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The Effect of Dividend Changes on Stock and Bond Prices

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ABSTRACT

This study examines stock and bond price reactions to dividend changes. The positive stock market response to dividend increases has several potential explanations, two of the more commonly discussed being information content and wealth redistribution between stockholders and bondholders. The evidence presented supports the wealth redistribution hypothesis but does not rule out the information content hypothesis. Typically we find that the bond price reaction to announcements of large dividend changes is opposite to the stock price reaction. Our results differ from those of Handjinicolaou and Kalay.

THIS PAPER EXAMINES THE impact of dividend changes on both the stock and bond markets. This topic is interesting because of the possibility of distinguishing between two important hypotheses: the information content hypothesis and the wealth redistribution hypothesis. Although each of these hypotheses is consistent with a positive stock price reaction to a dividend increase, the predicted bond price reactions are different: Information content implies bond prices should increase when dividend increases are announced, and wealth redistribution implies bond prices should fall. Although these two hypotheses have different implications for the bond price reaction to dividend changes, they are not mutually exclusive.

Handjinicolaou and Kalay (1984) analyze bond returns around dividend changes, and report that "bond prices are not affected by dividend increases but react negatively to dividend reductions" (p. 59). They argue their data support the information content hypothesis. Woolridge (1983) gets similar results, but, since he includes multiple bonds for the same firm, the t-statistics may be overstated inasmuch as returns will not be independent across bonds. Jayaraman and Shastri (1988) find insignificantly negative bond price

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reactions to special dividend announcements. Thus, the existing literature points toward information content. The evidence to date for wealth transfer is scant.

Our study examines several independent samples of stock and bond prices in an effort to examine these two hypotheses. We collect dividend change samples for the extreme cases—dividend initiations and dividend omissions. Using data from Data Resources Inc., we also collect samples of dividend decreases and of large dividend increases. Finally, we look at the 1975 to 1976 period in an effort to reproduce the Handjinicolaou and Kalay results.

The results presented in this article show a positive reaction to large dividend increases in the stock market and a negative price reaction in the bond market, which is consistent with the wealth redistribution hypothesis. Furthermore, the large dividend decrease sample confirms wealth transfer, with stock price declines accompanied by positive bond excess returns. The evidence, however, does not contradict the information content hypothesis.

The rest of the article is organized as follows. Section I describes the data and samples. The methodology is explained in Section II. The empirical results are presented in Section III.

I. Data

We collect samples of announcements of dividend increases and decreases. The samples are identified from the COMPUSTAT and CRSP Master Tape, and announcement dates are confirmed from the *Wall Street Journal Index*. Firms are included in the dividend omission sample if they omit dividends after paying dividends for at least two years. Firms are included in the dividend initiation sample if the firm initiates its first dividend or resumes dividends after a period of five years. Firms with dividend decreases that are not omissions and firms with dividend increases that are not initiations are put into separate samples. Bond price information is from the *Wall Street Journal* and Data Resources Inc., with interest ex payment dates from *Moody's Bond Record*.

The samples are limited to firms with stocks and bonds traded on the New York Stock Exchange (NYSE) or American Stock Exchange (AMEX). For firms with multiple bond issues, only the most frequently traded issue is used to avoid interdependence of returns. Also, only straight debt issues with at least four trading prices during a 21-day interval around the announcement are considered, thus ensuring one return during the announcement period and sufficient returns during the comparison period to compute a standard deviation. Firms with simultaneous announcements, such as earnings announcements, within two trading days of the announcement date are excluded.

For each sample we collect all the events occurring within the study period. Table I gives the details for each sample. For example, we find 11,140 dividend increases occurring between January 1978 and December 1987. Of

Table I

Sample Sizes Before and After Filtering

This table gives the sample sizes, broken down by type of event and by filter applied. The total sample consists of both dividend increases and dividend decreases. The increases consist of initiations and large (greater than 30 percent) increases. The decreases consist of omissions, large (greater than 30 percent) decreases, and small (less than 30 percent) decreases. The sources for our data are the COMPUSTAT and CRSP Master Tape, the *Wall Street Journal* (WSJ), and Data Resources, Inc. (DRI). Column 5 shows the sample size for the large dividend change samples after omitting smaller events. Columns 6, 7, and 8 give the samples remaining after deleting firms that did not have bonds traded, after omitting firms with contaminating announcements such as earnings, and after omitting firms with missing bond data, respectively.

Event	Period	Sources	Initial Sample	Sample after Omitting Smaller Events	Sample after Omitting Firms with No Bonds Traded	Sample after Omitting Contaminating Announcements	Sample after Omitting Firms with Missing Bond Data
Dividend initiations	Jan. '70 Dec. '86	COMPUSTAT, CRSP, *WSJ*	1214	1214	34	26	15
Large dividend increases	Jan. '78 Dec. '87	CRSP, DRI	11,140	1007	178	136	46
Total increases							61
Dividend omissions	Jan. '70 Dec. '86	COMPUSTAT, CRSP, *WSJ*	743	743	75	56	19
Large dividend decreases	Jan. '78 Dec. '87	CRSP, DRI	958	664	93	66	43
Small dividend decreases	Jan. '78 Dec. '87	CRSP, DRI	294	294	50	22	8
Total decreases							70
Total sample							131

these, 1,007 are increases of 30 percent or more. Eliminating firms that do not have bonds traded on the NYSE or AMEX leaves us with 178. Omitting firms with simultaneous announcements leaves a sample of 136. Many bonds are traded so infrequently that we cannot compute standardized returns. Of the 136, only 46 have sufficient bond data. Thus, the original sample of 11,140 yields a final sample of 46.

The full dividend change sample consists of 131 announcements, 61 dividend increases, and 70 dividend decreases. The dividend increase sample consists of two subsamples: 15 dividend initiations (row 1 of Table 1) and 46 large (exceeding 30 percent) dividend increases (row 2). The dividend decrease sample consists of three subsamples: 19 dividend omissions (row 3), 43 large (exceeding 30 percent) dividend decreases (row 4), and 8 small dividend decreases (row 5).

We have examined the frequency distribution of dividend change announcements by month. The events are spread out through time. Hence, the sample does not seem to have a clustering problem.

II. Methodology

We use the mean-adjusted returns methodology, as developed in Masulis (1978, 1980a, 1980b) and applied in Dann (1980, 1981), to analyze bond and stock returns. We use the Handjinicolaou and Kalay methodology to handle the infrequent trading problem and to adjust for term structure changes. Returns are estimated for a 21-day period around the announcement (Day − 10 to Day + 10). The announcement normally occurs on the day before it is reported in the *Wall Street Journal*.

Because the market may respond on the day of the announcement, if the dividend change is announced before the market closes, or on the next day, if the news is released after the market closes, then Day 0 and Day 1 together are considered the announcement period. It is often the case that no trade is reported on the NYSE or AMEX for the bond of interest on the day of the announcement. Because we wish to capture the announcement effect, we define Day 0 to be the first day on which a trade occurs on or after the date of the public announcement. Furthermore, if a trade is reported on the announcement day, we cannot be sure that it did not occur before the announcement, so for these cases we define Day 1 to be the first day after Day 0 for which a trade is reported.

Bond returns are a series of single and multiple day returns and are adjusted to yield equivalent single day returns using the Handjinicolaou and Kalay (1984) methodology. A 21-day interval around the event is used to estimate the comparison and announcement period returns. The comparison period is the 21 days around the announcement excluding the 2-day announcement period (0, 1). Let n be the number of days between reported bond trades. The number of days between trades will vary with time, of course, but we suppress the time subscript on n. To adjust for changes in the term structure of interest rates the adjusted bond return ($ABR_{i,n}$) is calculated as follows:

$$ABR_{i,n} = BR_{i,n} - TBR_{i,n},$$

where $BR_{i,n}$ is the bond holding period return for firm i over n days and $TBR_{i,n}$ is the return over the same holding period for an equivalent Treasury bond.[1] The mean of the comparison period returns ($R_{i,cp}$) for bond i is then

$$R_{i,cp} = \frac{1}{K-1} \sum_{cp} \left(\frac{ABR_{i,n}}{n} \right),$$

where $ABR_{i,n}$ is divided by n to give a daily return, K is the number of recorded trades for bond i over the comparison period, and Σ_{cp} means sum over the $K - 1$ returns in the comparison period. This equation is equivalent to equation (6) of Handjinicolaou and Kalay (p. 44). The number of recorded trades is usually less than 21 because of the nontrading problem. The standard deviation (S_i) of the daily adjusted bond returns for bond i is

$$S_i = \left\{ \frac{1}{K-2} \left[\sum_{cp} \left(\frac{ABR_{i,n}}{\sqrt{n}} - R_{i,cp}\sqrt{n} \right)^2 \right] \right\}^{1/2}.$$

This expression is equivalent to equation (7) of Handjinicolaou and Kalay. The standardized daily excess return ($SER_{i,t}$) for firm i on day t is then

$$SER_{i,n} = \frac{\left(\frac{ABR_{i,n}}{\sqrt{n}} \right) - R_{i,cp}\sqrt{n}}{S_i}.$$

Equally weighted portfolios of bonds are formed for each day by combining the standardized daily excess returns ($SER_{i,t}$) for each traded bond. The mean portfolio standardized excess return for day t is

$$SMER_t = \frac{\Sigma_i SER_{i,t}}{N_t},$$

where N_t is the number of bonds trading on Day t. Assuming that the individual standardized excess bond returns are independent through time and normally distributed, the appropriate test statistic has a Student t-distribution with 18 degrees of freedom. The t-statistic is then

$$t = \frac{SMER_t}{S_p}.$$

[1]Treasury bonds with matching maturity and coupons are used for the adjustment. First, the treasury bonds with the closest coupon are found, and, of those, the one with the closest maturity is chosen.

Here, S_p is the standard deviation of the portfolio mean standardized excess return over the comparison period and is given by

$$S_p = \left\{ \left(\frac{1}{18} \right) \sum_{cp} \left(SMER_t - \overline{SMER} \right)^2 \right\}^{1/2}$$

$$\text{and} \quad \overline{SMER} = \left(\frac{1}{19} \right) \sum_{cp} SMER_t$$

The standardized mean excess returns have a t-distribution based on normality and independence of returns over time. Preliminary tests indicated no serious problem with nonnormality. Furthermore, the lack of clustering supports the independence assumption. Moreover, the number of significant t's *outside* the announcement period is not greater than the number expected by chance, thus providing further evidence that the t's are not overstated.

III. Empirical Results

A. *Price Reaction to Dividend Increases*

Panel A of Table II summarizes our results for dividend increase announcements. The standardized mean excess two-day returns for the total sample of 61 dividend increase announcements are presented on row 1. Because standardized returns are not technically percentage returns, the nonstandardized returns are given in parentheses (these are typically about the same size as the standardized returns but are more affected by outliers). The 2-day stock excess return is 0.98 (1.53) percent with a t-statistic of 5.04. The 2-day bond excess return is -0.37 (-0.14) with a t statistic of -1.92. Stock returns are significantly positive, whereas bond returns are negative although not quite significant. To ensure that the results are not driven by outliers we ran the nonparametric Wilcoxon signed rank test. The z-statistics are reported in Table II in parentheses. The z-value for the stocks is 2.40, whereas that for the bonds is -1.05.

This sample consists of two mutually exclusive subsamples. Results for 15 dividend initiations announced between January 1970 and December 1986 are given on row 1a. The stock return is 0.28 (0.05) and, with a t-statistic of 0.80, is not significant. The bond return is -0.49 (-0.50) with an accompanying t of -1.45. Row 1b presents results for 46 large (exceeding 30 percent) dividend increases announced between January 1978 and December 1987. The announcement period stock return is 1.21 (2.04) percent with a t of 5.23, whereas the bond return is -0.33 (-0.04) with an accompanying t of -1.50.

B. *Price Reaction to Dividend Decreases*

Panel B of Table II summarizes our results for dividend decreases. The announcement period standardized excess returns for the total sample of 70 dividend decreases are given on row 2. The two-day stock return is -2.01 (-3.47) percent with a t of -9.41, whereas the corresponding bond return is

Table II

Standardized Daily Mean Excess Two-Day Returns

This table presents standardized mean excess returns for both stocks and bonds and the number positive and negative for the two-day announcement period for dividend increases (Panel A), dividend decreases (Panel B), and increases and decreases combined (Panel C). To combine the increases and decreases, we reverse the signs for the decreases. The statistics for the announcement period return are given in parentheses below the returns, and the Wilcoxon signed rank test statistics are given next to the number positive versus number negative. The increase sample is broken down into initiations and large (greater than 30 percent) increases. The decrease sample is broken down into omission, large (greater than 30 percent), and small (less than 30 percent) decreases. In Panel C we combine initiations and omissions as well as decreases and large increases.

	Two-Day Return[a]		No. Positive: No. Negative[b]		
Sample	Stocks	Bonds	Stocks	Bonds	Sample Size
Panel A. For Dividend Increases					
1. Total sample	0.98	−0.37	40:21 (2.40)[c]	28:33 (−1.05)	61
	(5.04)[c]	(−1.92)			
1a. Initiations	0.28	−0.49	9:6 (0.34)	4:11 (−1.99)[c]	15
	(0.80)	(−1.45)			
1b. Large increases	1.21	−0.33	31:15 (2.57)[c]	24:22 (−0.23)	46
	(5.23)[c]	(−1.50)			
Panel B. For Dividend Decreases					
2. Total sample	−2.01	0.69	19:51 (−4.68)[c]	39:31 (1.64)	70
	(−9.41)[c]	(2.84)[c]			
2a. Omissions	−1.09	0.84	5:14 (−2.29)[c]	13:6 (1.61)	19
	(−3.23)[c]	(2.04)			
2b. Large decreases	−2.70	0.81	10:33 (−3.85)[c]	24:19 (1.24)	43
	(−10.09)[c]	(2.10)[c]			
2c. Small decreases	−0.54	−0.01	4:4 (−0.56)	2:6 (−1.26)	8
	(−1.22)	(−0.01)			
Panel C. For Increases and Decreases Combined—Signs Reversed for Decreases					
3. Total sample	1.53	−0.54	91:40 (5.04)[c]	59:72 (−1.91)	131
	(9.47)[c]	(−3.46)[c]			
3a. Initiations and omissions	0.72	−0.70	23:11 (1.92)	10:24 (−2.50)[c]	34
	(2.67)[c]	(−2.52)[c]			
3b. Decreases and large increases	1.82	−0.50	68:29 (4.68)[c]	49:48 (−0.71)	97
	(9.48)[c]	(−2.74)[c]			

[a] t-statistics in parentheses.
[b] Wilcoxon signed rank test statistic in parentheses.
[c] significant at 5 percent level.

0.69 (0.63) with a t-statistic of 2.84. Both 2-day returns are significant at the 5 percent level. The Wilcoxon signed rank test z-values are −4.68 and 1.64 for stocks and bonds, respectively.

This sample consists of three disjoint subsamples. The first consists of 19 dividend omissions, announced between January 1970 and December 1986. The results are presented on row 2a. The announcement period stock return is -1.09 (-4.10) with a t-statistic of -3.23, whereas the bond return is 0.84 (1.76) with a t of 2.04. The second subsample consists of 44 large (exceeding 30 percent of the original dividend) dividend decreases announced between January 1978 and December 1987. The results are given on row 2b. The stock return is -2.70 (-5.56) with a t of -10.09, whereas the bond return is 0.81 (0.31) with a t of 2.10. We have omitted an outlier from this sample. If included, it causes the bond results for this sample to become insignificant. The third subsample consists of 8 small (less than 30 percent of the original dividend) decreases announced between January 1978 and December 1987. The results are given on row 2c. The stock return is -0.54 (-0.55) with a t of -1.22, whereas the bond return is -0.01 (-0.68) with a t of -0.01. This is the only subsample in our study that does not suggest wealth transfer.

C. Price Reaction to Increases and Decreases Combined

Panel C of Table II summarizes our results when dividend increases and decreases are combined. To combine them, we reverse the signs on the returns for decreases. The announcement period standardized excess returns for the total sample of 131 dividend increases and decreases are given on row 3. The announcement period stock return is 1.53 (3.16) with a t-statistic of 9.47, whereas the corresponding bond return is -0.54 (-0.40) with a t of -3.46. Both 2-day returns are significant at the 5 percent level. The Wilcoxon signed rank test z-values are 5.04 and -1.91 for stocks and bonds respectively.

The total sample can be broken down into two disjoint subsamples. The first consists of the 34 dividend initiations and omissions. The results are presented on row 3a. The 2-day stock return is 0.72 (2.27) with a t of 2.67, whereas the bond return is -0.70 (-1.24) with a t of -2.52. The second subsample consists of 97 dividend decreases and large dividend increases. The results for this subsample are presented on row 3b. The two-stock return is 1.82 (3.47) with a t-statistic of 9.48, whereas the corresponding bond return is -0.50 (-0.10) with a t-statistic of -2.74.

D. Summary and Discussion of the Results

We find evidence of wealth redistribution around announcements of large dividend changes. Row 1 of Table II provides evidence that bond prices decline when dividends are increased, whereas row 2 shows that bond prices increase when dividends decrease. Moreover, row 3 indicates that the wealth redistribution effect is statistically significant for the combined samples.

Note that the samples summarized in rows 1 and 2 of Table II are disjoint. Thus, the joint probability that the evidence for wealth transfer occurred by chance is much lower than even the higher of the individual t-statistics would suggest. This is borne out on row 3. Thus, by concentrating on major changes in dividends, we have been able to detect a wealth transfer effect that others have missed. Given the severe nontrading problem for bonds, we believe it is important to make the adjustment of the announcement period as described in Section II. Others, for example Hand, Holthausen, and Leftwich (1992), make a similar adjustment.

Our results differ from those of Handjinicolaou and Kalay. When we looked at the period they examined we found weak (statistically insignificant) evidence for wealth transfer. Although Handjinicolaou and Kalay report a sample of 34 uncontaminated dividend decrease announcements, we could only find 25. For these 25, the standardized two-day bond return for the announcement period is 0.12 (0.18) with a t-statistic of 0.34. Fourteen of the returns are positive, whereas eleven are negative. The effect we and Handjinicolaou and Kalay were trying to measure is small, and the results can differ for several reasons. First, Handjinicolaou and Kalay examined a much shorter period than we did. Second, a few simultaneous announcements could obscure the effect. For example, dividend decreases are likely to be announced at the same time as bad news about the firm. In fact, De Angelo and De Angelo (1990) and De Angelo, De Angelo, and Skinner (1992) provide evidence that dividend reductions are closely associated with losses. Third, the methodologies for the two papers are not identical; for example, the comparison periods are different. Fourth, and possibly most important, we concentrated on the important dividend increases and decreases.

We conclude that more attention should be paid to the wealth transfer mechanism and to the associated agency problems. Furthermore, explanations for dividends based on information content may be less important than previously thought. Although the results have documented the additional role of wealth transfer, they do not contradict the information content hypothesis.

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