequency of Negative Forecast Errors and Negative Earnings Surprises[1]

	(1) Percentage of negative earnings surprises	(2) Percentage of negative forecast errors	(3) = (2) – (1) Excess of negative earnings errors over negative surprise cases
All Years	43.08%	50.68%	7.60%
By Subperiod:			
1983-1993	48.59%	53.55%	4.96%
1994-1997	30.69%	43.40%	11.71%

[1] Earnings surprise: Difference between the actual earnings and the latest forecast for the quarter, $EPS - F_{latest}$.
Forecast error: Difference between the actual earnings and the earliest forecast for the quarter, $EPS - F_{earliest}$.

Table 2
Frequency of Selected Expectation Paths, by Period[1]

	Cases with a Negative Forecast Error that End with:												
	(a) Positive Surprise (Down-Up Path)		(b) Zero Surprise (Down-Zero Path)		(c) **Group I** (a) and (b) combined. I.e., Cases with either Positive or Zero Surprise (Down-Up or Down-Zero Paths)		(d) Cases with a Positive Forecast Error that End with a Negative Surprise (Up-Down Path)		(e) Cases with a Zero Forecast Error that End with a Negative Surprise (Up-Down Path)		(f) **Group II** (d) and (e) combined. I.e., cases with either a Positive or Zero Forecast Error with a Negative Surprise (Up-Down Path)		Difference between Group I and Group II in the proportion of cases where the sign of the Surprise is opposite the sign of the Error
Period	N	% of all cases with a negative error	N	% of all cases with a negative error	N	% of all cases with a negative error	N	% of all cases with a positive error	N	% of all cases with a zero error	N	% of all cases with either a positive or zero error	
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]	[10]	[11]	[12]	**[13] = [6] – [12]**
All Years	9,080	24.65%	4,061	11.02%	13,141	35.68%	4,715	14.19%	1,536	24.76%	6,251	15.85%	**19.83%***
1983-1993	5,023	22.45%	1,672	7.47%	6,695	29.93%	3,047	17.69%	759	29.86%	3,806	19.52%	**10.41%***
1994-1997	4,057	28.10%	2,389	16.52%	6,446	44.58%	1,668	10.42%	777	21.22%	2,445	12.42%	**32.16%***
Difference between subperiods						**14.65%***						**-7.10%***	**21.75%***

[1] Expectation paths are defined by the sign of the forecast revision and the earnings surprise.
Forecast revision: Difference between the latest forecast and the earliest forecast for the quarter, $F_{latest} – F_{earliest}$.
Earnings surprise: Difference between the actual earnings and the latest forecast for the quarter, $EPS - F_{latest}$.
Forecast error: Difference between the actual earnings and the earliest forecast for the quarter, $EPS - F_{earliest}$.

* Significant at the 1% level, using the test of proportions.

Table 3
Mean Quarterly Abnormal Returns (CAR_Q) by Sign, Size of Forecast Error and Expectation Path[1]

PANEL A: By Sign and Size of Forecast Error, and Expectation Path

Positive Error Cases: EPS - $F_{earliest}$ > 0				**Negative Error Cases: EPS - $F_{earliest}$ < 0**			
Size of Forecast Error	Path Based on Direction of Revision and Surprise	No. of Obs.	Period Return, CAR_Q	Size of Forecast Error	Path Based on Direction of Revision and Surprise	No. of Obs.	Period Return, CAR_Q
5.0%>X>0.0%	Up-Down	1574	0.018	0.0%>X>-5.0%	Up-Down	1238	-0.002
	Up-Zero	995	0.009		Zero-Down	1006	-0.004
	Up-Up	614	0.027		Down-Zero	957	-0.008
	Zero-Up	1966	0.032		Down-Down	347	-0.002
	Down-Up	2516	0.034		Down-Up	2278	0.002
Total No. ; Weighted Return		**7665**	**0.026**	**Total No. ; Weighted Return**		**5826**	**-0.002**
10.0%>X>5.0%	Up-Down	1064	0.020	-5.0%>X>-10.0%	Up-Down	855	-0.026
	Up-Zero	726	0.033		Zero-Down	671	-0.022
	Up-Up	1886	0.045		Down-Zero	794	-0.027
	Zero-Up	1537	0.047		Down-Down	916	-0.025
	Down-Up	1930	0.041		Down-Up	1597	-0.011
Total No. ; Weighted Return		**7143**	**0.039**	**Total No. ; Weighted Return**		**4833**	**-0.020**
15.0%>X>10.0%	Up-Down	539	0.028	-10.0%>X>-15.0%	Up-Down	537	-0.034
	Up-Zero	339	0.059		Zero-Down	328	-0.033
	Up-Up	1798	0.058		Down-Zero	443	-0.040
	Zero-Up	822	0.081		Down-Down	926	-0.037
	Down-Up	1103	0.066		Down-Up	892	-0.015
Total No. ; Weighted Return		**4601**	**0.061**	**Total No. ; Weighted Return**		**3126**	**-0.030**
20.0%>X>15.0%	Up-Down	319	0.031	-15.0%>X>-20.0%	Up-Down	425	-0.048
	Up-Zero	164	0.084		Zero-Down	238	-0.061
	Up-Up	1493	0.073		Down-Zero	297	-0.065
	Zero-Up	406	0.086		Down-Down	815	-0.046
	Down-Up	642	0.062		Down-Up	660	-0.017
Total No. ; Weighted Return		**3024**	**0.069**	**Total No. ; Weighted Return**		**2435**	**-0.042**
25.0%>X>20.0%	Up-Down	215	0.031	-20.0%>X>-25.0%	Up-Down	293	-0.047
	Up-Zero	89	0.036		Zero-Down	139	-0.076
	Up-Up	1030	0.093		Down-Zero	150	-0.073
	Zero-Up	258	0.086		Down-Down	687	-0.047
	Down-Up	449	0.083		Down-Up	392	-0.027
Total No. ; Weighted Return		**2041**	**0.081**	**Total No. ; Weighted Return**		**1661**	**-0.047**
30.0%>X>25.0%	Up-Down	163	0.049	-25.0%>X>-30.0%	Up-Down	261	-0.043
	Up-Zero	79	0.028		Zero-Down	112	-0.082
	Up-Up	885	0.112		Down-Zero	143	-0.077
	Zero-Up	185	0.101		Down-Down	636	-0.064
	Down-Up	329	0.062		Down-Up	331	-0.036
Total No. ; Weighted Return		**1641**	**0.090**	**Total No. ; Weighted Return**		**1483**	**-0.057**
35.0%>X>30.0%	Up-Down	134	0.015	-30.0%>X>-35.0%	Up-Down	198	-0.042
	Up-Zero	51	0.053		Zero-Down	105	-0.042
	Up-Up	624	0.112		Down-Zero	114	-0.089
	Zero-Up	140	0.079		Down-Down	519	-0.071
	Down-Up	258	0.070		Down-Up	280	-0.042
Total No. ; Weighted Return		**1207**	**0.086**	**Total No. ; Weighted Return**		**1216**	**-0.059**

Table 3 (Continued)
Mean Quarterly Abnormal Returns (CAR_Q) by Sign, Size of Forecast Error and Expectation Path[1]

PANEL A (Continued)

Positive Error Cases: EPS - $F_{earliest}$ > 0				Negative Error Cases: EPS - $F_{earliest}$ < 0			
Size of Forecast Error	Path Based on Direction of Revision and Surprise	No. of Obs.	Period Return, CAR_Q	Size of Forecast Error	Path Based on Direction of Revision and Surprise	No. of Obs.	Period Return, CAR_Q
40.0%>X>35.0%	Up-Down	73	0.014	-35.0%>X>-40.0%	Up-Down	161	-0.039
	Up-Zero	23	0.007		Zero-Down	52	-0.054
	Up-Up	475	0.110		Down-Zero	85	-0.147
	Zero-Up	81	0.074		Down-Down	493	-0.065
	Down-Up	160	0.093		Down-Up	175	-0.044
Total No. ; Weighted Return		**812**	**0.092**	**Total No. ; Weighted Return**		**966**	**-0.063**
X>40.0%	Up-Down	556	0.046	X<-40.0%	Up-Down	2209	-0.068
	Up-Zero	186	0.048		Zero-Down	861	-0.073
	Up-Up	2341	0.108		Down-Zero	950	-0.143
	Zero-Up	376	0.119		Down-Down	7796	-0.114
	Down-Up	828	0.081		Down-Up	1975	-0.066
Total No. ; Weighted Return		**4287**	**0.093**	**Total No. ; Weighted Return**		**13791**	**-0.099**

PANEL B: Summary by Sign of Forecast Error and Expectation Path

	Path Based on Direction of Revision and Surprise*	No. of Portfolios (No. of Obs. in Portfolios)	Mean CAR_Q Across Error-size Portfolio	Difference Between CAR_Q for the •-Up and •-Down Paths (t-statistic)
Positive Error Cases: EPS – $F_{earliest}$>0 (n=32,492 firm-quarters)	Up-Down	9 (4,637)	0.028	
	Up-Zero	9 (2,652)	0.040	0.045
	• - Up	27 (25,203)	0.073	(3.85)
Zero Error Cases: EPS - $F_{earliest}$ = 0 (n=6,051 firm-quarters)	Up-Down	1 (1,503)	-0.003	0.013
	Zero-Zero	1 (2,081)	0.008	(2.02)
	Down-Up	1 (2,467)	0.010	
Negative Error Cases: EPS – $F_{earliest}$ <0 (n=35,337 firm-quarters)	• - Down	27 (22,824)	-0.047	0.019
	Down-Zero	9 (3,933)	-0.074	(2.84)
	Down-Up	9 (8,580)	-0.028	

[*] (• is Up, Zero or Down)

[1] Expectation paths are defined by the sign of the forecast revision and the earnings surprise.
Forecast revision: Difference between the latest forecast and the earliest forecast for the quarter, $F_{latest} – F_{earliest}$.
Earnings surprise: Difference between the actual earnings and the latest forecast for the quarter, EPS - F_{latest}.
Forecast error: Difference between the actual earnings and the earliest forecast for the quarter, EPS - $F_{earliest}$.
CAR_Q: Cumulative abnormal return over the quarter beginning on the day prior to the earliest forecast and ending the day following the earnings release.

Table 4
Results for Regression (1):

$$CAR_{i,Q} = \beta_0 + \beta_1 DMBE_{i,Q} + \beta_2 DBEAT_{i,Q} + \beta_3 ERROR_{i,Q} + \beta_4 SURP_{i,Q} + \beta_5 DBEAT_{i,Q} * SURP_{i,Q} + \varepsilon_{i,Q},$$

(t-statistics are provided in parentheses)

Sample	β_0	β_1	β_2	β_3	β_4	β_5	R^2 (%)
Full Sample (n=75,910)	**-0.028 (-25.48)**	**0.016 (7.60)**	**0.037 (14.05)**	**0.519 (9.83)**	**0.634 (8.18)**	**0.366 (5.14)**	**3.9**
By Period							
Subperiod 1: 1983-1993 (n=42,371)	-0.028 (-17.87)	0.016 (5.41)	0.041 (12.46)	0.498 (7.70)	0.575 (5.39)	0.436 (4.19)	4.0
Subperiod 2: 1994-1997 (n=33,538)	-0.029 (-17.49)	0.017 (6.33)	0.052 (14.16)	0.588 (8.06)	0.675 (7.40)	0.732 (3.40)	3.9
By Quarter[1]							
Quarter 1 (n=14,216)	-0.034 (-12.24)	0.023 (4.15)	0.040 (7.44)	0.651 (5.25)	0.306 (3.69)	0.397 (1.84)	4.5
Quarter 2 (n=15,233)	-0.028 (-11.45)	0.019 (3.92)	0.035 (7.68)	0.574 (4.90)	0.631 (3.77)	0.476 (3.01)	4.1
Quarter 3 (n=16,444)	-0.028 (-11.88)	0.018 (4.01)	0.034 (7.70)	0.608 (5.08)	0.662 (3.83)	0.295 (1.81)	4.0
Quarter 4 (n=17,521)	-0.029 (-12.90)	0.019 (4.39)	0.035 (8.38)	0.421 (4.80)	0.518 (3.71)	0.355 (2.25)	4.6

Legend:

CAR_Q: Cumulative abnormal return over the quarter beginning the day prior to the earliest forecast and ending the day following the earnings release.

ERROR: Forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS - $F_{earliest}$, standardized by price at the beginning of the quarter.

SURP: Earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS - F_{latest}, standardized by price at the beginning of the quarter.

DMBE (DBEAT): Dummy variable that takes on the value of 1 if SURP $\geq$ 0 and 0 otherwise

[1] Only calendar-year firms were considered in this analysis.

Table 5
Results for Regression (2):

$$CAR_{i,Q} = \delta_0 + \delta_1 DMBE + \delta_2 DMBE^{subset} + \delta_3 ERROR + \delta_4 SURP + \delta_5 DMBE*SURP + \delta_6 DMBE^{subset}*SURP + \varepsilon_{i,Q}$$

(t-statistics are provided in parentheses)

Line	Tested Hypothesis (subset for which $DMBE^{subset}$ =1)	δ_0	δ_1	δ_2	δ_3	δ_4	δ_5	δ_6	R^2 (%)
1	H_6 (Losses)[1]	-0.028 (-24.45)	0.045 (15.88)	0.004 (2.12)	0.530 (9.90)	0.695 (7.81)	0.096 (1.78)	0.249 (1.93)	3.5
2	H_7 (Earnings Decreases)[2]	-0.028 (-24.55)	0.044 (16.45)	0.040 (1.76)	0.529 (9.88)	0.655 (7.53)	0.100 (1.81)	1.318 (0.61)	3.6
3	H_8 (Habitual Beaters)[3]	-0.027 (-24.60)	0.044 (11.37)	0.034 (1.97)	0.525 (9.77)	0.663 (7.60)	0.235 (1.25)	1.216 (3.57)	3.5
4	H_9 (Cases likely to represent expectation management)	-0.028 (-24.53)	0.044 (9.97)	-0.005 (-1.99)	0.529 (9.90)	0.655 (7.54)	0.096 (1.72)	-0.002 (-0.69)	3.5
5	H_{10} (Cases likely to represent earnings management – based on the Jones' model)	-0.027 (-19.17)	0.046 (5.04)	-0.003 (-1.84)	0.568 (13.62)	0.614 (8.76)	0.342 (4.26)	-0.005 (-2.42)	3.7
6	H_{10} (Cases likely to represent earnings management – based on the "extraction model")	-0.029 (-24.66)	0.044 (4.58)	-0.004 (-2.13)	0.601 (12.48)	0.579 (9.95)	0.282 (3.67)	-0.004 (-2.01)	3.8

Legend:

CAR: In the regressions presented in lines 1-4: cumulative abnormal return over the quarter beginning the day prior to the earliest forecast and ending the day following the earnings release. In the regressions in lines 5 and 6: cumulative abnormal return over the period beginning the day prior to the first forecast and ending 50 days following the end of the quarter.

ERROR: Forecast error computed as the difference between the actual earnings and the earliest forecast for the quarter, EPS - $F_{earliest}$, standardized by price at the beginning of the quarter.

SURP: Earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS - F_{latest}, standardized by price at the beginning of the quarter.

DMBE: Dummy variable that takes on the value of 1 if SURP ≥ 0 and 0 otherwise.

$DMBE^{subset}$: Dummy variable that takes on the value 1 if SURP ≥ 0 and, in addition, the case belongs to a designated subset of the sample. Otherwise $DMBE^{subset}$ = 0.

[1] Results are presented based on whether net income is positive or negative. Comparable results are obtained when income from continuing operations is used to classify the firm's profitability.

[2] Earnings decreases are defined relative to the same fiscal quarter last year.

[3] Habitual beaters are firms that beat or meet expectations in at least 75% of the quarters. Firms had to have at least 20 quarters of data to participate in this analysis.

Table 6

Results for Regression (3)[1,2]

$$\mathbf{CAR_{I,Q} = \alpha + \beta_1 REV_{i,Q} + \beta_2 SURP_{i,Q} + \varepsilon_{i,Q}}$$

(t-statistics are provided in parentheses)

Sample	Intercept	β_1	β_2	R^2
Full Sample (n=76,265)	0.00 (0.82)	0.73 (11.98)	1.54 (32.18)	0.025
Observations with Monotonic Paths (Down-Down and Up-Up Paths)	0.00 (-1.31)	1.07 (8.13)	1.23 (12.11)	0.022
Observations with Non-Monotonic Paths (Down-Up and Up-Down Paths)	0.00 (1.22)	0.79 (7.01)	2.12 (19.24)	0.026

<u>Legend:</u>

CAR **:** Cumulative abnormal return over the quarter beginning on the day prior to the earliest forecast and ending the day following the earnings release.

REV: Forecast revision computed as the difference between the latest forecast and the earliest forecast for the quarter, F_{latest} - $F_{earliest}$, standardized by price at the beginning of the quarter.

SURP: Earnings surprise computed as the difference between the actual earnings and the latest forecast for the quarter, EPS - F_{latest}, standardized by price at the beginning of the quarter.

Table 7
Cumulative Abnormal Returns Associated with Quarterly Forecast Revisions and Earnings Surprises

	Cumulative Abnormal Returns During:		
Magnitude of the Forecast Revision or Earnings Surprise	(1) Forecast Revision Period[1]	(2) Earnings Announcement Period[1]	(3) Ratio of (2) to (1)
Upward Revisions / Positive Earnings Surprises			
5.0% > X ≥ 0.0%	0.004	0.008	2.00
10.0% > X ≥ 5.0%	0.011	0.016	1.45
15.0% > X ≥ 10.0%	0.016	0.026	1.63
20.0% > X ≥ 15.0%	0.019	0.029	1.53
25.0% > X ≥ 20.0%	0.021	0.036	1.71
30.0% > X ≥ 25.0%	0.024	0.033	1.38
35.0% > X ≥ 30.0%	0.030	0.042	1.40
40.0% > X ≥ 35.0%	0.034	0.051	1.50
X ≥ 40.0%	0.036	0.084	2.33
Downward Revisions/ Negative Earnings Surprises			
0.0% > X ≥ -5.0%	-0.007	-0.010	1,43
-5.0% > X ≥ -10.0%	-0.012	-0.019	1.58
-10.0% > X ≥ -15.0%	-0.017	-0.026	1.53
-15.0% > X ≥ -20.0%	-0.023	-0.029	1.26
-20.0% > X ≥ -25.0%	-0.028	-0.037	1.32
-25.0% > X ≥ -30.0%	-0.029	-0.044	1.52
-30.0% > X ≥ -35.0%	-0.034	-0.040	1.18
-35.0% > X ≥ -40.0%	-0.037	-0.052	1.41
X ≤ 40.0%	-0.040	-0.073	1.83

[1] The earnings announcement (the revision) period is the 3-day period, including the day of the earnings announcement (revision) the preceding day and the following day.

Table 8
Cumulative Abnormal Returns Subsequent to the Quarterly Earnings Announcement by Expectation Path

		Mean Abnormal Return Across Error-size Portfolios				
	No. of Obs	In Quarter t	In Subsequent Periods[1]			
Expectation Path	.	CAR_Q	CAR_{Q+1}	$CAR_{year\ t+1}$	$CAR_{year\ t+2}$	$CAR_{year\ t+3}$
Positive Errors: EPS - $F_{earliest}$ > 0						
Up-Down	4,637	0.025	0.007	0.012	0.007	0.010
Up-Zero	2,652	0.032	0.003	-0.011	0.010	0.009
Up-Up	11,146	0.079	0.017	0.018	0.015	0.020
Zero-Up	5,771	0.059	0.012	0.015	0.020	0.016
Down-Up	8,286	0.049	0.010	0.017	0.021	0.017
Zero Errors: EPS - $F_{earliest}$ = 0						
Up-Down	1,503	-0.003	0.008	-0.003	0.006	0.011
Zero-Zero	2,081	0.008	0.005	0.015	0.003	--0.008
Down-Up	2,467	0.010	0.009	0.016	0.015	0.014
Negative Errors: EPS - $F_{earliest}$ < 0						
Up-Down	6,177	-0.042	-0.009	0.013	-0.004	0.010
Zero-Down	3,512	-0.038	-0.005	-0.009	0.011	0.013
Down-Zero	3,933	-0.060	0.006	0.018	-0.010	-0.005
Down-Down	13,135	-0.080	-0.020	-0.010	0.009	-0.007
Down-Up	8,580	-0.035	0.004	0.017	0.013	0.012

Legend:
CAR_Q : Cumulative abnormal return over the quarter beginning on the day prior to the earliest forecast and ending the day following the earnings release. (This column is from Panel B of Table 3.)
CAR_{Q+1}: Cumulative abnormal return over the following quarter beginning two days after the earnings release date for quarter t and ending the day following the earnings release for quarter t+1.

[1] The annual abnormal returns are adjusted for bias by the procedure suggested by Barber and Lyon [1996, 1997].

Table 9
Firm Performance in Fiscal Years Subsequent to the Quarterly Earnings Surprise, by the Sign of the Earnings Surprise[1]

MEAN VALUES

	Year t+1							Year t+2						
Path in Fiscal Year t	ROA	ROE	% Losses	Sales Growth	M/B	Profit Margin	Income Growth	ROA	ROE	% Losses	Sales Growth	M/B	Profit Margin	Income Growth
Positive Errors														
Up-Down	0.029	0.015	0.163	0.165	2.472	0.028	0.071	0.033	0.003	0.183	0.123	2.542	0.030	-0.041
Up-Zero	0.039	0.019	0.141	0.209	2.728	0.041	0.113	0.046	0.066	0.106	0.186	2.856	0.039	0.143
• - Up	0.057*	0.114*	0.102*	0.230*	2.859*	0.054*	0.492*	0.057*	0.118*	0.096*	0.207*	2.857*	0.052*	0.445*
Zero Errors														
Up-Down	0.044	0.078	0.130	0.220	2.895	0.041	0.085	0.053	0.086	0.106	0.180	2.929	0.051	-0.001
Zero-Zero	0.064	0.110	0.099	0.249	3.390	0.059	0.164	0.059	0.113	0.129	0.222	3.404	0.056	0.111
Down-Up	0.056**	0.109*	0.105**	0.275*	3.178**	0.053	0.323*	0.058	0.123*	0.124**	0.196	2.975	0.056	0.364*
Negative Errors														
• - Down	0.037	0.043	0.150	0.172	2.573	0.033	0.061	0.040	0.061	0.155	0.122	2.410	0.037	0.159
Down-Zero	0.047	0.083	0.123	0.225	2.625	0.041	0.184	0.044	0.074	0.147	0.160	2.648	0.040	0.385
Down-Up	0.041	0.124*	0.143	0.190	2.555	0.038	0.387*	0.047	0.125*	0.140	0.137**	2.667**	0.044	0.426*

• stands for Up, Zero and Down.
* Indicates significant difference at the 0.05 level or better using a one-tailed t-test (see note 1)
** Indicates significant difference at the 0.10 level or better using a one-tailed t-test (see note 1)

Legend:
ROA: Return on assets measured as net income divided by total assets
ROE: Return on equity measured as net income divided by the book value of equity.
% Losses: No. of firms reported a loss based on net income.
Sales Growth: Growth in sales revenues.
M/B: Market value of equity divided by the book value of equity.
Profit Margin: Net income divided by sales.
Income Growth: Growth in net income. (Note: Measures using net income were repeated using Income from Continuing Operations with similar results.)

[1]For the Positive Error Cases, differences between the performance measure for the Up-Down and • - Up paths are compared.
For the Zero Error Cases, differences between the Up - Down and Down-Up paths are compared.
For the Negative Error Cases, differences between the • - Down and Down-Up paths are compared.