Revenue Growth and Stock Returns

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Very Preliminary. Please do not circulate.

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Abstract

This paper examines the relation between revenue surprises and stock returns. It also investigates how the market updates its earnings expectations following announcements of revenue surprises. The results indicate that the stock price reaction on the earnings announcement date is significantly related to the magnitude of revenue surprises, after controlling for earnings surprises. I also find a significant relation between analyst forecast errors and revenue and earnings surprises. In addition, I find that analysts revise their forecasts of future earnings in response to revenue surprises. I also find significant abnormal returns in the post-announcement period for stocks that have large revenue surprises. Further examination of forecasts errors in the quarters after the earnings announcement quarter indicates that analysts are slow to incorporate the information in earnings and revenue surprises in the earnings forecasts.

The price of a stock is the present value of cash flows that accrue to its owner. This simple yet fundamental principle of finance indicates that what matters for stock valuation is bottom line earnings that eventually result in cash payouts, either in the form of dividends or share repurchases. However, in recent times investors and analysts are increasingly focusing not only on bottom line earnings, but also on top line revenues that firms generate. For example, on December 20, 2001, a company called American Healthways reported earnings for the first quarter of fiscal year 2002 that slightly beat analyst expectations but reported revenues that, according to analysts, was at the ``low end of the (expected) range." The stock price dropped by over 20 percent following the announcement of shortfall in the company's revenue growth, although it did not fall short of the earnings expectation for the quarter.

In many instances, investors also use the ratio of price to sales as a valuation indicator. This ratio gained popularity particularly in the nineties when there was a rapid growth in the number of companies that went public before generating positive earnings, and for these companies the commonly used measure of price-to-earnings were uninformative. Because of the increased investor focus on revenues, analysts surveyed by data vendors such as IBES and Zacks now provide sales forecasts in addition to earnings forecasts.

Why should unexpected changes in the top line matter for valuation? Of course, usually changes in revenues are associated with changes in earnings in the same direction. However, as in the American Healthways example, and as indicated by investor and analyst focus on the top line, revenue growth seems to matter for valuation beyond what is reflected in concurrent earnings. The valuation consequences of revenue surprises suggest that revenue growth provides incremental information about future earnings growth. Specifically, firms that experience strong earnings growth and strong revenue growth concurrently may exhibit faster earnings growth in the future than firms that exhibit similar levels of earnings growth but with no surprises or negative surprises on the revenue front. However, it is also possible that the market mistakenly focuses on revenues while what really matters is the bottom line. For example, in the past few years internet related companies such as Amazon.com experienced extraordinary price run ups following strong revenue growths although these revenue surprises were not

accompanied by matching increases in the bottom line. In hindsight, the implicit market expectations that future earnings growth will follow revenue growth turned out to be overly optimistic for these companies. Therefore, it is not clear whether the stock price reactions to revenue growth are attributable to the market rationally updating its priors about future earnings growth, or whether they are due to behavioral biases that lead to overly optimistic expectations about future earnings.

This paper examines the relation between revenue surprises and stock returns. It also investigates how the market updates its earnings expectations following announcements of revenue surprises. The results here indicate that the stock price reactions on the earnings announcement dates are significantly related to the magnitude of revenue surprises, after controlling for earnings surprises. I also find a significant relation between analyst forecast errors and revenue and earnings surprises. In addition, I find that analysts revise their forecasts of future earnings in response to revenue surprises. These results indicate that increases in earnings that are accompanied by increases in revenues lead to more persistent earnings growth than earning increases not accompanied by similar levels of sales growth.

This paper also examines the stock price performance in the period following the quarterly announcements of financial results. I find significant abnormal returns for stocks that have large revenue surprises. This evidence is similar to the post-announcement drift in prices following earnings surprises. I find that these abnormal returns cannot be explained by differences in risk.

Further examination of forecasts errors in the quarters after the earnings announcement quarter indicates that analysts are slow to incorporate the information in earnings and revenue surprises in the earnings forecasts. To the extent that analyst forecasts reflect market expectations, these results indicate that the abnormal returns following revenue surprises are related to delayed market reactions.

The rest of the paper is organized as follows. Section I presents the relation between revenue and earnings surprises and stock returns around earnings announcements. Section II examines how these surprises are related to analyst forecast errors and forecast revisions. Section III examines the post-announcement performance of firms classified based on earnings and revenue surprises. Section IV examines whether

differences in risk or delayed reactions can explain the post-announcement performance. Section V concludes the paper.

I. Revenue and Earnings Surprise and Announcement Date Stock Returns

A. Revenue and Earnings Surprise Measure

A large body of literature examines stock price response to earnings surprises. I follow this literature and use standardized unexpected earnings (SUE) as the measure of earnings surprise. SUE for firm i in quarter t is defined as:

$$SUE_{i,t} = \frac{Q_{i,t} - E(Q_{i,t})}{s_{i,t}},$$

where $Q_{i,t}$ is the quarterly earnings per share before special items and discontinued operations, $E(Q_{i,t})$ is the expected quarterly EPS prior to earnings announcement, and $s_{i,t}$ is the standard deviation of quarterly earnings.

I assume that $Q_{i,t}$ follows a seasonal random walk with drift. I estimate the drift $\partial_{i,t}$ as follows:

$$\partial_{i,t} = \frac{\sum_{1}^{8}(Q_{i,t-j} - Q_{i,t-j-4})}{8}, \text{ and}$$

$$E(Q_{i,t}) = Q_{i,t} + \partial_{i,t}.$$

I include only firms that had data to compute the past eight seasonal differences in quarterly earnings. Therefore, to be included in the sample, a firm should have a total of 12 quarterly earnings data.

Some of the earlier studies (e.g. Foster, Olsen and Shevlin (1984) and Bernard and Thomas (1989)) assume that the seasonal differences in quarterly EPS follow an AR(1) process to estimate the earnings expectations. However, Foster (1977) and Freeman and Tse (1989) find that announcement date returns are more highly correlated with forecast errors from the seasonal random walk model than with the forecast errors from a AR(1) model. Finally, I estimate $s_{i,t}$ using the first difference of quarterly earnings growth over the previous eight quarters.

I follow a similar procedure to measure revenue surprise. Specifically, I define standardized unexpected revenue growth (SURG) as:

$$SURG_{i,t} = \frac{\text{REV}_{i,t} - E(\text{REV}_{i,t})}{x_{i,t}},$$

where $\text{REV}_{i,t}$ is the quarterly revenue per share, and $E(\text{REV}_{i,t})$ is the expected quarterly revenue per share prior to earnings announcement, and $x_{i,t}$ is the standard deviation of REV. I assume that REV also follows a seasonal random walk and estimate its expectation and standard deviation in a manner similar to that for quarterly EPS.

B. Data and Results

I use COMPUSTAT for balance sheet and income statement data, and I also obtain earnings announcement dates from COMPUSTAT. I obtain returns data from CRSP. I exclude financials from the sample since the revenues of financial firms are not comparable with that of industrial firms. I also exclude utilities from the sample since their revenue growth are typically more predictable than that for the other industrial firms. The sample period is 1974 to 2000. I start the sample in 1974 since this was the first year when there were at least 1000 observations per quarter.

Table I presents the sample size across years. The sample size increases gradually from 4,317 firm-quarters in 1974 to 16,861 firm-quarters in 2000. There are a total of 252,484 firm-quarter observations in the sample. I classify firms with market capitalizations smaller than the NYSE median firm at the beginning of the calendar quarter prior to earnings announcement as small firms and the others as large firms. There are 186,192 firm-quarter observations for small firms and 66,292 firm-quarter observations for large firms.

Table 2 presents the correlations between SURG and SUE over the entire sample period, and over the 1974 to 1987 and 1988 to 2000 subperiods. I compute the correlation with pooled cross-section and time-series data. As can be expected, sales and earnings surprises are positively correlated and the correlation for the entire sample period is .305. The correlation in the first subperiod is somewhat larger than that in the second subperiod.

Table 2 also reports the correlations for low and high book-to-market firms, low and high sales-to-price firms and small and large firms. I use the book-to-market classification to examine if there are any systematic differences in stock price reactions to earnings and sales surprises for value and growth firms. Sales-to-price is also a measure of value and growth since the market price for a dollar of sales for growth firms is higher than that for value firms.[2] In the context of this paper, I partition firms on the basis of sales-to-price ratio since I am interested in investigating price reactions to surprises in sales growth.

Book-to-market ratio for each announcement date is the ratio of the book value of equity for that quarter divided by the market capitalization of equity at the end of the quarter. Although the book value data for the reporting quarter are not publicly available at the quarter end, they become available on the announcement date when I measure the price reactions. Sales-to-price is the ratio of rolling four-quarter sales ending with the announcement quarter, divided by a measure of "average" market capitalization over the year. I compute this average market capitalization as the product of the average number of shares outstanding over the previous 12 months as reported by COMPUSTAT and the price at the end of the quarter. To assign firms to high and low book-to-market and sales-to-price groups, I determine the sample median ratios in the calendar quarter prior to the announcement dates. Firms below the median are assigned to the "low" group and firms above the median are assigned to the "high" group. I use the median ratios during the prior calendar quarter rather than those during the contemporaneous calendar quarter because the complete data for the contemporaneous quarter will not be available at the time of the earnings announcements.

The average correlations between SURG and SUE fall in a narrow range between .281 for the high sales-to-price firms to .318 for the low sales-to-price firms. The correlations are lower in the second subperiod than in the first subperiod for all subsamples.

Table 3 presents abnormal stock returns within four-day earnings announcement windows for stocks classified based on SURG and SUE. The earnings announcement

[2] For example, the sales-to-price ratio for Microsoft is less than .1 and that for General Motors is over 5.

window is trading day *t*-2 to trading day t+1, where *t* is the earnings announcement date in COMPUSTAT. I compute the abnormal returns $AR_{i,t}$ as follows:

$$AR_{i,t} = \prod_{j=t-2}^{t+1}(1+R_{i,j}) - \prod_{j=t-2}^{t+1}(1+MR_{ij}),$$

where, R and MR are the raw stock return and return on the value-weighted market index, respectively.

I first rank stocks each calendar quarter based on SURG and assign them to five SURG groups labeled R1 through R5. The extreme groups R1 and R5 comprise the decile of stocks with the smallest and largest SURG, respectively. The intermediate groups R2, R3, and R4 comprise stocks in SURG deciles 2 and 3, SURG deciles 4 through 7, and SURG deciles 8 and 9, respectively. I obtain the decile cutoffs for each calendar quarter from the SURG distribution during the previous calendar quarter.

I then independently rank the stocks each calendar quarter based on SUE and assign them to five SUE groups labeled E1 through E5. The intersections of the SURG and SUE groups yield a total of twenty-five subsamples with various combinations of revenue and earnings surprises. R1|E1 is the lowest SURG and lowest SUE group, and R5|E5 is the highest SURG and highest SUE group.

Table 3 presents the average announcement window abnormal returns. To compute the standard errors to assess the statistical significance, I follow a procedure similar to that in Jegadeesh (2000). Since several earnings announcements are made within any announcement window, the return observations in the sample are not independent. To take into account the cross-sectional dependence, I first compute the average abnormal return within each six-month period. The average abnormal return for each group is the weighted average of the abnormal returns for the six-month cohorts in the group, where the weights are proportional to the number of observations in the respective cohorts. Specifically,

$$\overline{AR} = \mathtt{w}\,\mathtt{A},$$

where,

$\overline{AR}$: Average abnormal return

$\mathtt{w}$: Vector of weights where the i^{th} element is the ratio of the number of observations in

period i divided by the total number of observations over the sample period

A: Vector of average abnormal return where each element A_i is the average abnormal return for the i^{th} six-month cohort.

The variance of $\overline{AR}$ is given by:

$$\text{Var}(\overline{AR}) = w V_A w,$$

where V_A is the variance covariance matrix of A. Since the return measurement intervals do not overlap, the off diagonal elements of V_A and the estimates for the diagonal elements are $(A_i - \overline{AR})^2$.

The announcement window returns are monotonically related to both SURG and SUE. The returns for R1 and R5 are -1.07% and 2.16%, respectively, and the returns for E1 and E5 are -1.95% and 2.75, respectively. The difference in abnormal returns between the extreme SUE groups is larger than that between the extreme SURG groups. However, both SURG and SUE contain incremental information relative to one another since returns increase monotonically across SURG groups within each SUE group and also across the SUE groups within each SURG group.

Interestingly, the even high SURG stocks earn negative abnormal returns in the low SUE groups. In contrast, high SUE stocks earn significantly positive abnormal returns in the low SURG groups. These results indicate that investors receive positive earnings news favorably even in conjunction with poor sales performance, but positive sales performance is received with disappointment if the benefits do not contemporaneously flow through to the bottom line.

Panels A and B of Table 3 present the results for the two subperiods. The subperiod results are by and large similar to that in the full sample period. However, the price reactions for firms with positive revenue and earnings surprises are significantly larger in the second subperiod than in the first subperiod. For example, the average abnormal return for the R1|E1 group is 3.12% in the first subperiod compared with 5.47% in the second subperiod.

Panel A of Table 4 presents the difference in abnormal returns between the extreme SURG groups within each SUE group and Panel B presents this difference between extreme SUE groups within each SURG group. For all SURG and SUE groups,

the abnormal returns for the positive surprises groups are significantly larger than that for the negative surprises groups. Therefore, both sales and earnings surprises provide incremental information to the market.

To provide a different perspective on the information content of sales and earnings surprises, I estimate the following regression:

$$\text{Model 1: } \text{AR}_{i,t} = a + b * SURG_{it} + c * SUE_{i,t} + e_{i,t}.$$

In this model, the slope coefficients *b* and *c* are the sales and earnings response coefficients, respectively.

I follow the Fama-MacBeth procedure and fit the regression within each six-month period and I compute the *t*-statistics using the time-series standard deviations of the coefficients. Table 5 presents the time-series averages of the regression coefficients. Both SURG and SUE coefficients are reliably positive over the entire sample period. The SUE coefficient, however, is more than three times as large as the SURG coefficient, which indicates that the market attaches much more significance to the bottom line growth than the top line growth. The SUE coefficient is fairly stable across subperiods, but the SURG coefficient is larger in the second subperiod than in the first subperiod. Perhaps SURG has more incremental information in the second subperiod because the correlation between SURG and SUE is smaller in this subperiod.

Table 5 also presents the sales and earnings response coefficients for the subsamples. Interestingly, both sales and earnings response coefficients are larger for value stocks than for growth stocks, both when the samples are classified based on book-to-market and sales-to-price. The difference across sales-to-book based subsamples is particularly striking. The SURG coefficients for the low and high sales-to-price groups are .0027 and .0046, and the corresponding SUE coefficients are .0074 ad .0153, respectively. This finding appears puzzling at first sight since, intuitively, one would expect earnings surprises for the growth firms to be capitalized with larger multiples and hence result in larger price impact. But since the earnings per share surprises are normalized by the standard deviation, larger SURG and SUE does not necessarily imply larger dollar surprises.

These results, however, have an interesting implication. A part of earnings surprise is known to have a permanent impact on future earnings, while a part of the

surprise is temporary (see for example Collins and Kothari (1989)). Similarly, it is likely that only a part of the revenue surprise is permanent. The price impact of earnings surprises increases with the fraction of the earnings surprise that is permanent. The results in this table indicate that the permanent component of revenue and earnings surprises are expected to be larger for value firms than for growth firms, particularly when the classification is based on price-to-sales ratio.

The sales and earnings response coefficients are larger for small firms than for large firms. One explanation for the larger coefficient for the small firms may be that the permanent component of surprises is larger for them. However, in the case of the market capitalization based classification, a more likely explanation is that there is less information content in earnings announcement for large firms simply because more information is produced in the market for these firms. Therefore, SURG and SUE may not accurately measure the relative magnitudes of surprises for small and large firms.

Model 1 assumes that SURG and SUE have independent effect on prices. I consider a second model to investigate the importance of interactions between SURG and SUE. This model is specified as follows:

$$\text{Model 2: } AR_{i,t} = a + b * SURG_{it} + g * SUE_{i,t} + q * D_{i,t}^{high} + f * D_{i,t}^{low} + e_{i,t},$$

where,

D^{high} = 1 if SURG > 0 and SUE > 0,

= 0 otherwise

D^{low} = 1 if SURG < 0 and SUE < 0,

= 0 otherwise

Table 5 presents the estimates of this regression as well. The slope coefficients are significant for both positive and negative interactions and the interaction terms significantly reduce the independent effects of both SURG and SUE. In other words, a given level of earnings surprise creates a larger price impact if it is accompanied by revenue surprise in the same direction. This result implies that when earnings surprise is driven by revenue growth rather than by increase in the net margin, the permanent component of earnings surprise will be larger than otherwise. As with SURG, the interaction effects are larger in the second subperiod than in the first subperiod. The message from the subsample regressions is similar to that from the results of Model 1.

Specifically, value firms experience a larger price response to the interaction terms than growth firms and small firms experience a larger price response than large firms.

II. Forecast Error and Forecast Revisions

A. Forecast Error

The results so far indicate that revenue surprises provide value relevant information to the market. Since the value of any top line surprises has to eventually flow through the bottom line, the findings in the last section indicate that SURG is correlated with both current and future earnings surprises. This section uses analyst forecast error as a measure of contemporaneous earnings surprise and examines the relation between SURG and SUE, and analyst forecast errors.

For several reasons, analyst forecast is a better measure of earnings expectations than the estimate of $E(Q_{i,t})$ used in the last section. First, analyst forecasts are not constrained by any particular time series model for earnings. Secondly, the information in the history of earnings is only a subset of the information that analysts use to arrive at their forecasts. Thirdly, analysts update their forecasts periodically, and hence they will be able to capture information that reaches the market after the last earnings announcement.

However, I choose to use the time series model to estimate $E(Q_{i,t})$ in the last section for two reasons. First, analyst forecasts of earnings are available only from 1984, while I cover a much longer sample period using the time-series estimate. Also, the revenue expectations in the last section are formed based on information up to the previous quarter. Since I am interested in examining the incremental information provided by revenue surprises relative to the information in earnings surprises, it seems appropriate to use information up to the same point in time for both earnings and revenues.[3]

I use IBES summary earnings forecast data to obtain consensus analyst forecasts. Since the IBES data are available only from 1984, the sample period for the sections that use these data are from 1984 to 2000.

[3] It possible to use analyst forecasts of revenues as proxies for market expectations. However, use of this proxy would further shorten the sample period since IBES revenue forecasts are available only from 1999.

I examine the relation between analyst forecast error and SURG and SUE using the following regression model:

$$\text{FE Model}: FE_{i,t} = C_0 + C_1 * SURG_{i,t} + C_2 * SUE_{i,t} + e_{i,t},$$

where, $FE_{i,t} = \frac{100 \times [Q_{i,t} - FA_{t-\partial}(Q_{i,t})]}{P_{i,t-\partial}}$, $FA_{t-\partial}(Q_{i,t})$ is the last consensus forecast of $Q_{i,t}$ prior to the earnings announcement and $P_{i,t-\partial}$ is the price on the date of the forecast. IBES provides monthly consensus forecasts as of the third Wednesday of each month. Therefore, the latest consensus forecast is as of the IBES date rather than as of the day prior to announcement. To identify the latest forecast date, I search up to two months prior to the announcement and chose the latest consensus forecast. I exclude the observation if no consensus forecast is available within this two-month window.

Table 6 presents the regressions estimates. As before, I fit the cross-sectional regressions every quarter and report the mean regression estimates. Both SURG and SUE are significantly related to analyst forecast errors. However, the SUE coefficient is larger, which is not entirely surprising since $Q_{i,t}$ enter the computation of SUE and forecast errors and analysts likely use the information in the history of earnings in their forecasts.

Both SURG and SUE coefficients are larger for value firms than for growth firms. This result is fairly intuitive since forecast errors on the left hand side are normalized by prices, and value firms trade at lower price to earnings multiples. The small firm coefficients are larger than the large firm coefficients. In fact, the SURG coefficient for large firms is not significant. These results also confirm that there is less information content in earnings announcements for large firms than for small firms.

B. Forecast Revisions

The magnitude of price reactions at the time of earnings announcements for firms with extreme earnings surprises are typically several times larger than the magnitude of dollar surprises in earnings. Therefore, much of the price reactions for these firms are due to changes in expectations about future earnings. Similarly, the evidence that SURG contains value relevant information indicates that the market uses revenue surprises to update expectations of future earnings.

Here again, I use analyst forecasts as proxies for market expectations of future quarterly earnings. I use the following regression model to examine how analysts use the information in SUE and SURG to revise their forecasts:

$$\text{FR Model}: FR_{i,t+t} = j_{0,t} + j_{1,t} * SURG_{it} + j_{2,t} * SUE_{i,t} + e_{i,t},$$

where, $FR_{i,t} = \frac{100 \times [FA_{t+\partial}(Q_{i,t+t}) - FA_{t-\partial}(Q_{i,t+t})]}{P_{i,t-\partial}}$, $FA_{t-\partial}(Q_{i,t+t})$ is the last consensus forecast of $Q_{i,t+t}$ prior to the earnings announcement at time *t*, $FA_{t+\partial}(Q_{i,t+t})$ is the first consensus forecast of $Q_{i,t+t}$ after the earnings announcement, and $P_{i,t-\partial}$ is the price on the date of the earlier forecast date. To identify these forecast dates, I searched up to two months prior to the announcement date for the pre-announcement forecast, and two months after the announcement date for the post-announcement forecast. I exclude the observation if either no consensus forecast was available before or after the announcement, within this two-month window.

Quarterly earnings forecasts for up to six quarters ahead are available on IBES. However, as the forecast horizon increases, the number of firms for which forecasts are available decreases. The number of firms with five- and six-quarter ahead forecasts is fairly small. Therefore, I use only up to four-quarter ahead forecast data. Since I need forecasts both before and after earnings announcements to compute forecast revisions, I use up to three-quarter ahead revision data in the FR Model (i.e. $t = 1, 2 \text{ or } 3$).[4]

Table 6 presents the regressions results. Both SURG and SUE coefficients are significantly positive for all three forecast revisions. The SUE coefficients are larger than the SURG coefficients, indicating that earnings surprises are expected to have a more significant impact on future earnings than revenue surprises. These results also explain why high SURG firms with low SUE earn negative returns. In the long run, the negative effects of low SUE outweigh the positive effects of high SURG.

The slope coefficients decline as the forecast horizon increases. For example, the SURG coefficients for one-, two-, and three-quarter ahead forecast revisions are .0260, .0175 and .0085, and the SUE coefficients are .0437, .0283 and .0196, respectively. All of these coefficients are significantly smaller that the SURG and SUE coefficients in the

forecast error regression. The relative magnitudes of the SURG and SUE coefficients in the FE model and the FR model indicate that the market expects a large part of the bottom line impact of SURG and SUE to be temporary.[5]

The subsample results indicate that the SURG and SUE coefficients are generally larger for value firms than for growth firms. The only exception is for the three-quarter ahead forecast revisions for the book-to-market sample, where the point estimate of the SURG coefficient is larger for the low group than for the high group, but both of these coefficients are not reliably positive. The difference between the slope coefficients are more pronounced across the sales-to-price subsamples than across the book-to-market subsamples. These results indicate that the market expects a more permanent effect on earnings for a given level of SURG and SUE for value firms than for growth firms. This inference is also consistent with the findings in Table 4, where the value firms had larger sales and earnings response coefficients than the growth firms.

III. Post-announcement performance

The results so far indicate that stock prices respond positively to both revenue and earnings surprises. At least a part of the response to revenue surprises can be explained by the findings that higher revenues lead to expectations of increased earnings in the future. In recent times, however, such expectations were not met in practice by many technology and internet companies. Several internet related stocks such as Amazon.com and Pricline.com focused on increasing top line growth even while their losses increased, with the idea that increased revenues will eventually bring in increased earnings. Investors rewarded such aggressive sales growth with high prices for a while, but were eventually disappointed when strong revenues did not transform into strong cash flows. In these instances, the market was overly optimistic about the cash flow generating potential of aggressive sales. If the market has such overly optimistic expectations based on revenue growth, then we would expect that high SURG stocks will earn lower post announcement returns than low SURG stocks.

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[4] When $t = 3$, the forecast before the earnings announcement is a four-period ahead forecast and the forecast after earnings announcement is a three-period ahead forecast.

[5] Because of the seasonality in quarterly earnings, SURG and SUE may have a larger impact on the four-quarter ahead forecast revisions than on the forecast revisions for the earlier quarters.

It is possible, however, that the internet stock experience is an exception rather than the rule. In fact, a large body of literature suggests that the market underreacts, rather than overreacts, to information. Earnings momentum and price momentum are some examples of stock price underreaction. For instance, Latane and Jones (197?), Forster, et al. (1984), Bernard and Thomas (1989), and Chan, Jegadeesh and Lakonishok (1996) among others, examine the post-announcement performance of SUE portfolios, and find that the high SUE stocks significantly outperform low SUE stocks. Jegadeesh and Titman (1993, 2001), Rouenhurst (1998) and others find evidence that past winners outperform past losers. If the market also underreacts to the information in revenue surprises, then we would expect the high SURG firms to earn higher returns than the low SURG firms.

This section examines the post-announcement returns for SURG and SUE portfolios to investigate whether there are any systematic biases in market expectations. I use the SURG and SUE portfolios from the earlier section, and compute their returns over various horizons up to one year (252 trading days), starting from day t+2. If a stock in the sample is delisted before the end of the one-year post-announcement period, then the value of the position at the time of delisting is invested in the value-weighted index from that point forward.

Figure 1 presents the returns for the SURG and SUE portfolios during the post-announcement period. The high SURG portfolios earn positive abnormal returns over the entire post-announcement period, while the low SURG portfolio earns negative abnormal returns. The results for the post-announcement performance for various SUE portfolios confirm the evidence in the extant literature. The abnormal returns for the high SURG portfolios are fairly close to those for the high SUE portfolios. However, the low SUE portfolios perform worse than the low SURG portfolios. The high SURG-high SUE portfolio earns about 2% larger returns that the high SUE and the high SURG portfolios in the first six months after announcement. The post announcement abnormal returns for the SURG and the SUE portfolios increase over the first six months and then roughly level off. Chan et al. (1996) also find that the SUE portfolios earn abnormal returns mostly over the first six months, and the performance of the SURG portfolios exhibits a similar pattern.

Table 7 presents the six-month post-announcement returns for various SUE and SURG portfolios. The high SURG portfolio earns 3.78% while the low SURG portfolio earns -2.92%, and both of these returns are reliably different from zero. The high and low SUE portfolios earn returns of -4.12% and 4.64% respectively.[6] The difference in returns across the extreme SUE portfolios is larger than that across the extreme SURG portfolios.

Because SURG and SUE are positively correlated, a part of the return differences across SURG portfolios is attributable to the SUE effect, and a part of the return difference across SUE portfolios is attributable to the SURG effect. To assess the incremental effects of SURG and SUE, Table 7 (Panel A) examines the return differences between the extreme SURG portfolios within the SUE groups. The return difference is the smallest for the low SUE group but they are about equal across the other SUE groups. All return differences here are significantly positive.

The SURG effect seems stronger in the second subperiod than in the first subperiod. For instance, the average return difference across the five SUE groups is 2.68% in the first subperiod compared with 5.51% in the second subperiod. The average return difference is larger for low book-to-market stocks than for high book-to-market stocks. However, the return difference is larger for high sales-to-price stocks than for low sales-to-price stocks. Therefore, there is no apparent difference in the SURG effect for value firms relative to growth firms.

The SURG effect is weak among large stocks. The return difference across the extreme portfolios is significant only for the middle SUE portfolio and the average return difference is only 1.31%. The large firm prices, therefore, appear to react efficiently to the information in SURG.

Table 7 (Panel B) presents the return differences between the extreme SUE portfolios within the SURG groups. The SUE results are by and large similar to the SURG results, although the magnitude of the SUE effect is larger than the SURG effect. For example, over the entire sample period, the average return difference across the SUE

[6] The return difference that I find between the extreme SUE portfolios is larger than that in Bernard and Thomas (1989). Bernard and Thomas's (1989) sample comprises only NYSE and AMEX firms while I also include Nasdaq firms in my sample. More small firms trade on the Nasdaq than on NYSE and AMEX, and the SUE effect is larger among small firms than among large firms.

portfolios is 7.26% while that across the SURG portfolios is 4.51%. Also, the SUE effect is significant for the large firms as well as for the small firms. However, the average return difference for the large firms is only 3.63% compared with that of 8.80% for the small firms.

To further examine the relation between post-announcement returns and SURG and SUE, I estimate the following regressions:

$$\text{Model 1 (6 - month)}: \ \text{AR(6)}_{i,t} = a + b * SURG_{it} + c * SUE_{i,t} + e_{i,t}, \text{ and}$$

$$\text{Model 2 (6 - month)}: \ \text{AR(6)}_{i,t} = a + b * SURG_{it} + g * SUE_{i,t} + q * D_{i,t}^{high} + f * D_{i,t}^{low} + e_{i,t},$$

where AR(6) is the stock return in excess of the market returns over the six-month period after earnings announcement date. Table 8 presents the regression estimates. The regression estimates generally convey the same message as the results in Table 7. The only important difference between the implications of the results in Tables 7 and 8 pertain to the relation between SURG and post-announcement returns for large firms. Although the incremental contribution of SURG in Table 7 is not statistically significant when the SUE groups are individually considered, the regression results for Model 1 (6-month) indicate that SURG is significant at the 10% level for the large firms.

IV. Forecast errors in future quarters- Portfolio Characteristics

The post-announcement performances of various portfolios indicate that the market underreacts to the information in SURG and SUE. However, it is possible that the high SURG and high SUE portfolios are systematically riskier than the low SURG and low SUE portfolios. Bernard and Thomas (1989) present a detailed evaluation of the relative merits of the risk and delayed reaction hypotheses in explaining the post-announcement performance of the SUE portfolios. That paper concludes that the performances of SUE portfolios are attributable to delayed reaction rather than to differences in their risks.

The first subsection here presents an analysis of the portfolio characteristics to examine whether differences in risk could potentially account for the return differences. The next subsection examines analyst forecast errors in the three quarters after earnings announcements to examine if analysts fully incorporate the information in SURG and SUE in their forecasts immediately after earnings announcements.

A. Portfolio Characteristics

The first measure of risk that I consider is CAPM betas. I estimate the beta of each stock using the market model regression over the 36-month period prior to the month of earnings announcement. I use the value-weighted index return as the market proxy. If returns data were not available for any month during the 36-month estimation period, I use the return for the corresponding size-decile portfolio for that month.

Table 10, Panel A, presents the average portfolio betas. The portfolio betas fall in a fairly narrow range between 1.00 and 1.14. The average beta for the low and high SURG portfolios are 1.07 and 1.05, respectively. The difference in betas is too small (and in the wrong direction) to account for any of the differences in abnormal returns. The fact that the betas do not systematically differ across the portfolios is perhaps not particularly surprising, since there is no reason to expect revenue or earnings surprises to be more concentrated in high or low beta stocks.

The distribution of betas across various portfolios indicates that adjusting for risk under the CAPM will not explain the differences in returns across the SURG portfolios or SUE portfolios. It is possible, however, that other sources of risk such as exposures to the book-to-market factor or the size factor in the Fama and French (1993) model may explain the differences in returns.

To asses whether these sources of risk may explain the return differences, I compute the average book-to-market and average size of the firms in SURG and SUE groups.[7] Table 10 (Panel B) presents the average book-to-market ratios. The average book-to-market ratios for the high and low SURG firms are .68 and .94, and these ratios for the high and low SUE firms are .73 and .89, respectively. These results indicate that the high SURG and high SUE firms are tilted more towards growth firms than the low SURG and low SUE firms. Since Fama and French (1993) and others find that value firms outperform growth firms, the differences in book-to-market ratios across the SURG and SUE groups are unlikely to explain the differences in their returns.

[7] Daniel and Titman (1996) show that stock returns are more closely related to stock the characteristics (book-to-market and size) than to the sensitivities to the Fama and French factors.

The results in this subsection indicate that differences in risk, either in the context of the CAPM or in the context of the Fama and French model, cannot explain the differences in returns across the SURG and SUE portfolios. Nevertheless, it is always possible that some sources of risk outside these models may explain the differences in returns. If the high SURG stocks and the high SUE stocks are indeed riskier than the low SURG stocks and the low SUE stocks, then they should be riskier both in the first and second six-month periods after earnings announcements. However, the high SURG and high SUE stocks outperform the low SURG and low SUE stocks only in the first six-month period. Therefore, it is unlikely that risk differences account for the superior performance of the high SURG and high SUE stocks relative to the low SURG and low SUE portfolios.

B. Forecast errors

This subsection investigates whether analysts incorporate the information in SURG and SUE when they revise their forecasts after earnings announcements. To do so, I identify the first consensus forecast on IBES after each earnings announcement date.[8] I then compute the forecast error relative to this forecast as follows:

$$FE_{i,t+t} = \frac{100 \times [Q_{i,t+t} - FA_t(Q_{i,t+t})]}{P_{i,t}},$$

where, $FA_t(Q_{i,t+t})$ is t-period ahead consensus forecast on the first IBES after the earnings announcement, and $P_{i,t}$ is the price on this date. I then fit the following regression model:

$$\text{FE(future) } FE_{i,t+t} = C_0 + C_1 * SURG_{it} + C_2 * SUE_{i,t} + e_{i,t}.$$

Table 11 reports the regression estimates. The regression estimates are all positive and generally significant for both SURG and SUE. However, there are two intriguing aspects of the results here. One is that the slope coefficients here are generally larger than the slope coefficients in the FR Model. The FR model measures the magnitude of forecast revisions after the earnings announcements, and FE (future) model

[8] In some instances, the first IBES date after the earnings announcement date contained forecasts for the fiscal quarter for which the earnings was just announced. To avoid potential biases due to IBES reporting

measures the forecast error relative to the revised forecasts. A comparison of the regression coefficients in Tables 6 and 11 indicates that the amount by which analysts revise their earnings forecast is less than half what they should have, given the ex-post relation between forecast errors and SUE and SURG.

The other intriguing aspect of the results here is that the slope coefficients in the FR model decrease with an increase in forecast horizon while those in the FE (future) model increase with the forecast horizon. These results imply that analysts expect the effect of SURG to be less important for more distant horizons. But perhaps due to earnings seasonality, SURG has a stronger effect on earnings more distant quarters (which are, however, closer to the next calendar quarter as quarter *t*) within the same one-year period.

These results indicate that analysts underreact to the information conveyed through earnings announcements. Specifically, they fail to fully take into account the effect of SURG and SUE for future earnings. To the extent that analyst forecasts reflect market expectations, these results indicate that the abnormal returns following revenue and earnings surprises are due to delayed market reactions.

VI. Conclusion

This paper finds that the stock price reactions on earnings announcement dates are significantly related to the magnitude of revenue surprises, after controlling for earnings surprises. I also find a significant relation between analyst forecast errors and revenue and earnings surprises. In addition, I find that analysts revise their forecasts of future earnings in response to revenue surprises. These results indicate that increases in earnings that are accompanied by increases in revenues lead to more persistent earnings growth than earnings increases not accompanied by similar levels of sales growth.

This paper also examines the stock price performance in the period following the quarterly announcements of financial results. I find significant abnormal returns for stocks that have large revenue surprises. This evidence is similar to the post-announcement drift in prices following earnings surprises. However, the relation between

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delays, I skipped these records and used data from the first IBES date when one-quarter ahead forecast was for the fiscal quarter next to the announcement quarter.

revenue surprises and post-announcement returns is weaker, and only marginally significant for large firms.

Further examination of forecasts errors in the quarters after the earnings announcement quarter indicates that analysts are slow to incorporate the information in earnings and revenue surprises in their earnings forecasts. To the extent that analyst forecasts reflect market expectations, these results indicate that the abnormal returns following revenue surprises are related to delayed market reactions.

A natural question that arises is whether the post-announcement drift following revenue surprises would allow for profitable trading strategies. After controlling for the effect of earnings surprises, the delayed reaction to revenue surprises results in a return difference of close to six percent for small stocks. The transaction costs for these stocks will likely be larger than this level of profits. Therefore, it is unlikely that a revenue surprise strategy in isolation will be profitable after transaction costs. However, a revenue surprise strategy will add value to other trading strategies, such as trading strategies based on earnings surprises. For example, stocks that have both positive revenue and earnings surprise earn larger returns than stocks that have only positive earnings surprises.

Table 1: Sample Size

This table presents the number of firm quarters in the sample over the 1974 to 2000 sample period. The sample comprises all firms on CRSP and COMPUSTAT with data available to compute revenue and earnings surprises, and book-to-market and sales-to-price ratios. The sample excludes all financials and utilities. ``Small'' firms are firms with market capitalization of equity smaller than the median NYSE firm, and ``Large'' firms are firms with market capitalization of equity larger than the median NYSE firm at the beginning of the quarter prior to the earnings announcement dates.

Year	Number of Firm-Quarters		
	All	Small	Large
1974	4317	2513	1804
1975	4240	2274	1966
1976	3908	2202	1706
1977	3955	2367	1588
1978	4560	2880	1680
1979	5498	3527	1971
1980	6394	4146	2248
1981	5971	4011	1960
1982	5623	3714	1909
1983	5453	3582	1871
1984	6148	4230	1918
1985	8800	6485	2315
1986	9622	7190	2432
1987	9832	7418	2414
1988	9563	7233	2330
1989	9970	7657	2313
1990	10449	8233	2216
1991	10678	8058	2620
1992	10857	8289	2568
1993	11261	8691	2570
1994	12019	9304	2715
1995	12643	9677	2966
1996	13783	10642	3141
1997	15411	11867	3544
1998	15743	12276	3467
1999	16403	12742	3661
2000	16861	12890	3971
All Years	252484	186192	66292

Table 2: Correlation between Revenue and Earnings Surprises

This table presents the correlation between earnings and revenue surprises. Low (high) book-to-market firms are firms with the book-to-market ratios below (above) the sample median. Low (high) sales-to-price firms are firms with the sales-to-price ratios below (above) the sample median. Small firms are firms with market capitalization of equity smaller than the median NYSE firm, and Large firms are firms with market capitalization of equity larger than the median NYSE firm at the beginning of the quarter prior to the earnings announcement dates.

Sample		1974-2000	1974-1987	1988-2000
All		0.305	0.344	0.283
Book-to-Market	Low	0.307	0.343	0.286
	High	0.291	0.338	0.265
Sales-to-Price	Low	0.318	0.354	0.297
	High	0.281	0.327	0.256
Size	Small	0.310	0.356	0.287
	Large	0.282	0.317	0.257

Table 3: Earnings Announcement Window Returns

This table presents stock returns within four-day earnings announcement windows. The earnings announcement window comprises day -2 through day +1, where day 0 is the earnings announcement date recorded in COMPUSTAT. SURG is the revenue surprise measure and SUE is the earnings surprise measure. The extreme groups R1 and R5 comprise the decile of stocks with the smallest and largest SURG, respectively. The intermediate groups R2, R3, and R4 comprise stocks in SURG deciles 2 and 3, SURG deciles 4 through 7 and SURG deciles 8 and 9, respectively. A similar classification scheme is used for SUE groups E1 through E5. Average returns in bold face are significant at the one percent level.

Panel A: Sample period 1974 to 2000

		SUE						
		E1	E2	E3	E4	E5		Row Average
SURG	R1	**-2.27**	**-1.79**	**-0.37**	**1.03**	**0.92**		**-1.07**
	R2	**-2.29**	**-1.44**	-0.16	**1.18**	**1.72**		**-0.59**
	R3	**-1.79**	**-1.17**	**0.18**	**1.75**	**2.12**		**0.21**
	R4	**-1.21**	**-0.78**	**0.78**	**2.25**	**3.09**		**1.26**
	R5	**-1.04**	-0.20	**1.42**	**2.92**	**3.89**		**2.16**
	Column Average	**-1.95**	**-1.24**	**0.28**	**1.97**	**2.75**		0.06

Panel B: Sample period 1974 to 1987

		SUE						
		E1	E2	E3	E4	E5		Row Average
SURG	R1	**-2.22**	**-1.83**	**-0.91**	0.27	0.58		**-1.34**
	R2	**-2.35**	**-1.71**	**-0.42**	**0.69**	**0.97**		**-0.84**
	R3	**-1.82**	**-1.31**	-0.12	**1.08**	**1.57**		-0.08
	R4	**-0.97**	**-0.85**	**0.35**	**1.49**	**2.35**		**0.83**
	R5	**-1.21**	-0.13	**1.04**	**2.28**	**3.12**		**1.75**
	Column Average	**-1.93**	**-1.37**	**-0.03**	**1.33**	**2.16**		

Panel C: Sample period 1988 to 2000

		SUE						
		E1	E2	E3	E4	E5		Row Average
SURG	R1	**-2.32**	**-1.76**	0.03	**1.66**	**1.19**		**-0.85**
	R2	**-2.25**	**-1.18**	0.07	**1.67**	**2.53**		**-0.35**
	R3	**-1.76**	**-1.04**	**0.47**	**2.47**	**2.79**		**0.50**
	R4	**-1.43**	**-0.71**	**1.26**	**3.24**	**4.18**		**1.78**
	R5	**-0.82**	-0.30	**1.9**	**3.92**	**5.47**		**2.80**
	Column Average	**-1.97**	**-1.12**	**0.59**	**2.72**	**3.59**		

Table 4: Earnings Announcement Window Returns - Incremental Effect of Revenue and Earnings Surprises

This table presents the difference between the earnings announcement window returns for extreme revenue surprise (SURG) and earnings surprise (SUE) portfolios. The earnings announcement window comprises day -2 through day +1, where day 0 is the earnings announcement date recorded in COMPUSTAT. The extreme groups R1 and R5 comprise the decile of stocks with the smallest and largest SURG, respectively. The intermediate groups R2, R3, and R4 comprise stocks in SURG deciles 2 and 3, SURG deciles 4 through 7 and SURG deciles 8 and 9, respectively. A similar classification scheme is used for SUE groups E1 through E5. Portfolios labeled R*|E* indicate equal weighted portfolios of stocks in the intersection of the respective SURG and SUE groups. The column ``Row Weighted Average" represents the weighted average returns across various portfolios in the row where the weights are proportional to the number of stocks in the portfolios. Average returns in bold face are significant at the one percent level.

Panel A: Incremental Effect of Revenue Surprise

Sample		Period	R5|E1-R1|E1	R5|E2-R1|E2	R5|E3-R1|E3	R5|E4-R1|E4	R5|E5-R1|E5
All Firms		1974-2000	**1.23**	**1.59**	**1.79**	**1.88**	**2.98**
		1974-1987	0.33	0.33	**1.20**	**0.91**	**2.44**
		1988-2000	**1.58**	**2.20**	**2.05**	**2.37**	**3.28**
Book-to-Market	Low	1974-2000	**1.00**	**1.70**	**1.95**	**2.01**	**2.54**
	High	1974-2000	**1.50**	**1.46**	**1.87**	**2.26**	**4.29**
Sales-to-Price	Low	1974-2000	**0.83**	**1.20**	**1.64**	**1.99**	**2.10**
	High	1974-2000	**1.63**	**1.93**	**2.07**	**2.43**	**4.80**
Market Cap	Small	1974-2000	**1.61**	**1.95**	**2.19**	**2.29**	**4.02**
	Large	1974-2000	-0.03	0.36	**0.83**	**1.26**	**1.28**

Panel B: Incremental Effect of Earnings Surprise

Sample		Period	R1|E5-R1|E1	R2|E5-R2|E1	R3|E5-R3|E1	R4|E5-R4|E1	R5|E5-R5|E1
All Firms		1974-2000	**3.19**	**4.01**	**3.91**	**4.30**	**4.94**
		1974-1987	**3.01**	**4.19**	**4.03**	**4.49**	**5.12**
		1988-2000	**3.28**	**3.98**	**3.85**	**4.26**	**4.98**
Book-to-Market	Low	1974-2000	**2.80**	**3.32**	**3.38**	**3.31**	**4.34**
	High	1974-2000	**3.50**	**4.78**	**4.55**	**5.61**	**6.29**
Sales-to-Price	Low	1974-2000	**2.72**	**3.02**	**2.81**	**3.06**	**3.99**
	High	1974-2000	**3.60**	**4.97**	**5.09**	**5.91**	**6.77**
Market Cap	Small	1974-2000	**3.61**	**4.87**	**4.70**	**5.32**	**6.02**
	Large	1974-2000	**1.78**	**1.62**	**1.84**	**2.07**	**3.09**

Table 5: Earnings Announcement Window Returns - Regression Results

The table examines the relation between stock returns and revenue and earnings surprises. It presents the estimates of the following regression moels:

$$\text{Model 1: } AR_{i,t} = a + b * SURG_{it} + c * SUE_{i,t} + e_{i,t}, \text{ and}$$

$$\text{Model 2: } AR_{i,t} = a + b * SURG_{it} + g * SUE_{i,t} + q * D_{i,t}^{high} + f * D_{i,t}^{low} + e_{i,t},$$

where AR is the stock return in excess of the market returns within the four-day earnings announcement windows. The earnings announcement window comprises day -2 through day +1, where day 0 is the earnings announcement date recorded in COMPUSTAT. SURG is the revenue surprise measure and SUE is the earnings surprise measure.
D^{high} is a dummy variable that is 1 if both SURG and SUE are positive, and 0 otherwise, and D^{low} is a dummy variable that is 1 if both SURG and SUE are negative, and 0 otherwise. Low (high) book-to-market firms are firms with the book-to-market ratios below (above) the sample median. Low (high) sales-to-price firms are firms with the sales-to-price ratios below (above) the sample median. Firms are Low and high sales-to-price firms. Small firms are firms with market capitalization of equity smaller than the median NYSE firm, and Large firms are firms with market capitalization of equity larger than the median NYSE firm at the beginning of the quarter prior to the earnings announcement dates.

Sample		Period	Model (1)		Model (2)			
All Firms		1974-2000	.0032	.0107	.0009	.0082	.0093	-.0065
			(11.58)	(42.22)	(4.05)	(31.37)	(14.16)	(-10.72)
		1974-1987	.0017	.0108	.0000	.0089	.0070	-.0048
			(6.98)	(30.43)	(.03)	(26.24)	(8.41)	(-6.42)
		1988-2000	.0049	.0107	.0019	.0074	.0118	-.0083
			(18.71)	(29.31)	(6.93)	(21.60)	(15.27)	(-10.06)
Book-to-Market	Low	1974-2000	.0031	.0085	.0011	.0063	.0080	-.0065
			(10.31)	(34.68)	(4.06)	(22.09)	(11.19)	(-9.05)
	High	1974-2000	.0042	.0141	.0019	.0117	.0104	-.0042
			(10.87)	(35.25)	(5.93)	(29.69)	(9.16)	(-5.51)
Sales-to-Price	Low	1974-2000	.0027	.0074	.0011	.0057	.0070	-.0046
			(10.51)	(29.84)	(4.37)	(21.32)	(10.82)	(-6.73)
	High	1974-2000	.0046	.0153	.0019	.0124	.0115	-.0055
			(10.55)	(40.51)	(5.34)	(30.78)	(10.20)	(-6.31)
Market Cap	Small	1974-2000	.0042	.0140	.0018	.0114	.0094	-.0057
			(11.55)	(38.31)	(6.20)	(28.17)	(10.50)	(-7.73)
	Large	1974-2000	.0012	.0049	.0002	.0038	.0050	-.0023
			(6.28)	(18.16)	(.98)	(13.75)	(8.54)	(-3.69)

Table 6: Relation between Contemporaneous Analyst Forecast Errors and Forecast Revisions and Revenue and Earnings surprises

This table presents the estimates of regressions:

FE Model: $FE_{i,t} = C_0 + C_1 * SURG_{it} + C_2 * SUE_{i,t} + e_{i,t}$, and

FR Model: $FR_{i,t+t} = j_{0,t} + j_{1,t} * SURG_{it} + j_{2,t} * SUE_{i,t} + e_{i,t}$.

See text definitions of *FE* and *FR.* SURG is the revenue surprise measure and SUE is the earnings surprise measure. DP is a dummy variable that is 1 if both SURG and SUE are positive, and 0 otherwise. DN is a dummy variable that is 1 if both SURG and SUE are negative and 0 otherwise. Low (high) book-to-market firms are firms with the book-to-market ratios below (above) the sample median. Low (high) sales-to-price firms are firms with the sales-to-price ratios below (above) the sample median. Firms are Low and high sales-to-price firms. Small firms are firms with market capitalization of equity smaller than the median NYSE firm, and Large firms are firms with market capitalization of equity larger than the median NYSE firm at the beginning of the quarter prior to the earnings announcement dates.

Sample		Forecast Error (FE model)		Analyst Forecast Revisions (FR Model)					
				One Qtr Ahead		Two Qtrs Ahead		Three Qtrs Ahead	
		SURG	SUE	SURG	SUE	SURG	SUE	SURG	SUE
All firms		.1126	.5166	.0260	.0437	.0175	.0283	.0085	.0196
		(4.40)	(10.20)	(7.12)	(6.88)	(4.54)	(7.04)	(2.44)	(6.74)
Book-to-market	Low	.0578	.2951	.0130	.0278	.0110	.0164	.0053	.0125
		(3.82)	(8.66)	(3.35)	(5.78)	(3.33)	(4.68)	(1.73)	(3.99)
	High	.2463	.8042	.0360	.0648	.0179	.0419	.0042	.0335
		(3.17)	(10.38)	(3.49)	(5.35)	(1.87)	(3.99)	(.45)	(4.03)
Sales-to-Price	Low	.0786	.2341	.0098	.0278	.0067	.0150	.0029	.0120
		(4.52)	(7.22)	(2.23)	(5.41)	(3.34)	(5.54)	(1.27)	(3.74)
	High	.1584	.8800	.0476	.0584	.0319	.0430	.0188	.0293
		(3.17)	(10.02)	(5.81)	(4.78)	(3.53)	(6.09)	(2.40)	(5.21)
Market Cap	Small	.1599	.7055	.0328	.0529	.0223	.0361	.0106	.0241
		(4.00)	(10.02)	(4.70)	(4.59)	(3.62)	(6.21)	(1.89)	(5.82)
	Large	.0235	.1987	.0155	.0242	.0101	.0153	.0036	.0131
		(1.57)	(4.89)	(5.57)	(5.85)	(5.33)	(3.81)	(1.51)	(3.28)

Table 7: Post-announcement returns for revenue and earnings surprise portfolios

This table presents stock returns over the six-month period following earnings announcements. SURG is the revenue surprise measure and SUE is the earnings surprise measure. The extreme groups R1 and R5 comprise the decile of stocks with the smallest and largest SURG, respectively. The intermediate groups R2, R3, and R4 comprise stocks in SURG deciles 2 and 3, SURG deciles 4 through 7 and SURG deciles 8 and 9, respectively. A similar classification scheme is used for SUE groups E1 through E5. Average returns in **bold** face are significant at the one percent level, and returns in *italics* are significant at the five percent level. The Sample period is 1974 to 2000.

		SUE						
		E1	E2	E3	E4	E5		Row Average
SURG	R1	**-4.72**	**-4.60**	-1.31	-.55	1.34		**-2.92**
	R2	**-4.95**	**-2.54**	-.81	1.12	.54		-1.61
	R3	**-3.81**	*-2.19*	.34	**3.33**	**3.88**		.37
	R4	-2.14	-1.57	1.75	**3.60**	**5.89**		*2.30*
	R5	**-2.56**	1.56	**2.62**	**4.58**	**6.50**		**3.78**
	Column Average	**-4.12**	*-2.37*	.44	**3.14**	**4.64**		

Table 8: Post-Announcement Returns - Incremental Effect of Revenue and Earnings Surprises

This table presents the difference between the six-month returns after earnings announcements for extreme revenue surprise (SURG) and earnings surprise (SUE) portfolios. The extreme groups R1 and R5 comprise the decile of stocks with the smallest and largest SURG, respectively. The intermediate groups R2, R3, and R4 comprise stocks in SURG deciles 2 and 3, SURG deciles 4 through 7 and SURG deciles 8 and 9, respectively. A similar classification scheme is used for SUE groups E1 through E5. Portfolios labeled R*|E* indicate equal weighted portfolios of stocks in the intersection of the respective SURG and SUE groups. The column ``Row Weighted Average" represents the weighted average returns across various portfolios in the row where the weights are proportional to the number of stocks in the portfolios. Average returns in bold face are significant at the one percent level, and returns in *italics* are significant at the five percent level.

Panel A: Incremental Effect of Revenue Surprise

Sample		Period	R1|E5-R1|E1	R2|E5-R2|E1	R3|E5-R3|E1	R4|E5-R4|E1	R5|E5-R5|E1
All Firms		1974-2000	**2.16**	**6.16**	**3.93**	**5.13**	**5.16**
		1974-1987	1.62	**2.80**	**4.14**	**2.67**	**2.17**
		1988-2000	**2.54**	**8.36**	**3.90**	**6.32**	**6.42**
Book-to-Market	Low	1974-2000	**3.80**	**7.47**	**4.43**	**7.31**	**6.89**
	High	1974-2000	.48	**5.01**	**3.67**	**3.44**	**4.31**
Sales-to-Price	Low	1974-2000	**3.99**	**4.65**	**4.83**	**6.42**	**4.45**
	High	1974-2000	.29	**8.10**	**3.34**	**4.52**	**6.76**
Market Cap	Small	1974-2000	*2.22*	**7.59**	**4.42**	**7.19**	**7.15**
	Large	1974-2000	.58	*1.86*	**2.85**	-.19	1.45

Panel B: Incremental Effect of Earnings Surprise

Sample		Period	R1|E5-R1|E1	R2|E5-R2|E1	R3|E5-R3|E1	R4|E5-R4|E1	R5|E5-R5|E1
All Firms		1974-2000	**6.06**	**5.49**	**7.69**	**8.02**	**9.05**
		1974-1987	**8.33**	**8.90**	**8.75**	**7.05**	**8.88**
		1988-2000	5.24	**4.14**	**7.19**	**8.36**	**9.13**
Book-to-Market	Low	1974-2000	**4.96**	**5.24**	**7.19**	**8.35**	**8.04**
	High	1974-2000	**6.87**	**6.15**	**8.52**	**7.88**	**10.70**
Sales-to-Price	Low	1974-2000	**6.55**	**4.50**	**5.82**	**6.04**	**7.01**
	High	1974-2000	*5.59*	**6.50**	**9.63**	**10.40**	**12.06**
Market Cap	Small	1974-2000	**6.80**	**6.36**	**9.25**	**9.84**	**11.73**
	Large	1974-2000	3.36	**2.59**	**3.60**	**4.34**	**4.24**

Table 9: Post-Announcement Returns - Regression Results

The table examines the relation between stock returns over the six-month period following earnings announcement, and revenue and earnings surprises. It presents the estimates of the following regression moels:

$$\text{Model 1: } \text{AR(6)}_{i,t} = a + b * SURG_{it} + c * SUE_{i,t} + e_{i,t}, \text{ and}$$

$$\text{Model 2: } \text{AR(6)}_{i,t} = a + b * SURG_{it} + g * SUE_{i,t} + q * D_{i,t}^{high} + f * D_{i,t}^{low} + e_{i,t},$$

where AR(6) is the stock return in excess of the market returns over the six-month period after earnings announcement date. SURG is the revenue surprise measure and SUE is the earnings surprise measure.

D^{high} is a dummy variable that is 1 if both SURG and SUE are positive, and 0 otherwise, and D^{low} is a dummy variable that is 1 if both SURG and SUE are negative, and 0 otherwise. Low (high) book-to-market firms are firms with the book-to-market ratios below (above) the sample median. Low (high) sales-to-price firms are firms with the sales-to-price ratios below (above) the sample median. Firms are Low and high sales-to-price firms. Small firms are firms with market capitalization of equity smaller than the median NYSE firm, and Large firms are firms with market capitalization of equity larger than the median NYSE firm at the beginning of the quarter prior to the earnings announcement dates.

Sample		Period	Model (1)		Model (2)			
All Firms		1974-2000	.0085	.0173	.0053	.0135	.0113	-.0121
			(7.13)	(14.38)	(3.93)	(10.52)	(3.37)	(-4.75)
		1974-1987	.0063	.0190	.0041	.0159	.0063	-.0117
			(3.88)	(11.02)	(1.94)	(8.34)	(1.39)	(-3.31)
		1988-2000	.0108	.0155	.0065	.0110	.0166	-.0125
			(6.67)	(9.69)	(4.19)	(7.01)	(3.53)	(-3.41)
Book-to-Market	Low	1974-2000	.0100	.0150	.0067	.0111	.0143	-.0116
			(7.69)	(11.26)	(4.94)	(7.72)	(3.71)	(-3.52)
	High	1974-2000	.0084	.0216	.0063	.0192	.0062	-.0078
			(5.54)	(13.08)	(3.32)	(10.52)	(1.57)	(-2.29)
Sales-to-Price	Low	1974-2000	.0077	.0138	.0047	.0104	.0115	-.0112
			(6.38)	(10.74)	(3.48)	(7.43)	(2.89)	(-3.71)
	High	1974-2000	.0111	.0228	.0084	.0194	.0116	-.0081
			(6.64)	(13.94)	(4.38)	(10.55)	(2.91)	(-2.30)
Market Cap	Small	1974-2000	.0115	.0233	.0087	.0199	.0095	-.0100
			(7.23)	(17.44)	(4.85)	(12.53)	(2.38)	(-3.16)
	Large	1974-2000	.0023	.0074	.0011	.0057	.0063	-.0041
			(1.93)	(5.38)	(.77)	(4.09)	(1.63)	(-1.36)

Table 10: Portfolio Characteristics

This table presents the betas computed with respect to the CRSP value-weighted index, and the book-to-market ratio for revenue and earnings surprise portfolios. SURG is the revenue surprise measure and SUE is the earnings surprise measure. The extreme groups R1 and R5 comprise the decile of stocks with the smallest and largest SURG, respectively. The intermediate groups R2, R3, and R4 comprise stocks in SURG deciles 2 and 3, SURG deciles 4 through 7 and SURG deciles 8 and 9, respectively. A similar classification scheme is used for SUE groups E1 through E5.

Panel A: Average Betas

		SUE						
		E1	E2	E3	E4	E5		Row Average
SURG	R1	1.14	1.08	1.03	1.02	1.02		1.07
	R2	1.11	1.06	1.03	1.00	1.01		1.05
	R3	1.07	1.05	1.02	1.01	1.03		1.03
	R4	1.04	1.00	1.03	1.05	1.07		1.04
	R5	1.03	1.02	1.01	1.05	1.10		1.05
	Column Average	1.09	1.05	1.03	1.03	1.06		

Panel B: Average Book-to-Market Ratios

		SUE						
		E1	E2	E3	E4	E5		Row Average
SURG	R1	0.95	0.94	0.95	0.93	0.91		0.94
	R2	0.92	0.85	0.87	0.81	0.80		0.86
	R3	0.86	0.82	0.83	0.80	0.79		0.82
	R4	0.82	0.76	0.77	0.72	0.70		0.75
	R5	0.71	0.70	0.71	0.68	0.62		0.68
	Column Average	0.89	0.83	0.82	0.77	0.73		

Table 11: Relation between Future Forecast Errors and Revenue and Earnings Surprises.

This table presents the estimates of regressions:
$FE_{i,t+t} = C_{0,t} + C_{1,t} * SURG_{it} + C_{2,t} * SUE_{i,t} + e_{i,t,t}$,
where $FE_{i,t+t}$ is the forecast error for t-quarter ahead forecasts. SURG is the revenue surprise measure and SUE is the earnings surprise measure. DP is a dummy variable that is 1 if both SURG and SUE are positive, and 0 otherwise. DN is a dummy variable that is 1 if both SURG and SUE are negative and 0 otherwise. Low (high) book-to-market firms are firms with the book-to-market ratios below (above) the sample median. Low (high) sales-to-price firms are firms with the sales-to-price ratios below (above) the sample median. Firms are Low and high sales-to-price firms. Small firms are firms with market capitalization of equity smaller than the median NYSE firm, and Large firms are firms with market capitalization of equity larger than the median NYSE firm at the beginning of the quarter prior to the earnings announcement dates.

Sample		Forecast Error					
		One Qtr Ahead		Two Qtrs Ahead		Three Qtrs Ahead	
		SURG	SUE	SURG	SUE	SURG	SUE
All firms		.0456	.1508	.0942	.1670	.1406	.1889
		(2.98)	(7.19)	(5.86)	(6.33)	(4.77)	(8.17)
Book-to-market	Low	.0434	.0683	.0545	.1047	.1006	.0999
		(3.63)	(4.60)	(5.79)	(7.51)	(4.17)	(7.34)
	High	.0705	.2701	.1255	.2730	.1727	.2975
		(1.42)	(3.73)	(2.75)	(4.01)	(2.74)	(6.16)
Sales-to-Price	Low	.0616	.0601	.0449	.0945	.1106	.0915
		(3.74)	(5.34)	(5.40)	(7.12)	(3.06)	(5.59)
	High	.0335	.2667	.1466	.2656	.1720	.3089
		(.96)	(6.00)	(3.66)	(5.46)	(4.45)	(6.87)
Market Cap	Small	.0559	.2092	.1071	.2547	.1722	.2619
		(2.37)	(6.67)	(4.36)	(8.71)	(4.54)	(7.58)
	Large	.0167	.0666	.0422	.0110	.0769	.0816
		(1.16)	(3.52)	(2.31)	(.18)	(2.97)	(3.09)

Performance of Revenue and Earnings Surprise Portfolios (1974-2000)