

The Wealth and Earnings Implications of Stock Splits By Nondividend-Paying Firms

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This paper extends the evidence on stock splits of nondividend-paying firms by documenting the long-term wealth effects associated with such splits. To measure long-term wealth effects, I estimate cumulative abnormal returns (CARs) surrounding split announcements. I examine both unconditional CARs and CARs conditional on post-split earnings realizations. The analysis of CARs conditional on postsplit earnings is the first attempt in the literature to link CAR patterns surrounding splits directly to earnings information rather than to a proxy variable (dividends). Additionally, I provide new evidence regarding the frequency of stock splits by nondividend-paying firms and the average time interval between the split and subsequent dividend initiation. Finally, I estimate announcement period abnormal returns and earnings forecast errors for my sample in order to provide a complete analysis of the wealth and earnings implications of splits that is free of contaminating dividend information.

INTRODUCTION

Fama, Fisher, Jensen, and Roll (1969) examine the behavior of cumulative abnormal returns (CARs) surrounding the effective dates of stock splits. They document both unconditional CARs and CARs conditional on postsplit dividend behavior. The CAR patterns that Fama, Fisher, Jensen, and Roll report are consistent with their conclusion that the market reacts only to the dividend implications of stock splits. Fama, Fisher, Jensen, and Roll note, however, that the market likely reacts to the change in earnings prospects associated with the dividend change rather than to the dividend change itself.¹ The dividend change serves as a proxy for the more fundamental earnings information released around stock splits.

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¹ An extensive literature supporting the idea that dividends are earnings signals developed subsequent to Fama, Fisher, Jensen, and Roll. Theoretical support for this idea is provided by Bhattacharya (1979), John and Williams (1985), Miller and Rock (1985), Ambarish, John, and Williams (1987), and Ofer and Thakor (1987). Empirical support is provided by Asquith and Mullins (1983), Brickley (1983), Ofer and Siegel (1987), and Healy and Palepu (1988).

Subsequent stock split literature links splits more directly to earnings information. Lakonishok and Lev (1987) and Asquith, Healy, and Palepu (1989) document significant earnings increases before and after split announcements. Doran and Nachtmann (1988) find that analysts' presplit earnings forecasts underestimate postsplit earnings. Klein and Petersen (1989) find that analysts revise earnings forecasts upward following split announcements. McNichols and Dravid (1990) and Asquith, Healy, and Palepu (1989) document a positive relationship between split announcement period abnormal returns and earnings forecast errors. Klein and Petersen (1989) document a positive relationship between split announcement period abnormal returns and analysts' earnings forecast revisions.

Other innovations in the split literature refine event study methodology, making it possible to more accurately measure the impact of the split announcement on stock price. Where Fama, Fisher, Jensen, and Roll examine monthly returns surrounding the stock split effective date, Charest (1978) examines monthly returns surrounding the month of the first public announcement of the split. Grinblatt, Masulis, and Titman (1984), Asquith, Healy, and Palepu (1989), Klein and Peterson (1989), and McNichols and Dravid (1990) estimate announcement period abnormal returns using daily rather than monthly data. All of these refined event studies document significant positive abnormal returns during the split announcement period.

A potential concern in interpreting the stock split literature arises from the existence of contaminating dividend information. Grinblatt, Masulis, and Titman (1984) find that most splitting firms announce a dividend increase immediately before, simultaneous with, or immediately after the split announcement. That dividend increases are associated with positive wealth and earnings changes is extensively documented. [For example, see Asquith and Mullins (1983), Brickley (1983), Ofer and Siegel (1987), and Healy and Palepu (1988).] Thus, the concern is that the split literature does not separate the wealth and earnings implications of stock splits from those of cash dividends.

To address this concern, Grinblatt, Masulis, and Titman estimate announcement period abnormal returns for a subsample of splits by firms that paid no cash dividends in the three years prior to splitting. They find a positive mean abnormal return for such splits. Similarly, Asquith, Healy, and Palepu (1989) find significant earnings increases following splits by firms that had paid no dividends prior to splitting their shares. To date, Grinblatt, Masulis, and Titman and Asquith, Healy, and Palepu are the only studies that provide evidence for splits by nondividend-paying firms.

In this paper I extend the evidence on stock splits of nondividend-paying firms by documenting the long-term wealth effects associated with such splits. I estimate both unconditional CARs and CARs conditional on postsplit earnings realizations. The analysis of CARs conditional on postsplit earnings is the first attempt in the literature to link CAR patterns surrounding splits directly to earnings information rather than to a proxy variable (dividends). Additionally, I provide new evidence regarding the frequency of stock splits by nondividend-paying firms and the average time interval between the split and subsequent dividend initiation. Finally, I estimate announcement period abnormal returns and earnings forecast errors for my sample in order to check the consistency of my results with Grinblatt, Masulis, and Titman and Asquith, Healy, and Palepu and to provide an

analysis of the wealth and earnings implications of splits that is free of contaminating dividend information.

SAMPLE DESIGN AND DESCRIPTION

An initial sample of firms is identified from the Center for Research in Security Prices (CRSP) monthly stock master files. Two types of firms are identified. The first type consists of firms that paid no cash dividends during their listing on the CRSP monthly master. The second type consists of firms whose first CRSP dividend occurred at least one year after their first CRSP return. All firms that were not listed on the CRSP monthly master after July 2, 1962, the first date for which daily return data is available on the CRSP daily return file, are eliminated from the sample. The CRSP monthly stock master includes only data for the period during which a firm is listed on the New York Stock Exchange (NYSE); therefore, *Standard & Poor's Daily Stock Price Record*, *Moody's Dividend Record*, and *Standard & Poor's Security Owner's Stock Guide* are used to identify any cash dividends prior to a firm's first listing on the CRSP monthly master. Each firm is classified as either a no dividend firm or a dividend-initiating firm. No dividend firms are those firms identified as having no history of cash dividends. Dividend-initiating firms are those firms that paid their first cash dividend at least one year after being listed on the NYSE. Hereafter, the term *nondividend-paying firms* refers to the combined sample of no dividend firms and the no-dividend-paying history of dividend-initiating firms. The sample selection procedure results in a sample of 268 nondividend-paying firms with 154 of those firms being no dividend firms and 114 being dividend-initiating firms.

Moody's Dividend Record and the *Capital Changes Reporter* are used to identify all stock splits completed by no dividend and dividend-initiating firms during their corporate histories. For this study a stock split is defined as any stock distribution exceeding 25 percent of the shares outstanding. The *Wall Street Journal Index* is used to identify the dates of the first public announcements of stock splits.

Table 1 summarizes the frequencies of stock splits by nondividend-paying firms. Of the 154 no dividend firms 62 have never split their stock, 35 have had one stock split, and 57 have engaged in multiple splits. Of the 114 dividend-initiating firms 47 had no stock splits prior to initiating dividends, 36 had one split prior to initiating dividends, and 31 had multiple splits prior to initiating dividends. For the total sample of 268 nondividend-paying firms 109 had no splits, 71 had one split, and 88 had multiple splits.

Two things are apparent from Table 1. First, a majority of both no dividend firms (60 percent) and dividend-initiating firms (59 percent) split their stock during their non-cash dividend history. Therefore, it is not unusual for firms that do not pay cash dividends to split their stock. Second, of those nondividend-paying firms that split their stock at least once, a majority (55 percent) engaged in additional stock splits. This suggests that stock splits by nondividend-paying firms, especially their initial splits, are unlikely to be associated with the initiation of dividends.

Table 1 reports 114 splits by dividend-initiating firms. Table 2 reports the time intervals between the announcements of those splits and the subsequent announcements of the initiation of cash dividends by the splitting firms. The mean and median intervals are presented for the full sample of splits by dividend-initiating firms and for initial splits by

Table 1—Frequency of Stock Splits by Nondividend-Paying Firms*

Frequency	Firm Type		
	Nondividend-Paying	No Dividend	Dividend-Initiating ^b
0	109	62	47
1	71	35	36
2	44	22	22
3	24	19	5
4	11	8	3
5	7	7	0
6	0	0	0
7	1	0	0
8	0	0	0
9	1	1	0

*The sample of nondividend-paying firms consists of two firm types. The first type, no dividend firms, consists of all firms that paid no cash dividends during their listing on the CRSP monthly stock master tape and had been listed on the CRSP monthly master for at least one year. The second type, dividend-initiating firms, initiated cash dividends during their listing on the CRSP monthly master, with the first cash dividend occurring at least one year after the firm was first listed on the CRSP monthly master. The sample was constructed utilizing the 1987 CRSP monthly stock master tape, *Moody's Dividend Record*, and *Standard & Poor's Stock Guide*.

^bIncludes only splits that occurred prior to the firm's initial cash dividend.

dividend-initiating firms. The mean (median) interval for the full sample is 11 years 4 months (8 years, 0 months), while the mean (median) interval for initial splits is 9 years 4 months (8 years, 0 months).² Only 6 percent of the split announcements are followed by the initiation of dividends within two years of the announcement date. These results indicate that the time interval surrounding splits by firms that have never paid cash dividends is mostly uncontaminated by dividend information. Thus, my sample design effectively isolates the wealth and earnings implications of stock splits from those of cash dividend signals.

SHAREHOLDER WEALTH EFFECTS

Event study methodology is employed in this section to examine the effect of split announcements by nondividend-paying firms on the share prices of those firms.

METHODOLOGY

This section describes the event study methodology employed to examine the effect of split announcements on share prices. For an event i the announcement date (day 0 in event time) is defined as the date of the earliest report of the event in the *Wall Street Journal*. The announcement period is defined as event days -1 and 0 because it is not known whether the announcement preceded or followed the close of trading on the trading day prior to the day of publication of the announcement. For the days surrounding an

² It is the fact that firms have different frequencies of splits that makes it possible for the mean or median interval for all splits to exceed that for initial splits, as the following example demonstrates. Suppose firm 1 has splits with intervals of 20 years, 18 years, and 16 years while firm 2 has splits with intervals of five years and four years. The median interval is 12.5 years for initial splits and 16 years for all splits. The mean interval is 12.5 years for initial splits and 12.6 years for all splits.

Table 2—Time Interval Between Split Announcement and The Initiation of Cash Dividends^a

Time Interval (Years)	All Splits	Initial Splits
0 < t ≤ 2	7	5
2 < t ≤ 4	15	6
4 < t ≤ 6	19	12
6 < t ≤ 8	20	14
8 < t ≤ 10	11	7
10 < t ≤ 12	12	5
12 < t ≤ 14	9	7
14 < t ≤ 16	8	6
16 < t ≤ 18	0	0
18 < t ≤ 20	5	3
20 < t	8	2
Mean Interval	11 year 4 months	9 years 4 months
Median Interval	8 years 0 months	8 years 0 months

^aBased on interval between first *Wall Street Journal* announcement of split and first *Wall Street Journal* announcement of initial cash dividend. Where one of the announcement dates is unavailable the time interval is the interval between either the split and dividend ex dates or record dates

event excess returns are estimated using the market model.³ An estimate of the excess return for the common stock of the firm engaging in event *i* on day *t* is the abnormal return:

$$(1) AR_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt})$$

where:

- R_{it} = The rate of return on day *t* on the common stock of the firm engaging in event *i*;
 R_{mt} = The rate of return on the CRSP equally weighted index on day *t*;
 and
 $\hat{\alpha}_i$ and $\hat{\beta}_i$ = The ordinary least squares (OLS) estimates of the market model from a regression estimated over a 120 day estimation period that follows the *T* days for which abnormal returns are computed.⁴

Post-event returns are used to estimate the OLS parameters for split announcements because of the evidence provided by Fama, Fisher, Jensen, and Roll, Grinblatt, Masulis, and Titman, and others that firms tend to split their shares following periods of positive abnormal returns. This makes the use of pre-event returns inappropriate for estimating a return benchmark for split announcements. Abnormal returns are computed for each event

³ Abnormal stock price performance also is estimated using market-adjusted, mean-adjusted, and raw returns. These changes in methodology do not alter the conclusions of this paper.

⁴ Abnormal returns are computed for two time periods, the time period extending from 15 days prior to the announcement date until 15 days after the announcement date (*T* = 31) and the time period extending from 240 days prior to the announcement date until 240 days after the announcement date (*T* = 481).

for which the CRSP daily return tape contains returns for both the market model estimation period and the T days for which estimates of abnormal returns are required.

For any event date t the mean abnormal return (MAR) for a portfolio of N securities is:

$$(2) \text{MAR}_t = (1/N) \sum_{i=1}^N \text{AR}_{it}.$$

For the portfolio of N securities a measure of the average cumulative stock price performance from event date $t-s$ to event date t is the mean cumulative abnormal return (MCAR):

$$(3) \text{MCAR}_{t-s,t} = (1/N) \sum_{i=1}^N \sum_{q=t-s}^t \text{AR}_{i,q}.$$

MCARs are used to assess the average magnitude and statistical significance of stock price changes associated with stock split announcements. The Z-statistic described in Dodd and Warner (1985) is used to test for the significance of MCARs. The test statistic is distributed approximately unit normal under the null hypothesis of no abnormal performance.^{5,6} Two nonparametric tests, the Fisher sign test and the Wilcoxon signed-ranks test, are used to check the influence of outliers.

ANALYSIS OF WEALTH EFFECTS OF STOCK SPLIT ANNOUNCEMENTS BY NONDIVIDEND-PAYING FIRMS

Table 3 presents MCARs, Z-statistics, and results of nonparametric tests for the period covering 15 days prior to the split announcement to 15 days following the split announcement. Results based on parametric and nonparametric tests are generally consistent, so discussions of statistical significance are limited to the Z-statistic. The two day announcement period MCAR for the entire sample is 1.90 percent. This two day abnormal return is significant at the 0.01 level of significance ($Z = 5.96$). This result is consistent with the hypothesis that stock splits convey positive information. Table 3 reports a significant stock price increase in the period prior to the split announcement. The MCAR from day -15 to day -2 is 2.23 percent ($Z = 2.30$). The cumulative stock price performance in the 15 days following the split is not significantly different from zero.

Announcements other than cash dividend announcements often are associated with split announcements. To ensure that the results are not driven by such contemporaneous announcements, both the *Wall Street Journal Index* and the *Wall Street Journal* articles announcing the split are checked for any contaminating announcements within three days of the announcement dates.⁷ The results for splits with no contemporaneous announcements also are presented in Table 3.

⁵ On the basis of extensive simulations, Brown and Warner (1985) show that, in general, methodologies based on the market model and standard parametric tests are well-specified for event studies using daily returns.

⁶ Brown and Warner (1985) indicate that this test statistic results in too many rejections of the null hypothesis that the mean abnormal return is equal to zero in the presence of variance increases during the announcement period. In order to control for the possibility of such a variance increase, a test statistic that employs a cross-sectional estimate of the residual variance also is employed. The conclusions are not altered by the choice of test statistic.

⁷ The contaminating announcements controlled for are:

- Earnings and revenue announcements;

Table 3—Mean Cumulative Abnormal Returns (MCARs) Around Announcements of Stock Splits by Nondividend-Paying Firms

	All Splits	No Contemporaneous Announcement	Initial Splits
MCAR _{-15,-2}	2.23%	2.90%	1.83%
Z _{-15,-2}	2.30*	2.44*	0.80
pos/neg ^a	83/61	48/30*	26/22
Wilcoxon Z ^b	2.55*	2.38*	0.93
MCAR _{-1,0}	1.90%	2.35%	2.37%
Z _{-1,0}	5.96**	5.01**	4.35**
pos/neg ^a	97/47**	53/25**	35/13**
Wilcoxon Z ^b	4.71**	4.07**	2.95**
MCAR _{1,15}	0.43%	-0.59%	-0.58%
Z _{1,15}	0.02	-0.87	-0.67
pos/neg ^a	75/69	36/42	26/22
Wilcoxon Z ^b	0.40	0.59	0.50
N	144	78	48

^aRatio of positive to negative MCARs. Tests of significance are based on the Fisher sign test. The null hypothesis is an equal probability of negative and positive SAFEs

^bTest statistic for Wilcoxon signed-ranks test

* Two tailed test significant at the 0.05 level

** Two tailed test significant at the 0.01 level

The results for splits with no contemporaneous announcements are similar to the results reported for all splits. The two day announcement period MCAR is 2.35 percent ($Z = 5.01$). The MCAR from day -15 to day -2 is 2.90 percent ($Z = 2.44$), and the post-announcement period MCAR of -0.59 percent is not significantly different from zero ($Z = -0.87$). These results indicate that the market's reaction during the announcement period is driven by the announcement of the split rather than other contemporaneous announcements.

Table 3 also reports the results for initial splits by nondividend-paying firms. There are two reasons for examining initial splits separately. First, as reported in Table 1, many nondividend-paying firms engage in multiple splits prior to initiating dividends. Therefore, the time interval surrounding initial splits is even less likely to be contaminated with dividend information than the interval for other splits by nondividend-paying firms. Second, examining initial splits prevents the pre-event returns examined from being contaminated with returns that represent the market's reaction to a previous split. This is a minor problem when looking at short time periods prior to a split because a firm is unlikely to split its stock twice in a short period. It is an important consideration, however, when longer time frames are examined.

- Managers' forecasts of earnings and revenue;
- The issuance of new securities;
- Secondary offerings of the firm's stock;
- Redemption of the firm's debt;
- Changes in management; and;
- Changes in compensation plans.

For initial splits the two day announcement period MCAR is 2.37 percent ($Z = 4.35$). As is the case for all splits and splits with no contemporaneous announcements, the MCAR for the period following the split announcement is not significantly different from zero. Unlike the two previous cases, the MCAR from day -15 to day -2 is not significantly different from zero. If there is a significant price increase prior to initial splits, it appears to end by 15 days prior to the split announcement.⁸

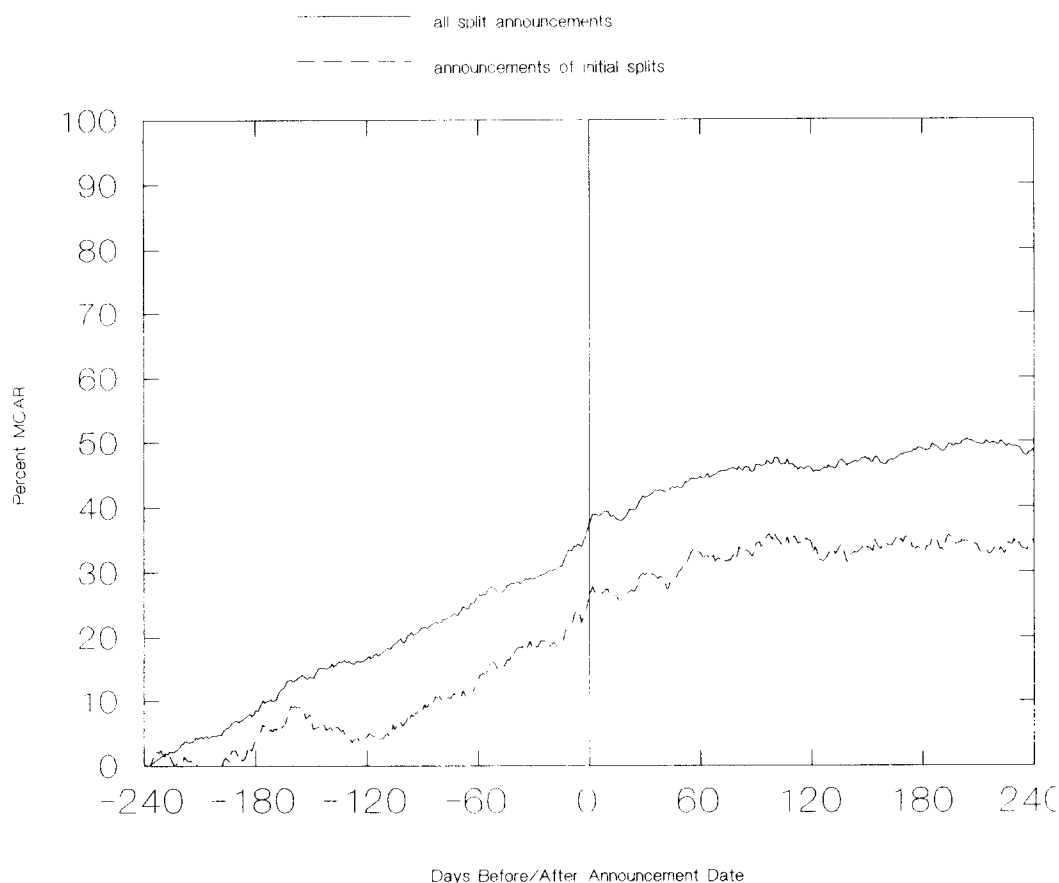
Overall, the results reported in Table 3 are consistent with the hypothesis that stock splits by nondividend-paying firms convey positive information. Interestingly, the short-term cumulative abnormal return patterns surrounding split announcements by nondividend-paying firms are similar to those reported by previous authors for dividend-paying firms. Also, the positive announcement period abnormal returns are similar to those reported by Grinblatt, Masulis, and Titman and Asquith, Healy, and Palepu for samples of nondividend-paying firms.

ANALYSIS OF LONG-TERM WEALTH CHANGES SURROUNDING STOCK SPLIT ANNOUNCEMENTS BY NONDIVIDEND-PAYING FIRMS

To extend the analysis of splits by nondividend-paying firms to the long-term wealth changes surrounding such splits, this section reports MCARs for the period from 240 days prior to the split announcement to 240 days following the announcement. The MCAR patterns for both initial splits and all splits by nondividend-paying firms are graphed in Figure 1. The presplit MCAR patterns for nondividend-paying firms are similar to the abnormal return patterns reported for dividend-paying firms by Fama, Fisher, Jensen, and Roll and Grinblatt, Masulis, and Titman. The MCAR patterns are characterized by a sharp increase in the stock prices of splitting firms prior to the split announcements. The MCAR from day -240 to day -2 is 35.34 percent ($Z = 8.30$) for all splits and 23.69 percent ($Z = 4.10$) for initial splits. The significant positive pre-event MCAR for initial splits indicates that the positive presplit abnormal returns reported in this paper are not simply the market's reaction to previous split announcements. The MCARs of both samples in Figure 1 exhibit significant mean abnormal returns for the two day announcement period. These abnormal returns are similar to the corresponding abnormal returns reported in Table 3, indicating that estimation of the announcement period return is robust with respect to the choice of the postsplit benchmark estimation period. Contrary to Fama, Fisher, Jensen, and Roll, who report a leveling of the cumulative abnormal return pattern in the year following the split, Figure 1 shows a continued (though less pronounced) price increase in the period following the split announcement. For the entire split sample the MCAR for the 240 days following the announcement date (11.36 percent) is significant at a .01 level of significance ($Z = 3.01$). For initial splits the MCAR for the 240 days following the announcement date (8.11 percent) is not significantly different from zero ($Z = 1.55$). My postsplit MCARs are similar to Grinblatt, Masulis, and Titman's cumulative return of 7.21 percent for the 120 day period following split announcements by dividend-paying firms. Thus, Grinblatt, Masulis, and Titman's positive postsplit cumulative return is not driven by contaminating dividend information.

⁸ Figure 1 reports a significant price increase in the 240 days preceding initial split announcements.

Figure 1—Mean Cumulative Abnormal Returns (MCARs) Surrounding Announcements of Stock Splits by Nondividend-Paying Firms



All Split Announcements (N = 99)
 $\text{MCAR}_{-240,-2} = 35.34$ percent Z = 8.30
 $\text{MCAR}_{-1,0} = 1.97$ percent Z = 5.35
 $\text{MCAR}_{1,240} = 11.36$ percent Z = 3.01

Announcements of Initial Splits (N = 31)
 $\text{MCAR}_{-240,-2} = 23.69$ percent Z = 4.10
 $\text{MCAR}_{-1,0} = 2.60$ percent Z = 3.73
 $\text{MCAR}_{1,240} = 8.11$ percent Z = 1.55

The continued positive abnormal returns after the split announcement are somewhat disturbing, as in an efficient market one would expect post-announcement abnormal returns to be of mean zero. This result is consistent, however, with the significant positive abnormal returns observed on split and stock dividend ex dates by Eades, Hess and Kim (1984), Woolridge (1983), and Grinblatt, Masulis, and Titman. Because Fama, Fisher, Jensen, and Roll use the effective date (not the announcement date) of the split to

identify month 0 in their event study, they include the ex-date abnormal return in month 0. Thus, the difference from Fama, Fisher, Jensen, and Roll's post-event abnormal return pattern is at least partially attributable to the ex date effect.⁹

THE EARNINGS INFORMATION IN STOCK SPLITS BY NONDIVIDEND-PAYING FIRMS

This section examines the earnings of nondividend-paying firms that split their stock. The behavior of earnings both before and after the split is examined in order to test the effectiveness of stock splits as signals of abnormal earnings performance.

METHODOLOGY

Earnings data are obtained from the Compustat annual and research tapes. There are 67 sample firms for which the necessary data exist. In any year it is assumed that the change in a firm's earnings is a function of the average change of all firms on the Compustat tapes such that a measure of abnormal earnings performance is the forecast error:

$$(4) \text{FE}_{it} = \Delta \text{Earnings}_{it} - (\hat{\alpha}_i + \hat{\beta} \Delta \text{Earnings}_{mt})$$

where:

- $\Delta \text{Earnings}_{it}$ = The change in the earnings of firm *i* during the fiscal year beginning at *t* - 1 and ending at *t*; and
- $\Delta \text{Earnings}_{mt}$ = The change in the equally weighted average of earnings for all firms included in the annual Compustat tapes between *t* - 1 and *t*.

This expectations model has been used previously by Vermaelen (1981) and Eckbo (1986). Forecast errors are computed for the year prior to the split, the year of the split, and three years following the split. The parameters of the earnings market model are estimated using all available earnings observations prior to the year preceding the split. A minimum of five observations is required for estimating the market model parameters. The test statistic is constructed using the event study methodology described above.¹⁰

ANALYSIS OF EARNINGS FORECAST ERRORS

Table 4 reports median forecast errors (FEs) and mean standardized annual forecast errors¹¹ (SAFEs) for earnings changes around stock splits by nondividend-paying firms. Mean SAFEs, rather than mean FEs, are reported because the mean of the unstandardized

⁹ Ex dates are identified for the splits that are examined in the current study. The ex date abnormal return is found to be significant at a 0.01 level of significance. The ex date mean abnormal return varies from 1.48 percent to 1.60 percent, depending on the choice of estimation period for the market model parameters.

¹⁰ Two alternative earnings adjustment techniques also are used. First, industry-adjusted percent earnings changes are examined. Under this approach each annual percent earnings change is adjusted by subtracting that year's median percent earnings change for the splitting firm's industry (based on two digit SIC codes). Second, earnings forecast errors are computed under the assumption that the expected change in earnings during the event period (years -1 to 3) is equal to the mean change in all prior years for which data are available. This proxy for the expected earnings change is based on the evidence presented by Ball and Watts (1972) and Watts and Leftwich (1977) that earnings follow a submartingale with a linear trend. The alternative methodologies support the same conclusions as do the market model results.

¹¹ Each forecast error is standardized by dividing by the standard error of the forecast.

Table 4—The Behavior of Standardized Annual Forecast Errors* (SAFEs) for Earnings Changes Around Stock Splits by Nondividend-Paying Firms

Year ^b	Mean SAFE	Z-value ^c	Median FE	pos/neg ^d
Panel A: The Earnings Measure is Earnings per Share (\$)				
All Splits				
-1	1.41	11.36**	0.11	50/15**
0	2.33	18.62**	0.25	48/16**
1	1.19	8.99**	0.12	36/21*
2	-0.69	-4.82**	0.01	25/24
3	0.77	5.04**	0.01	23/20
Initial Splits				
-1	1.16	4.92**	0.04	13/5
0	2.73	11.57**	0.19	14/4*
1	1.96	7.83**	0.13	12/4
2	1.59	6.15**	0.07	8/7
3	-1.18	-4.40**	-0.03	7/7
Panel B: The Earnings Measure is Net Operating Income (\$ millions)				
All Splits				
-1	2.80	22.88**	5.01	54/13**
0	5.31	43.42**	5.10	52/15**
1	5.98	45.94**	5.64	40/19**
2	1.92	13.59**	0.77	27/23
3	1.24	8.16**	2.68	23/20
Initial Splits				
-1	1.25	5.30**	1.76	14/4*
0	5.17	21.91**	4.98	16/2**
1	8.46	33.82**	5.56	13/3*
2	6.44	24.93**	0.15	8/7
3	5.21	19.53**	1.74	7/7

*It is assumed that the change in earnings for each firm is a function of the change in earnings for an equally weighted portfolio of firms on the Compustat annual and research tapes. Each forecast error is standardized by dividing it by the standard error of the forecast

^bYear zero is the fiscal year during which the split is announced

^cThe null hypothesis is that the average SAFE is equal to zero

^dRatio of positive to negative SAFE's. Tests of significance are based on the Fisher sign test. The null hypothesis is an equal probability of negative and positive SAFE's

* Significant at 0.05 level, two tailed test

** Significant at 0.01 level, two tailed test

FEs is extremely sensitive to outliers. The SAFE's are less sensitive to outliers. The median FEs are insensitive to outliers. Results are reported for two earnings measures: net operating income (NOI) and earnings per share (EPS). Net operating income is chosen as a proxy for the cash flow produced by the firm's assets. Earnings per share is chosen as a proxy for the cash flow produced for the firm's shareholders. SAFE's are reported for all splits and for initial splits.

The empirical results for mean SAFE's indicate that splits follow a fiscal year of unexpectedly high earnings. In addition, the fiscal year of the split and the following three years are predominantly years of significantly positive earnings forecast errors. An examination of the number of positive and number of negative FEs (by definition equivalent to the number of positive and number of negative SAFE's) for each year, however, suggests

that the significant Z-values reported in years two and three are the result of a few extreme observations. Based on the evidence in Table 4, it is only safe to conclude that the year prior to, the year of, and the year following splits are years of above normal earnings. This holds true for both earnings measures and both split samples. These results are consistent with the notion that splits signal a temporary continuance of unusually good pre-split earnings performance. These patterns of earnings performance are similar to those documented by Lakonishok and Lev (1987) for dividend-paying firms and Asquith, Healy, and Palepu for nondividend-paying firms.

ANALYSIS OF MCARS ACCORDING TO EARNINGS PERFORMANCE

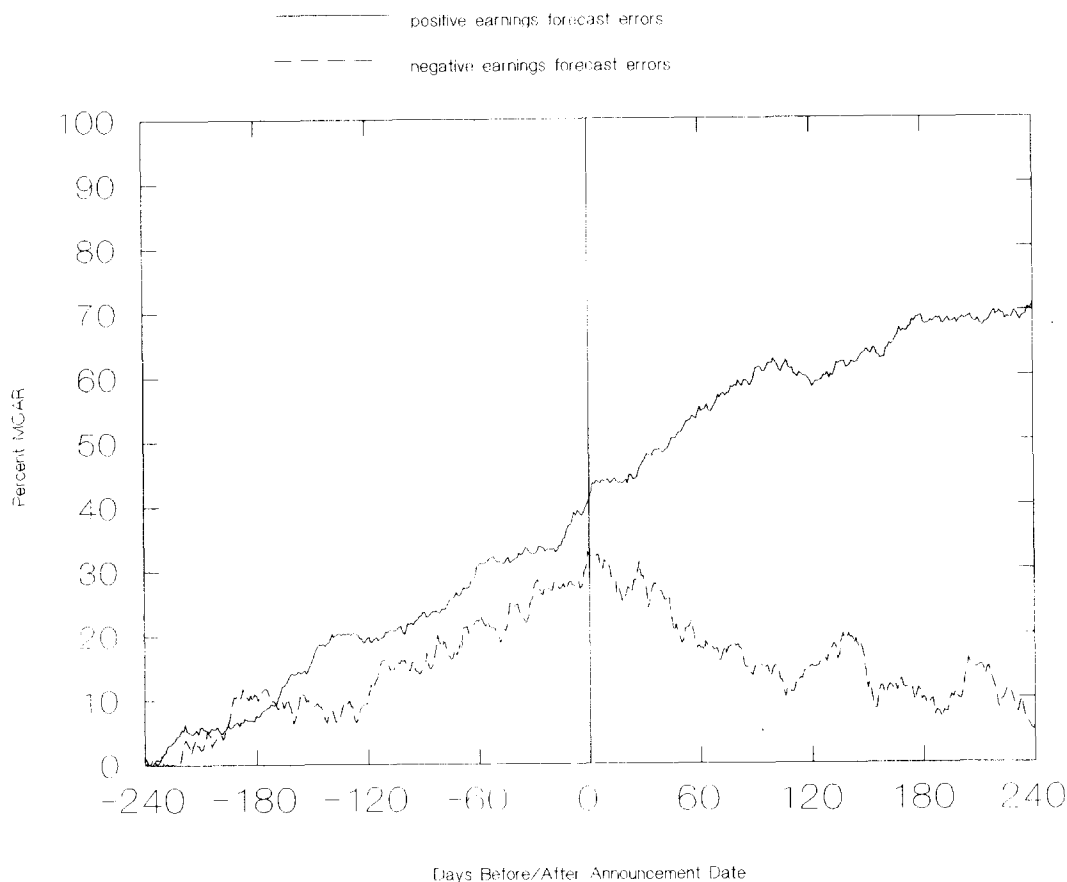
If the market's reaction during the split announcement period is a consequence of the earnings information contained in the announcement, then postsplit returns should reflect whether the announcing firm fulfills the market's expectation. Figure 2 graphs MCARs during the 481 day period surrounding stock splits by nondividend-paying firms. The sample is divided by the sign of the earnings forecast error for the fiscal year-end following the split announcement. This is the first attempt in the literature to link cumulative abnormal return patterns surrounding splits directly to earnings information, rather than to a proxy variable (dividends).

The MCAR patterns in Figure 2 are comparable to Fama, Fisher, Jensen, and Roll's graphs of cumulative average abnormal returns conditional on postsplit dividend performance. For both subsamples of splitting firms there is a significant increase in the stock price during the period preceding the split. Following the split, however, the return patterns diverge. Firms with positive earning forecast errors experience cumulative abnormal performance similar to that which they experienced prior to the split, while firms with negative forecast errors see their previous gains almost completely dissipated.

These results are consistent with the following story. Nondividend-paying firms tend to split their stock following a period of abnormally good earnings performance. The market correctly interprets the split as an indication that this abnormal earnings performance is likely to continue. In the year following the split the market revises its earnings expectation as new earnings information becomes available. The stock prices of splitting firms that report abnormally high earnings for the fiscal year-end following the split experience further upward revision, while the market recognizes that the split information was erroneous in the case of firms that report abnormally low earnings for the fiscal year-end following the split, so the stock prices of those firms fall.

The divergence of the return patterns in Figure 2 is more pronounced than the divergence of return patterns based on dividend performance in Fama, Fisher, Jensen, and Roll. In particular, the positive postsplit abnormal performance is more evident for the earnings increase sample than it is for Fama, Fisher, Jensen, and Roll's dividend increase sample. Thus, the sample design and methodology used in this paper appear to more successfully separate sample firms based on postsplit performance, providing a more accurate picture of the long-term wealth implications of stock splits.

Figure 2—Mean Cumulative Abnormal Returns (MCARs) Surrounding Announcements of Stock Splits by Nondividend-Paying Firms. The Sample Division is Based on the Sign of the Earnings Forecast Error in the Fiscal Year Following the Announcement



Positive Forecast Errors (N = 40)
 MCAR_{-240,-2} = 39.67 percent Z = 5.82
 MCAR_{-1,0} = 1.38 percent Z = 2.44
 MCAR_{1,240} = 29.94 percent Z = 4.43

Negative Forecast Errors (N = 9)
 MCAR_{-240,-2} = 30.27 percent Z = 2.46
 MCAR_{-1,0} = 1.84 percent Z = 1.66
 MCAR_{1,240} = -27.00 percent Z = -1.43

CONCLUSIONS

In this paper I extend the evidence on stock splits of nondividend-paying firms by documenting the long-term wealth effects associated with such splits. I estimate both unconditional CARs and CARs conditional on postsplit earnings realizations. The analysis of CARs conditional on postsplit earnings is the first attempt in the literature to link CAR patterns surrounding splits directly to earnings information, rather than to a proxy variable (dividends). Additionally, I provide new evidence regarding the frequency of stock

splits by nondividend-paying firms and the average time interval between the split and subsequent dividend initiation. Finally, I estimate announcement period abnormal returns and earnings forecast errors for my sample in order to check the consistency of my results with Grinblatt, Masulis, and Titman and Asquith, Healy, and Palepu and to provide a complete analysis of the wealth and earnings implications of splits that is free of contaminating dividend information.

Evidence regarding the frequency of stock splits by nondividend-paying firms and the time intervals between splits and subsequent dividend initiations indicates that my sample is not contaminated with dividend information. The examination of earnings behavior surrounding stock splits by nondividend-paying firms indicates that: 1) splits tend to follow periods of abnormally high changes in earnings for those firms; 2) the fiscal year of the split is generally associated with an abnormally high change in earnings for the splitting firm; and 3) the year following the split tends to be a year of abnormally high changes in earnings for the splitting firms. Thus, splits seem to signal a temporary continuation of abnormally good earnings performance.

The examination of abnormal returns on the stocks of nondividend-paying firms that split their shares indicate that, on average: 1) splits follow periods of positive abnormal returns on the splitting firms' shares; 2) the split announcements are associated with a further upward valuation in the splitting firms' share prices; 3) firms that exhibit abnormally high earnings changes in the fiscal year following the split experience a continued upward valuation in their share prices of a magnitude similar to their presplit performance; and 4) firms that exhibit abnormally low earnings changes in the fiscal year following the split see their previous gains almost completely dissipated. Thus, the market appears to react in a rational manner to the earnings information associated with stock split announcements.

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