Do Management Forecasts of Earnings Affect Stock Prices in Japan?

Masako N. Darrough and Trevor S. Harris

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The authors are both Associate Professors, Graduate School of Business, Uris Hall, Columbia University, New York, NY 10027. We are grateful to Jim Haggard for significant programming assistance, and to The Center on Japanese Economy and Business at Columbia University for their financial assistance in obtaining the data. We also acknowledge the cooperation provided by Nihon Keizai Shimbun, in particular H. Tanaka and J. Uno for hours of conversation with invaluable wisdom.

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1 Introduction

Japan's capital markets have played a crucial role in the recent increase in the globalization of international capital markets. As a result it has become important to understand the similarities and differences in the way Japanese markets operate in comparison to the more familiar Anglo-American environment.

One of the major differences that has attracted a great deal of attention is the relatively high average price/earnings [PE] ratio (Viner [1988]) for the stocks listed on the Tokyo Stock Exchange. A question sometimes raised in the popular press is whether the difference in PEs suggests that US stocks are undervalued or Japanese stocks are overvalued.[1] Of course, such conjectures are not well-founded unless we understand the differences in the institutional characteristics of the two markets. Some of the differences raise subtle but important questions, such as whether a particular institutional arrangement can be adopted in other environments. Just as we have seen the transfer of US accounting practices to non-US companies active in international capital markets, certain institutional characteristics of Japan's capital markets might lead to related changes in other countries. This paper considers one such characteristic, management forecasts, which we believe to be a likely candidate for such a global transfer.

In Japan, the securities exchanges request that management provide forecasts of sales, earnings and dividends. Although the forecasts are technically voluntary, almost all Japanese companies provide them. In contrast, relatively few US firms seem to publish forecasts.[2] If the Japanese forecasts are reasonably accurate and used by investors, then even non-Japanese companies might be "encouraged" to prepare management forecasts on a regular basis.

Evaluation of the relevance of management forecasts is also important in understanding the difference between Japanese and US PEs. Although the difference since 1986 appears to be enormous, there is no consensus so far as to whether the PEs are really different once "proper" adjustments are made. For example, Aron [1987, 1989] has consistently argued that "adjusted" PE ratios are

[1]For a recent example, see "Abreast of the Market" in *The Wall Street Journal*, September 6, 1989 pp. C1-C2.

[2]For example, the survey by Lees [1981] found that only 10.4% of the surveyed firms (total of 397 firms) disclosed forecasts. See also the samples in Waymire [1984] or Baginski [1987].

virtually identical in the two countries.[3] Others such as Scheinemann [1988, 1989], and Poterba and French [1989] arrive at the opposite conclusion, despite making similar adjustments. All these calculations are based on historic earnings. Yet, if prices reflect expected earnings, and management forecasts of earnings are relevant in Japan, then it is necessary to examine how these forecasts affect stock prices. This investigation may then help us in evaluating the Japanese PE "anomaly" in a more precise manner.

Two questions must be answered in order to assess the relevance of Japanese management forecasts. First, how accurate are the management forecasts? If the forecasts are inaccurate we should not expect them to be useful to investors. We compare the predictive accuracy of management forecasts with a simple random walk model, since all the research we have found on the association between unexpected earnings and security returns in Japan has used such a model as the benchmark (e.g. Kunimura [1986], Ito [1988] and Sakakibara, et al. [1988]).

Clearly, while predictive accuracy is presumably necessary (Penman [1980]), it is not sufficient in order to claim that management forecasts are important for investors. Thus the second question considered is whether investors actually use these forecasts in pricing securities. To answer this question we investigate whether management forecasts provide additional "news" at the time of their release, by estimating the price reaction around the date of forecast announcement.

The procedure we follow requires a careful sorting of various information releases by Japanese companies. Two disclosure practices must be noted: (1) many companies disclose parent and consolidated financial statements at different times; and (2) those that provide forecasts announce both realized and forecast figures simultaneously. Disclosure of both parent and consolidated values suggests that there are two potential earnings "news" dates. Simultaneous announcement of both historical and forecast data necessitates that we first discriminate and control for the reaction to the realized earnings. To provide the maximum control for tests of the reaction to forecast earnings, we consider unexpected earnings measures based on historic and forecast earnings as well as the

[3]Aron's claim is based mainly on two types of adjustments. First, he uses aggregate data to adjust Japanese earnings to conform more closely to US generally accepted accounting principles. Second, he incorporates different growth and discount rates into a capitalization rate. He has made these calculations periodically since 1979.

latest "analyst" forecasts.[4] Consequently, the study also provides some evidence on the relevance of these analyst forecasts.

The evidence we provide in this paper suggests (1) that management forecasts of both parent and consolidated earnings are generally more accurate than the widely used random walk model, and (2) that investors appear to use both management forecasts in pricing securities.

Section 2 of the paper discusses some institutional background and presents the basic hypotheses. We describe the sample and test procedures in Section 3. The predictive accuracy tests and results are reported in Section 4, and the price reaction studies are presented in Section 5. We summarize the findings and conclude the paper in Section 6.

2 Background Information and Hypotheses

Japan's Commercial Code requires companies to prepare unconsolidated annual reports within three months of the fiscal year end (FYE). The Securities and Exchange Law, which covers companies listed on the securities exchanges, has also required listed companies to submit consolidated reports since FYE March 31, 1978.[5] These consolidated reports are generally submitted after the parent-only reports, and are required to be published within four months of the FYE.[6]

These two are the only reports legally required, but the securities exchanges require companies to announce a brief summary of current financial information including sales, earnings and dividends in a press release (Kessan Tanshin). In addition, they *request* management to provide forecasts and most companies comply.[7] These announcements are made for both parent and consolidated results so that we frequently have two separate announcements and forecasts. Figure 1 provides a summary of the disclosures and their timing for a typical company.

[4]The term "analyst" forecast should not be interpreted as being equivalent to an US analyst forecast. As explained in Section 3 of the paper we use the forecasts provided by Nihon Keizai Shimbun (Nikkei) analysts. Their officials explained that the forecasts are not made in a manner similar to a detailed US forecast, and are frequently based on management's own estimates.

[5]Although consolidated reports were required from 1978, the use of equity accounting for unconsolidated affiliates has only been required since 1983.

[6]As of FYE March 31, 1988, listed companies will be required to submit the parent and consolidated reports simultaneously.

[7]Kunimura [1986] reports a survey which found that more than 90 percent of firms (March 31, 1981 FYEs and listed on the Tokyo Stock Exchange) provided management forecasts of sales and earnings.

The parent-only report submitted to the Ministry of Finance (Yuka Shoken Hokokusho) is a document with detailed disclosures, while the equivalent consolidated report (Renketsu Yuka Shoken Hokokusho) contains considerably less detail. The parent-only report has generally been considered to be the one on which many users rely (Viner [1988]).[8] Thus, a question arises as to whether consolidated earnings have any marginal information over the parent-only earnings. Using small samples with historical data, Ishizuka [1987] and Ito [1988] show that both the changes in consolidated and in parent-only earnings explain some of the variation in market-adjusted (abnormal) returns. Thus consolidated earnings would appear to have marginal information content. A problem with these, and most other information content studies using Japanese data, is that they ignore the forecasts when measuring unexpected earnings (UE). Although Kunimura [1986] and Ishizuka [1987] have performed some preliminary analysis on the relevance of parent-only management forecasts, the question of earnings expectation models and the relevance of forecasts in Japan has largely been ignored and remains unresolved (Ito [1988] p.8).

As mentioned in the introduction, interest in the relevance of management forecasts (MFs) of earnings goes beyond the methodological choice of an earnings expectations model. We believe it is an important question because the answer may not only provide important insights for the analysis of the high Japanese PEs, but also influence the institutional setup of capital markets in other countries.

The basic question of interest is whether Japanese management forecasts are relevant to investors. This question is broken down into separate pieces that are formulated into three hypotheses. The first relates to the degree of MF accuracy. If MFs have a higher predictive accuracy than a simple random walk model, then we should expect the forecasts to provide a better measure of UE than the naive model generally used. Thus the first hypothesis to be tested is:

H_1^N: Management forecasts of earnings are no more accurate than forecasts based on a simple random walk model.

The alternative hypothesis is that the MFs are more accurate. This null hypothesis is evaluated

[8]Interestingly, the widely publicized PE ratios (e.g. as in *Morgan Stanley Capital International Perspectives*) are usually based on the parent-only earnings.

separately for parent and consolidated earnings.

Of course, predictive accuracy alone is not sufficient to conclude that investors use the information. Hence we consider next whether MFs provide incremental information in explaining the association between unexpected earnings and (unexpected) security returns at the announcement dates. Unfortunately, Japanese MFs are disclosed simultaneously with the other earnings data. Consequently, it is not possible to control for other events in the manner employed by Waymire [1984] or Jennings [1987]. To assess the incremental relevance of MFs, however, we need to control for the "news" in UE.

The available research on Japanese securities markets does not provide us with clear guidance as to which UE model to use. In addition to the random walk (RW) and MF models, we have periodic analyst forecasts (AFs) reported in the Nihon Keizai Shimbun (Nikkei).[9] Security analysis in Japan has not developed in the same way as in the US or Britain. As a result, these forecasts frequently reflect the most recent MFs as extracted from interviews or other management disclosures. At the very least these AFs should reflect the MFs provided with the announcement of mid-year interim results. Possibly as a reflection of the relative importance of the parent-only statements, AFs are only available in machine-readable form from Nikkei for the parent earnings. We were also informed that analysts rarely provide forecasts of consolidated earnings.

Based on the studies we have seen, it appears that there is little understanding of the relationship between (unexpected) returns and the different measures of UE.[10] Consequently, we choose to analyze the question of MFs relevance for investors in two steps.

First, we consider the impact of annual earnings announcements on returns using different measures of UE. Specifically we determine which of the three measures provides the strongest association between (abnormal) returns and UE. Brown, Foster and Noreen [1985] have shown that "the more timely the expectations model, the stronger the association between average cumulative abnormal returns and earnings forecast errors" (p.8). The second null hypothesis to be tested is

[9]Nikkei is one of two major sources of analyst forecasts. The other is the rival publisher, the Toyo Keizai Shimbun. We do not have access to these forecasts in machine readable form, but do not expect that they would be very different given the nature of security analysis in Japan.

[10]For a small sample of firms in the period 1976-1978, Kunimura [1986] shows that AFs are more accurate than the estimates based on interim earnings forecasts.

then based on the idea that there is no difference in the association between unexpected earnings and unexpected returns when management forecasts, analyst forecasts or forecasts based on a simple random walk model are used to measure expected earnings. The hypothesis will be formally specified in Section 5.

Second, once the results of tests of the first step are obtained, we examine whether the MFs for the next period's earnings have any impact on the unexpected returns after controlling for the effect of UE. Again this question will be considered for both parent and consolidated forecasts, with the latter tests controlling for the results from tests of parent-only forecasts. Thus, formal specification of the hypothesis is also deferred to Section 5.

3 Data and Sample Selection

As stated, the primary research question is whether MFs of both parent and consolidated earnings contain marginal information for investors. Since consolidated data are relatively recent in Japan, the availability of MFs of consolidated earnings is the major constraint in selecting a sample.

The Center on Japanese Economy and Business at Columbia University has a data base of parent and consolidated financial statement data, security prices and "attribute" data (including dividends and parent forecasts) compiled by Nikkei. The data base covers a maximum of 10 years (for prices) ending with August 1987.

We first extracted all companies available on the consolidated data file, which runs from FYEs March 31, 1978 through May 31, 1987. As 59% of all the companies on the consolidated data file have March 31 FYEs we focussed our collection procedures on this subset of firms. We hand-collected the announcement dates and management (consolidated) forecasts released at the time, for all companies with March 31 FYEs, as well as for companies with any other FYE whose announcements are published in the daily Nihon Keizai Shimbun in May, June or July of the relevant years. The Nikkei newspaper publication date is one day after the actual release of the Kessan Tanshin.

The "attribute" files from Nikkei contain monthly parent-only forecasts and "update dates,"

representing the dates on which Nikkei has discussed the company's potential results. In principle the forecasts represent AFs and the update dates reflect the dates on which the forecasts are first announced. However, we were told that the first update after the FYE represents the date of the announcement of earnings (i.e., the date of the Kessan Tanshin) and that this date's forecast is in fact the MF. Therefore, we selected the first update date at least 30 days after the FYE as the parent-only announcement date, and the forecast on that date as the MF for the parent-only earnings. Given that these are monthly date files and that the update date represents the last update in the month, we checked the dates and forecasts against those reported in the daily Nihon Keizai Shimbun to ensure that our information is accurate. We found, and corrected numerous differences in announcement dates, as a result of an announcement being earlier than the last update in a month, but found no differences in the forecasts. Thus even when there is an apparent update in AFs after the announcement of MFs in the same month the actual values of the forecasts do not change.

Given that we are interested in both the parent and consolidated data, we exclude observations for which the parent and consolidated announcement dates are less than 12 trading days apart.[11]

The attribute data files are also used to extract the AFs. We select the last update date and forecast prior to the FYE as the most recent AF prior to the announcement of earnings. Although many of these dates are within the month prior to the FYE, the forecasts may not have been revised since the interim forecast by managers. As previously indicated, even when the AF is more recent it is possible that the AF is based on some updated information from management, so that the reference to AFs should be interpreted cautiously.

The final criterion used is that the price and attribute files contain data to calculate a sufficient number of returns to estimate the coefficients in the standard market model used in the abnormal returns analysis.[12] The market model used is

$$R_{it} = \alpha_i + \beta_i R_{mt} + \epsilon_{it}, \tag{1}$$

[11] A twelve day period is chosen because the event study part of this research considers a maximum window of -4 to +4 days.

[12] Although several studies using daily returns have used returns based on simple price changes (e.g., Chap. 4 in Sakakibara, et al. [1988]), the returns in this study include all dividends and appropriate adjustment factors.

where :

R_{it} is the return (including dividends and adjustment factors) for firm i for day t,

R_{mt} is the return on the equally-weighted index of firms in the first section of the Tokyo Stock Exchange for day t,

α_i and β_i are firm specific parameters, and

ϵ_{it} is the residual and is assumed to behave according to the standard assumptions.

The model is estimated over the 180 days immediately preceding the maximum event window (-4 to +4 days) considered for the announcement of parent-only earnings. Observations are dropped if there are less than 90 days of returns available to estimate the market model parameters. The event window is chosen to ensure that we minimize the impact of confounding signals between parent and consolidated announcements.

The imposition of all the filters leads to a final sample of 1,300 observations. Table 1 shows the impact of the different selection criteria, while Table 2 provides some description of the characteristics of the sample. Panel A of Table 2 indicates that most of the observations are in fiscal years 1985 through 1987, which reflects the increased presentation of consolidated data once the equity method was required. This period is characterized by unusually high increases in Japanese stock prices.[13] Panel A also shows that there is a widespread distribution of observations across industries. The electronics industry, which has the largest number of firms, covers a range of specializations including general and heavy electric equipments, appliances, electronic controls and electric auto parts.

The descriptive statistics presented in Panel B of Table 2 indicates, as we would expect, that the consolidated earnings are higher (by about 15%) than parent-only earnings. It is also apparent that managers are generally optimistic in their forecasts, suggesting that the AFs may be the most accurate measure of expected earnings.

[13]The TOPIX (Tokyo Stock Price Index) during this period started at a year-end high of 913.37 on December 28, 1984 and went up to 2,258.56 on June 11, 1987. TOPIX is the index (100 on January 4, 1968) of the total market value of the stocks listed on the first section of the Tokyo Stock Exchange.

4 The Predictive Accuracy of Japanese Management Forecasts

The first stage of our analysis of Japanese MFs considers their forecast accuracy. Separately for parent-only and consolidated earnings, we estimate two forecast errors:

$$RWFE^r_{it} = \frac{A^r_{it} - A^r_{it-1}}{|A^r_{it}|}, \tag{2}$$

and

$$MFE^r_{it} = \frac{A^r_{it} - MFA^r_{it}}{|A^r_{it}|}, \tag{3}$$

where:

A^r_{it} is the accounting earnings for the r type report [r = parent (p) or consolidated (c)] for firm i at year t, and

MFA^r_{it} is management forecast of year t earnings for the r type report for firm i made at $t-1$.

For each firm-year observation we also calculate the difference between the absolute value of the two forecast errors:

$$d^r_{it} = |RWFE^r_{it}| - |MFE^r_{it}|. \tag{4}$$

We compute both parametric and nonparametric tests from d^r_{it}. To reduce the influence of outliers we truncate d^r_{it} at 1 (i.e., 100 percent). The mean of d^r_{it} is the mean absolute forecast error frequently used as the test of forecast accuracy in other studies (e.g., Brown et al. [1987a]). Despite truncation, the parametric tests are sensitive to violations of the normality assumption. Thus we also compute the nonparametric Wilcoxon Signed Rank Test (Lehman [1975]) and the Fisher Sign Test (Hollander and Wolfe [1973]). The Sign Test ignores the magnitudes and reflects only the direction of predictive ability.

Table 3 reports the results of the tests of predictive accuracy. For parent-only earnings all mean and median differences are positive, and for the pooled as well as several yearly samples these differences are statistically significant. In three of the years the median difference is more than 5 percent, so that on average, we can expect these differences to be economically significant.

The results based on consolidated earnings have a similar pattern, although the mean differences are generally lower than in the parent-only case. The differences for the pooled sample of 5.7 percent for the mean and 1.7 percent for the median are statistically significant. Also in four years the median difference is more than 5 percent. Interestingly the only year in which the Fisher Test indicates a significant number of negative differences (i.e., less accurate MFs) is in 1986. Given the concentration of March 31 FYEs, this probably reflects the unexpected appreciation of the yen in the last three quarters of 1985 and in early 1986.[14]

The results presented in Table 3 clearly indicate that management forecasts are more accurate measures of expected earnings in most cases. Thus we can reasonably expect that investors use the MFs and that the correlation with security returns is higher for MFUE than for RWUE.

5 The Relation between Unexpected Earnings, Management Forecasts and Security Returns

Before we can assert that MFs are indeed relevant, we have to consider whether investors actually utilize them. As the MFs are released simultaneously with historic earnings, we must first understand and control for any reaction to the (unexpected) earnings signals. Traditionally, the information content of an earnings signal has been evaluated by the association between a measure of unexpected earnings and unexpected returns (UR) (e.g., Beaver [1968]). The association tests are more complex in Japan because of the separate disclosures of parent-only and consolidated information, coupled with the availability of different measures of expected earnings. Thus we have to consider potential information sources in the following order: (1) unexpected parent-only (historic) earnings, (2) MF of next period parent-only earnings, (3) unexpected consolidated (historic) earnings, and (4) MF of next-period consolidated earnings.

[14]This period of rapid yen appreciation began in early 1985, but was given significant impetus by the meeting of the "Group of Seven" finance ministers in September 1985.

5.1 Tests of an Association between (Unexpected) Returns and Unexpected Parent-only Earnings

We first examine the associations around the time of the announcement of parent-only earnings. We have three measures of unexpected parent-only earnings:

$$RWUE^p_{it} = \frac{A^p_{it} - A^p_{it-1}}{P^p_{is-5}}; \qquad MFUE^p_{it} = \frac{A^p_{it} - MFA^p_{it}}{P^p_{is-5}}; \qquad AFUE^p_{it} = \frac{A^p_{it} - AFA^p_{it}}{P^p_{is-5}},$$

where:

AFA^p_{it} is the last "analysts" forecast of year t parent-only earnings for firm i prior to the FYE, and

P^p_{is-5} is the price times shares outstanding for firm i on the day before the first date of the -4 to +4 day event window, i.e., 5 days prior to day s, the announcement date of parent-only earnings.[15]

The null hypothesis tested is:

H^N_{2p}: There is no association between unexpected earnings and (unexpected) security returns so that there is no difference for random walk ($RWUE^p_{it}$), annual management forecast ($MFUE^p_{it}$) or latest analyst forecast ($AFUE^p_{it}$) based measures of unexpected earnings.

The alternative hypothesis is that an association exists and that there is a difference. We expect that the association is highest for $AFUE^p_{it}$ and lowest for $RWUE^p_{it}$.

In all the return related tests, we have to define an appropriate measure of returns. In similar tests using US data, the preference has been to use abnormal (unexpected) returns (AR_{it}) calculated as:

$$AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}), \tag{5}$$

[15] We deflate by the price times shares outstanding at the first day prior to the event window to reduce the potential measurement error in unexpected earnings and to be consistent with the valuation relation implicit in these tests (See Christie [1987]). We also ran the tests using $|A_{it}|$ as the denominator (i.e., as in equations (2) and (3)) with little difference in the results.

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated from a standard market model as in equation (1) (e.g., Waymire [1984] and Baginski [1987]). AR_{it} is also frequently cumulated over a test period to obtain

$$CAR_{it} = \sum_{t=1}^{T} AR_{it}, \tag{6}$$

where T is the length of the test period. CAR_{it} has also been estimated using standardized abnormal returns (e.g., Morse [1981], Ishizuka [1987] and Burgstahler et al. [1989]), i.e.,

$$SCAR_{it} = \sum_{t=1}^{T} \frac{AR_{it}}{S_{\epsilon_i}}, \tag{7}$$

where S_{ϵ_i} is the standard deviation of the residuals for the market model in the estimation period (equation (1)).

We performed association tests using AR_{it}, CAR_{it} and $SCAR_{it}$ where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimated as described in Section 3. Unfortunately, the market model does not seem to have much explanatory power in Japan (Sakakibara et al. [1988], Ch. 2; Maru et al. [1986], Ch. 4), particularly in certain periods. Looking at our own estimations for each firm, we often find a high variance from year to year in both $\bar{R}^2$ and the parameter estimates of the model. For example, Mitsui Mining has $\bar{R}^2 = 0.10$ and $\hat{\beta} = 2.75$ for announcement date 5/23/86 and $\bar{R}^2 = -0.01$ and $\hat{\beta} = -0.17$ for announcement date 5/22/87. For the sample as a whole the mean beta is 1.32, the median is 0.60 and more than 10% of the sample has a beta of greater than 2.5.[16]

As a result of our discomfort with the fit of a market model to our sample we also consider the correlations between the unexpected earnings measures and raw returns, cumulative raw returns ($CR_{it} = \sum_{t=1}^{T} R_{it}$), market adjusted returns ($MAR_{it} = R_{it} - R_{mt}$) and cumulative market adjusted returns ($CMAR_{it} = \sum_{t=1}^{T} MAR_{it}$), as well as these measures standardized by the appropriate standard deviations calculated in the estimation period (e.g., $SCMAR_{it} = \sum MAR_{it}/S_{MAR_i}$).

To test H_{2p}^{N}, the firms are initially placed into ten portfolios based on ranking by UE. Different portfolios are established for each of the UE measures. We then calculate the mean and median cumulative (abnormal) returns within each portfolio, for four different event windows; (-4,+1),

[16]Sakakibara et al. [1988] in their test of annual earnings announcements find similar results for their sample. In their full sample the average beta is 1.1, but when they remove observations for which the market model $\bar{R}^2 < 0.05$, the average beta jumps to 1.79.

(-4,+4), (-1,+1) and (0,+4). We consider the four event windows because of the perception that there is information leakage of the announcement and also a potential for slow adjustment to news (Sakakibara et al. [1988]). However the purpose of testing $H\,{}^{N}_{2p}$ is to ensure that we have adequately controlled for news in current earnings announced simultaneously with MF^{p}_{it+1}. Consequently, we are not really concerned with the vagaries of the event window, *per se*. Having considered all four event windows, we choose to report only the results for the (-1,+1) window as this minimizes the omitted variable problem and provides qualitatively equivalent results to those for other event windows.[17] The results of the parent-only test are reported in Table 4. We report only the results using the standardized set of return measures ($SCAR^{p}_{it}$ and $SCMAR^{p}_{it}$), as the other measures yield qualitatively similar results.

The results provide evidence in favor of the alternative hypothesis that there is an association between UE and UR at the time of parent-only earnings announcements, and that the best measure of expected earnings is AF^{p}_{it}. The rank correlation between $AFUE^{p}_{it}$ and $SCAR^{p}_{it}$ ($SCMAR^{p}_{it}$) is 0.059 (0.060), which is statistically significant and is higher than the equivalent correlations for the other UE measures. The pattern of abnormal returns across portfolios follows a pattern that can be viewed as broadly consistent with UE, but is certainly not uniform. For example, while the average of the abnormal returns is clearly higher for the top five portfolios compared to the bottom five, portfolio 5 has a higher mean abnormal return than portfolios 2, 3 and 4. Similarly portfolio 8 has a large positive return despite negative unexpected earnings. This last result partially reflects positive outliers as the $SCAR^{p}_{t}$ ($SCMAR^{p}_{t}$) for $AFUE^{p}_{t}$ portfolio 8 is 0.002 (0.198).[18] Nevertheless, the results reported in Table 4 suggest that we have an omitted variable or that there is a problem with short window association tests.

Given the concerns about market model estimation expressed previously, one possibility is a misspecified asset pricing model, so we recommend caution in interpreting the $SCAR^{p}_{it}$ results. But other cumulative return measures provide similar patterns. Another possibility is that net income

[17] Of course information leakage or a post-announcement drift may exist if one looks outside the -4 to +4 day period, but this is beyond the scope of this paper as we are considering the market reaction to current earnings solely as a control for other information around the announcement of MF.

[18] When we refer to portfolios we drop the i subscript from all earnings and return description.

contains transitory components that are discounted by investors.[19] As previously indicated, we may not have a long enough window to capture information leakage or a post-announcement drift. Nevertheless, the purpose of the test is to control for news in UE. Thus, having found that $AFUE^p_{it}$ is the best measure of unexpected earnings we can now consider the information content of parent-only MFs, and see whether this is a candidate omitted variable.

5.2 Tests of the Information Content of Management Forecasts of Parent-only Earnings

The third null hypotheses (for parent MFs) is:

H^N_{3p}: There is no information in management forecasts of next-period parent-only earnings.

The alternative hypothesis is that there is information in the MFs such that forecasted increases (decreases) in earnings lead to higher (lower) URs.

As already stated, the MF of next period earnings are provided in the Kessan Tanshin, simultaneously with the announcement of historic earnings. Thus, to test for the information content in MFs we must control for "news" in the current earnings announcement.

Hence, to test the hypothesis we first partition the observations into ten portfolios based on the magnitude of $AFUE^p_{it}$ as reported in Table 4. Then within each $AFUE^p_t$ portfolio we repartition the firms based on whether the MF predicts an increase or decrease in parent-only earnings for the next year. We compute the change in earnings using MF as:

$$\Delta MFA^p_{it+1} = MFA^p_{it+1} - A^p_{it}.$$

Within each $AFUE^p_t$ based portfolio, we expect

$$\left\{SCAR^p_t \,|\Delta MFA^p_{it+1} \geq 0\right\} > \left\{SCAR^p_t \,|\Delta MFA^p_{it+1} < 0\right\},$$

and equivalently for $SCMAR^p_t$. These results are reported in Table 5. We see that for each $AFUE^p_t$ portfolio except portfolio 5 the abnormal returns for the sub-group of firms with positive

[19] Although some Japanese researchers have used ordinary income as their measure of income for association tests, in Japan the difference between ordinary income and net income includes several items which would not be classified as extraordinary in many other countries including the United States. Consequently we choose to focus on net income.

ΔMFA^p_{it+1} are higher than for those firms with negative ΔMFA^p_{it+1}. For the sample as a whole, the rank order correlations of ΔMFA^p_{it+1} and abnormal returns are more than double those for $AFUE^p_{it}$ (0.140 vs. 0.059 for $SCAR^p_{it}$ and 0.174 vs. 0.060 for $SCMAR^p_{it}$).[20] The results also show that for eight of the ten $AFUE^p_t$ portfolios the negative ΔMFA^p_{t+1} sub-portfolios have negative $SCAR^p_t$ ($SCMAR^p_t$) and all the positive ΔMFE^p_{t+1} sub-portfolios have positive $SCAR^p_t$ (eight out of ten portfolios for $SCMAR^p_t$). Of particular interest is the result for portfolio 8. In Table 4 we report a surprisingly high positive mean $SCAR^p_t$ ($SCMAR^p_t$). When we partition using ΔMFA^p_{it+1}, we see that this is caused by a reaction to good news in the MF.

The results presented in Table 5 clearly indicate that parent-only MFs have information content. This finding is consistent with the aforementioned belief that parent-only reports are important for users of Japanese financial reports.

Having established the relevance of parent-only earnings announcements and MFs we next consider the corresponding questions for consolidated earnings.

5.3 Tests of an Association between (Unexpected) Returns and Unexpected Consolidated Earnings

Similarly to the analysis in Section 5.1, before we can consider the information content of MFs of consolidated earnings, we need to control for any information in the announcement of current earnings. As indicated, we have no analyst forecast for consolidated income as these are rarely made. Therefore, the two measures of unexpected earnings available are:

$$RWUE^c_{it} = \frac{A^c_{it} - A^c_{it-1}}{P^c_{is-5}}; \qquad MFUE^c_{it} = \frac{A^c_{it} - MFA^c_{it}}{P^c_{is-5}},$$

where superscript c denotes consolidated and P^c_{is-5} is the price times shares outstanding on the day before the first date of the -4 to +4 day window for the consolidated earnings announcement. Consequently the second part of H^N_2 is:

H^N_{2c}: There is no association between unexpected consolidated earnings and (unexpected) security returns so that there is no difference for random walk ($RWUE^c_{it}$) or annual management

[20] The rank order correlation between $AFUE^p_{it}$ and ΔMFE^p_{it+1} is -0.175.

forecast ($MFUE^c_{it}$) based measures of unexpected earnings.

The alternative hypothesis is that an association exists and that there is a difference with a higher association expected for $MFUE^c_{it}$.

We use the same return measures as in the parent-only tests. Given the time pattern of disclosures (Figure 1), it is an open question as to how to partition the firms to test H^N_{2c}. Ito [1988], in a study of annual return associations, partitions observations based on the sign of $A^p_{it} - A^p_{it-1}$ and then on the sign of $A^c_{it} - A^c_{it-1}$. Using a short-event period, Ishizuka [1987], Komura [1988] and Sakakibara et al. [1988], consider the change in consolidated earnings as an independent signal and do not control for other information.[21] Given our use of a short-event window with the sample partitioned so as to ensure that there are no overlapping days between the parent and consolidated windows, in Table 6 Panel A, we present mean values of $SCAR^c_{it}$ and $SCMAR^c_{it}$ (for event window -1 to +1) for 10 portfolios partitioned using $MFUE^c_{it}$ and $RWUE^c_{it}$. This provides us with a basis of comparison with the parent-only results presented in Table 4.

The mean abnormal returns suggest that there is no clear pattern in the association between the returns and unexpected consolidated earnings measures. The results using $SCAR^c_{it}$ and $MFUE^c_{it}$ show that three of the five highest $MFUE^c_t$ portfolios have negative abnormal returns while only two of the five lowest $MFUE^c_t$ portfolios have negative abnormal returns. Even if we consider the averages of the top five and the bottom five portfolios, we find that these are indistinguishable. When we use $RWUE^c_t$ as the measure of unexpected earnings the pattern improves in that three of the five highest (four of the five lowest) $RWUE^c_t$ portfolios have positive (negative) abnormal returns. However, the order of the magnitudes of abnormal returns across the portfolios does not follow the pattern of the size of unexpected earnings. This is reflected in the small negative rank order correlations of 0.009 for $MFUE^c_{it}$ and 0.011 for $RWUE^c_{it}$. When we consider the associations for $SCMAR^c_{it}$ there is slightly more consistency as reflected in the positive rank order correlations of 0.038 for $MFUE^c_{it}$ and a marginally significant ($p = 0.058$) 0.053 for $RWUE^c_{it}$.

[21] Sakakibara et al. actually use $A^c_{t-1} \times 1.05$ as their measure of expected earnings.

The natural question that arises is why we find such poor associations between unexpected consolidated earnings and abnormal returns. As the consolidated earnings are so recent, when looking for comparative results in the literature, we could find only three previous studies dealing with reactions to the announcement of consolidated income and all considered the period 1978–1984. Komura [1988] uses monthly returns and cannot reject a null hypothesis of no announcement effect. Ishizuka [1987] considers weekly returns and finds an announcement effect using squared $SCAR^c_{it}$ but does not differentiate according to the sign of unexpected earnings. Sakakibara et al. [1988] find an association using daily CARs and a simple good news/bad news split. However, they find that "the price adjustment to the consolidated earnings occurs on and after the announcement day" (p. 83), which, they suggest, "provides conclusive evidence that the Tokyo Stock Exchange is not all that efficient with respect to consolidated earnings information" (p. 90). Ishizuka's results also suggest that the market reacts slowly to consolidated earnings announcements. Consequently, we next consider whether a post-announcement window of 0 to +4 days provides us with a more clearly discernible pattern of associations between UR and UE.[22] These results are reported in Panel B of Table 6.

The rank order correlations (especially for $SCMAR^c_{it}$ and $RWUE^c_{it}$) and the inconsistent pattern of mean values within each portfolio suggest that the results may be sensitive to outliers. Since this was found to be partially true, we only report the median values for the abnormal returns for the 0 to +4 event window. We also found that portfolio 10, i.e., the worst UE, seemed idiosyncratic, so we eliminated firms with negative consolidated earnings from all portfolios considered in Table 6, Panel B.[23]

Looking first at the rank order correlations, we see that for $MFUE^c_{it}$ ($RWUE^c_{it}$) the correlations are 0.040 (0.009) for $SCAR^c_{it}$ and 0.075 (0.058) for $SCMAR^c_{it}$, with the latter being statistically significant. The median value of $SCMAR^c_{it}$ is negative for all $RWUE^p_t$ (nine out of ten for $MFUE^c_t$) portfolios, but in general the returns are lower for lower UE portfolios. The average

[22]For the - 4 to +1 event window the rank order correlations for $SCMAR^c_{it}$ ($SCAR^c_{it}$) are 0.026 (-0.006) with $MFUE^c_{it}$ and 0.048 (- 0.000) with $RWUE^c_{it}$.

[23]Neither the median values nor removal of firms with negative earnings provided any clearer pattern of associations for the -1 to +1 event window so we have not reported these values. There was also no material impact on the parent-only results from these adjustments.

$SCMAR^c_{it}$ of the top five portfolios is higher than the average of the bottom five. Similar results exist for the $SCAR^c_t$ portfolios. Thus, there still appears to be some other information affecting the returns.

Before proceeding further, to ensure that we have some association between UE and UR, we consider the simple 2×2 frequency distributions based on the signs of the measures. The χ^2 statistics from this test are reported in Table 7. Three of the four are significant with the only insignificant association being for the distribution based on the signs of $SCMAR^c_{it}$ and $RWUE^c_{it}$.[24] Given the negative values of the medians for most of the portfolios reported in Panel B of Table 6, these significant χ^2 statistics are surprising, and reaffirm that there is probably other information being priced by the market.

One possibility is the relevance of MFs of next period earnings, which is the primary issue in this paper. However, another possibility is that unexpected parent-only earnings and ΔMFA^p_{t+1} are omitted variables, that is, we are capturing a post-announcement effect from the parent-only values. To test this we partitioned the sample into eight portfolios based on a 4-way partition on $AFUE^p_{it}$ and then a sub-partition on the sign of ΔMFE^p_{it+1}, similar to the process discussed in Section 5.2 and reported in Table 5.[25] We then considered the abnormal returns around the consolidated earnings announcement date for these portfolios as well as new portfolios based on a further partition using (separately) the magnitudes of $MFUE^c_{it}$ and $RWUE^c_{it}$ (e.g., the eight $AFUE^p_t/\Delta MFE^p_{t+1}$ portfolios were sub-partitioned using $MFUE^c_{it}$ rankings). These results are not reported in the paper because they provide no additional insights. The χ^2 statistic for the frequency distribution based on the signs of $SCAR^c_{it}$ (0,+4) ($SCMAR^c_{it}$ (0,+4)) and $AFUE^p_{it}$ is 1.30 (2.19), which is not significant.[26]

To summarize, we can (weakly) reject the H^N_{2c} in that both $RWUE^c_{it}$ and $MFUE^c_{it}$ provide measures of unexpected earnings that are associated with unexpected returns, although it is difficult

[24] Table 7 reports the χ^2 statistics for the sample without observations with negative consolidated earnings. If these firms are retained, the χ^2 statistics and significance levels increase for all four distributions.

[25] We used an initial 4-way partition to ensure that we did not have too few observations in the final portfolios.

[26] We also partitioned the sample into different years and evaluated the UE and UR association by year. There are differences across years, but the qualitative conclusions remain. Thus, we do no not report these statistics.

to distinguish between the two UE measures.[27] However, the unexpected returns are not consistent with the magnitudes of either UE measure. As the objective of the analysis in this subsection is to establish the control variables to use in the test of the information content of MFs, the strength of the association between UE and unexpected returns is important but not itself critical. Consequently we consider next whether MFs of next period consolidated earnings are relevant, and whether they reduce the inconsistency.

5.4 Tests of the Information Content of Management Forecasts of Consolidated Earnings

The third hypothesis for consolidated earnings can be simply stated as:

H_{3c}^{N}: There is no information in management forecasts of next-period consolidated earnings.

The alternative hypothesis is that there is information in the MFs such that forecasted increases (decreases) in earnings lead to higher (lower) unexpected returns.

To test this hypothesis we partition each of the ten portfolios formed using $MFUE_{it}^{c}$ ($RWUE_{it}^{c}$) reported in Table 6 Panel B, based on whether the MF predicts an increase or decrease in consolidated earnings for the next year. We compute the change in consolidated earnings using MF as:

$$\Delta MFA_{it+1}^{c} = MFA_{it+1}^{c} - A_{it}^{c}.$$

Then within each $MFUE_{t}^{c}$ ($RWUE_{t}^{c}$) portfolio, we expect

$$\{SCAR_{t}^{c} | \Delta MFA_{it+1}^{c} \geq 0\} > \{SCAR_{t}^{c} | \Delta MFA_{it+1}^{c} < 0\},$$

and equivalently for $SCMAR_{t}^{c}$.

The results for the 0 through +4 day window are reported in Panels A and B of Table 8. For portfolios originally partitioned on the magnitude of $MFUE_{it}^{c}$ (i.e., in Panel A) we see that for $SCAR_{t}^{c}$, in nine of the ten portfolios the median unexpected return is higher for the positive ΔMFA_{t+1}^{c} than for the negative ΔMFA_{t+1}^{c} portfolios. Similar, though less pronounced,

[27] The rank order correlation between $RWUE_{it}^{c}$ and $MFUE_{it}^{c}$ is 0.69.

differences exist for $SCMAR_t^c$. Of particular interest in the $SCAR_t^c$ associations is the split for portfolios 2, 4, 5 and 9. In the high $MFUE_t^c$ portfolios (2, 4 and 5), we see that the negative ΔMFA_{t+1}^c sub-portfolios (column 1 in Table 8, Panel A) actually have negative median values of -0.391, -0.526 and -0.601 respectively, while the positive ΔMFA_{t+1}^c sub-portfolios (column 2 in Table 8, Panel A) have positive median values of 0.182, 0.008 and 0.049 respectively. A similar effect is seen in low $MFUE_t^c$ portfolio 9. However, a note of caution is warranted as there are portfolios, in particular portfolio 7, in which the ΔMFA_{it+1}^c has the opposite effect.

Considering portfolios initially partitioned on the magnitude of $RWUE_t^c$ (Table 8 Panel B) we see that for seven of the ten $RWUE_{it}^c$ portfolios, the median $SCAR_t^c$ values are higher for positive ΔMFA_{t+1}^c sub-portfolios. Once again in portfolios 1, 2 and 3 we find negative (positive) medians of $SCAR_t^c$ for the negative (positive) ΔMFA_t^c sub-portfolios. The results for the $SCMAR_t^c$ values are similar although the size of the differences are smaller.

Taken as a whole, we feel comfortable in rejecting H_{3c}^N, as the results in Table 8 provide reasonable evidence that management forecasts of consolidated earnings are associated with unexpected security returns. However, the conclusion would possibly be stronger if we could more easily unravel the associations between unexpected returns and unexpected current earnings. We believe that there are several factors at work that cannot be easily separated. First, and one potentially easy to evaluate is an extension of the event window. If the consolidated earnings are not quickly priced in the market, then we can expect more noise in short window association tests between UR and UE. However, acceptance of the notion of delayed pricing of information introduces a different set of concerns because it brings into question the relevance of a market price based association test. It also becomes more difficult to ensure that we have controlled for other information.[28]

Second, and somewhat related, we have most of our observations in the period from 1985–1987 (see Table 2). As noted earlier, this is a period of extraordinary growth in security prices (approximately 150 percent) without the same growth in earnings. Clearly, either the market was reacting to information other than earnings or an anomaly was occurring.

[28]Extending the event window by one day to (0,+5) reduced the rank order correlations in all four combinations of UE and UR, e.g., the correlation between $SCMAR_{it}^c$ and $MFUE_{it}^c$ went from 0.075 to 0.070.

Furthermore, in part of this time Japan was faced with a potential crisis in its export industries because of the rapid appreciation of the yen, so we should expect increased earnings uncertainty. Thus, overall, we can reasonably expect the return series to be more noisy in this period than in the 1978–1984 test period of Ishizuka [1987] or Sakakibara et al. [1988].[29] However, this problem should affect both parent and consolidated earnings.

Third, we use net income as our measure of earnings. As previously explained, an alternative earnings number, ordinary income, excludes items which would reasonably be included as operating income in other countries. On the other hand, net income may include extraordinary items which can add noise to the UE classification. It is however possible that we could improve our associations by using the management forecast from the interim consolidated report. Given the specific objective of this research we did not feel it was necessary to try to improve the association between UE and unexpected returns by focusing on these two issues.

Fourthly, there may be firm or industry characteristics which distort the association patterns, for example the historical accuracy of managers' forecasts. We shall begin investigating these possibilities in future research.

Finally, given that the problems do not appear to exist for parent-only earnings, it is possible that Japanese investors do not yet rely on consolidated earnings for most companies. This is also a question for additional research.

6 Summary and Conclusions

In this paper we have demonstrated that (1) management forecasts of both parent and consolidated earnings are generally more accurate than a simple random walk model; (2) the "analysts" forecast of parent-only earnings preceding the announcement date is the most accurate measure of unexpected earnings and is most closely associated with unexpected returns; (3) it is difficult to distinguish between management forecast and random walk measures of unexpected consolidated

[29]For example, recall from Section 4 that RW outperformed MF for 1986. Removal of 1986 increases all four of the χ^2 statistics reported in Table 7. However, as indicated the qualitative conclusions remain the same so in the interests of parsimony we do not report all the yearly tests.

earnings relative to their associations with unexpected returns; and (4) the sign of management forecasts of next period earnings are associated with unexpected returns for both parent and consolidated earnings.

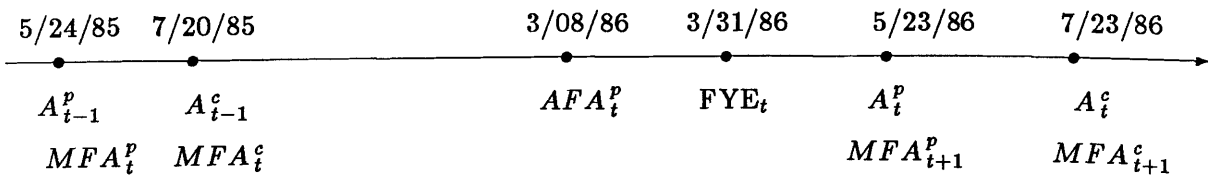
These findings have potential implications for both academics and market participants. First, for academics, we believe it is too simplistic to use simple random walk models as measures of unexpected earnings in studies of Japanese capital markets. Further, if one is interested in considering price reactions to accounting information, one should control for the concurrent (or, at least, latest) management and analyst forecast.

Second, for market participants, we believe the results indicate a need to consider management and analyst forecasts in their investment decisions. Further, it would be foolish to ignore the parent-only accounting data, as these appear still to be relevant to Japanese investors.

Third, studies of the PE anomaly should consider the management forecast, particularly if it indicates a large increase or decrease. Finally, for those interested in the globalization of financial markets, it seems reasonable to suggest that as Japanese influence continues to develop, it is possible that we shall see increasing interest in non-Japanese companies presenting some form of management forecast.

Figure 1: Flow of Information

Mitsui Mining for 1986



A^c_t is the actual consolidated earnings for fiscal year t.

A^p_t is the actual parent-only earnings for fiscal year t.

MFA^c_t is the management forecast of consolidated earnings for year t made at $t-1$.

MFA^p_t is the management forecast of parent-only earnings for year t made at $t-1$.

AFA^p_t is the last analyst forecast of parent-only earnings year t prior to FYE_{t-1}.

FYE_t is the fiscal year end for t.

Table 1: Summary of Sample Selection Procedure

Observations available on consolidated data base	3,488
Observations for which forecasts are not collected	(1,205)
Observations lost by lagging to obtain forecast errors	(752)
Observations lost from lack of parent forecast or consolidated and parent forecasts being too close	(150)
Observations without a sufficient return series	(81)
Final number of observations	1,300

Table 2: Description of the Sample of Firms

Panel A: Industry and Annual Distribution

Industry	87	86	85	84	83	82	81	80	79
Foods	21	23	21	2	2	2	2	2	2
Textile Products	13	26	19	1	1	1	1	1	1
Paper & Pulp	7	10	8	–	–	–	–	–	–
Chemicals	29	40	39	3	2	2	1	–	–
Drugs	5	8	6	1	1	–	–	–	–
Petroleum	3	4	3	–	–	–	1	1	1
Tires	3	5	4	–	–	–	–	–	–
Clay and Glass Products	11	13	12	1	–	–	–	–	–
Iron and Steel	16	19	18	1	–	–	1	1	1
Metal Products	17	27	27	2	1	–	–	–	–
Machinery	20	35	30	5	3	1	1	1	1
Electric Equipment	45	66	56	16	16	13	16	14	10
Shipbuilding	2	5	4	1	1	1	1	1	1
Motor Vehicles & Parts	11	14	12	3	3	2	2	2	2
Transportation Equipment	3	3	3	–	–	–	1	1	1
Precision Instruments	9	15	14	4	3	3	3	3	2
Other Manufacturing	5	6	6	–	–	–	–	–	–
Marine Products	3	3	1	–	–	–	–	–	–
Mining	3	5	5	–	–	–	–	–	–
Construction	9	13	11	1	2	2	1	1	1
Trading and Wholesale	27	30	28	10	11	11	10	3	–
Retail Stores	1	2	1	1	–	–	–	–	–
Credit & Leasing	3	3	2	1	1	1	–	–	–
Real Estate	7	7	4	–	–	–	–	–	–
Railroad & Bus	9	13	12	–	–	–	–	–	–
Trucking	7	8	7	–	–	–	–	–	–
Sea Transportation	2	8	8	–	–	–	–	–	–
Entertainment & Service	1	1	1	–	–	–	–	–	–
Total	292	412	362	53	47	39	41	31	23

Table 2 (continued)

Panel B: Descriptive Statistics for Earnings Variables

	1st Quartile	Median	3rd Quartile	Mean	SD
1. Parent-only					
A_t^p	6.73	13.70	24.81	19.40	30.21
MFA_t^p	7.67	14.42	26.77	22.40	34.25
MFA_{t+1}^p	7.23	13.66	25.44	20.34	32.06
AFA_t^p	6.33	13.19	25.01	19.01	29.21
2. Consolidated					
A_t^c	7.65	15.67	28.94	22.21	35.40
MFA_t^c	9.30	17.62	31.80	26.53	40.70
MFA_{t+1}^c	8.63	15.79	29.80	23.96	37.23

A_t is the earnings per share for year t.
MFA_t is the management forecast of year t earnings made at $t-1$.
AFA_t is the last analyst forecast of year t earnings per share prior to the fiscal year end.
SD is the standard deviation.
p (c) denotes parent (consolidated)

Table 3: Results for Tests of Predictive Accuracy of Annual Management Forecasts Relative to a Random Walk Model (in %)[1]

	Mean Difference	't' Value	1st Quartile	Median Difference	3rd Quartile	Sign of Wilcoxon Test Statistics	Fisher Test Statistic
			PARENT-ONLY				
Pooled	6.4	8.94**	- 2.6	2.6	13.4	+**	7.4**
1987	9.2	6.06**	- 1.7	3.1	15.6	+**	4.1**
1986	1.4	1.03	- 10.8	0.0	8.6	+	- 1.6
1985	10.6	7.70**	0.0	7.0	19.6	+**	7.1**
1984	7.0	2.00*	0.1	4.1	12.7	+**	4.0**
1983	2.1	0.87	- 3.7	1.2	9.1	+	0.4
1982	4.4	1.03	- 2.6	2.1	7.1	+	1.4
1981	0.9	0.28	- 4.5	1.7	11.2	+	1.7
1980	13.1	3.46**	4.5	8.4	18.2	+**	4.9**
1979	8.4	1.84	0.2	4.6	10.8	+	2.7*
			CONSOLIDATED				
Pooled	5.5	7.45**	- 2.8	1.6	13.6	+**	3.4**
1987	8.3	4.88**	- 0.1	2.2	16.4	+**	2.7
1986	0.8	0.63	- 7.5	0.0	8.6	+	- 4.3**
1985	9.4	6.17**	- 0.5	5.5	18.7	+**	5.6**
1984	8.3	2.79**	0.1	6.9	18.6	+**	3.7**
1983	0.8	0.24	- 3.4	1.3	6.4	+	0.7
1982	0.0	0.13	- 3.0	0.0	3.9	+	- 0.8
1981	1.5	0.46	- 7.7	0.8	10.6	+	0.5
1980	9.2	2.38*	2.8	7.1	17.1	+**	3.4**
1979	6.5	1.32	- 1.4	6.7	14.0	+	1.9

* $p < 0.05$ ** $p < 0.01$

[1]The differences in forecast errors are based on the random walk minus management forecast. Thus a positive (negative) sign indicates a more accurate management (random walk) forecast.

Table 4: Means and Rank Correlations for Portfolios Partitioned on the Basis of Different Measures of Unexpected Parent-only Earnings

	$AFUE_t^p$			$MFUE_t^p$			$RWUE_t^p$		
Portfolio #	UE_t^p (×100) (1)	$SCAR_t^p$ (-1,+1) (2)	$SCMAR_t^p$ (-1,+1) (3)	UE_t^p (×100) (4)	$SCAR_t^p$ (-1,+1) (5)	$SCMAR_t^p$ (-1,+1) (6)	UE_t^p (×100) (7)	$SCAR_t^p$ (-1,+1) (8)	$SCMAR_t^p$ (-1,+1) (9)
1	1.90	0.451*	0.284	2.76	0.264	0.135	6.43	0.147	0.077
2	0.39	0.245	0.066	0.65	0.133	0.054	1.31	0.377*	0.227
3	0.21	0.387**	0.143	0.34	0.422**	0.128	0.70	0.327*	0.073
4	0.11	0.206	0.004	0.13	0.364*	0.125	0.40	0.195	- 0.022
5	0.05	0.424**	0.148	0.03	0.159	0.038	0.19	0.265	0.050
6	0.01	0.348*	0.211	- 0.07	0.109	- 0.313	0.06	0.085	- 0.059
7	- 0.01	0.081	- 0.239	- 0.29	0.224	- 0.012	- 0.14	0.192	0.047
8	- 0.13	0.498**	0.259	- 0.62	0.294	- 0.010	- 0.56	0.264	- 0.010
9	- 0.29	- 0.090	- 0.229	- 1.18	0.100	- 0.062	- 1.32	0.319*	0.087
10	- 1.74	0.100	0.043	- 5.15	0.581**	0.340*	-6.03	0.478**	0.219
Rank Order Correlation		0.059*	0.060*		0.005	0.036		- 0.014	0.021

$AFUE_t^p$ is the difference between actual and latest "analyst" forecast of parent-only earnings year t divided by price times shares outstanding at time $s-5$, where s is the day of announcement.
$MFUE_t^p$ is the difference between actual and management forecast of parent-only earnings for year t divided by price times shares outstanding at time $s-5$.
$RWUE_t^p$ is the difference between actual (for year t) and last year's actual parent-only earnings divided by price times shares outstanding at time $s-5$.
$SCAR_t^p$ is the standardized cumulative abnormal return for year t.
$SCMAR_t^p$ is the standardized cumulative market adjusted return for year t.
* $p < 0.05$, ** $p < 0.01$ for mean not equal to 0.

Table 5: Means and Rank Correlation of Adjusted Returns for Portfolios based on Analyst Forecast of Unexpected Earnings and the Management Forecast of Changes in Next Period Earnings
Parent-only
(N=1,300)

Portfolio #	$SCAR_t^p$ (-1,+1) ΔMFA_{it+1}^p Negative (1)	Positive (2)	Difference (2)–(1)	$SCMAR_t^p$ (-1,+1) ΔMFA_{it+1}^p Negative (3)	Positive (4)	Difference (4)–(3)
1	0.383	0.545	0.162	0.171	0.442	0.271
2	- 0.570	0.806	1.376	- 0.668	0.585	1.271
3	- 0.095	0.641	0.736	- 0.307	0.382	0.689
4	- 0.036	0.298	0.334	- 0.106	0.074	0.180
5	0.482	0.401	- 0.081	0.235	0.118	- 0.117
6	- 0.164	0.470	0.634	- 0.167	0.301	0.468
7	- 0.541	0.348	0.889	- 0.723	- 0.032	0.691
8	- 0.305	0.882	1.187	- 0.395	0.571	0.966
9	- 0.619	0.120	0.739	- 0.732	- 0.030	0.702
10	- 0.288	0.222	0.500	- 0.210	0.122	0.332
Rank Order Correlation (with ΔMFA_{it+1}^p)	0.140**			0.174**		

$SCAR_t^p$ is the (portfolio) standardized cumulative abnormal return in year t.
$SCMAR_t^p$ is the (portfolio) standardized cumulative market adjusted return in year t.
ΔMFA_{it+1}^p is the difference between management forecast of parent-only earnings for firm i for year $t+1$ and actual earnings in year t.

** $p < 0.01$

Table 6: Summary Statistics for Portfolios
Partitioned on the Basis of
Different Measures of Unexpected Consolidated Earnings

Panel A: Rank Correlations and Portfolio Means for the Full Sample
(N=1,300)

	$MFUE_t^c$			$RWUE_t^p$		
Portfolio #	UE_t^c (×100) (1)	$SCAR_t^c$ (-1,+1) (2)	$SCMAR_t^c$ (-1,+1) (3)	UE_t^c (×100) (4)	$SCAR_t^c$ (-1,+1) (5)	$SCMAR_t^c$ (-1,+1) (6)
1	3.59	0.251	0.229	7.73	- 0.099	0.119
2	0.95	- 0.283	- 0.125	1.81	0.071	0.066
3	0.44	- 0.047	- 0.036	0.97	0.132	- 0.015
4	0.18	0.097	- 0.054	0.53	0.191	0.060
5	0.00	- 0.392*	- 0.181	0.24	- 0.152	- 0.113
6	- 0.17	0.246	0.163	0.05	- 0.330*	- 0.207
7	- 0.50	0.005	- 0.119	- 0.25	- 0.119	- 0.115
8	- 1.01	- 0.001	- 0.025	- 0.81	0.224	0.092
9	- 1.83	0.071	- 0.001	- 1.85	- 0.111	- 0.074
10	- 6.66	- 0.242	- 0.157	- 6.78	- 0.119	-0.121
Rank Order Correlation		0.009	0.038		- 0.011	0.053

Table 6 continued

Panel B: Summary Statistics
for Portfolios from Sample without Negative Consolidated Earnings
(N=1,190)

	$MFUE_t^c$			$RWUE_t^c$		
	Mean	Median		Mean	Median	
Portfolio #	UE_t^c (×100) (1)	$SCAR_t^c$ (0,+4) (2)	$SCMAR_t^c$ (0,+4) (3)	UE_t^c (×100) (4)	$SCAR^c$ (0,+4) (5)	$SCMAR^c$ (0,+4) (6)
1	3.77	0. 133	- 0.086	7.62	- 0.461	- 0.130*
2	1.04	- 0.167	0.002	1.85	- 0.080	- 0.042
3	0.50	0.018	- 0.094	1.02	0.236	- 0.034
4	0.24	- 0.048	- 0.113	0.57	- 0.048	- 0.132
5	0.06	- 0.326	- 0 .143	0.30	- 0.007	- 0.131
6	- 0.09	- 0.078	- 0.180	0.10	- 0.063	- 0.314
7	- 0.31	- 0.200	- 0.197	- 0.11	- 0.191	- 0.157
8	- 0.71	- 0.352	- 0.327	- 0.54	- 0.324	- 0.321
9	- 1.34	0.030	- 0.212	- 1.28	- 0.320	- 0.208
10	- 3.33	- 0.439	- 0.156	- 3.68	- 0.273	- 0.221
Rank Order Correlation		0.040	0.075**		0.009	0.058*

$MFUE_t^c$ is the difference between actual and management forecast of consolidated earnings divided by price at time $s-5$.
$RWUE_t^c$ is the difference between actual and last year's actual consolidated earnings divided by price at time $s-5$.
$SCAR_t^c$ is the standardized cumulative abnormal return for year t.
$SCMAR_t^c$ is the standardized cumulative market adjusted return for year t.

* $p < 0.05$ ** $p < 0.01$

Table 7: χ^2 Statistics for the 2×2 Frequency Distributions of Portfolios Based on the Signs of Unexpected Earnings and Unexpected Returns

Unexpected Earnings Measure	Unexpected Return Measure $SCAR^c_{it}$	$SCMAR^c_{it}$
$MFUE^c_{it}$	4.25 (0.04)	2.84 (0.09)
$RWUE^c_{it}$	3.31 (0.07)	0.64 (0.43)

Numbers in parentheses represent probabilities.

$MFUE^c_{it}$ is the difference between actual and management forecast of parent-only earnings for firm i and year t.
$RWUE^c_{it}$ is the difference between actual (in year t) and last year's actual parent-only earnings for firm$i$ and year t.
$SCAR^c_{it}$ is the standardized cumulative abnormal return for form i and year t.
$SCMAR^c_{it}$ is the standardized cumulative market adjusted return for firm i and year t.

Table 8 Medians and Rank Correlations of Adjusted Returns for Portfolios based on Unexpected Earnings and the Management Forecast of Changes in Next Period Earnings Consolidated (N=1,190)

Panel A: Management Forecast of Unexpected Earnings

Portfolio #	$SCAR_t^c$ (0,+4) ΔMFA_{it+1}^c Negative (1)	Positive (2)	Difference (2)–(1)	$SCMAR_t^c$ (0,+4) ΔMFA_{it+1}^c Negative (3)	Positive (4)	Difference (4)–(3)
1	- 0.080	0.288	0.368	- 0.143	- 0.072	0.071
2	- 0.391	0.182	0.573	- 0.058	0.023	0.081
3	- 0.225	0.020	0.245	- 0.019	- 0.103	- 0.084
4	- 0.516	0.008	0.524	- 0.142	- 0.058	0.084
5	- 0.601	0.049	0.650	- 0.322	- 0.116	0.206
6	- 0.310	- 0.002	0.308	- 0.150	- 0.183	- 0.033
7	0.525	- 0.376	- 0.901	0.131	- 0.300	- 0.431
8	- 0.460	- 0.337	0.123	- 0.348	- 0.327	0.021
9	- 0.339	0.180	0.519	- 0.450	- 0.199	0.251
10	- 0.779	- 0.289	0.490	- 0.657	- 0.126	0.531
Rank Order Correlation (with ΔMFA_{it+1}^c)	0.042			0.052		

Table 8 continued

Panel B: Random Walk Unexpected Earnings

Portfolio #	$SCAR_t^c$ (0,+4) ΔMFA_{it+1}^c negative (1)	positive (2)	Difference (2)–(1)	$SCMAR_t^c$ (0,+4) ΔMFA_{it+1}^c negative (3)	positive (4)	Difference (4)–(3)
1	- 0.578	0.157	0.735	- 0.277	- 0.048	0.223
2	- 0.467	0.091	0.558	- 0.100	0.008	0.108
3	- 0.194	0.330	0.524	- 0.142	- 0.034	0.118
4	0.109	- 0.122	- 0.231	- 0.070	- 0.137	- 0.067
5	- 0.109	0.054	0.163	- 0.251	- 0.130	0.120
6	- 0.522	- 0.052	0.470	- 0.362	- 0.313	0.049
7	- 0.020	- 0.191	- 0.171	0.248	- 0.343	- 0.591
8	- 0.038	- 0.352	- 0.314	- 0.289	- 0.357	- 0.068
9	- 0.518	- 0.142	0.376	- 0.322	- 0.208	0.114
10	- 0.588	- 0.153	0.435	- 0.411	- 0.144	0.267

$SCAR_t^c$ is the standardized cumulative abnormal return in year t.
$SCMAR_t^c$ is the standardized cumulative market adjusted return in year t.
ΔMFA_{it+1}^c is the difference between management forecast of consolidated earnings for firm i for year $t+1$ and actual earnings in year t.

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