What do Analysts Really Predict? Inferences from Earnings Restatements and Managed Earnings

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<u>Abstract</u>

This paper examines whether analysts behave as if they attempt to predict the firm's "correct" or "unmanaged" earnings or whether, instead, they forecast the earnings that management is most likely to report regardless of whether these earnings are correct or incorrect (GAAP-wise), unmanaged or managed. The paper further investigates whether subsequent analysts' forecasts and stock recommendations are affected by earnings management in the current period. The results, based on a sample of 285 restatements and a much larger sample of cases where earnings are likely to have been managed upward, are consistent with analysts focusing on the prediction of the earnings number most likely to be reported by management even if this number is incorrect (as evidenced by its subsequent restatement) or otherwise likely to have been managed. Further, the managed earnings component appears to influence analysts' subsequent earnings forecasts, leading to upward forecast revisions and upgraded stock recommendations. The subsequent operating performance of firms engaged in earnings management indicates that upward earnings management is used by management to signal favorable future performance, justifying analysts' optimism.

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1. Introduction

Earnings information plays an important role in firm valuation creating a demand for earnings forecasts. This demand is met by the financial analysts' industry which produces, as one of its most important products, quarterly, annual and multi-year earnings forecasts. Given the ample evidence that reported earnings are often managed by firms to achieve various reporting objectives, the question arises as to exactly what earnings number analysts forecast. In light of the many accounting scandals in recent years, it is important to assess (1) the extent to which analysts are capable of anticipating earnings management and whether they use this capability to produce forecasts of unmanaged earnings and (2) the extent to which analysts are capable of detecting earnings management in the reported numbers and incorporate this knowledge in their future forecasts and stock recommendations.

Analysts might predict the managed earnings number rather than the unmanaged one because, like other investors, they are not sufficiently sophisticated or they lack the information needed to project and undo the effects of earnings management. Or, analysts might choose to predict the managed earnings series even when they are aware of the "correct" earnings number because they try to minimize the forecast error and, as a result, enhance their reputation and possibly increase their compensation.¹

Either explanation as to why analysts might predict managed earnings rather than the correct earnings number is of a potential concern to users of analysts' forecasts. The first one suggests that analysts do not have a competitive edge over unsophisticated investors in terms of

¹ See Hong and Kublick (2003), Mikhail et al. (1999) and Stickel (1992) for the importance of forecast accuracy to analysts.

their access to private information or the quality of their analyses. The second explanation suggests that the earnings forecasts produced by analysts are designed to predict as accurately as possible the earnings number that management is most likely to report irrespective of whether this number properly conveys the actual performance of the company or helps in assessing the true value of its equity.

Irrespective of whether analysts *anticipate* earnings management and incorporate the managed component in their forecasts, analysts should incorporate in their forecasts of future periods and stock recommendations information on earnings management that they are able to detect in reported earnings. For example, analysts should be less inclined to upgrade their stock recommendations in the wake of good earnings news if they know that this good news is likely attributable to earnings management.²

Past studies surveyed in the next section provides conflicting answers regarding the ability of analysts forecast to anticipate earnings management and incorporate them in their forecasts. Our study extends previous studies in a number of respects. First, we increase the power of the tests by refining the identification of earnings management. Specifically, we examine two subsamples: one consisting of periods where earnings were restated and the second consisting of other periods where, based on the earnings pattern and accrual behavior, upward earnings management is deemed likely to have occurred. Further, we extend the investigation of analysts' ability to anticipate and detect earnings management by examining certain attributes of their earnings forecasts and their stock recommendations subsequent to an earnings management we analyze subsequent operating performance.

² The underlying assumption of this assertion is that the managed earnings component is less persistent and informative about future firm's performance than other components of reported earnings. We examine this assumption indirectly later.

The results indicate that during periods for which earnings are eventually restated or where earnings management is otherwise likely to be present, analysts forecast a number that is closer to the number that management *will* report—the "managed" earnings number than to the unmanaged earnings number. The evidence further shows that in the wake of an upward earnings management, analysts issue more optimistic forecasts and upgrade their stock recommendation. Examination of the operating results in periods subsequent to the upward earnings management incidents indicates, however, that these firms outperform their respective control groups. This suggests that analysts' positive response to incidents of upward earnings management does not necessarily reflect accounting fixation or otherwise inefficient forecasting.

These results have implications for investors and researchers. They suggest that, because analysts forecast the managed earnings number, reliance on these forecasts for valuation purposes should take into account the permanence of this component. They further suggest that firms use upward earnings management to signal their future performance. This signaling is reliable since the managed component of earnings appears to be as persistent as the unmanaged component. The results are also consistent with analysts being aware of the signaling value of earnings management and take this signal into account when forming their forecasts and stock recommendations.

The paper proceeds as follows. In the next section we review related research on analysts' forecasts. The hypotheses are presented in section 3, followed by a description of the empirical design in section 4. The data and sample are described in section 5. The results are presented and discussed in section 6. Some limitations of the paper are discussed in section 7. Concluding remarks are provided in the last section.

2. Previous Research

The extent to which analysts identify the managed component of earnings relates to the broader issue of the efficiency of analysts' forecasts and recommendations. Some empirical evidence suggests that analysts do not incorporate publicly available information in their forecasts or do not fully account for the implications of these forecasts in making their stock recommendations. For example, analysts were found to assign undue permanence to extreme accruals leading to biased forecasts (Barth and Hutton (2004); Teoh and Wong (2002)) and to ignore differences in discretionary and nondiscretionary accruals in making their forecasts (Bannister and Newman (1998)). Analysts were also found to fail to fully incorporate important information such as the predictable future earnings declines associated with the reversal of high positive accruals in the current period (Bradshaw, Sloan and Richardson, (2001)), earlier earnings announcements made by related firms (Ramnath (2002)), predictive pension footnote information (Picconi (2006)), the aggressive accrual behavior in pre-merger reports by acquiring firms (Louis (2004)) and the implications of restructuring charges (Chaney et al. (1999)). The evidence further suggests that analysts do not use their own earnings forecasts efficiently in making stock recommendations (Bradshaw (2004)), seldom use present value techniques in their firm evaluations (Block (1999)) and react to, rather than anticipate, earnings corrections (Griffin (2003)).

With respect to managed earnings, prior studies provide inconsistent evidence regarding to whether analysts are able to anticipate earnings management and fully reflect this information in their future forecasts. Ettredge, Shane and Smith (1995) show that analysts only partially discount overstated earnings (identified by their eventual restatement) in revising their earnings expectations. Abarbanell and Lehavy (2003a) find that firms with buy (sell) stock

recommendations are more (less) engaged in earnings management yet this tendency is not fully incorporated in analysts' earnings forecasts. In a related study, Abarbanell and Lehavy (2003b) document that analysts' forecast errors are correlated with extreme unexpected accruals, suggesting that analysts either do not anticipate earnings management or do not exclude the managed earnings component from their forecasts. Shane and Stock (2006) find that analysts fail to anticipate earnings management arising from tax-motivated income shifting. Further evidence consistent with analysts being either unable or unwilling to adjust their forecasts for earnings management is provided by Hanna and Orpurt (2006) who find an association between special items and analysts' forecast errors.

The use of special items or large accruals as indicators of earnings management in assessing whether analysts incorporate past earnings management in their forecasts of future earnings, while reasonable, has some drawbacks. For example, since special items are often excluded from analysts' forecasts of earnings, when computing the forecast error it is important to exclude such items from actual earnings. If the actual earnings number is not fully adjusted for these items, this results in a spurious correlation between special items and analysts' forecast errors.³ Large accruals, in turn, may reflect operational factors or measurement errors.

Another indicator of earnings management used by past research is the proximity of the firm to a likely earnings threshold. Hayn (1995) and Burgstaher and Dichev (1997) observe a discontinuity of the distribution of earnings around zero and interpret it as an indication of earnings management. Burgstahler and Eames (2003) extend this notion by exploring the distribution of analysts' earnings forecasts and forecast errors in instances where the firm succeeds in narrowly avoiding a loss or an earnings decline and therefore assumed to reflect

³ In reporting a firm's actual EPS, I/B/E/S excludes those items that most individual analysts exclude from their individual forecasts of the firm's earnings. To the extent that such exclusions are not universal across analysts, the forecast error based on the consensus forecast will be correlated with those items.

earnings management. Their evidence is consistent with analysts anticipating earnings management and incorporating its effect in their forecasts.

The fact that a firm operates just above a threshold does not necessarily suggest earnings management. In fact, Dechow, Richardson and Tuna (2003) fail to confirm that the kink is related to unexpected accruals. Moreover, other explanations are provided by the literature for the so-called "kink" in the distribution of earnings levels and earnings changes around zero that do not invoke earnings management. Durtschi and Easton (2005) provide evidence that the kink is likely due to the fact that the earnings variable in these distributions is deflated by price and to certain sample selection criteria. Beaver, McNichols and Nelson (2004) suggest that the discontinuity in the earnings frequency distribution around zero arises from the availability of tax loss carryforwards and carrybacks as well as the fact that losses tend to be associated with large special items. Other explanations for the kink (such as real manipulations, exchange listing or conservatism) are offered by Dechow, Richardson and Tuna (2003). Strong evidence supporting the intuitive notion that the kink is indeed related to earnings management is provided, however, by Jacob and Jorgensen (2005) who show that the kink is primarily observed in the annual result for the fiscal year, which is more likely to be the object of loss or earnings decline avoidance, than in the aggregation of any other sequence of four quarterly results.

Our conclusion from the collective evidence is that the kink suggests the presence of earnings management but the identification of incidents of a small profit or a small earnings increase as earnings management cases needs further refinements. In our study, we attempt to mitigate these methodological difficulties of identifying earnings management by using two samples where earnings management can be more safely assumed. One sample consists of periods where earnings were eventually restated. The earnings originally reported for these

periods are likely to reflect some form of earnings management as evidenced by their subsequent restatement. The other sample consists of periods in which the firm narrowly avoided a loss or an earnings decline and, importantly, could not have met these thresholds without the presence of positive unexpected accruals.

We use these samples to investigate analysts' ability to *anticipate* or *detect* the managed earnings component in reported numbers. Note that finding a relation between the current period's forecasts and the managed and unmanaged components of earnings does not indicate unambiguously whether or not analysts are capable of anticipating earnings management. Analysts may be capable of anticipating earnings management yet still include the managed earnings component in their forecasts in order to enhance their forecast accuracy. Therefore, to assess analysts' ability to detect earnings management, we further assess analysts' ability to anticipate and detect earnings management in reported earrings by examining the behavior of analysts in terms of both their earnings forecasts and stock recommendations made following the release of earnings that contain a managed component. If analysts are able to detect earnings management, they will discount the managed component in forecasting future periods and in their stock recommendations to the extent that it is not sustainable.

3. Hypotheses

3.1 Analysts' forecasts

Our first hypothesis focuses on the object of analysts' forecasts as follows:

H1: Analysts exclude the managed earnings component of current earnings in their earnings forecasts.

H1 is tested against the alternative that analysts include the managed earnings component in their forecasts of future earnings.

Results from testing H1 that are consistent with the alternative, would suggest that analysts are not capable of anticipating the managed earning component and that they simply predict the "combined" earnings number that they expect management to report. However, another interpretation of the results is that analysts, although capable of anticipating the managed earnings component, choose to issue a forecast that combines the managed and unmanaged components for the sake of "accuracy." To distinguish between these two interpretations, we test two additional hypotheses that relate to the subsequent behavior of analysts as described below.

Assuming that the managed earnings component is more transitory than other earnings components, any earnings management in the current period, unless detected and adjusted for, will bias analysts' earnings forecasts for future periods. Accordingly, we hypothesize:

H2: Analysts' earnings forecasts for periods following a period of upward earnings management are unbiased.

H2 is tested against the alternative that there is an upward bias in analysts' forecasts of future earnings following periods of managed earnings.

Evidence inconsistent with both H1 and H2 would suggest that analysts' failure to exclude the managed earnings component from their forecasts does not stem from their concern about the accuracy of their forecasts but rather from their inability to anticipate the managed component of earnings.

3.3. Earnings management and analysts' stock recommendations

To gain further insight into analysts' ability to identify the managed earnings component, we examine their stock recommendations following the release of managed earnings. As noted

above, analysts may be aware of the managed component in earnings and choose to include it in their earnings forecasts if they are concerned about the accuracy of their predictions (as measured against the reported numbers). However, in the interest of providing sound stock recommendations, analysts are likely to discount the managed component of earnings. To illustrate this point, suppose that an analyst believes that the unmanaged EPS of a firm is \$0.90 even though the firm reports EPS for the quarter is \$1.00. If the managed component of \$0.10 is deemed to be transitory then, *ceteris paribus*, the analyst would be less likely to issue a "buy" recommendation for the coming periods. Building on this logic, we determine whether analysts respond differently to managed and unmanaged earnings in forming their stock recommendations, by testing the following hypothesis:

H3: Analysts' propensity to upgrade their stock recommendations is not affected by

upward earnings management in the recent reported period.

H3 is tested against the alternative that analysts' propensity to upgrade their stock recommendations increases by the presence of an upward earnings management in recent earnings.

Evidence inconsistent with H1 yet consistent with H2 and H3 would indicate that while analysts correctly identify the managed earnings component in the forthcoming earnings report, they nonetheless choose to include it in their forecasts for the sake of accuracy but discount it when forecasting future periods and providing stock recommendations. Evidence inconsistent with all three hypotheses would suggest that analysts are unable to distinguish between the managed and unmanaged components of earnings and thus do not consider these components in forecasting earnings or in issuing stock recommendations.

Evidence consistent with H1 yet inconsistent with H2 and H3 would suggest that analysts are capable of distinguishing between the managed and unmanaged components of earnings and do so when forecasting current earnings but assign the same weight to the managed and unmanaged earnings components of recently reported earnings when forecasting future periods or making stock recommendations. Depending on whether or not the managed earnings component is predictive of the firm's future performance, such forecasting behavior would either indicate efficient forecasting or some degree of accounting fixation. To distinguish between these two interpretations, we further test H4 as follows:

H4: The managed earnings component is associated with improved operating performance in subsequent periods.

4. Empirical Design

4.1. Forecasts and forecast errors

To determine the object of analysts' forecasts, H1 is tested using two statistics. The first is the correlation between the forecast error defined, alternately, as the reported (managed) or unmanaged earnings less the latest earnings forecast for the period and the amount of the managed earnings component.⁴ Under the null of H1, we expect the correlation between the managed earnings component and the forecast error to be 1 when the forecast error is computed with respect to reported earnings and 0 when the forecast error is computed with respect to the true, unmanaged, earnings number. Under the alternative to H1, we expect the opposite, a correlation of 0 and -1, respectively for the two error measures. In the intermediate situation where the forecast includes only a fraction, α , of the managed earnings component, the above

⁴ For most of our analyses, we use the latest analyst forecast in the period defined as that made just prior to the release of the actual earnings. Use of the earliest forecast or the consensus forecast produces essentially the same results.

correlations under the null of H1are expected to be 1- α and $-\alpha$, respectively (see the appendix for the derivation of these correlations).

The second and related measure that we use to test H1 is the proximity of analysts' forecasts to the reported earnings as compared to their proximity to the unmanaged earnings numbers. Two alternative deflated forecast error measures are employed– the error deflated by the absolute value of reported earnings and the error deflated by the stock price at the end of the period.

4.2. Identifying earnings management cases

As noted earlier, we test the hypotheses on two samples where earnings management is likely to be present. The first sample consists of firm-periods for which earnings are eventually restated. For this "restatement sample," the presumption is that the earnings that were originally reported were managed. Accordingly, the managed earnings component is defined as the difference between the originally reported number and the restated one. In examining this sample, we use only the earliest reporting period (typically a quarter) in any given sequence of successive restated periods. The reason for this is that analysts, in forming their earnings forecast for the first would-be restated period, are not influenced by misleading past earnings. However, after earnings are released for this would-be restated period, analysts might reasonably assume that these reported numbers are correct and consistent with GAAP and use them in developing forecasts of subsequent periods. Our test of H1, the object of analysts' predictions, is thus "cleaner" when tested on forecasts that are not "contaminated" by previous reports of managed earnings.

The second sample used to test the hypotheses consists of periods in which the firm has likely managed its earnings. This "managed earnings sample" consists of quarters in which firms barely passed an earnings threshold. Two earnings thresholds are considered – loss avoidance

and avoidance of an earnings decline relative to the same quarter in the previous year. Earnings identified as meeting or being "just-above" these thresholds when they exceed the thresholds by no more than k% of the end-of-quarter market values of equity where k is, alternately, equal to 0.25% and 0.50%. These cases are denoted as "loss avoiders" or "earnings decline avoiders."

Not all firms that meet or just beat the two thresholds are regarded as having manipulated earnings. To identify which of the loss- or decline-avoiders were most likely to have achieved the earnings threshold by managing earnings, we introduce three additional criteria that must be met for earnings to be considered as likely managed: (1) the period has positive unexpected accruals, (2) the positive unexpected accruals exceed the amount by which the earnings threshold is passed and (3) the positive unexpected accruals are not "too large." The first two criteria ensure that there is a link between unexpected accruals and the outcome of meeting a threshold. The second criterion goes a step further, ensuring that the earnings threshold was met only as a result of the presence in the reported number of unexpected positive accruals. The third criterion is introduced to eliminate cases where the magnitude of unexpected accruals is "too large" and therefore, due to their potential costs (e.g., political costs, increased public scrutiny), would not reasonably be expected to emanate from earnings management but rather from measurement errors or factors unrelated to earnings management. Unexpected accruals are considered "too large" when they exceed 1% of the market value of the equity for firms that avoid losses and 0.5% of the market value of the equity for firms that avoid reporting an earnings decline. Loss avoiders or earnings decline avoiders that meet these additional criteria constitute the "managed earnings sample." In analyzing this sample, the managed component of earnings is estimated, alternatively, as the excess of reported earnings over the threshold and as the amount of unexpected positive accruals.

4.3. Measuring unexpected accruals

Unexpected accruals are derived using the modified Jones model which relates the accruals each period to the level of activity (measured by revenues, accounts receivable and investment in property plant and equipment as specified in Jones (1991) and modified by Dechow et al. (1995)). For this derivation, we use the series of income from continuing operations before extraordinary items, discontinued operations and the cumulative effect of accounting changes. Because analysts' forecasts of earnings and the actual earnings numbers reported by I/B/E/S typically exclude some or all of the items defined as "special items" (Compustat data item #17), we also conduct all of the tests using a measure of accruals (and unexpected accruals) that excludes the net-of-tax effect of "special items."⁵ The modified Jones model is estimated for each firm from the time series consisting of all quarters preceding the prediction quarter. At least 16 quarters of data prior to the prediction quarter are required for the estimation.

4.4. Assessing the sensitivity of analysts' stock recommendations to managed and unmanaged components of earnings

To test H3, we observe the change in the mean stock recommendation (buy, hold or sell) from the month just prior to the month in which the current period's earnings are released to the first, second and third months following that earnings release. The change in recommendation is gauged by the change in the relative frequency of "buy," "hold" and "sell" stock recommendations. We compare the difference in the changes in stock recommendations between firms where earnings are likely to have been managed upward in the current period and the change in a matched sample of firms. As discussed below, we consider a number of matched

⁵ In computing the after-tax effect of special items, we use the firm's effective tax rate defined as the current portion of the tax expense divided by pretax income.

samples in evaluating analysts' forecasts and recommendations for the managed earnings sample.

5. Sample and Data

The restatement sample was derived from the Financial Statement Restatement database produced by the U.S. General Accounting Office in 2003 which contains a list of firms that issued restated financial statements between January 1, 1997 and June 30, 2002. We include in this sample only firms that restated earnings due to revenue or expense recognition issues.⁶ To ensure data availability and analysts' coverage we exclude firms on regional exchanges. For each restatement event, we identify the reporting periods in the sequence (quarters, years) that were subsequently restated.

The final restatement sample consists of 285 instances in which firms restated their earnings in the 1997 to 2002 period. For firms that had more than one restatement incident, we include on the first restated period as long as it is not included in subsequent restatement incidents.⁷ As a result of this selection procedure, the number of restatement incidents (each representing potentially a sequence of periods) equals the number of distinct firms in the sample.

A description of the final restatement sample is presented in Table 1. The 285 instances of restatements are associated with restatements of 1,114 quarterly results (typically representing a component of the annual restatement) and restatements of 301 annual results (i.e., some firms had to restate more than one year of earnings). On average, restatements cover slightly more than

⁶ We exclude restatements in the GAO database that are not related to earnings management. These include restatements arising because of acquisitions, restatements related to in-process research and development write-offs, restatements made as a result of applying SAB 101, restatements resulting from the clarification of a "grey area" of accounting, restatements that are merely a correction of a recent preliminary earnings announcements that have no effect on any previously reported numbers. ⁷ Firms with more than one restatement incident where the restated periods overlap (i.e., the same period is restated

on more than one occasion) are excluded from the analysis. Seven firms fell into this category.

four quarters (4.13) and span roughly 1.68 fiscal years. A substantial number of restatements (17.3%) apply to three or more fiscal years and almost one-third of the restatements (32.2%) cover six or more quarters.

The second sample, referred to as the "managed earnings sample," consists of cases where quarterly earnings are likely to have been managed in the years 1988 to 2004. To be included in this sample, firms had to have sufficient data to compute unexpected accruals using the modified Jones model. Due to their potential unique accrual behavior, we exclude from this sample firms in the utility (SIC 4911-4940), financial (SIC 6022-6200) insurance (SIC 6312 – 6400) and real estate (SIC 6500-6799) industries.

Financial statement data required for the various analyses were derived from Compustat. Analysts' earnings forecasts and recommendations were obtained from the Thomson Research I/B/E/S database. Return data were retrieved from the Center for Research on Security Prices (CRSP) database.

6. Results

6.1. Descriptive statistics of the restatement sample

Table 2 provides descriptive statistics on the magnitude of the restated amount relative to reported earnings for the restatement sample. Panel A shows the magnitude of the cumulative effect of the restatements measured over the sequence of reporting periods that were restated. Note that the restatement amount is quite large, averaging (having a median value of) 51.2% (30.1%) of the absolute value of earnings and 7.8% (1.2%) of the market value of equity. The mean (median) ratio of the absolute value of the quarterly restatement to the absolute value of the quarterly earnings is 67.6% (29.7%). Over 85% of the observations in the sample (243 out of

285) involve downward restatements. These restatements are significantly larger that the upward restatements (at the 1% significance level), equaling a mean (median) of 56.2% (34.4%) of earnings and 8.8% (1.4%) of equity. The mean effect on individual quarters in the restated period, shown in Panel B, is similarly sizeable. The mean (median) absolute magnitude to the quarterly restatement to the market value of the equity is 1.8% (0.4%). The large amounts involved in the restatements make this sample potentially powerful in identifying the object of analysts' earnings forecasts.

6.2. Testing H1 on the restatement sample

Results from testing whether analysts' object of prediction is the amount to be reported by management (which includes the managed earnings component) or the restated ("correct") amount as hypothesized in H1 are presented in Tables 3 and 4. Table 3 shows the correlation between the earnings forecast error and the amount of restatement, which represents the managed earnings component. Under the null version of the hypothesis which holds that analysts predict the unmanaged earnings amount, no significant correlation is expected between the forecast error defined with respect to restated earnings and the restatement amount.

The results are inconsistent with the null. For all restated periods, the correlation coefficients between the forecast error based on *restated* earnings and the restatement amount are positive and significant (the Pearson correlation coefficients are 0.241 and 0.280 when the deflator is the absolute earnings and price, respectively) while there is no significant correlation between the forecast error based on *reported* earnings and the restatement amounts (the Pearson correlations are -0.084 and -0.093 for the two alternative deflators, respectively). Similar results are obtained for the Spearman rank-order correlation. These results are echoed when conducted separately on the annual and quarterly restatement periods. These findings are consistent with

analysts' forecasts being more aligned with the (originally) reported earnings than with the restated amounts.

While the null of H1 is clearly rejected, the results do not fully support the alternative that predicts that the forecast errors, when computed with respect to the restated amounts, would be perfectly correlated with the amount of the restatement. Specifically, the correlations of 0.241 or 0.280 are still significantly smaller then 1.0. It thus appears that analysts do exclude a portion of the managed component in current earnings in making their forecasts.⁸

The same conclusion is reached when the proximity of the forecasts to these two numbers is examined. As shown in table 4, analysts' forecasts are significantly closer to the reported earnings than to the restated earnings. When both annual and quarterly observations are considered and errors are deflated by price, the absolute forecast error is 0.014 when computed from restated earnings but only 0.007 when computed from reported earnings. This difference is significant (at the 1% significance level). This result is obtained for, separately, annual and quarterly observations and when absolute earnings serve as the deflator

The results reported in Tables 3 and 4 are consistent with analysts being unable or unwilling to remove the "incorrect" or "managed" component of earnings from their forecasts.

6.3. Testing H1 on the managed earnings sample

As noted earlier, we initially identify cases of likely earnings management based on the level of unexpected accruals. Positive (negative) unexpected accruals are considered to be indications of upward (downward) earnings management. To test H1 using this sample, we ranked firm-quarters by their unexpected accruals (standardized by total assets) and partitioned them into ten portfolios. We then measured the forecast error within each portfolio. Under H1,

⁸ We hesitant to assign too much importance to the exact magnitude of the correlation coefficient between the forecast error and the restated amount because this coefficient, while invariably positive and significant, varies, depending on the truncation rule applied to the forecast error.

the forecast error computed with respect to reported earnings should be perfectly correlated with the unexpected accruals (that represent the managed earnings component).

The results from this analysis are reported in Table 5. There appears to be no significant association between the extent and direction of earnings management in the period as gauged by unexpected accruals (the median value for each portfolio is shown in the second column of the table) and the sign and magnitude of the forecast error. In fact, the median forecast error for portfolio 10, the most positive accruals portfolio (0.024 and 0.016 for the error deflated by the absolute value of actual earnings and price, respectively), is somewhat smaller (but not significantly so) than the median forecast error for the most negative accruals portfolio 1 (0.031 and 0.024, respectively). Small and insignificant differences are also found between the two extreme accruals portfolios in terms of the percentage of positive and negative errors in these two portfolios as reported in the rightmost columns of the table.

A somewhat different pattern is observed for the mean forecast error when the error is deflated by the absolute value of actual earnings: The forecast error is more positive for the positive accruals portfolios than the negative accruals portfolios with a difference of 0.014 as shown on the last line of the table. Still, this difference is not statistically significant at the conventional level.

The correlation between unexpected accruals and the forecast error (not tabulated) is significant but very small and of opposite signs for the two deflators, positive (0.015) when the error is deflated by the absolute value of actual earnings and negative (-0.014) when the error is deflated by price. The significance is likely induced by the large number of observations (46,471).

Overall, the results from Table 5 indicate that the errors in analysts' earnings forecasts are not correlated with the presence of earnings management as gauged by unexpected accruals. This suggests either that analysts are incapable of separating the managed component from the unmanaged component of earnings or that while capable of making this distinction, analysts are unwilling to incorporate it in their forecasts, opting instead to produce an earnings forecast that is closer to what management is likely to report.

These results may be due to the fact that unexpected accruals as estimated here are a noisy indication of the existence of earnings management. To more precisely identify earnings management, we construct a "managed earnings" sample using the more refined procedure described in section 4.2. Specifically, we identify a group of observations (firm-quarters) where earnings slightly exceed either the earnings threshold of reporting a loss or of reporting an earnings decline relative to the same quarter in the previous year. Within this group of loss or earnings decline avoiders, we identify a subgroup of observations where the unexpected accruals are large enough to enable the threshold to be met yet are not "too large" relative to their presumed target (i.e., exceeding the threshold) to raise the prospect that they are due to measurement errors. This group is considered to represent likely earnings management cases and is denoted as the "manipulators."

Table 6 shows the forecast errors for these different groups formed on the basis of the likelihood of earnings management in the quarter. The primary group of interest, the manipulators, is compared, alternately, to all firm-quarters and to those the "threshold avoiders," those firms that managed to achieve earnings threshold but are not considered manipulators.

The results reported in table 6 do not reveal a clear and consistent pattern of analysts extracting the managed component of the current quarter's earnings from their forecasts. On the

one hand, the mean forecast error, when deflated by the absolute value of actual earnings, is more positive for the manipulators relative to the comparison groups, suggesting such an extraction. Specifically, the mean value of this error measure for the manipulators is 0.055, which is significantly larger than the mean forecast error for the entire sample, 0.009, and for the "threshold avoiders," 0.019. Further, the percentage of positive forecast errors for the manipulators is higher than for the two comparison groups, 58.0% vs. 55.2% and 55.8%, respectively.

On the other hand, when the mean error is deflated by price, no such patterns are observed. In fact, the forecast error deflated by price for the manipulators group is generally smaller than that for the comparison groups.

We further conduct a correlation analysis for the manipulators group, similar to that provided in Table 4, where we correlate the managed earnings component with the forecast error defined alternately as the reported earnings and the unmanaged earnings. Under the null of H1, the forecast error is not expected to be correlated with the managed earnings component when the error is computed using the reported earnings and to be perfectly correlated with that component when the error is computed with respect to the unmanaged earnings.

The results from the correlation analysis are exhibited in Table 7. Panel A shows the results when the managed earnings component is defined as unexpected accruals. The Spearman correlation coefficient between the forecast error deflated by absolute earnings and the unexpected accruals (i.e., the managed earnings component) is small (0.029) and insignificant when defined with respect to reported earnings. In contrast, when the error is defined relative to the unmanaged earnings, the correlation with unexpected accruals is larger (0.292) and significant. Similar results are obtained for the forecast error deflated by price.

More pronounced results are obtained when the managed earnings component is defined as the excess of reported earnings over the earnings threshold as shown in Panel B. For the combined sample of manipulators (both loss and earnings decline), the respective Spearman correlation coefficients between the forecast error deflated by absolute earnings and the managed earnings component are 0.041 (and insignificant) and 0.517 (and highly significant) when the error is defined with respect to reported earnings and unmanaged earnings, respectively. Similar results are obtained for the forecast error deflated by price.

Taken together, the results in Table 7 are inconsistent with H1. That is, the findings do not support the notion that analysts anticipate earnings management and remove the managed earnings component from their forecasts. However, similar to our conclusion from the correlations reported in Table 3, although the null of H1 is rejected, the findings do support the alternative of a perfect correlation between managed earnings and the forecast error (defined from reported earnings). These results further reinforce the notion that analysts do exclude some portion of the managed earnings component from their forecasts.

6.4. Results from testing H2: Earnings forecasts in periods subsequent to periods of earnings management

If analysts are unable to detect earnings management, H2 holds that their earnings forecasts following periods of upward earnings management will be unduly influenced by the reported (managed) numbers and therefore biased upward. Similar to the tests of H1, we test H2 initially by identifying managed earnings cases based on unexpected accruals. We rank firm-quarters by their unexpected accruals and then partition them into 10 portfolios from the most negative to the most positive unexpected accruals. We then compute the forecast errors for three subsequent quarters, denoted as quarters t+1, t+2 and t+3 where quarter t is the earnings

management quarter. For this analysis, we use for each subsequent quarter the last earnings forecast issued after the release of the previous quarter's earnings.

Table 8 shows that the mean and median forecast errors are generally positive for all unexpected accruals portfolios. This is in line with previous research showing a pessimistic bias of forecasts made late in the reporting period (see Brown (2001)). A systematic pattern that emerges, however, is that analysts are less pessimistic, or more optimistic, in periods following quarters with a high level of unexpected accruals. By way of illustration, the mean (median) of the forecast error for quarter t+1 deflated by the absolute actual earnings is 0.024 (0.023) for portfolio 10 (consisting of the firm-quarters with the 10% most positive unexpected accruals) as opposed to 0.046 (0.033) for portfolio 1 (which consists of firm-quarters with the 10% most negative unexpected accruals). These differences are significant at the 1% significance level. The same trend continues in quarter t+2 but dissipates in quarter t+3. The results reported in Table 8 are thus consistent with upward earnings management leading to an upward bias in analysts' earnings forecast in subsequent periods.

Next we conduct the same analysis for firms grouped according to the likelihood of earnings management in the current period. The results, reported in Table 9, are consistent with those in Table 8. That is, earnings forecasts issued in the two quarters following a quarter with likely earnings management are, on average, more optimistic than forecasts issued following quarters where earnings management is less likely to have occurred. For example, as shown in the first the first three lines of the table, the mean forecast error deflated by the absolute reported earnings (price) in quarter t+1 is 0.036 (0.020) for the full sample, lower for the group of identified as avoiders in quarter t as loss 0.026 (0.019), and the lowest (most optimistic) for firm-quarters identified as loss or earnings decline manipulators 0.023 (0.016). Similar differences

exist between the groups of loss avoiders and loss manipulators and between the groups of earnings decline avoiders and earnings decline manipulators. Most of the above differences between the groups are significant at the 5% significance level. Such differences persist in quarter t+2 but, similar to the results reported in Table 8 for the unexpected accruals portfolios, dissipate in quarter t+3. The finding that earnings forecasts issued subsequently to upward management quarters is consistent with Ettridge, Shane and Smith (1995) who find that analysts, in revising their forecasts, only partially discount previously reported earnings that are overstated.

A possible explanation for the finding of a greater propensity of analysts to issue more optimistic forecasts for firms that have managed their earnings upward in the recent quarter is that these firms actually have better earnings performance in that quarter. However, the evidence is inconsistent with this explanation. Note that the earnings of the compared groups ("avoiders" vs. "manipulators") have the same status of being "just-above" an earnings threshold. To further test for differences in the operating performance of the compared groups, we examine their earnings growth (change in EPS divided by price) and sales growth (change in sales per share divided by price). The results (not tabulated) do not indicate any significant difference between the operating performance of the compared groups, the operating performance of the "manipulators" is lower (sometimes significantly so) than that of the "avoiders."

6.5. Results from testing H3: Stock recommendations in periods subsequent to periods of earnings management

We next examine the stock recommendations issued by analysts following the release of earnings likely to be affected by earnings management. H3 posits that analysts' propensity for recommendation upgrade is unaffected by whether or not recent earnings have been managed

upward. To test this hypothesis, we compare the frequencies of Buy, Hold and Sell recommendations between the period immediately preceding the period of likely earnings management and the period immediately following it. For the restatement sample, the period of likely earnings management extends from the earliest restated quarter to the latest restated quarter in the sequence of restated periods. For the sample of manipulators we compare the frequencies of recommendations between the last month of the quarter of likely earnings management (denoted as m=0) to the corresponding frequencies observed one, two and three months after the end of the earnings management quarter. Under the null of H3, the change in the relative frequency of the three types of recommendations is unrelated to the likelihood that earnings were managed in the current quarter.

Table 10 shows the change in the relative frequency (in percentage points) of each type of recommendation between the quarter preceding the restatement period and the quarter following it. The results clearly indicate that analysts significantly upgraded their recommendations. The percentage of Buy recommendations increases by 3.21 percentage points over the restatement period while the percentage of Hold and Sell recommendations declines. This change is significantly larger as compared with that for a control group consisting of the two firms in the restating firm's industry (based on four-digit SIC codes) that are closest in size to the restated firm.

The same result is obtained when we examine the change in analysts' recommendations around quarters of likely earnings management as exemplified by the manipulators group. Table 11 shows the frequency of recommendations in the first, second and third months following the quarter of earnings management for the different groups formed on the basis of the likelihood of earnings management in the current quarter. As before, the group of interest is consists of the

manipulators, those firms that achieved an earnings threshold (loss or decline avoidance) but would not have done so without the presence of unexpected accruals.

The results suggest that analysts not only fail to discount managed earnings but they actually are even more inclined to upgrade their stock recommendations in the wake of periods where earnings are managed upward. The relative frequency of Buy recommendations following periods in which the earnings are likely to have been managed upward for the manipulators (line 3 in the table) in line 3 in the table) increased by 0.65%, 0.88% and 0.96% in months +1, +2 and +3 respectively, whereas the percentage of Buy recommendations for the full sample actually decreased in the same months by 0.30%, 0.54% and 0.67%, respectively. These differences between the two groups are statistically significant at the 1% significance level. Correspondingly, there is a decline in the relatively frequency of Hold recommendations. Very similar results (not tabulated) are obtained when we analyze, separately, the manipulators that avoided reporting a loss and those that avoided reporting an earnings decline. Also note that that the manipulators exhibit also a greater increase in the proportion of Sell recommendations over months +1, +2 and +3. However, the increase in the proportion of Sell recommendations is small

and statistically insignificant.

The increased propensity of analysts to upgrade their recommendations in the wake of the release of quarterly earnings that are considered to be managed upward is unlikely to be driven by better operating performance in the current quarter by the "manipulators" relative to their comparison group (the "avoiders") given the evidence that the operating performance of the two groups is essentially the same (as noted in section 6.4 above).

The positive association between the frequency of Buy recommendations and the presence of earnings management is consistent with Lehavy and Abarbanell (2003a). However,

whereas Lehavy and Abarbanell use the level of recommendation to proxy for price sensitivity, hypothesizing that the presence of a better recommendation increases the firm's incentive and thus propensity to manage its earnings, our explanation reverses the causality. Specifically, upward managed earnings appear to prompt analysts to upgrade their recommendations. These two explanations for the observed association between earnings management and stock recommendations are not inconsistent and may, in fact, both be valid.

These results relating analysts' forecasting and recommendation behavior reinforce each other. Collectively they suggest that analysts, in forming their earnings forecasts and stock recommendations, do not discount earnings that are achieved through upward earnings manipulation but rather give them greater prominence. Analysts appear to revise their earnings forecast upward and upgrade their recommendations in the wake of earnings numbers that are likely to have been manipulated.

6.6. Results from testing H4: Operating performance subsequent to incidents of earnings management

Testing H4 is designed to distinguish between two interpretations of the findings of higher earnings forecasts and upgraded recommendations in the wake of earnings management – accounting fixation or performance signaling. For the purpose of this test we examine the operating performance of firms subsequent to restatements or incidents of likely earnings management and compare it to a control group. We examine three measures of operating performance: return on sales, return on assets and sales growth for the restatement sample and the sample of manipulators. We compare the future performance of the restaters and the manipulators with their respective control groups. For the restatement sample, the subsequent period consists of the first and the second fiscal years after the end of the last restated period. The control group consists of firms operating in the same industry (based on the four-digit SIC code) of the restatement firms and that are closest in size (based on total assets) to the respective restated firm. We exclude from this performance analysis firms that announced a restatement before the end of that year.

For the "likely earnings management" sample, we construct a similar industry-size matched group as well as two other control groups, one consisting of cases where the firm operated just above the earnings threshold (the loss or earnings avoiders) and the other of all firm-quarters.

The results reported in Table 12 show that firms with likely earnings management, both the restaters and the manipulators, exhibit significantly better operating performance in subsequent periods than do the comparison groups of firms. Panel A contains the results for the restatement sample. Over the first full fiscal year following the sequence of restated periods, the restaters report a median return on sales, return on assets and sales growth of 0.019, 0.022 and 0.076 as compared with only 0.010, 0.009 and 0.042 for the control group, with the difference in the median sales growth being significant at the 1% significance level. The same superior performance relative to the control group is exhibited in the second year after the restatement period.

As shown in Panel B, similar results are obtained for the likely earnings management sample. Over the a one-year (four quarter) period following the quarter with likely earnings management, the manipulators has a median return on sales, return on assets and sales growth of 0.070, 0.076 and 0.131, respectively. The respective comparative performance measures for industry-matched firms are 0.050, 0.057 and 0.092 and for firms that just met an earnings threshold (the avoiders) the measures are 0.058, 0.063 and 0.103, respectively. The performance is even lower for all sample firms equaling 0.048, 0.055 and 0.086, respectively. The "excess

profitability" of the manipulators is generally significant at the conventional level. The results are similar when we analyzed separately loss manipulators and earnings decline manipulators. As the table shows, the superior performance of manipulators continues in the second year after the earnings management quarter. It dissipates however (not tabulated) in the third and fourth year.

The findings suggest that firms use earnings management to signal future performance. They are consistent with prior evidence on management signaling through earnings management in Bartov et al. (2002) who show that firms whose earnings routinely represent a favorable surprise perform better in future periods even if the earnings surprise is achieved through earnings management.

7. Some Caveats

Two important caveats of this paper should be emphasized. First, the identification of earnings management cases is based on alternately, firms that restated earnings and firms that used unexpected accruals to meet earnings thresholds. While we believe that our identification of earnings management cases, particularly the one based on restatements, is powerful, it is obviously not perfect. Identification errors would tend to make the testing of H1 less reliable. However, a poor identification of earnings management cases works against rejecting H2 and H3, both of which are resoundingly rejected by the empirical results.

The second caveat relates to our ability to infer from analysts' forecasting and recommendation behavior in periods following earnings management on their capability to detect earnings management when it exists. Such inferences depend heavily on whether or not the managed earnings component is transitory, or at least more transitory than the unmanaged component of earnings. We do not provide direct evidence on this issue even though the evidence from testing H4 regarding future performance of manipulators suggests some degree of persistence of the managed earnings component. Relevant to this question are the findings regarding the persistence of accruals. However, since managed earnings do not perfectly correspond to unexpected accruals (particularly given the limitations of estimating unexpected accruals) further research on the permanence of managed earnings is warranted.

8. Concluding Remarks

We examine whether analysts behave as if they attempt to predict firms' "correct" or "unmanaged" earnings or whether they, instead, aim at predicting the earnings that management is most likely to report. We use two samples to address this issue, one where the existence of earnings management is assumed from earnings restatements and the other sample where earnings management is identified through accrual behavior around earnings thresholds. The results are consistent with analysts focusing more on predicting the earnings number that will be reported even if this number is incorrect (as evidenced by its subsequent restatement) or managed (as evidenced by unexpected accruals that are needed to achieve certain earnings thresholds). The results further indicate that analysts react positively to instances of upward earnings management in terms of both their earnings forecasts and stock recommendations in subsequent periods. This response, however, does not appear to reflect inefficient forecasting since the subsequent performance of firms with recently managed earnings is superior on average to that of other groups of firms.

The findings of this paper add to the evidence on the forecasting behavior of analysts. We do not find limitations in analysts' ability to detect and process correctly accounting information.

Rather, the results suggest that analysts, in forming their forecasts and stock recommendations, take into account the signaling about future performance conveyed by earnings management in the current period.

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Appendix Association between Forecast Errors and the Managed Earnings Component

Denote the sum of the "true" unmanaged components in reported earnings as E^{T} , the managed component as E^{M} , the earnings forecast as F, the forecast error defined with respect to the reported (i.e., managed) earnings number as FE^{R} and the forecast error defined with respect to the true (i.e., unmanaged) earnings as FE^{T} .

Under the null of H1:

 $F^{T} = E^{T} + \varepsilon_{1}$, where ε_{1} is an independent random error with an expected value of zero, and $FE^{R} = (E^{T} + E^{M}) - (E^{T} + \varepsilon_{1}) = E^{M} - \varepsilon_{1}$.

The correlation between the managed earnings component, E^M , and the forecast error, FE^R , under the null is expected thus to be 1 (assuming that ϵ_1 is uncorrelated with E^M).

In contrast, under the alternative of H1:

 $F^{R} = (E^{T} + E^{M}) + \varepsilon_{2}$, where ε_{2} is an independent random error with an expected value of zero, and $FE^{R} = (E^{T} + E^{M}) - [(E^{T} + E^{M}) + \varepsilon_{2}] = -\varepsilon_{2}.$

The correlation between the managed earnings component and the forecast error FE^{R} under the alternative is expected to be 0 (assuming that ε_{2} is uncorrelated with E^{M}).

If analysts include the managed earnings only partially so that $F^P = E^T + \alpha E^M + \varepsilon_3$ then: $FE^P = (E^T + E^M) - [(E^T + \alpha E^M) + \varepsilon_3 = (1-\alpha) E^M - \varepsilon_3$

The correlation between the managed earnings component and the forecast error FE^{P} in this case is expected to be $(1-\alpha)$.

If the forecast error is defined with respect to the "true" (unmanaged) earnings number then under the null:

 $FE^{T} = ET - (E^{T} + \varepsilon_{1}) = -\varepsilon_{1}.$

The correlation between the managed earnings component, E^M , and the forecast error, FE^R , under the null is expected thus to be zero (assuming that ε_1 is uncorrelated with E^M).

Under the alternative:

 $F^{R} = (E^{T} + E^{M}) + \varepsilon_{2}$, where ε_{2} is a random error with an expected value of zero, and $FE^{T} = E^{T} - [(E^{T} + E^{M}) + \varepsilon_{2}] = -E^{M} - \varepsilon_{2}$.

The correlation between the managed earnings component and the forecast error FE^{T} under the alternative is expected to be -1.0 (assuming that ε_{2} is uncorrelated with E^{M}).

If analysts include the managed earnings only partially so that $F^{P} = ET + \alpha E^{M} + \epsilon_{3}$, then

 $FE^{P} = E^{T} - [(E^{T} + \alpha E^{M}) + \varepsilon_{3}] = -\alpha E^{M} - \varepsilon_{3}$, and its correlation with EM is expected to be - α .

Appendix (continued) Association between Forecast Errors and the Managed Earnings Component

The correlation between the managed earnings component and the forecast error FE^{P} in this case is expected to be $-\alpha$.

Under the above setting the correlation of the magnitude of the restatement (representing $-E^{M}$) should be:

Correlation of the restatements with the forecast error defined with respect to the:	Under the Null (exclusion of the managed earnings component from the forecast)	Under the alternative (inclusion of the managed earnings component in the forecast)	Intermediate state (partial inclusion of the managed earnings component in the forecast)
Originally reported (managed) earnings	1	0	1-α
Restated (unmanaged) earnings	0	-1	- α

Table 1Restatement Sample

	No. of	% of
	observations	observations
Number of firms issuing restated results	285	
Total number of periods for which earnings were restated ^a	1,415	
Quarterly Reports		
Total number of quarters for which earnings were restated	1,114	
Number of firms restating quarterly results	270	100.0
Average number of restated quarters per firm	4.13	
No. of firms restating: one quarter	61	22.6
two quarters	37	13.7
three quarters	48	17.8
four quarters	23	8.5
five quarters	14	5.2
six or more quarters	87	32.2
Annual Reports		
Total number of years for which earnings were restated	301	
Number of firms restating yearly results	179	100.0
Average number of restated years per firm	1.68	
No. of firms restating: one year	92	51.4
two years	56	31.3
three or more years	31	17.3

^a All reporting periods (both quarters and years) for which restated numbers are provided are included. A restatement of quarterly results of prior years' earnings will generally give rise to two restatement periods, the quarter and the corresponding year.

Table 2 **Magnitude of Earnings Restatements**

A. Magnitude of Cumulative Restatements

(Computed over the sequence of periods affected by the restatement)

	Al A	l Restatemen Absolute Valu $(n = 285)$	ts: ie	Downward (n =	Restatements 243)	Upward Restatements $(n = 37)$	
	Value	Deflated	Deflated	Deflated by	Deflated by	Deflated	Deflated
	(in \$ 000)	by	by price ²	absolute	Price ²	by	by Price ²
	absolute		(n=257)	earnings ¹	(n=223)	absolute	(n=223)
	earnings ¹					earnings ¹	
Mean	\$ 37,525	0.512	0.078	0.562	0.088	0.257	0.019
Std. Dev.	\$ 142,491	0.584	0.502	0.603	0.539	0.350	0.026
Quartile 1	\$ 1,233 0.078 0.004		0.099	0.004	0.046	0.003	
Median	\$ 5,227 0.301 0.012		0.344	0.014	0.122	0.008	
Quartile 3	\$ 17,932	0.709	0.048	0.771	0.054	0.363	0.020

B. Magnitude of Quarterly Restatements

	Al	ll Restatemen	ts:	Downward	Restatements	Upward Restatements	
	A	Absolute Valu	ie	(n =	888)	(n = 226)	
		(n = 1, 114)					
	Value	Deflated	Deflated	Deflated by	Deflated by	Deflated	Deflated
	(in \$ 000)	by	by price ²	absolute	price ²	by	by price ²
	absolute		(n=1,043)	earnings ¹	(n=831)	absolute	(n=212)
	earnings ¹					earnings ¹	
Mean	\$11,060	0.676	0.018	0.740	0.019	0.426	0.012
Std. Dev.	\$60,422	0.737	0.236	0.756	0.263	0.593	0.031
Quartile 1	\$ 566 0.097 0		0.001	0.117	0.001	0.066	0.001
Median	\$ 1,642 0.297 0.004		0.004	0.363	0.004	0.152	0.003
Quartile 3	\$ 5,160	1.162	0.010	1.428	0.011	0.426	0.007

¹ Absolute earnings is measured as the average between the absolute values of the reported earnings and the restated earnings. ² Price is measured at the beginning of the restated period.

Period and Correlation		Error and Rest	ated Amounts ²	
Coefficients	Deflated by Ab	solute Earnings ³	Defla	ted by Price ⁴
	Forecast Error Ba	sed on Farnings as:	Forecast Error is	Based on Farnings as:
	Reported	Restated	Reported	Restated
All Periods				
No. of Obs.	327	327	304	304
Pearson	-0.084	0.241	-0.093	0.280
	(0.221)	(<0.001)	(0.178)	(<0.001)
Spearman	-0.061	0.267	0.012	0.337
1	(0.236)	(<0.001)	(0.547)	(<0.001)
Annual Period	s			
No. of Obs.	141	141	131	131
Pearson	-0.055	0.317	-0.051	0.421
	(0.663)	(0.011)	(0.685)	(<0.001)
Spearman	-0.036	0.351	-0.028	0.353
	(0.732)	(<0.001)	(0.712)	(<0.001)
Quarterly Peri	ods	1		
No. of Obs.	186	186	173	173
Pearson	-0.002	0.234	-0.027	0.327
	(0.979)	(0.009)	(0.760)	(<0.001)
Spearman	-0.015	0.252	-0.031	0.366
	(0.746)	(<0.001)	(0.694)	(<0.001)

Table 3 Correlation between the Amount of Restatement and Analysts' Earnings Forecast Errors for the First Period in the Restatement Sequence¹

¹ The first (earliest) restated period in the sequence of periods covered by a restatement is a year for the annual periods and a quarter for the quarterly periods.

 2 p-values are provided in parentheses 3 Absolute earnings is measured as the average between the absolute values of the reported earnings and the restated earnings.

⁴ Price is measured at the beginning of the restated period.

⁵ The forecast error is defined as the reported (or restated) earnings less the last forecast of earnings for the period.

Table 4Difference between the Earnings Forecast Error Based on Reported Earnings and
That Based on Restated Earnings
for the First Period in the Restatement Sequence^{1,2}

		Abs Deflate	olute Error d by Earnir	ngs ³		Absolute Error Deflated by Price ⁴			
	For	ecast Error	Based on H	Earnings as:	Forecast Error Based on Earnings as:				
	n	ReportedRestatedMeanDifference ^a			n	Reported	Restated	Mean Difference ^a	
All Periods	327	0.115	0.161	-0.046 (-4.92)	304	0.007	0.014	-0.007 (-6.26)	
Annual Periods	141	0.128	0.177	-0.049 (-5.43)	131	0.010	0.019	-0.008 (-5.98)	
Quarterly Periods	186	6 0.105 0.148 -0.043 (-4.37) -0.043 -0.043 -0.043		173	0.004	0.010	-0.007 (-5.47)		

^a t-values are provided in parentheses

¹ The forecast error is defined as the absolute value of the difference between reported (or restated) earnings and last analyst forecast made just prior to the announcement of the next period's earnings.

² The first (earliest) restated period in the sequence of periods covered by a restatement could is a year for the annual periods and a quarter for the quarterly periods.

³ The denominator is the average between the absolute values of the reported earnings and the restated earnings. Deflated values are truncated at ± 1 .

⁴ The denominator is the price at the beginning of the restated period. Deflated values are truncated at $\pm 0.1\%$.

	Median	Mean Values			М	edian Value	es	Sign of Forecast Error		
	Unexpected	Forecast	Error/	Error/	Forecast	Error/	Error/	%	%	%
Portfolio	Accruals ^b	Error ^c	Actual ^d	Price	Error	Actual	Price ^e	Positive	Zero	Negative
Based on				d,e						-
Unexpected										
Accruals ^a										
1: Smallest	-0.118	-0.009	0.003	0.019	0.010	0.031	0.024	58.40	12.95	28.65
unexpected										
accruals	0.065	0.002	0.005	0.010	0.007	0.024	0.001	56.65	15.00	00.07
2	-0.065	0.003	0.005	0.019	0.007	0.024	0.021	56.65	15.28	28.07
3	-0.041	-0.001	0.001	0.018	0.009	0.024	0.021	56.20	13.68	30.12
4	-0.024	-0.000	0.002	0.018	0.008	0.023	0.020	55.78	14.76	29.46
5	-0.009	0.002	0.010	0.016	0.005	0.021	0.017	54.08	15.04	30.89
6	0.005	0.003	0.009	0.016	0.005	0.021	0.017	54.50	15.42	30.08
7	0.018	0.007	0.012	0.018	0.007	0.025	0.020	56.23	14.86	28.91
8	0.034	0.004	0.010	0.017	0.007	0.024	0.020	55.62	14.76	29.62
9	0.054	-0.000	0.024	0.019	0.010	0.029	0.024	56.70	14.76	28.54
10: Largest	0.098	0.001	0.017	0.013	0.005	0.024	0.016	53.74	13.52	32.74
unexpected accruals										
Difference:										
Portfolio 10	0.216	0.010	0.014	-0.006	-0.005	-0.007	-0.008	-4.66	0.57	4.09
– Portfolio 1										

Table 5Association between Analysts' Quarterly Forecast Errors and
Current Quarter's Unexpected Accruals

^a The number of firms in each portfolio is approximately 4,650.

^b Accruals are based on income from continuing operations before special items. Unexpected accruals are determined using the modified Jones model as explained in section 4.3.

^c The forecast error is defined as the absolute value of the difference between reported earnings per share and the last analyst forecast made just prior to the announcement of the next quarter's earnings.

^d The ratios of the error to the absolute value of the reported EPS and price are truncated at ± 1.0 and ± 0.1 , respectively.

^e Values reported for Error/Price are multiplied by 100.

Table 6 **Analysts' Forecast Errors: Results for Firms Grouped by the Likelihood of Earnings Management** in the Quarter

					ies	М	Median Values		
		No.	Error ^b	Error/	Error/	Error	Error/	Error/	of Obs.
	Group ^a	of		Actual ^c	Price ^{c,d}		Actual ^c	Price ^{c,d}	With
		Obs.							Positive
									Errors
1	Full Sample	46,650	0.001	0.009	0.017	0.007	0.024	0.020	55.8%
	Loss or Earnings								
2	Decline Avoiders	16,762	0.005	0.019	0.015	0.005	0.022	0.012	55.2%
3	Loss or Decline	854	0.004	0.055	0.014	0.007	0.032	0.014	58.0%
	Manipulators								
	Difference ([3] – [2])			0.039**	-0.001		0.010**	-0.002	2.8%
	Difference ([3] – [1])			0.046**	-0.003		0.008*	-0.006**	2.2%
4	Loss Avoiders	11,280	0.002	0.015	0.012	0.005	0.024	0.009	52.9%
5	Loss Manipulators	590	0.002	0.066	0.015	0.007	0.043	0.016	59.3%
	Difference ([5] – [4])			0.051**	0.003		0.009**	0.007	6.4%
	Earnings Decline								
6	Avoiders	7,411	0.011	0.031	0.021	0.007	0.022	0.016	59.1%
7	Earnings Decline	277	0.008	0.033	0.014	0.005	0.015	0.010	56.0%
	Manipulators								
	Difference ([7] – [6])			0.002	-0.007**		-0.007	-0.006*	-2.9%

* significant at the 5% significance level

** significant at the 1% significance level.

(Significance levels are for one-sided tests, based on the t-test for the mean and on the Z values from the Wilcoxon-Mann-Whitney tests for the medians.)

^a Loss or earnings decline "avoiders" and "manipulators" are defined in section 4.2.

^b The forecast error is defined as actual EPS less the last forecast of EPS (the forecast just preceding the earnings announcement).

^c The ratios of the error to the absolute value of the reported EPS and price are truncated at $\pm 1.0\%$ and $\pm 0.1\%$ of the distributions, respectively. ^d Values reported for Error/Price are multiplied by 100.

Table 7 **Correlation between the Managed Earnings Component and Analysts' Earnings** Forecast Errors for the "Manipulators"

T

Panel A: "Man (n=852	aged Earnings Co 2) ¹	omponent" is Define	ed as Abnormal	Accruals			
	Forec	ast Error	Forecast Error				
Correlation	(Deflated by A	bsolute Earnings) (Deflated by Price ³)					
	Based on	Earnings as:	Based on	Earnings as:			
		e		C			
	Reported	"Unmanaged"	Reported	"Unmanaged"			
Pearson	0.005	0.183	0.010	0.157			
	$(0.903)^2$	(0.017)	(0.790)	(<0.0001)			
Spearman	0.029	0.292	0.022	0.336			
Ĩ	(0.386)	(<0.0001)	(0.326)	(<0.0001)			
Panel B: "Man Earn	aged Earnings Co lings Exceed the 7	Smponent" is Define Threshold ⁴	ed as the Amou	nt by which			
(1) Loss and De	ecline Manipulato	ors (854)					
Pearson	0.095	0.410	0.065	0.346			
	(0.039)	(<0.0001)	(0.059)	(<0.0001)			
Spearman	0.041	0.517	0.030	0.394			
1	(0.213)	(<0.0001)	(0.422)	(<0.0001)			
(2) Loss Manip	ulators (n=590)						
Pearson	0.078	0.322	0.036	0.278			
	(0.154)	(<0.0001)	(0.284)	(<0.0001))			
Spearman	0.171	0.446	0.078	0.343			
1	(0.052)	(<0.0001)	(0.175)	(<0.0001)			
(3) Decline Mar	nipulators (n=277	/)					
Pearson	0.093	0.551	0.129	0.881			
	(0.125)	(<0.0001)	(0.035)	(<0.0001)			
Spearman	0.057	0.811	0.148	0.838			
	(0.344)	(<0.0001)	(0.039)	(<0.0001)			

¹Abnormal accruals are derived from the modified Jones model as explained in section 4.3. ² p-values are given in parentheses ³ Price is measured at the beginning of the period.

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⁴ The managed earnings component for Loss Manipulators is equal to actual earnings minus the amount by which earnings exceed zero. The managed earnings component for the Earnings Decline Manipulators is equal to the EPS for the same quarter in the previous.

Table	8
1 adic	0

Analysts' Forecast Errors for Forecasts of Future Quarters' Earnings by the Sign and Magnitude of Unexpected Accruals in the Current Quarter: Results by Portfolio of Unexpected Accruals

Quarter t+1			MEAN			MEDIAN		SIGN	OF ER	ROR
Portfolio	Median	Error	(Error/	Error/	Error	(Error/	Error/	% Pos.	% Zero	% Neg.
of unexpected	Unexpected		Actual)	Price		Actual)	Price			
accruals"	Accruals	0.016	*100	0.025	0.010	*100	0.025	(1.0)	14.52	22 (1
I (smallest)	-0.118	0.016	0.046	0.025	0.010	0.033	0.025	61.86	14.53	23.61
2	-0.065	0.008	0.039	0.024	0.010	0.029	0.025	60.75	14.33	24.93
3	-0.041	0.010	0.033	0.023	0.010	0.030	0.027	61.09	13.62	25.29
4	-0.024	0.00/	0.034	0.020	0.010	0.026	0.020	58.73	14.06	27.22
5	-0.009	0.008	0.027	0.021	0.010	0.026	0.020	57.83	16.07	26.09
6	0.005	0.007	0.024	0.020	0.009	0.028	0.022	57.64	14.20	28.16
7	0.018	0.001	0.010	0.019	0.010	0.026	0.022	56.92	14.44	28.64
8	0.034	0.005	0.008	0.016	0.008	0.023	0.020	55.87	13.71	30.43
9	0.054	0.006	0.028	0.019	0.010	0.025	0.021	56.62	15.72	27.66
10 (largest)	0.098	0.006	0.024	0.017	0.008	0.023	0.018	55.54	15.63	28.82
Ouarter t+2										
1 (smallest)	-0.118	0.012	0.033	0.023	0.010	0.031	0.024	59.81	14.16	26.03
2	-0.065	0.014	0.027	0.022	0.010	0.028	0.022	59.64	14.22	26.14
3	-0.041	0.008	0.029	0.023	0.010	0.028	0.026	59.97	13.80	26.22
4	-0.024	0.014	0.041	0.023	0.010	0.028	0.022	59.40	15.40	25.20
5	-0.009	0.006	0.024	0.020	0.010	0.025	0.021	57.91	14.81	27.28
6	0.005	0.001	0.024	0.019	0.010	0.026	0.020	57.51	13.92	28.57
7	0.018	0.009	0.023	0.020	0.010	0.029	0.023	58.24	14.40	27.36
8	0.034	0.003	0.025	0.020	0.010	0.025	0.022	57.19	15.23	27.57
9	0.054	0.005	0.017	0.018	0.009	0.026	0.021	56.11	15.44	28.45
10 (largest)	0.098	0.002	0.023	0.017	0.007	0.024	0.020	56.28	14.75	28.97
Quarter t+3										
1 (smallest)	-0.118	-0.009	0.003	0.019	0.010	0.031	0.024	58.40	12.95	28.65
2	-0.065	0.003	0.005	0.019	0.007	0.024	0.021	56.65	15.28	28.07
3	-0.041	-0.001	0.001	0.018	0.009	0.024	0.021	56.20	13.68	30.12
4	-0.024	-0.000	0.002	0.018	0.008	0.023	0.020	55.78	14.76	29.46
5	-0.009	0.002	0.010	0.016	0.005	0.021	0.017	54.08	15.04	30.89
6	0.005	0.003	0.009	0.016	0.005	0.021	0.017	54.50	15.42	30.08
7	0.018	0.007	0.012	0.018	0.007	0.025	0.020	56.23	14.86	28.91
8	0.034	0.004	0.010	0.017	0.007	0.024	0.020	55.62	14.76	29.62
9	0.054	-0.000	0.024	0.019	0.010	0.029	0.024	56.70	14.76	28.54
10 (largest)	0.098	0.001	0.017	0.013	0.005	0.024	0.016	53.74	13.52	32.74

^aThere are approximately 4,650 observations in each portfolio.

Table 9
Analysts' Forecast Errors for Forecasts of Future Quarters' Earnings
by the Likelihood of Earnings Management in the Current Quarter

		MEAN			MEDIAN	SIGN OF ERROR			
Period and Group		(Error/ Actual) * 100	Error/ Price	Error	(Error/ Actual) * 100	Error/ Price	% Pos.	% Zero	% Neg.
Quarter t+1									
Full Sample	0.007	0.036	0.020	0.010	0.027	0.022	58.1	14.7	27.2
Loss or Earnings Decline Avoiders	0.007	0.026	0.019	0.007	0.023	0.016	57.6	17.1	25.3
Loss or Decline Manipulators	0.005	0.023	0.016	0.005	0.025	0.012	56.2	20.6	23.2
Logg Avgidorg	0.004	0.024	0.017	0.006	0.047	0.015	56.9	172	25.0
Loss Avoiders	0.004	0.034	0.017	0.000	0.047	0.013	57.6	17.5	23.9
	-0.000	0.032	0.010	0.003	0.030	0.012	37.0	1/./	24.7
Earnings Decline Avoiders	0.009	0.026	0.020	0.007	0.022	0.016	58.4	17.9	23.8
Earnings Decline Manipulators	0.006	0.020	0.018	0.005	0.017	0.011	55.4	24.6	20.0
Augentar t 12									
Full Sample	0.007	0.036	0.020	0.010	0.027	0.022	58 1	147	27.2
Loss or Farnings Decline Avoiders	0.007	0.030	0.020	0.010	0.027	0.022	58.3	17.1	27.2
Loss or Decline Manipulators	0.005	0.032	0.020	0.007	0.023	0.017	54.0	21.5	24.5
	0.005	0.025	0.011	0.005	0.017	0.007	51.0	21.5	21.5
Loss Avoiders	0.003	0.047	0.018	0.007	0.029	0.016	57.0	16.9	26.0
Loss Manipulators	0.014	0.043	0.014	0.005	0.029	0.012	55.4	19.6	25.0
Earnings Decline Avoiders	0.011	0.032	0.022	0.008	0.024	0.017	59.9	18.3	21.7
Earnings Decline Manipulators	0.010	0.016	0.015	0.004	0.013	0.006	53.3	24.2	22.5
Ouarter t+3									
Full Sample	0.007	0.026	0.020	0.010	0.027	0.022	58.1	14.7	27.2
Loss or Earnings Decline Avoiders	0.008	0.032	0.019	0.007	0.024	0.015	57.5	18.2	24.3
Loss or Decline Manipulators	0.006	0.038	0.014	0.007	0.029	0.012	59.1	20.1	20.8
Loss Avoiders	0.005	0.035	0.015	0.005	0.029	0.012	55.3	18.4	26.2
Loss Manipulators	0.004	0.039	0.014	0.009	0.043	0.015	61.7	17.1	21.2
Earnings Decline Avoiders	0.012	0.033	0.021	0.008	0.023	0.016	59.7	18.9	21.5
Earnings Decline Manipulators	0.009	0.038	0.014	0.005	0.015	0.011	56.7	23.8	19.6

 Table 10

 Revisions in Analysts' Recommendations from the Pre-Restatement Period to the Post-Restatement Period

		Me betwee	Mean Change in the Relative Frequency of the Recommendation between the Quarter Immediately Preceding the Restatement Period and:											
	Sample	The	First Quarte	r Followi	ng the	The Second Quarter Following								
		NL C	Restateme	nt Period	the Kestatement Period									
		No. of firms	Buy	Hold	Sell	No. of firms	Buy	Hold	Sell					
1	Restatement Firms	272	3.21% (2.53)**	-2.43% (1.96)*	-0.78% (-1.21)	264	2.89% (2.01)*	-2.48% (1.76)	-0.41% (-0.84)					
2	Control Group of Firms in Same Industry ^b	544	1.24% (1.40)	-0.92% (1.12)	-0.32% (0.76)	528	1.37% (1.53)	-0.94% (1.22)	-0.43% (-0.67)					
	Difference: ([1] – [2])		1.97% (3.92) **	-1.51% (1.82)	-0.46% (-0.84)		1.52% (1.67)	-1.54% (-1.56)	0.02% (0.21)					

Significant at the 0.01 level; * significant at the 0.05 level

^a Observations for which the restatement announcement occurs within the two quarters following the restatement period are excluded.

^b The control group is constructed by matching each observations with two firms in the same industry (based on four-digit SIC code) that are closest in size to the restatement firm based on total assets at the end of the quarter preceding the first restatement quarter. The change in the analysts' recommendations is computed for the same quarters as for the matched sample firm.

Table 11

Revisions in Analysts' Recommendations in the Months Following the End of the Quarter with Likely Earnings Management: Results for Firms Groups Based on the Likelihood of Earnings Management in the Quarter^a

			First Month after the "Managed" Quarter			Secon "Ma	nd Month a anaged" Qu	fter the arter	Third Month after the "Managed" Quarter		
		No. of firms	Buy Hold Sell		Buy	Hold	Sell	Buy	Hold	Sell	
1	Full Sample	98,989	-0.30	.30 0.25 0.05		-0.54	0.42	0.12	-0.67	0.51	0.17
2	Loss or Earnings- Decline Avoiders	34,731	-0.10	0.07	0.03	-0.14	0.08	0.06	-0.11	0.04	0.08
3	Loss or Earnings- Decline Manipulators	1,616	0.65	-0.77	0.13	0.88	-1.10	0.22	0.96	-1.15	0.19
	Difference ([3] – [2])		0.75**	-0.84**	0.10	1.02**	-1.18**	0.16	1.07**	-1.19**	0.11
	Difference ([3] – [1])		0.95**	0.95** -1.02** 0.08		1.36**	-1.52**	0.10	1.63**	-1.66**	0.02

^{**} Significant at the 0.01 level; * significant at the 0.05 level ^aValues reported in the table are the change in the percentage of analysts' Buy, Hold and Sell recommendations.

Table 12
Future Operating Performance of Earnings Management Cases Relative to Control Groups

	Earnings Management	No. of	Annual Performance: One-Year-Ahead						Annual Performance: Two-Years-Ahead						
	Group	Obs.	Return	Return on Sales		Return on Assets		Sales Growth		Return on Sales		Return on Assets		Sales Growth	
			Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	Mean	Median	
												•		•	
A.	A. Restatement Sample														
1	Restaters	211	-0.146	0.019	-0.111	0.022	0.057	0.076	-0.067	0.025	-0.064	0.035	0.089	0.082	
2	Control Sample	211	-0.187	0.010	-0.163	0.009	0.021	0.042	-0.098	0.014	-0.087	0.016	0.061	0.063	
	Test of differences: [1]-[2]		(2.74)**	(1.56)	(3.32)**	(1.72)	(2.89)**	(2.61)**	(2.69)**	(1.64)	(1.95)*	(2.03)**	(2.57)**	(2.12)**	
B. Managed Earnings Sample															
3	All Cases	35,577	0.027	0.048	0.046	0.055	0.125	0.089	0.031	0.048	0.045	0.055	0.128	0.086	
4	Control Sample ^a	656	0.031	0.050	0.048	0.057	0.131	0.092	0.043	0.049	0.047	0.056	0.129	0.088	
5	Loss or Earnings Decline Avoiders	13,204	0.062	0.058	0.065	0.063	0.142	0.103	0.059	0.057	0.063	0.063	0.131	0.096	
6	Loss or Earnings Decline Manipulators	662	0.072	0.070	0.074	0.076	0.197	0.131	0.060	0.067	0.066	0.075	0.171	0.117	
	Test of differences: [6] – [5] ^b		(1.95)*	(5.24)**	(3.14)**	(4.19)**	(5.49)**	(5.61)**	(0.13)	(4.13)**	(0.92)	(2.69)**	(2.33)*	(2.69)**	
	[6] – [4]		(5.12)**	(5.89)**	(6.23)**	(6.78)**	(5.92)**	(6.16)**	(2.97)**	(4.94)**	(4.86)**	(5.83)**	(2.21)*	(2.56)**	
	[6]- [3]		(8.02)**	(9.85)**	(9.17)**	(8.39)**	(8.04)**	(7.95)**	(3.91)**	(7.92)**	(5.16)**	(6.40)**	(2.43)*	(4.32)**	
7	Loss Avoiders	8,531	0.059	0.053	0.058	0.053	0.155	0.111	0.057	0.055	0.057	0.057	0.142	0.102	
8	Loss Manipulators	435	0.064	0.059	0.063	0.059	0.224	0.157	0.049	0.059	0.055	0.057	0.187	0.123	
	Test of differences: [7]-[8]		(0.72)	(2.09)*	(1.18)	(1.34)	(5.10)	(5.09)	(0.84)	(1.34)	(0.53)	(0.15)	(1.81)*)	(1.67)*	
9	Earnings Decline Avoiders	6,304	0.073	0065	0.080	0.076	0.139	0.106	0.068	0.062	0.075	0.074	0.122	0.092	
1 0	Earnings Decline Manipulators	236	0.088	0.091	0.095	0.093	0.159	0.119	0.073	0.080	0.083	0.087	0.142	0.104	
	Test of differences: [9]-[10]		(1.55)	(5.37)**	(3.54)**	(4.92)**	(1.49)	(1.60)	(0.47)	(4.09)**	(1.42)	(3.43)**	(1.21)	(1.59)	

^a Control sample consists of firms in the same industry (defined as the four-digit SIC code) as the restaters (or the loss or earnings decline manipulators) that are closest in size (based on total assets) to the manipulators in the year examined. If no matched firm with assets within +/-20% of the firm's assets could be found, the observation was excluded from the analysis.

^bT-statistics are provided for the mean differences; Wilcoxon Z scores are provided for the median differences. ** significant at the 0.05 level; * significant at the 0.01 level

Legend:

(Variables below are truncated at +/-1% of the distribution.)

Income from continuing operations divided by sales Return on Sales:

Income from continuing operations divided by the average value of assets over the recent four quarter ends Return on Assets:

Change in sales from year 0 to year +1 or from year +1 to year +2, divided by sales in the previous year. Sales Growth: