

股息變動與年盈餘宣告的資訊效果

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摘要

本文探討在一有先後次序的揭露狀況下，股息變動是否有可能強化，而非減弱或掏空其後年盈餘宣告的資訊效果。當股息變動與前一年盈餘變動有相反的符號時，對公司的前景二者給予相衝突的信號。市場上對即將宣告的年盈餘，可能會有較分歧的看法。因此，在這種股息變動之後的盈餘宣告，應有特別明顯的資訊效果。本文的實證結果支持這種情況存在。因此，股息變動有可能模糊對盈餘的預期，而盈餘宣告有釐清的功能。

Dividend Changes and the Informativeness of Annual Earnings Reports

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Abstract

In a sequential release setting, this study examines the common belief that dividend changes preempt or diminish the informativeness of subsequent earnings reports. When a dividend change gives a signal which conflicts with the change in earnings of the preceding year, the market expectations regarding the upcoming annual earnings may become more diverse. As a result, the annual earnings report following the dividend change should become more informative. The results of this study confirm this possibility. Earnings reports, therefore, are capable of clarifying the confusion in the market regarding the upcoming earnings that is caused by certain dividend changes.

1. Introduction

This paper empirically investigates how dividend changes affect the price informativeness of annual earnings announcements in a sequential release setting. The purpose is to examine whether dividend changes preempt the information contained in earnings reports.¹ The common view is that dividends and earnings are information substitutes regarding the value of the firm, in the sense that the presence of one preempts or diminishes the informativeness of the other.² However, it has been well documented that the informativeness of a given earnings report depends on the precision or richness of prior information which affects the divergence of market expectations.³ It is therefore possible that an earnings report may become more informative than usual, conditional on a specific dividend change. The results of this paper support such a possibility: an annual earnings report is significantly more informative if the preceding dividend change has a sign that is different from the change in earnings of the preceding year.

Venkatash (1989) presents an interesting empirical setting whose results, in effect, motivate this study. Venkatash shows that price reactions to quarterly earnings announcements (measured by absolute raw returns) after dividend initiation are significantly smaller than those before dividend initiation. The author argues that the initiation of dividends creates an extra vehicle by which managers can communicate information with the market. With this additional vehicle, the reliance on earnings information is reduced, and price reactions to earnings announcements are smaller. In this sense, dividends and earnings are sub-

¹Earnings announcements and earnings reports are used interchangeably in this paper.

²For previous work relevant to the present study, see, for example, Miller and Rock (1985), Ofer and Siegel (1987), Brown, Choi, and Kim (1990), and Venkatash (1989).

³See Atiase (1985), Grant (1980), McNichols and Manegold (1983), and Lobo and Mahmoud (1989).

stitutes; dividends diminish the informativeness of earnings reports. However, earnings announcements after dividend initiation are still informative in Venkatesh's study. Dividends do not completely preempt the information conveyed by earnings reports.

One observation in Table 2 of Venkatesh (1989) deserves careful examination. Subsequent to dividend initiation, earnings announcements that follow dividend announcements tend to be more informative than those that precede dividend announcements. That is, earnings announced after dividends seem to have the ability of confirming the information in dividends. The present study further explores this special role of earnings.

According to Aharony and Swary (1980), only dividend announcements that contain changes in dividend payments are price informative. The present study follows this finding and focuses on dividend changes. There are two tests in this study. The weak test compares the informativeness of two contiguous annual earnings announcements made by the same firm. The first announcement is not preceded by a dividend change while the second one is. If a dividend change provides information about the value of the firm so precisely that it diminishes or preempts the informativeness of the following earnings report (as the substitute view suggests), the earnings report preceded by a dividend change should be less informative than the one which is not preceded by a dividend change.

The strong test further considers the consistency of the signals conveyed by dividends and earnings. In this test, the informativeness of an earnings report is assumed to be conditional not only on the existence or absence of a preceding dividend change, but also on the consistency of previous earnings and dividend signals. For a given annual earnings report that is preceded by a dividend change, if the dividend change gives the same signal as the prior year's earnings (for example, an earnings increase last year followed by a dividend increase, or vice versa), then the information content of that earnings report should

have been preempted and the report should be less informative. On the other hand, if preceding earnings and dividends give conflicting signals (for example, an earnings decrease followed by a dividend increase, or vice versa), then the earnings preceded by the dividend change may be more informative, relative to one that is not preceded by the dividend change. The latter case would exist if the conflicting signals conveyed by earnings and dividends cause more confusion (divergent expectations) about the firm's prospects.

In accounting literature, the variance of price changes has been widely used as the measure of the informativeness of earnings reports.⁴ Pertaining to this literature, Holthausen and Verrecchia (1988), in a sequential information release setting, show that the variance of price changes corresponding to an information release is an increasing function of the divergence of prior expectations. Choi (1986) reaches a similar conclusion in a capital asset pricing model. These theoretical results lay the foundation for both the weak and the strong tests.

2. Sample Procedures

The following criteria are used to identify firms whose dividend changes will be the focus of study:

1. A firm must have been a U.S. manufacturing firm whose common stock was traded on the NYSE during the fiscal years 1981 through 1985,
2. A firm must have paid quarterly cash dividends and have had an uninterrupted dividend history which could be obtained from the CRSP tapes, and
3. A firm's earnings announcement dates must be available on the Compustat tapes.

⁴For example, Beaver (1968), Patell (1976), Grant (1980), McNichols and Manegold (1983), Atiase (1985), Lobo and Mahmoud (1989), Swaminathan (1991), and Stice (1991).

For each of the firms that meet these criteria, a revolving two-year window defined by three consecutive annual earnings announcement dates is used from 1981 through 1985. A dividend change is included in the sample if it 1) sits in the second year of the window, 2) is the only dividend change in the window, and 3) does not involve a dividend initiation, stock split, or stock dividend.

The criteria applied to firms assure data availability. The requirements on dividend changes are for the specific empirical design of the study. The requirement that a dividend should not be accompanied by a dividend initiation, stock split, or stock dividend is necessary because this study is interested only in regular dividend changes. In addition, that requirement is necessary to avoid picking up the effects of multiple-period implication of a initiation, stock split, or stock dividend on earnings (Healy and Palepu 1988; Asquith, Healy, and Palepu 1989; Grinblatt, Masulis, and Titman 1984).

These criteria result in a sample of 112 dividend changes made by 112 firms. Among these dividend changes, 82 increase and 30 decrease cash dividend payments. The two-day market-adjusted returns are 0.0046 and -0.0341 for the dividend increase and decrease subsamples, respectively. The t-statistics for both numbers are significant at the 1% level (two-tail test).

In prior studies on the earnings-dividend relationship, quarterly information releases (changes in quarterly dividends and quarterly earnings announcements) have been used. This study uses annual earnings announcements instead. It is possible to argue that using quarterly earnings announcements is more appropriate because they are more timely. However, quarterly earnings figures have some drawbacks as an indicator of future prospects. Seasonality and postponement of adjustments until the fourth quarter (Kinney and McDaniel 1989) are two conspicuous examples. To the extent that quarterly earnings better capture the possible relationship with dividends, the tests in this study are biased toward not finding any result.

3. Testing Procedures

In the literature, Beaver's U, the ratio of the squared market model forecast error to the return variance, has been used to measure price informativeness of earnings reports.⁵ However, Marais (1984) has noted that the actual mean of U is unknown and the Z statistic based on U will be overstated when return forecast errors are leptokertic. As a result, the null hypothesis of no price reactions may be rejected more often than is warranted.

An alternative, offered by Stice (1991), is to use residuals rather than market model prediction errors. Cready (1992) demonstrates that the actual mean of the residuals is known, which gives this approach an edge over the Beaver's U. Accordingly, the method proposed by Stice (1991) and corrected by Cready (1992) is adopted in the study.

For each of the two years under investigation (0 and -1), the following procedures are used to test whether earnings reports on average are informative. First, 42 daily raw returns centering on the day annual earnings is reported (the COMPUSTAT announcement day as day -1) are retrieved from CRSP for each firm in the sample. Second, these 42 daily raw returns are combined into twenty one (21) 2-day raw returns. The 2-day raw return of the days -1 and 0, for example, will be combined as the return of the pseudo event-day 0. Third, the return residual is calculated as follows.

$$r_{it} \equiv R_{it} - \bar{R}_i, \quad (1)$$

where R_{it} is firm i 's 2-day raw return for day t ($t = -10$ to $+10$), and \bar{R}_i is the mean raw return of the period $t = -10$ to $t = 10$. Fourth, a standardized residual is calculated as

⁵See the previous note.

$$SR_{it} \equiv \frac{r_{it}}{(S_{R_i}^2)^{\frac{1}{2}}} \left(\frac{T-3}{T-1} \right)^{\frac{1}{2}}, \quad (2)$$

where $T=21$ and $S_{R_i}^2$ is the sample variance of firm i 's return. The sample mean of R_{it}^2 can be shown to be $(T-3)/T$. Fifth, the test statistic can be constructed:

$$Z_t = \frac{\sum_{i=1}^N (SR_{it}^2 - \overline{SR^2})}{[2N(T-2)/(T-5)]^{\frac{1}{2}}}, \quad (3)$$

Where N is the number of firms. Since the finite sample property of the test statistic Z_t is unknown, the significance level will be evaluated by the empirical distribution of Z_t . The method which generates the relevant empirical distribution employed in Stice (1991) will be adopted.

To test whether there is any difference in the informativeness of annual reports between year -1 and year 0 , the following test statistic will be used:

$$Z_0^{diff} = \frac{\sum_{i=1}^N (SR_{0io}^2 - SR_{-1io}^2)}{[4N(T-2)/(T-5)]^{\frac{1}{2}}}, \quad (4)$$

where the subscripts of SR^2 (0 and -1) denote year 0 and year -1 . Again, the significance level of the test statistic will be evaluated by the empirical distribution.

The following steps are used to generate the empirical distribution of Z_t :

1. For each pseudo-firm in the resampling process (112 in total), draw randomly with replacement 21 returns from the 2,352 (21 x 112) returns of the sample,
2. For each pseudo-firm calculate SR_{it}^2 ,
3. Randomly draw one from the 21 SR_{it}^2 of each and every pseudo-firm to calculate average SR_{it}^2 and Z_t ,
4. Repeat steps 1 to 3 1,000 times to generate the empirical distribution of Z_t ,

5. Use the empirical distribution of Z_t to evaluate the significance of the actual Z_t .

The following steps are used to generate the empirical distribution of Z_0^{diff} :

6. Steps 1 and 2 above are repeated for year 0 and -1 ,
7. Calculate the difference in SR_{it}^2 between year 0 and -1 ,
8. Randomly draw one from 21 ($SR_{0it}^2 - SR_{-1it}^2$) of each and every firm to calculate average ($SR_{0it}^2 - SR_{-1it}^2$) and Z_0^{diff} ,
9. Repeat steps 6 to 8 1,000 times to generate the empirical distribution of Z_0^{diff} ,
10. Use the empirical distribution to evaluate the significance level of the actual Z_0^{diff} .

4. Results and Discussion

Table 1 reports price adjustments to the annual earnings announcement preceding a dividend change. With the significance levels based both on the normal theory(NT) and on the empirical distribution(ED) of Z_t are reported. The p-values represent the probability of a value above the specific Z-value.

The average SR_{it}^2 of day 0, which supposedly captures the price adjustment triggered by the annual earnings announcement, has the greatest value in the 21-day observation window. The corresponding Z-value is significant at the 5% level under the normality assumption, and significant at the 2% level based on the empirical distribution. Therefore, the annual earnings announcement preceding a dividend change (more appropriately, the annual earnings announcement not preceded by a dividend change) is price-informative. Furthermore, the price adjustments are not significant at the same level in the surrounding days. It is thus reasonable to conclude that the price reactions in day 0 capture the information content of the annual earnings announcement.

Table 1
Price reactions to the annual earnings announcement
preceding a dividend change

| 2-day period | Average SR_t^2 | Z_t | NT | ED | | | |
|-----------------|---------------------|--------|---------|---------|-------|--------|--------|
| | | | p-value | p-value | Z_t | NT | ED |
| -10 | 0.971 | 0.781 | 0.217 | 0.127 | Mean | 0.000 | -0.313 |
| -9 | 0.794 | -0.431 | 0.667 | 0.534 | S.D. | 1.000 | 0.908 |
| -8 | 0.974 | 0.806 | 0.210 | 0.122 | | | |
| -7 | 0.994 | 0.934 | 0.174 | 0.098 | 1% | -2.326 | -2.230 |
| -6 | 0.759 | -0.671 | 0.749 | 0.622 | 5% | -1.645 | -1.737 |
| -5 | 1.002 | 0.992 | 0.161 | 0.089 | 25% | -0.674 | -0.970 |
| -4 | 0.805 | -0.357 | 0.639 | 0.493 | 50% | 0.000 | -0.284 |
| -3 | 0.700 | -1.076 | 0.859 | 0.790 | 75% | 0.678 | 0.284 |
| -2 | 0.722 | -0.925 | 0.823 | 0.728 | 95% | 1.645 | 1.256 |
| -1 | 0.971 | 0.783 | 0.217 | 0.127 | 99% | 2.326 | 1.826 |
| 0 | 1.103 | 1.685 | 0.046 | 0.017 | | | |
| 1 | 0.844 | -0.092 | 0.537 | 0.401 | | | |
| 2 | 0.759 | -0.672 | 0.749 | 0.622 | | | |
| 3 | 0.878 | 0.141 | 0.444 | 0.304 | | | |
| 4 | 0.875 | 0.122 | 0.452 | 0.316 | | | |
| 5 | 0.791 | -0.455 | 0.675 | 0.540 | | | |
| 6 | 0.811 | -0.318 | 0.625 | 0.479 | | | |
| 7 | 0.846 | -0.784 | 0.531 | 0.397 | | | |
| 8 | 0.869 | 0.083 | 0.467 | 0.324 | | | |
| 9 | 0.729 | -0.880 | 0.811 | 0.716 | | | |
| 10 | 0.803 | -0.375 | 0.646 | 0.505 | | | |

SR_t^2 , the adjusted squared abnormal return of pseudo-day t , measures the price reaction to an information release. *NT* stands for normal theory and *ED* for empirical distribution.

Table 2
Price reactions to the annual earnings announcement
following a dividend change

| 2-day period | SR_t^2 | Z_t | NT | ED | | | |
|-----------------|----------|--------|---------|---------|-------|--------|--------|
| | | | p-value | p-value | Z_t | NT | ED |
| -10 | 1.013 | 1.073 | 0.142 | 0.067 | Mean | 0.000 | -0.288 |
| -9 | 1.044 | 1.283 | 0.100 | 0.048 | S.D. | 1.000 | 0.913 |
| -8 | 0.830 | -0.189 | 0.575 | 0.437 | | | |
| -7 | 0.826 | -0.214 | 0.585 | 0.446 | 1% | -2.326 | -2.145 |
| -6 | 0.695 | -1.113 | 0.867 | 0.811 | 5% | -1.645 | -1.683 |
| -5 | 0.951 | 0.642 | 0.261 | 0.149 | 25% | -0.674 | -0.942 |
| -4 | 1.097 | 1.650 | 0.050 | 0.023 | 50% | 0.000 | -0.329 |
| -3 | 0.724 | -0.915 | 0.820 | 0.742 | 75% | 0.674 | 0.325 |
| -2 | 0.857 | 0.002 | 0.499 | 0.361 | 95% | 1.645 | 1.256 |
| -1 | 0.802 | -0.379 | 0.648 | 0.524 | 99% | 2.326 | 2.038 |
| 0 | 1.129 | 1.866 | 0.031 | 0.015 | | | |
| 1 | 0.997 | 0.963 | 0.168 | 0.082 | | | |
| 2 | 0.912 | 0.375 | 0.354 | 0.231 | | | |
| 3 | 0.633 | -1.541 | 0.938 | 0.919 | | | |
| 4 | 0.692 | -1.134 | 0.872 | 0.817 | | | |
| 5 | 0.890 | 0.223 | 0.412 | 0.290 | | | |
| 6 | 0.717 | -0.961 | 0.832 | 0.756 | | | |
| 7 | 0.729 | -0.877 | 0.810 | 0.723 | | | |
| 8 | 0.720 | -0.941 | 0.827 | 0.749 | | | |
| 9 | 0.930 | 0.500 | 0.309 | 0.192 | | | |
| 10 | 0.812 | 0.313 | 0.623 | 0.495 | | | |

SR_t^2 , the adjusted squared abnormal return of pseudo-day t , measures the price reaction to an information release. *NT* stands for normal theory and *ED* for empirical distribution.

Table 2 reports the price adjustments to the annual earnings announcement following a dividend change. The average SR_t^2 of day 0 again has the greatest value in the 21-day observation window. The corresponding Z-statistic is significant at the 4% level under the normality assumption, and significant at the 2% level based on the empirical distribution. Therefore, the annual earnings announcement following a dividend change is also price-informative. Similarly, because the price adjustments in the days surrounding day 0 are not significant at the same level, the price adjustments in day 0 apparently capture the information content of the annual earnings announcement.

The next step is to compare the price informativeness of annual earnings reports. The price adjustments to the annual earnings announcement following a dividend change are compared with the price adjustments for the same firms to their annual earnings announcement preceding the dividend change. The results are reported in table 3. For the whole sample the average difference is 0.026, which is not significant at traditional levels. Statistically, this result indicates that the informativeness of annual earnings does not depend on dividend changes. This is inconsistent with the prediction of the "substitute view" of dividends and earnings. The weak test thus indicates that dividends and earnings are not substitutes.

The results of the strong test are reported in table 3. Seventy (70) of the 112 observations in the sample have consistent pre-announcement earnings and dividend signals (an increase in earnings followed by a dividend increase or a decrease in earnings followed by a dividend decrease). The other 42 observations have conflicting pre-announcement earnings and dividend signals (an increase in earnings followed by a dividend decrease or a decrease in earnings followed by a dividend increase).⁶ For the subsample of consistent signals, the average difference

⁶Among the earnings changes of year 0, 96 have the same sign as the preceding dividend change and only 16 have the opposite sign.

in price adjustments is negative (-0.094), consistent with the prediction of the substitute view. However, the Z-statistic is insignificant.

Table 3
Difference in the price reactions to annual earnings announcements between year 0 and year -1

Panel A

| | <i>N</i> | Average $SR_{0i0}^2 - SR_{-1i0}^2$ | Z_0^{diff} | <i>NT</i> p-value | <i>ED</i> p-value |
|----------------------|----------|---------------------------------------|--------------|----------------------|----------------------|
| Whole Sample | 112 | 0.026 | 0.128 | 0.551 | 0.246 |
| Consistent Signals | 70 | -0.094 | -0.458 | 0.677 | 0.447 |
| Inconsistent Signals | 42 | 0.228 | 1.105 | 0.135 | 0.058 |

Panel B

| Z_0^{diff} | <i>NT</i> | <i>ED</i> |
|--------------------|-----------|-----------|
| Mean | 0.000 | -0.777 |
| Standard Deviation | 1.000 | 1.400 |
| 1% | -2.326 | -4.842 |
| 5% | -1.645 | -3.141 |
| 25% | -0.674 | -1.550 |
| 50% | 0.000 | -0.617 |
| 75% | 0.674 | 0.110 |
| 95% | 1.645 | 1.185 |
| 99% | 2.326 | 1.929 |

Year -1 refers to the year whose earnings is announced prior to the dividend change. Year 0 refers to the year whose earnings is announced after the dividend change. Average $SR_{0i0}^2 - SR_{-1i0}^2$ measures the difference in the price reactions to the earnings announcements between year 0 and year -1. *NT* stands for normal theory and *ED* for empirical distribution.

For the subsample of inconsistent earnings and dividend signals, the average difference in price adjustments is positive (0.228). The corresponding Z-statistic is significant at the 6% level based on the empirical distribution. This result is by no means consistent with the substitute view. Instead, it is consistent with the view that, when dividend changes give a signal that conflicts with the preceding earnings, confusion regarding the value of the firm arises and calls for clarification by the following earnings announcement. Admittedly, this result is not overwhelming.

A diagnostic test follows. It is likely that the timing of dividend change announcements is not random. Dividend changes announced late in the year may cause more confusion that needs clarification from subsequent earnings, relative to those announced earlier in the year. If this is the case, then the result reported in table 3 for inconsistent signals may pick up this timing effect. To examine this possibility, the timing of dividend change announcements is first studied.

In table 4, the variable LEAD represents the number of trading days between the dividend change announcement and the following annual earnings announcement. With 250 trading days a year, the four groups in table 4 roughly resemble the four quarters of the year. Compared to the sample with consistent signals, fewer dividend changes are declared in the first quarter for the sample with inconsistent signals. Overall, conflicting dividend signals are released later in the year, as compared to consistent dividend signals.

Table 5 reports results based on the timing of the dividend change announcements. The sample is divided into two groups. Neither the group with dividend changes declared early in the year nor the group with dividend changes declared late in the year reveals a significant difference in price adjustments. It is therefore reasonable to conclude that the results reported in table 3 can not be attributed to the timing of dividend changes.

Table 4
The timing of dividend changes

| | Consistent signals | Inconsistent signals | Total |
|----------------------------|--------------------|----------------------|-------|
| LEAD \geq 187 | 21 | 5 | 26 |
| 186 \geq LEAD \geq 125 | 15 | 13 | 28 |
| 124 \geq LEAD \geq 63 | 17 | 13 | 30 |
| 62 \geq LEAD | 17 | 11 | 28 |
| Total | 70 | 42 | 112 |

LEAD refers to the number of days between the dividend change announcement and the following annual earnings announcement. Two hundred and fifty trading days for a year is assumed.

Table 5
Difference in the price reactions to annual
earnings announcements between year 0 and year-1
based on the timing of dividend changes

| | <i>N</i> = | Average $SR_{0i_0}^2 - SR_{-1i_0}^2$ | Z_0^{diff} | <i>NT</i> p-value | <i>ED</i> p-value |
|-------------------------|------------|---|--------------|----------------------|----------------------|
| Early (LEAD \geq 109) | 56 | -0.025 | -0.122 | 0.549 | 0.331 |
| Late (LEAD > 109) | 56 | 0.078 | 0.378 | 0.353 | 0.177 |

Year -1 refers to the year whose earnings is announced prior to the dividend change. Year 0 refers to the year whose earnings is announced after the dividend change. Average $SR_{0i_0}^2 - SR_{-1i_0}^2$ measures the difference in the price reactions to the earnings announcements between year 0 and year -1. *NT* stands for normal theory and *ED* for empirical distribution.

The timeliness of the two annual earnings reports is also examined. On average the annual earnings report preceding the dividend change reaches the market 39.18 days after the fiscal year end. The annual earnings report following the dividend change reaches the market 38.61 days after the fiscal year end. There is no significant difference in the timeliness of the annual earnings reports.

One may wonder if the results just reported may arise from the surprise in the earnings of year 0 (relative to that of year -1), rather than from the conflicting signals of previous earnings and dividend changes. On an a priori ground, this is unlikely because analysts tend to incorporate dividend change information into their earnings forecasts subsequent to dividend change announcements (Ofer and Siegel 1987). Consequently, the earnings surprise, when earnings is actually announced, should be small. It is not obvious why the earnings surprise may have an increment in the presence of a dividend change. Nevertheless, some statistics are provided to help relieve the concern. The earnings changes of year -1 and year 0 are first adjusted by the stock price two days before dividend change, and then the absolute values are compared. The difference has a median of -0.00178 , not significant at any reasonable level. For the observations with conflicting and congruent signals, the differences (medians) are $-.00587$ and $-.00043$ respectively, and neither is significant.

5. Conclusion

This paper examines whether dividend changes preempt or diminish the informativeness of annual earnings reports. As an exception to the common view that dividends are information substitute of earnings and diminish the informativeness of subsequent earnings reports, the present study finds a situation in which earnings reports following dividend changes are more informative than usual. When dividend changes contain a signal which is conflicting with the changes in earnings of

the preceding year, the market expectations about the upcoming annual earnings probably become more diverse, thereby rendering the following annual earnings reports highly informative. Earnings reports, therefore, are capable of clarifying the confusion in earnings expectations that results from certain dividend changes.

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