Do Dividends Signal Earnings? The Case Of Omitted Dividends

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Abstract

Considerable evidence exists to support the hypothesis that the payment of dividends provides information that helps investors and analysts value the firm. We find that dividend omissions precede increases in return variance, beta and the dispersion of analyst forecasts of earnings. However, the variance of actual earnings also increases after dividend omissions. An increase in the variance of earnings implies a decrease in the predictability of earnings even if there is no change in information availability. The evidence is consistent with the hypothesis that managers omit dividends because earnings become inherently less predictable. In other words, managers use dividends as a signaling mechanism. We also report a negative association between stock price reactions to omission announcements and changes in beta, but not changes in total return variance or earnings variance, consistent with increases in priced estimation risk.

1. Introduction

The payment and size of dividends have long been matters of debate in corporate finance. Under conditions of symmetric information and taxes, dividends have been dubbed a puzzle [Black (1976)]. Several authors model dividend policy under the assumption that information is distributed asymmetrically between managers and investors. Bhattacharya (1979, 1980) argues that firms pay dividends because dividends signal the private information of managers and thus help market participants value the firm. Ambarish, John and Williams (1987) suggest that high value firms choose investment and dividends jointly to separate themselves from low value firms. In other words, dividends are not a residual payment as implied by classical finance theory. John and Williams (1985) and Ambarish, John and Williams (1987) predict a positive association between dividends and stock prices. John and Nachman (1987) describe dividends as a "coarse signal of earnings." Miller and Rock (1985) argue that once the investment decision of a firm is made, unanticipated dividends signal changes in earnings and cash flows. These models differ in the details of their assumptions and approach, but reach the same broad conclusion: firms pay dividends to convey information to investors that cannot be conveyed costlessly and credibly in other ways.

Empirical evidence supports the signaling function of dividends. Asquith and Mullins (1983) find that the initiation of dividends has a significant positive impact on the firm' s stock price. They interpret their evidence as consistent with the signaling hypothesis in that managers use dividends to communicate private information to investors, and investors react favorably. Richardson, Sefcik and Thompson (1986) report similar evidence.

Healey and Palepu (1988) investigate the impact of dividend initiations and omissions on stock prices along with changes in earnings. They find that initiations are associated with positive stock price reactions and omissions with negative stock price reactions. They also document that stock price reactions to dividend announcements are positively related to subsequent earnings changes. Ofer and Siegel (1987) report that security analysts revise their earnings forecasts in response to unexpected dividend changes. The greater the unexpected dividend change, the greater is the forecast revision.

Venkatesh (1989) examines the effect of dividend initiations on the information content of earnings announcements. He reports that the average price reaction to announcements of earnings is smaller after the firm starts paying dividends than before. Venkatesh interprets the result as consistent with dividend signaling. He also documents that the variability of stock returns is lower in the period after dividend initiation; the reduction primarily consists of lower residual risk rather than lower correlation with the market. Venkatesh suggests that after dividends begin, investors accord less importance to non-dividend information that previously could have caused price reactions. Thus, the availability of superior information from dividend announcements may result in lower variability of returns. Venkatesh concludes, "This evidence supports the notion that investors view dividends as an information-transmission mechanism."

Howe and Lin (1992) report an inverse relationship between bid-ask spreads and dividend yields across stocks. They interpret the relationship as supportive of dividend signaling.

In this paper, we investigate the effect of dividend omissions on stock return volatility. If Venkatesh's interpretation of decreases in volatility following dividend initiations is correct, then we should observe increases in volatility following omissions because of the removal of the dividend as an information source. We also examine the effect of dividend omissions on security-analyst forecasts of earnings. If analysts use dividend information when they estimate earnings, a lack of dividends should make their estimates less precise. Less precise estimation should result in greater disagreement among analysts. Hence, we measure the precision of estimates as the variance of forecasts across different analysts.

Another interpretation, not mutually exclusive with the first, of changes in return volatility and earnings forecast variance around dividend omissions is that managers omit dividends when earnings become more volatile. Lintner (1956) suggests that corporate dividend payments depend on long-run, sustainable earnings. Managers may omit the dividend only when they no longer are confident that future earnings will support the payment. One reason for the lack of confidence may be an increase in the variability of future firm cash flows and earnings. In this case, return volatility would increase and earnings forecast precision would decrease even if there were no asymmetry of information between managers and investors or if dividends did not reduce the asymmetry.[1] We test the hypothesis that earnings variability following a dividend omission is greater than before the omission.

Although the results are consistent with both dividend signaling and increases in earnings variability, the evidence strongly supports the view that managers omit dividends due to their perception of an increase in earnings variance. The stock return variance and beta increase significantly following dividend omissions. The variance of analysts' forecasts of earnings also increases significantly. There also is a statistically significant increase in the variance of earnings per share from before to after the dividend omission. A control sample of firms that experience similar stock price performance to the omitting firms, but continue to pay dividends, does not experience increases in the variability of returns or earnings. Thus the variability increases appear to characterize firms omitting dividends, not poorly performing firms in general.

We also examine the relation between stock price reactions to dividend omission announcements and changes in volatility. Only the change in beta, not the change in the variances of earnings and returns, explains a statistically significant part of the cross-sectional variation in the stock price reaction. The results are consistent with an increase in estimation risk due to the reduced predictability of earnings.

2. Sample Selection

We identify firms that omitted any dividend during 1962-1987 by examining the distribution records in the Center for Research in Security Prices (CRSP) NYSE-AMEX stock master file. We subject the sample so obtained to the following filters.

1. For firms that have more than one dividend omission, we consider only the first omission. The market's expectations of an omission may be different the second time, and this may affect the results in an indeterminate way.

2. We also drop firms that resumed the dividend in less than a year. The resumption would interfere with the data requirements discussed below.

3. We include only firms that have daily return data in the CRSP NYSE-AMEX file for at least 160 days before and 160 days after the last dividend payment date.

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[1]We are grateful to one of the anonymous referees for suggesting this hypothesis.

4. We include only firms that pay quarterly dividends before the omission. This requirement controls for the potentially greater uncertainty associated with longer intervals between dividend payments. Venkatesh (1989) imposes a similar requirement.

The result is a sample of 381 dividend omissions by the same number of firms. Table 1 reports the distribution of the sample by the year of the final dividend and by industry. Even at the single-digit SIC code level, the sample does not appear to contain large clusters of omissions in the same industry at the same time.

We obtain analysts' forecasts of earnings from the I/B/E/S tapes.[2] The tape contains earnings forecasts for 1976-1985 only. We limit the analyst forecast tests to firms that have one-year-ahead forecasts on the tape for at least five consecutive months before and five consecutive months after the last dividend payment.[3] To ensure meaningful variances across analysts, we only consider firms with at least five analysts. Only 31 firms from the CRSP sample of 381 satisfy our I/B/E/S data availability requirements.

To test earnings variability, we obtain annual and quarterly earnings per share from the COMPUSTAT files. Not all the firms have data on the files, and the sample size varies depending on the relative quarter or year. The sample sizes are reported with the tests.

To construct a control sample of firms with similar stock returns, we examine the CRSP file to find firms that paid at least four consecutive quarterly dividends and did not have an omission between the first dividend and the last date the firm traded on the NYSE or AMEX.[4] For an initial random sample of 1,000 firms, we randomly choose a date at least 250 calendar days after the first dividend payment. We start with more control than omission firms to ensure that we have enough control firms at each level of abnormal return after we form deciles as described below. We treat the randomly chosen date as the pseudo-omission date for these firms. For both the dividend omission and control samples, we estimate the cumulative abnormal return over a 240 trading day period ending 121 days before the date of omission. We use daily

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[2]The Institutional Brokers Estimate System (I/B/E/S) is a service of Lynch, Jones, & Ryan, who provide the data as part of a broad academic program to encourage earnings expectations research. The I/B/E/S file available for this study contained information from 1976 to 1985 only.

[3]The I/B/E/S database contains very few quarter-ahead forecasts.

[4]We are grateful to one of the anonymous referees for suggesting the use of a control sample.

data and market model abnormal returns, with betas estimated by the method of Scholes and Williams (1978). The market model parameters are estimated over the year preceding the 240 day period. We treat the omission and control groups as a single population and sort the firms into deciles based on the cumulative abnormal return. Within each decile, we reduce the control sample size to equal the omission sample size by making a final random selection from the control firms that fall in the decile. The result is a sample of 381 firms that had similar stock price performance to the omitting firms, but continued to pay quarterly dividends.

We conduct our tests on the full omission and control samples and on subsamples based on relative firm size. The relative size is the ratio of the equity market value to the average market value of all stocks on the New York and American stock exchanges. We compute the ratio as of the final dividend payment date.

3. Results

3.1. Stock Return Volatility

In this section we analyze three stock return volatility measures: two return variance measures and a beta. We use daily returns from the CRSP file, including the equally weighted index of all NYSE-AMEX stocks. We divide the daily return data into three periods: the period for measurement of pre-omission volatility, a transition period, and the period for measurement of post-omission volatility. The 120 days around the date of the last dividend payment (day 0), sixty on either side, make up the transition period. The transition period covers the announcement date of the dividend omission, which may have been preceded by leakage of related news. Thus, investors likely revised their expectations about dividends during the transition period. We exclude the transition period from the analysis so that the measured return volatility captures the effects of the old and new dividend policies, not the change in policy as such.

We compute the pre-omission volatility using daily returns from days -160 through -61 and the post-omission volatility from days +61 through +160.

We also use weekly stock returns over 100 week periods to investigate volatility using a longer return-computation interval and a longer calendar period. [Handa, Kothari and Wasley (1989) document that betas are sensitive to the length of the return interval.] To allow for possible holidays, we define the transition period as weeks -13 through +13. We measure the volatility over weeks -113 through -14 and +14 through +113.

3.1.1. Return Variance

We compute two measures of variance: the total variance of return, and a market-adjusted variance suggested by Skinner (1989). To compute the market-adjusted variance, we standardize each daily stock return by the standard deviation of the equally weighted market index return over the 100 day period, then calculate the variance of the standardized stock return. This controls for any differences in market-wide return variance between the pre- and post-omission periods.

We test for a change in the variance by computing the ratio of the variance after omission to the variance before omission. Skinner (1989) observes that a parametric test may not be appropriate for testing whether the variance ratios are equal to one. Even the Wilcoxon signed rank test suggested by Skinner assumes a symmetric distribution [see Sprent (1989)]. The variance ratio is not close to symmetrically distributed. Therefore, we conduct tests on the natural logarithm of the ratio, a transformation that improves the symmetry of the distribution. We use the *t* test and the Wilcoxon signed rank test to see if there is an increase in the variance, on average. The null hypothesis is that the log of the ratio is equal to zero.

Table 2 reports the mean variance measures before and after dividend omission, the distribution of the ratios, and the hypothesis tests. For the firms that omit dividends, there is an increase in the daily and weekly unadjusted variance and market-adjusted variance. The increases are statistically significant at better than the 1% level by both the *t* and signed rank tests. If we convert the variances to standard deviations, there is an increase in the unadjusted daily standard deviation of 29% and in the market-adjusted daily standard deviation of 22%. In comparison, Venkatesh (1989) reports a 15% decrease in the standard deviation of raw and market-adjusted returns following dividend initiation.

For the control sample, the point estimate of mean daily unadjusted variance increases slightly from the pre-omission to post-omission period, while the market-adjusted daily variance decreases. The opposite pattern appears in the weekly data. The changes in the weekly and daily variances are statistically insignificant at the 5% level. We conclude that there is no change in the return volatility for the control sample. This implies that the increase in variance is specific to firms omitting dividends, rather than being attributable to the general poor performance of the firms.[5]

3.1.2. Beta

Table 3 reports the Scholes-Williams beta estimates. The firms omitting dividends experience increases in the daily and weekly betas. The increase in the daily beta is not statistically significant but the increase in the weekly beta is significant at the 0.01% level. The control sample daily mean beta shows almost no change, and the point estimate of mean weekly beta decreases; none of the changes is significant at the 5% level. Only the dividend omission sample has an increase in beta.

Since the change in daily beta is not significant in the dividend omission sample, we report beta changes by relative firm size in table 4. For the dividend omission firms in the largest relative size class (>1) and those in the third largest class (0.2-0.5), there is an increase in daily beta that is significant at the 5% level by both the parametric and nonparametric tests. The other two size classes experience no significant change in the daily beta. All four size classes exhibit significant increases in the weekly beta. In contrast, the control sample firms show no significant increase in daily or weekly beta in any of the size classes. In the 0.2-0.5 class, the control firms exhibit a significant decrease in the weekly beta.

In summary, while the daily betas of firms omitting dividends do not increase significantly for all size classes, they do not decrease significantly for any size class. The weekly beta increases significantly. The daily and weekly betas of control firms do not increase significantly. Thus, the increase in beta, like the increase in return variances, is associated with dividend omissions as such, rather than with the recent stock price performance that may characterize firms that omit dividends. The results are consistent with the idea that the information available to investors decreases after a dividend omission. In particular, the differential risk associated with reduced information, or estimation risk, appears to include non-diversifiable risk as measured

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[5]We also tested the subsamples based on the relative size of the firms. For the dividend omission sample, the unadjusted and market-adjusted variances both increase in all subsamples. The increase is significant at the 1% level by both tests, except that the market-adjusted variance increase for the 0.5-1.0 relative size is marginally significant at the 5.07% level by the t test and significant at the 1% level by the signed rank test. For the control sample, no variance increase is significant at the 5% level in any subsample.

by beta. This is consistent with a study by Clarkson and Thompson (1990), who study newly listed and newly public firms and conclude that estimation risk is reflected in betas.

3.2. Variance of analysts' forecasts

Several studies document the superiority of analysts' forecasts of earnings over time series models.[6] Ofer and Siegel (1987) report that analysts revise earnings forecasts in response to unexpected dividend changes. After a firm stops paying dividends, the lack of dividend information may lead to greater uncertainty and disagreement among analysts. We test this hypothesis using the variance of forecasts across analysts for each firm before and after the dividend omission. We compare the variance of one-year-ahead forecasts made in months -5 through -3 to the variance of forecasts made in months +3 through +5.

Table 5 reports the average variance of analyst forecasts as a fraction of the mean earnings forecast. Both equally weighted averages and averages weighted by the number of analysts that follow the firm are reported. For the firms omitting dividends, the equally weighted average variance rises from 37.45% of forecasted earnings before the omission to 278.96% after. The increase is statistically significant at conventional levels by the Student *t* and Wilcoxon signed rank tests. The average variances for the control sample are 5.70% of forecasted earnings before the randomly selected pseudo-omission date and 6.66% after. The change in the control sample variance is not statistically significant. The results are similar when we use averages weighted by the number of analysts.

The results show that an increase in the dispersion of analysts forecasts accompanies a dividend omission, on average. The increase in dispersion implies that the absence of dividends makes earnings forecasts less certain and leads to greater disagreement among analysts. Since analyst forecasts affect stock prices, the greater noise in their estimates probably contributes to the increase in return volatility reported above.

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[6]See Brown and Rozeff (1978), Crichfield, Dyckman and Lakonishok (1978), Givoly and Lakonishok (1979), Collins and Hopwood (1980), Fried and Givoly (1982), Rozeff (1983), Brown, Griffin, Hagerman, and Zmijewski (1987a, 1987b), and Brown, Richardson and Schwager (1987).

3.3. Variance of actual earnings

In this section, we test the hypothesis suggested by Lintner (1956) that managers alter dividend policy in response to changes in the predictability of future earnings. A difficulty in any investigation of the variance of actual earnings is that unlike stock returns or analyst forecasts, earnings are observable only once per quarter for each firm. Moreover, accounting research reports that the time series of quarterly earnings contains a seasonal component [see Bao, Lewis, Lin and Manegold (1983)]. In effect, we have only one degree of freedom per year. Thus, the estimation of the variance of earnings for a single firm requires the use of a long sample period; even ten years would be a small sample. We are not willing to assume that the variance of earnings is stable over such a long period, so we do not examine the time-series variance for individual firms. Instead, we compute the cross-sectional variance of earnings for the dividend omission and control samples. In reality, each of the firms may have a different variance, but the cross-sectional variance should be an unbiased, though not efficient, estimator of the mean variance.

To test whether the variances before and after the dividend omission differ, we use the F test introduced by Levene (1960) and modified by Brown and Forsythe (1974). The modified Levene test is a one-way analysis of variance between the two samples, where each observation is replaced by its absolute deviation from the median of its respective sample. Conover, Johnson and Johnson (1981) conduct simulations of more than 50 homogeneity of variance tests and find that the modified Levene test is one of the two most powerful, is well specified under the null hypothesis, and is highly robust to departures of the data from normality.

The earnings measure we use is the primary earnings per share, scaled by the stock price at the end of the reporting period. This measure should be more comparable across firms and across time than a total dollar earnings measure. For comparison, we also report the earnings per share without scaling by the stock price.

Table 6 reports the earnings variance results. We compare year -1 against year +1, year -2 against year +2, and quarters -1 against +1 and -2 against +2. In every case, the variance increases for the dividend omission sample. The modified Levene F test rejects the null hypothesis of equal variances at better than the 5% level. The point estimates of variance in the control sample sometimes increase and sometimes decrease, but there is no change that is significant at the 5% level. Like the stock return volatility increases reported above, the increases in earnings variance are specific to the sample of dividend omissions, rather than being associated with the past stock price performance of firms omitting dividends.

The increases in earnings volatility suggest that the informational value of dividends alone does not explain the increases in stock return volatility and dispersion of analyst forecasts. Instead, earnings become inherently less predictable around the time of dividend omissions. The evidence shows that decreased predictability of earnings contributes to the managerial decision to omit the dividend.

4. Stock Price Reactions

Several studies document that stock prices react to unexpected changes in dividend policy [see Asquith and Mullins (1983), Brickley (1983), Dielman and Oppenheimer (1984), and Woolridge (1982, 1983)]. Dielman and Oppenheimer (1984), Ghosh and Woolridge (1991) and Healey and Palepu (1988) document a negative average announcement period abnormal return in response to dividend omissions. The results we present above suggest that the information content of a dividend omission announcement can include not only decreases in future mean earnings, which Healey and Palepu substantiate, but also increases in the variance of future earnings. In this section, we report tests of the association between changes in variability measures and the stock price reaction to dividend omission announcements.

4.1. Event study of dividend omission announcements

We first report average stock price reactions to dividend omission announcements to establish the correspondence between our results and previous studies. We search the *Wall Street Journal Index* for news of the omission announcements. Out of the 381 omissions in the main sample, the Wall Street Journal reports on 280. We define the date of the first news item describing the omission as day 0.

We use event study methods to measure the common-stock valuation effects of dividend omission announcements. Assume that stock returns follow a single-factor market model,

$$R_{jt} = a_j + b_j R_{mt} + e_{jt} .$$

R_{jt} and R_{mt} are the rates of return on the common stock of the *j*th firm and on the CRSP equally weighted market index on day *t*, and e_{jt} is a random variable with an expected value of zero (constant variance, uncorrelated with the market index or other stock return on day *t*, and zero autocorrelation).

Define the abnormal return as

$$AR_{jt} = R_{jt} - \left(\hat{a}_j + \hat{b}_j R_{mt}\right),$$

where $\hat{a}_j$ and $\hat{b}_j$ are Scholes-Williams adjusted ordinary least squares estimates of a_j and b_j. The market model parameter estimation period comprises days +101 through +355.[7] We compute cumulative average abnormal returns by adding the AR_{jt} across days for each firm, then averaging across firms. To test whether the average abnormal returns and cumulative average abnormal returns differ from zero, we use the standardized cross-sectional test developed by Boehmer, Musumeci and Poulsen (1991).[8] This test standardizes each AR_{jt} by its estimated standard error to take account of cross-sectional heteroscedasticity, and also makes a cross-sectional variance adjustment. We also report the nonparametric generalized sign test, which compares the ratio of positive to negative abnormal returns against the corresponding ratio in the estimation period [see Cowan (1992)]. Both tests are robust to transient variance increases during the days being tested, and the generalized sign test is robust to outliers.

Table 7 reports the stock price reactions for five days centered on day 0. The mean and median abnormal return are negative each day. Both the parametric and nonparametric tests find the average abnormal return on days −1 and 0 to be significantly different from zero at the .001 level. The cumulative average abnormal return over windows composed of days −1 through +1, −1 through 0, and −2 through +2 also are negative and significant at the .001 level by both tests. The mean of −10.74% on days −1 and 0 is

[7]The use of a post-event estimation period is appropriate in event studies of corporate financial decisions because a pre-event estimation period is subject to an ex post selection bias. See Cowan, Nayar and Singh (1990) for further discussion.
[8]Tests of cumulative average abnormal returns extend the Boehmer, Musumeci and Poulsen (1991) method by incorporating the serial dependence correction described by Karafiath and Spencer (1991) and Cowan (1993).

close to the mean −9.5% reported by Healey and Palepu (1988) for their sample of 172 omission announcements.[9]

4.2. Cross-sectional regressions

To test the association between stock-price reactions to omission announcements and changes in volatility, we regress the three-day (−1,+1) announcement period abnormal return on the changes in weekly stock return variance and weekly beta.[10] (We do not include the variance of analyst forecasts because the number of firms for which we have both announcement dates and analyst forecast variances is small.) If part of the bad news in dividend omissions is that volatility is increasing, there should be a negative relation between the stock price reaction and the change in a volatility measure from before to after the announcement. The regressions use the log of the ratio of market-adjusted variance after to market-adjusted variance before the omission and the beta after minus the beta before the omission. These are the same data used in panel B of table 2 and panel B of table 3 respectively.[11] We estimate the regressions using ordinary least squares and calculate t-statistics using the heteroscedasticity-consistent covariance matrix originated by White (1980).[12]

The regression results appear in table 8.[13] Row (1) reports a simple linear regression of the stock-price reaction on the log of variance ratio. Although the point estimate of the slope coefficient is negative, it is not statistically significant. In row (2), the coefficient of the difference in beta is negative and statistically significant at the .001 level using a one-tailed test. Row (3) reports a multiple regression on both volatility

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[9]We repeated the event study using net-of-market abnormal returns, which are defined as the raw stock return minus the market index return on the same day; the results were qualitatively the same.
[10]We also estimated regressions using days (−1,0) and (−2,2) as the announcement period. We do not report these regressions as there is no qualitative difference in the results.
[11]The variance and beta are estimated using data from a period excluding the announcement date.
[12]The use of OLS variance estimators instead of the White procedure does not alter the conclusions presented in this section.
[13]The results in table 8 are for 278 firms. Two out of the 280 firms for which we have announcement dates have 20 or fewer weekly returns available in the 100-week period used to compute the post-omission variance and beta. Initially we included the two firms in the regression, but they appeared as influential outliers with large Cook's D values. Of the other 278 firms, three have between 30 and 46 weekly returns in the post-event period, and 275 have 50 or more returns, with most having 100. None of the 278 has a large Cook's D. We checked the other results throughout the paper and found that none of the conclusions would be affected by the removal of the two outliers.

measures; again the change in beta, but not the change in variance, explains a statistically significant part of the cross-sectional variation in the stock price reaction. The estimated coefficient of beta, −0.0331, means that on average a 0.1 increase in beta is associated with an incremental abnormal return of −0.331%.[14]

The regressions support the idea that the stock price reactions to omission announcements reflect the increased stock return volatility expected to accompany the omissions. However, only the systematic component of total return volatility, as measured by beta, appears to be reflected.

4.3. Stock price reactions and earnings variances

As section 3.3 discuses, we do not compute earnings variances for individual firms, so we can not include earnings variances in a cross-sectional regression. Instead, we sort the sample into quintiles on the basis of the three-day announcement period abnormal return and compute cross-sectional variances of pre- and post-omission earnings for each quintile. The results are in table 9. The raw variance of earnings per share exhibits a statistically significant increase only for quintiles 1 and 4, and decreases in quintiles 0 and 3, although the decreases are not statistically significant. When earnings per share is scaled by the end of period common stock price, the variance increases in every quintile and the increase is statistically significant at the .05 level in quintiles 1, 3 and 4. However, there is no clear pattern across the quintiles. The ratio of variance after the omission to variance before the omission does not decrease monotonically from the most negative abnormal return quintile to the least negative. Thus, no particular association between stock price reactions to dividend omission announcements and earnings variances is apparent. This is consistent with the lack of an association between total return variance and stock price reaction in the cross-sectional regressions above.

5. Conclusion

Considerable evidence exists to support the hypothesis that the payment of dividends provides information that helps investors and analysts value the firm. Our evidence also is consistent with information transmission: dividend omissions precede increases in return variance, beta and the dispersion of analyst forecasts of earnings.

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[14]We repeated the regressions using net-of-market announcement period cumulative abnormal returns as the dependent variable. The results were similar in terms of point estimates and identical in terms of statistical significance.

The variance of actual earnings also increases after dividend omissions. The increase in earnings variance cannot be the result of the dividend omissions because dividends have no effect on earnings. The dividend omissions could be partly the result of the increased variance of earnings, however. Managers may omit dividends when their confidence interval on earnings no longer reassures them that they will be able to continue dividends in the future. The confidence interval on earnings may become less reassuring because expected earnings decline, or because the variance of earnings increases, or both. An increase in the variance of earnings implies a decrease in the predictability of earnings even if there is no change in information availability. If managers omit dividends because earnings become inherently less predictable, the decline in predictability rather than the dividend omission itself could explain the increases in return variance, beta and analyst forecast variance that we find. Similarly, the evidence of Healey and Palepu (1988) and Venkatesh (1989) regarding return variance and the information content of earnings announcements, and the evidence of Howe and Lin (1992) regarding the cross-sectional association between bid-ask spreads and dividend yields, may be partly the result of differential predictability of earnings.

Several studies document that stock prices react to unexpected changes in dividend policy [see Asquith and Mullins (1983), Dielman and Oppenheimer (1984), and Woolridge (1982, 1983)]. Dielman and Oppenheimer (1984), Ghosh and Woolridge (1991), Healey and Palepu (1988) and this paper report significant negative reactions to dividend omission announcements. Thus, dividend announcements appear to have information content, and the information seems to be important to the market valuation of firms. Our results suggest that part of the information investors infer from dividend omission announcements can pertain to increases in earnings variance. The increased earnings variance may translate into an increase in estimation risk, which Clarkson and Thompson (1990) suggest is priced by the market and therefore reflected in beta. We test this idea by examining the association between announcement period abnormal returns and changes in return variance, beta and earnings variance. The abnormal return is related to the change in beta but not the changes in total return variance and earnings variance. The results suggest that systematic, priced estimation risk is a component of the increase in earnings variance, but not the only or even the dominant component.

The revision of analyst forecasts in response to dividend information reported by Ofer and Siegel (1987) further suggests that differences in earnings variance do not fully explain the differences in information variables associated with divergent dividend policies. Future research efforts should focus on sorting out how much of the post-omission increases in return variance, beta and analyst forecast variance are results of the omission and how much would result from earnings variance increases even if dividends continued.

References

Ambarish, R., K. John, and J. Williams, 1987, Efficient signaling with dividends and investments, *Journal of Finance* 42, 321-343.

Asquith, P. and D. Mullins, 1986, The impact of initiating dividend payments on shareholders' wealth, *Journal of Business* 46, 77-96.

Bao, D.-H., M.T. Lewis, W.T. Lin, and J.G. Manegold, 1983, Applications of time-series analysis in accounting: A review, *Journal of Forecasting* 2, 405-423.

Bhattacharya, S., 1979, Imperfect information, dividend policy, and 'the bird in the hand fallacy,' *Bell Journal of Economics* 10, 259-270.

Bhattacharya, S., 1980, Nondissipative signalling structures and dividend policy, *Quarterly Journal of Economics* 95, 1-24.

Black, F., 1976, The dividend puzzle, *Journal of Portfolio Management* 2, 5-8.

Boehmer, E., J. Musumeci, and A.B. Poulsen, 1991, Event-study methodology under conditions of event-induced variance, *Journal of Financial Economics* 30, 253–272.

Brown, L., P. Griffin, R. Hagerman, and M. Zmijewsji, 1987a, Security analyst superiority relative to univariate time series models in forecasting quarterly earnings, *Journal of Accounting and Economics* 9, 61-87.

Brown, L., P. Griffin, R. Hagerman, and M. Zmijewsji, 1987b, An evaluation of alternate proxies for the market assessment of unexpected earnings, *Journal of Accounting and Economics* 9, 159-193.

Brown, L., G. Richardson, and S. Schwager, 1987, An information interpretation of financial analyst superiority in forecasting earnings, *Journal of Accounting Research* 25, 49-67.

Brown, L. and M. Rozeff, 1978, The superiority of analysts' forecasts as measures of expectations: Evidence from earnings, *Journal of Finance* 33, 1-6.

Brown, M.B. and A.B. Forsythe, 1974, Robust tests for the equality of variances, *Journal of the American Statistical Association* 69, 364-367.

Clarkson, P.M., and R. Thompson, 1990, Empirical estimates of beta when investors face estimation risk, *Journal of Finance* 45, 431-453.

Collins, W.A., and W.S. Hopwood, 1980, A multivariate analysis of annual earnings forecasts generated from quarterly forecasts of financial analysts and univariate time-series models , *Journal of Accounting Research* 18, 390-406.

Conover, W.J., M.E. Johnson, and M.M. Johnson, 1981, A comparative study of tests for homogeneity of variances, with applications to the outer continental shelf bidding data, *Technometrics* 23, 351-361.

Cowan, A.R., 1992, Nonparametric event study tests, *Review of Quantitative Finance and Accounting* 2, 343–358.

Cowan, A.R., 1993, Tests for cumulative abnormal returns over long periods: Simulation evidence, *International Review of Financial Analysis* 2, 51–68.

Cowan, A.R., N. Nayar and A.K. Singh, 1990, Stock returns before and after calls of convertible bonds, *Journal of Financial and Quantitative Analysis* 25, 549–554.

Crichfield, T., T. Dyckman, and J. Lakonishok, 1978, An evaluation of security analysts' forecasts, *Accounting Review* 53, 651-668.

Dielman, T.E., and H.R. Oppenheimer, 1984, An examination of investor behavior during periods of large dividend changes, *Journal of Financial and Quantitative Analysis* 19, 197-216.

Fried, D., and D. Givoly, 1982, Financial analysts' forecasts of earnings: A better surrogate for market expectations, *Journal of Accounting and Economics* 4, 85-107.

Ghosh, C. and J.R. Woolridge, 1991, Dividend omissions and stock market rationality, *Journal of Business Finance and Accounting* 18(3), 315–330.

Givoly, D., and J. Lakonishok, 1979, The information content of financial analysts' forecasts of earnings, *Journal of Accounting and Economics* 1, 165-185.

Handa, P., S. P. Kothari and C. Wasley, 1989, The relation between the return interval and betas: Implications for the size effect, *Journal of Financial Economics* 23, 79-100.

Healey, P., and K. Palepu, 1988, Earnings information conveyed by dividend initiations and omissions, *Journal of Financial Economics* 21, 149-175.

Howe, J.S., and J.C. Lin, 1992, Dividend policy and the bid-ask spread: An empirical analysis, *Journal of Financial Research* 15, 1-10.

John, K., and J. Williams, 1985, Dividends, dilution and taxes: A signaling equilibrium, *Journal of Finance* 40, 1053-1070.

John, K. and D.C. Nachman, 1985, Risky debt, investment incentives, and reputation in a sequential equilibrium, *Journal of Finance* 40, 863–878.

Karafiath, I., and D.E. Spencer, 1991, Statistical inference in multiperiod event studies, *Review of Quantitative Finance and Accounting* 1, 353-371.

Levene, H., 1960, Robust tests for equality of variances, in I. Olkin, ed., *Contributions to Probability and Statistics,* 278-292. (Stanford University Press, Palo Alto, California.)

Lintner, J., 1956, Distribution of incomes of corporations among dividends, retained earnings and taxes, *American Economic Review* 46, 97-113.

Miller, M.H., and K. Rock, 1985, Dividend policy under asymmetric information, *Journal of Finance* 40, 1031-1052.

Ofer, A., and D. Siegel, 1987, Corporate financial policy, information, and market expectations: An empirical investigation of dividends, *Journal of Finance* 42, 889-912.

Richardson, G., S. Sefcik, and R. Thompson, 1986, A test of dividend irrelevance using volume reactions to a change in dividend policy, *Journal of Financial Economics* 17, 313-334.

Rozeff, M.S., 1983, Predicting long-term earnings growth: Comparisons of expected return models, submartingales and Value Line analysts, *Journal of Forecasting* 2, 425-435.

Skinner, D.J., 1989, Options markets and stock return volatility, *Journal of Financial Economics* 23, 61-78.

Sprent, P., 1989, *Applied Nonparametric Statistical Methods* (Chapman and Hall, London).

Venkatesh, P.C., 1989, The impact of dividend initiation on the information content of earnings announcements and returns volatility, *Journal of Business* 62, 175-197.

White, H., 1980, A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity, Econometrica 48, 817-838.

Woolridge, J.R., 1982, The information content of dividend changes, *Journal of Financial Research* 5, 237-247.

Woolridge, J.R., 1983, Dividend changes and security prices, *Journal of Finance* 38, 1607-1615.

Table 1

Distribution by Year of Last Dividend and Industry for 381 Omissions of Cash Dividends during the Period 1963-1986

	Industry (SIC Code)										
Year	0	1	2	3	4	5	6	7	8	Not Found	Total
1963	0	0	3	1	0	0	0	0	0	0	4
1964	0	0	2	1	4	0	1	0	0	1	9
1965	0	0	2	0	4	0	0	0	0	1	7
1966	0	0	1	3	0	0	0	1	0	1	6
1967	0	0	0	4	2	1	0	1	0	0	8
1968	0	0	3	1	7	1	0	1	0	1	14
1969	0	0	4	1	6	4	1	0	2	1	19
1970	1	2	4	11	17	8	2	2	1	2	50
1971	0	2	2	12	3	1	2	1	0	1	24
1972	0	0	4	0	1	2	1	2	0	0	10
1973	0	0	2	3	2	0	1	1	0	0	9
1974	0	0	5	2	9	3	5	16	0	2	42
1975	0	0	0	5	5	4	3	4	0	2	23
1976	0	0	1	3	1	0	0	1	0	1	7
1977	0	1	1	3	0	1	0	0	0	0	6
1978	0	1	0	2	0	2	1	0	0	0	6
1979	0	0	2	3	6	2	1	1	0	0	15
1980	0	0	2	1	4	2	3	3	1	1	17
1981	0	1	3	3	5	4	4	3	0	2	25
1982	0	1	1	10	10	1	1	1	0	3	28
1983	0	2	0	3	3	1	0	2	0	1	12
1984	0	0	0	4	0	2	2	5	1	3	17
1985	0	1	2	4	8	1	2	3	0	1	22
1986	0	0	0	0	1	0	0	0	0	0	1
Total	1	11	44	80	98	40	30	48	5	24	381

Table 2

Comparison of Common Stock Return Variance before and after Dividend Omission for 381 Firms Eliminating Quarterly Cash Dividends during 1963-1986 and for a Control Sample of 381 Firms with Similar Stock Price Performance that Continued to Pay Quarterly Cash Dividends

Panel A: Daily Return Variance

		Mean Variance		Ratio of Variance After to Variance Before				*p*-value for *ln*(Ratio) = 0	
Sample	Return Variance Measure	Before	After	Mean	Median	First Quartile	Third Quartile	*t* Test	Wilcoxon Signed Rank Test
Firms omitting dividends	Unadjusted	0.000889	0.001472	2.315	1.475	0.833	2.658	0.0001	0.0001
	Market adjusted	17.27747	25.91492	2.106	1.386	0.850	2.403	0.0001	0.0001
Control sample firms	Unadjusted	0.000526	0.000570	1.249	1.044	0.682	1.562	0.4909	0.3378
	Market adjusted	13.90244	12.60518	1.280	0.943	0.582	1.561	0.0942	0.0966

Panel B: Weekly Return Variance

		Mean Variance		Ratio of Variance After to Variance Before				*p*-value for *ln*(Ratio) = 0	
Sample	Return Variance Measure	Before	After	Mean	Median	First Quartile	Third Quartile	*t* Test	Wilcoxon Signed Rank Test
Firms omitting dividends	Unadjusted	0.003351	0.006364	2.520	1.566	0.997	2.682	0.0001	0.0001
	Market adjusted	11.40728	13.39860	1.156	1.110	0.909	1.316	0.0026	0.0001
Control sample firms	Unadjusted	0.002739	0.002679	1.316	0.998	0.633	1.521	0.2555	0.5293
	Market adjusted	7.203714	7.669097	1.112	1.031	0.853	1.239	0.5659	0.2195

Table 3

Comparison of Common Stock Scholes-Williams Beta before and after Dividend Omission for 381 Firms Eliminating Quarterly Cash Dividends during 1963-1986 and for a Control Sample of 381 Firms with Similar Stock Price Performance that Continued to Pay Quarterly Cash Dividends

Panel A: Daily Return Beta

	Mean Beta		Difference between Post-Omission and Pre-Omission Betas				*p*-value for Mean Difference = 0	
Sample	Before	After	Mean	Median	First Quartile	Third Quartile	*t* Test	Wilcoxon Signed Rank Test
Firms omitting dividends	1.10	1.15	0.05	0.08	-0.39	0.51	0.2130	0.1528
Control sample firms	1.00	1.00	-0.00	-0.03	-0.42	0.41	0.8894	0.6200

Panel B: Weekly Return Beta

	Mean Beta		Difference between Post-Omission and Pre-Omission Betas				*p*-value for Mean Difference = 0	
Sample	Before	After	Mean	Median	First Quartile	Third Quartile	*t* Test	Wilcoxon Signed Rank Test
Firms omitting dividends	1.04	1.28	0.24	0.22	-0.11	0.57	0.0001	0.0001
Control sample firms	0.96	0.84	-0.11	-0.01	-0.38	0.27	0.2343	0.0837

Table 4

Comparison of Common Stock Scholes-Williams Beta by Relative Firm Size

Panel A: Daily Beta

Sample	Relative Size	N	Difference between Post-Omission and Pre-Omission Betas: Mean	Median	First Quartile	Third Quartile	*p*-value for Mean Difference = 0: *t* Test	Wilcoxon Signed Rank Test
Dividend Omission	>1.0	37	0.23	0.27	-0.34	0.58	0.0384	0.0423
	0.5-1.0	43	0.04	-0.00	-0.61	0.34	0.7626	0.8962
	0.2-0.5	89	0.26	0.27	-0.27	1.00	0.0109	0.0021
	<= 0.2	212	-0.06	-0.02	-0.57	0.36	0.3137	0.3036
Control	>1.0	94	0.00	-0.01	-0.35	0.38	0.9578	0.9478
	0.5-1.0	50	-0.11	-0.13	-0.49	0.35	0.1755	0.2447
	0.2-0.5	72	-0.05	-0.03	-0.44	0.43	0.5396	0.6891
	<= 0.2	165	0.04	-0.01	-0.45	0.46	0.4772	0.8758

Panel B: Weekly Beta

Sample	Relative Size	N	Difference between Post-Omission and Pre-Omission Betas: Mean	Median	First Quartile	Third Quartile	*p*-value for Mean Difference = 0: *t* Test	Wilcoxon Signed Rank Test
Dividend Omission	>1.0	37	0.38	0.39	0.03	0.62	0.0012	0.0005
	0.5-1.0	43	0.30	0.22	-0.19	0.63	0.0040	0.0064
	0.2-0.5	89	0.37	0.34	-0.02	0.61	0.0001	0.0001
	<= 0.2	212	0.15	0.14	-0.21	0.53	0.0113	0.0002
Control	>1.0	94	-0.01	0.04	-0.23	0.28	0.8794	0.4937
	0.5-1.0	50	-0.21	0.02	-0.42	0.21	0.0922	0.2896
	0.2-0.5	72	-0.53	-0.12	-0.66	0.21	0.0486	0.0131
	<= 0.2	165	0.04	-0.03	-0.40	0.35	0.8310	0.4752

Table 5

Comparison of Variance of Analyst Forecasts of Earnings before and after Dividend Omission for Firms Eliminating Quarterly Cash Dividends and for a Control Sample of Firms with Similar Stock Price Performance that Continued to Pay Quarterly Cash Dividends

Panel A: Mean Variances and Paired Difference Tests

			Variance as a Fraction of Firm Mean Earnings Forecast		*p*-value for Difference	
Sample	N	Weighting	Mean Before	Mean After	*t* Test	Wilcoxon Signed Rank Test
Firms omitting dividends	31	Equal	.3745	2.7896	.0354	.0001
		Number of Analysts	.3711	2.6341	.0296	.0001
Control sample firms	45	Equal	.0570	.0666	.1472	.2015
		Number of Analysts	.0565	.0668	.1248	.1558

Panel B: Variance as a Fraction of Mean Earnings Forecast, Quartiles Weighted by Number of Analysts

		Before Omission			After Omission		
Sample	N	First Quartile	Median	Third Quartile	First Quartile	Median	Third Quartile
Firms omitting dividends	31	0.0900	0.1793	0.3327	0.4200	0.7900	1.4555
Control sample firms	45	0.0267	0.0466	0.0731	0.0233	0.0532	0.3754

Table 6

Comparison of Variance of Annual and Quarterly Earnings per Share (EPS) before and after Dividend Omission for Firms Eliminating Quarterly Cash Dividends during 1963-1986 and for a Control Sample of Firms with Similar Stock Price Performance that Continued to Pay Quarterly Cash Dividends

Panel A: Annual Earnings per Share

Sample	N	EPS[a]	Years	Variance Before	Variance After	Modified Levene *F* (*p*)
Firms omitting dividends	286	Unscaled	(-1,1)	7.890858	19.156466	6.21 (.0130)
	286	Scaled	(-1,1)	0.115722	1.419651	14.91 (.0001)
	273	Unscaled	(-2,2)	4.148129	20.482212	20.15 (.0000)
	271	Scaled	(-2,2)	0.009148	1.941062	18.83 (.0000)
Control sample firms	245	Unscaled	(-1,1)	3.485329	5.455420	1.69 (.1947)
	244	Scaled	(-1,1)	0.004826	0.004690	0.05 (.8254)
	241	Unscaled	(-2,2)	5.264736	14.376655	1.16 (.2818)
	240	Scaled	(-2,2)	0.004658	0.008254	0.01 (.9417)

Panel B: Quarterly Earnings per Share

Sample	N	EPS[a]	Quarters	Variance Before	Variance After	Modified Levene *F* (*p*)
Firms omitting dividends	164	Unscaled	(-1,1)	1.3176097	2.1558905	6.54 (.0110)
	158	Scaled	(-1,1)	0.0172523	0.0391716	9.19 (.0026)
	161	Unscaled	(-2,2)	0.3787129	0.9172744	10.71 (.0012)
	155	Scaled	(-2,2)	0.0013487	0.0618349	9.88 (.0018)
Control sample firms	214	Unscaled	(-1,1)	0.4861156	0.2895149	0.12 (.7300)
	202	Scaled	(-1,1)	0.0013316	0.0006779	0.82 (.3646)
	208	Unscaled	(-2,2)	0.3198671	0.3514388	0.73 (.3939)
	185	Scaled	(-2,2)	0.0006058	0.0003799	3.34 (.0682)

[a] Scaled EPS is EPS divided by end of period common stock price.

Table 7

Stock Price Reactions to 280 Announcements of Dividend Omissions, 1963-1986

	(Cumulative) Abnormal Return[a]			Z Statistic	
Day(s)	Mean	Median	Positive/ Negative	SCS[b]	GST[c]
–2	–2.17%	–0.45%	120/160	–2.36**	–1.16
–1	–5.59%	–2.21%	75/205	–9.36***	–6.55***
0	–5.16%	–2.60%	84/196	–7.97***	–5.47***
+1	–2.01%	–0.23%	134/136	–0.74	+0.52
+2	–1.65%	–0.11%	134/136	+1.17	+0.52
(–1,+1)	–12.75%	–6.34%	50/230	–7.23***	–9.55***
(–1,+0)	–10.74%	–6.21%	53/227	–8.68***	–9.19***
(–2,+2)	–16.58%	–6.24%	52/228	–5.75***	–9.31***

[a] Daily abnormal returns are computed using the CRSP equally weighted market index and market model parameters estimated over days +101 through +355, where day 0 is the date of the first *Wall Street Journal* report of the omission. Market model parameter estimates are adjusted using the Scholes-Williams method.
[b] SCS denotes the standardized cross-sectional test. See Boehmer, Musumeci and Poulsen (1991).
[c] GST denotes the generalized sign test. See Cowan (1992).
** Statistically significant at the .01 level using a one-tailed test.
*** Statistically significant at the .001 level using a one-tailed test.

Table 8

Regression of Three-Day Announcement Period Cumulative Abnormal Return on Changes in Market-Adjusted Variance of Stock Return and Changes in Scholes-Williams Beta for 278 firms Omitting Dividends, 1963-1986

The dependent variable is the days −1 through +1 cumulative market model abnormal return, expressed as a fraction, not a percentage.The explanatory variables represent changes in the market-adjusted variance and beta, which are estimated using weekly stock returns from 100-week periods before and after the dividend omission. *t*-statistics for the difference of the regression coefficients from zero are computed on the basis of asymptotically consistent variance estimates [White (1980)] and appear in parentheses below the estimated coefficients.

	Estimated Coefficient of:				
	Intercept	*ln* Ratio of Variance After to Variance Berfore	Beta After minus Beta Before	R^2	F (p-value)
(1)	−0.0706 (−13.35***)	−0.0009 (−0.06)		0.0%	0.004 (.9525)
(2)	−0.0609 (−11.96***)		−0.0319 (−3.28***)	5.4%	15.737 (.0001)
(3)	−0.0612 (−12.00***)	0.0123 (0.83)	−0.0331 (−3.42***)	5.6%	8.198 (.0003)

*** Statistically significant at the .001 level using a one-tailed test.

Table 9

Comparison of Mean and Variance of Annual EPS before and after Dividend Omission, for Firms Eliminating Quarterly Cash Dividends during 1963-1986, by Quintile of Three-Day Announcement Period Cumulative Abnormal Return

Quintile	CAAR	N	EPS[a]	Variance Before	Variance After	Variance After ÷ Variance Before	Modified Levene *F* (*p*)
0	−48.0%	37	Unscaled	15.157898	10.676725	0.70	0.06 (.8082)
1	−11.2%	44	Unscaled	3.694168	12.106304	3.28	4.82 (.0309)
2	−6.4%	42	Unscaled	10.075354	67.056672	6.66	0.92 (.3392)
3	−2.7%	45	Unscaled	6.294130	5.689190	0.90	0.72 (.3971)
4	4.5%	44	Unscaled	2.858387	5.333676	1.87	4.91 (.0294)
0	−48.0%	37	Scaled	0.274393	1.384853	5.05	1.28 (.2627)
1	−11.2%	44	Scaled	0.015128	0.521441	34.47	5.66 (.0196)
2	−6.4%	42	Scaled	0.239945	4.352503	18.14	1.28 (.2605)
3	−2.7%	45	Scaled	0.021618	0.083185	3.85	5.16 (.0255)
4	4.5%	44	Scaled	0.023096	0.337209	14.60	5.62 (.0200)

[a] Scaled EPS is EPS divided by end of period common stock price.