

Stock Splits: Evidence from Mutual Funds

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ABSTRACT

Mutual fund splits occur in high-priced funds after unusually high returns. Split factors are related to the deviation of a fund's price from the mean of all fund prices. Post-split prices are below the mean of other funds' prices. Post-split numbers of shareholders and assets do not increase compared with funds having similar rates of asset growth. However, I find evidence that mutual fund splits bring per account shareholdings back up to normal levels. I argue that signaling, liquidity, and tick size theories do not apply to mutual fund splits.

A PHENOMENON IGNORED in the literature on stock splits is that mutual funds also split.¹ For example, on January 9, 1996, the Piper Emerging Growth Fund declared a 100 percent common stock dividend.² Mutual fund splits are surprising because the number of shares that a mutual fund shareholder obtains for a given sum of money is determined by dividing an arbitrary offer price into the given sum of money.

This paper provides evidence on mutual fund splits. I report the following: (1) Funds' pre-split prices are significantly higher than the average of all fund prices. Lakonishok and Lev (1987), Brennan and Copeland (1988), and Ikenberry, Rankine, and Stice (1996) provide similar evidence for common stock splits. (2) Split factors of mutual funds are similar to those of common stocks, the most common being two for one in both cases. (3) Post-split prices of mutual funds are near the average fund price at the time of the split. Lakonishok and Lev (1987), Brennan and Copeland (1988), and Ikenberry et al. (1996) report similar evidence for common stocks. (4) The split factor of mutual fund splits is cross-sectionally related to the percentage deviation of a fund's price from the average mutual fund price at the time of the split. McNichols and Dravid (1990) find the same for common stock splits. (5) Mutual fund splits occur after the funds experience significantly higher returns than non-splitting funds of comparable size. Dolley (1933) and Fama

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¹ The only exception I find is Barker (1956).

² A letter to shareholders dated January 9, 1996 states that the action was taken "in order to make Emerging Growth Fund more affordable for new and existing shareholders." A March 31, 1996 report mentions that the "board took this action in order to make the fund potentially more attractive for new and existing shareholders."

et al. (1969) report similar evidence for common stocks. (6) Post-split returns of splitting mutual funds are significantly lower than those of funds that experience similar asset growth and return in the year of the split and no different than returns of size-matched funds. By contrast, post-split earnings behavior of common stocks suggests that the split announcement provides a signal to the market of better-than-expected future earnings (see Asquith, Healy, and Palepu (1989), and McNichols and Dravid (1990)). (7) Splitting funds have *similar* growth in number of shareholders and total assets in the year after the split as a control sample of non-splitting funds with the same asset growth in the year of the split. Dolley (1933), Barker (1956), and Lamoureux and Poon (1987) find *increases* in numbers of shareholders in the year after common stock splits. (8) Prior to splits, shareholders in splitting funds hold approximately one-half the number of shares as shareholders in control funds that do not split.

According to the Division of Investment Management of the Securities and Exchange Commission, mutual funds that split go through the same procedures as ordinary companies. They file proxy statements, ask shareholders for formal approval of the split, and adjust their accounting in accordance with SEC procedures. Private correspondence with mutual funds reveals that the costs of splitting are trivial.

The paper is organized as follows. Section I discusses theories of common stock splits and their relevance for mutual fund splits. The data and sample are discussed in Section II. Section III provides the empirical analysis of price and Section IV an analysis of the growth of returns, number of shareholders, and of total assets. Section V summarizes and concludes.

I. Stock Split Theories and Mutual Fund Splits

A. Previous Explanations

Four types of stock split theories appear in the literature on stock splits: signaling, optimal tick size, tax-option, and trading range.

The Brennan and Copeland (1988) signaling model of splits does not apply to the mutual fund split because there is no higher cost of transacting at lower prices for mutual funds. The costs of transacting in mutual funds do not depend on the price of the fund. Monies deposited by investors are simply divided by offer prices to obtain numbers of shares purchased. The Brennan and Hughes (1991) signaling model of splits also does not apply because funds do not use a lower price to increase broker promotion and research. Security analysts do not follow mutual funds or generate brokerage commissions via their research. Nevertheless, in the following I examine the signaling of managerial ability by examining mutual fund returns after the split.

Angel's (1996) suggestion that firms split their stocks in order to achieve an optimal tick size relative to the stock price does not apply to mutual fund splits as mutual funds have a continuous tick size. Funds do not optimize

liquidity or any of the other conditions that Angel suggests are associated with an optimal tick size.

The tax-option hypothesis (Lamoureux and Poon (1987)) argues that increased return variance of common stocks after they split (Ohlson and Penman (1985)) provides stockholders with enhanced opportunities to time purchases and sales. But because the return variance of a mutual fund share is a function of the assets in the underlying fund portfolio, an *immediate* change in the fund's variance is unlikely. It would require that the variances of the underlying assets alter after the split.

Baker and Gallagher's (1980) survey finds that managers tend to mention an optimal trading range to explain splits. Dolley (1933) and Barker (1956) maintain that the conventional price attracts trading and improves a common stock's liquidity. However, Copeland (1979) shows that liquidity declines after stock splits, and Brennan and Copeland (1988) and others emphasize that higher transactions costs at lower prices discourage trading. With respect to mutual funds, however, liquidity is simply not a consideration. For the most part, the investor can invest or redeem shares with little difficulty and without trading costs depending on price. Liquidity does not seem to provide an explanation for mutual fund splits.

Dolley (1933), Barker (1956), and Lakonishok and Lev (1987) argue that managers are concerned with the composition of investor ownership. Lakonishok and Lev (1987) suggest that management wants to affect investor ownership because of the variation of trading costs with stock price. However, transactions costs in funds, when they are present, are not a function of price. Still, I examine changes in the total assets invested per shareholder account.

Barker (1956), Lamoureux and Poon (1987), and Maloney and Mulherin (1992) document increases in shareholder numbers when stocks split. In the literature, it is variously held that managers of firms wish to broaden their shareholder lists for reasons of control, and to facilitate future equity financing, to reduce prospects of adverse legislation, and to widen product market. Because mutual fund management fees increase with assets under management, mutual fund managers gain from an increase in the number of stockholders if funds under management simultaneously increase. Therefore I examine growth in number of shareholders and total assets below.

B. Other Hypotheses

In this section I bring together other explanations for the mutual fund split.³ First, money illusion might drive mutual fund splitting. Money illusion means using the nominal price in one's decisions. For example, investors might (irrationally) shy away from high-priced mutual funds because

³ Some have suggested to me that there may be a cost for newspapers to report prices above 100 dollars that causes newspapers to exclude reporting on the fund. However, newspapers in fact do report funds with prices over 100 dollars. Also, funds split long before their prices are near 100 dollars.

they believe that a high price makes it more likely that the price can decline. Or perhaps, not wishing to invest resources to discover otherwise, investors assume that, all else equal, a lower-priced fund is preferable. That is, they are rationally ignorant. In either of the latter two cases, it makes sense for managers to respond by splitting the stock so as to retain customers.

If there is money illusion, fund assets should tend to be concentrated in funds that have prices near the average for all funds or at least not concentrated in high-priced funds. To test this hypothesis, I regress the assets of the first 500 mutual funds taken from *CDA/Wiesenberger Investment Companies Yearbook '95*, pages 477–976, against their net asset values at year-end 1994. The result (not reported) is a slight, significant *positive* association of total assets and net asset value, which is driven primarily by the largest funds. If anything, the larger funds have higher net asset values, so the evidence does not support the money illusion hypotheses. Nevertheless, anecdotal evidence suggests that money illusion could be a factor.⁴

A variation on money illusion is to hypothesize that some (unidentified) costs of being unconventional exist. In a letter to shareholders (January 6, 1997), Mutual Series funds announced three splits “in response to concerns expressed by various existing shareholders, prospective shareholders and members of management that the funds’ share prices were higher than the norm in the mutual fund industry.” A *conventional* price of a mutual fund could be similar to using conventional words in conversation or giving conventional names to offspring. If I refer to democracy as ochlocracy, few are likely to understand. If I name a child Plotinus, I am likely doing him no favor. By the same token, a price of 1.35 or 75.25 dollars for a mutual fund, when the mean is 15 dollars, may lead some potential shareholders to skip to the next fund at relatively small loss to him if funds are not all that different from one another. Under this hypothesis, as with money illusion, there should be fewer shareholders and/or fewer assets under management for funds with prices farther from average prices. As noted above, this is not the case.

Second, one reason for a fund to attract more shareholders is that the fund expects to make high capital gains tax distributions in the future. Current shareholders benefit if the distribution attracts many new shareholders who buy into the tax liability. Below, I examine the capital gains distributions of funds that split.

Third, a fund manager writes that his fund split ten for one because shareholders “tend to prefer to have more shares than a fraction.” If a shareholder wishes to make a gift of shares or liquidate small amounts, it is perhaps more convenient to have 100 shares of a ten dollar (net asset value) fund

⁴ James Connelly Jr., explaining the split of a Fred Alger fund, on the CNBC program *The Money Club* in November 1996, stated that “We were finding more and more that as the fund got to 30 dollars per share people [callers] were saying that the price was too high . . . A lot of those people also went to our competitors and received information. And I think that it’s the consumer’s instinct that everything else being equal they will pick the lower-priced product.”

than ten shares of a 100 dollar fund. Also, if a fund disallows reinvestment of fractional share amounts, some shareholders would find it impossible to reinvest small amounts of a high-priced share.⁵ Under this hypothesis, funds that split should have low values of the average number of shares held by shareholders per account compared with funds that do not split. Therefore, I examine the average holdings in shares.

II. Data

The source of data on mutual funds is annual issues of *Wiesenberger's Investment Companies* (now known as *CDA/Wiesenberger*) dated 1966 to 1992, which also include data for years 1965 to 1991 and earlier. *Wiesenberger* typically, but not always, provides the month, day, and size of stock splits and dividends in notes below the statistical summaries provided for each mutual fund. I find a total of 194 stock splits and stock dividends of all sizes.⁶ Table I shows the total numbers of mutual funds and splits for each year from 1965 through 1990, excluding small stock dividends of less than 20 percent, with the exception of one stock dividend of 18 percent that I judged to be close enough to 20 percent to include in the sample. In total I eliminate 27 stock dividends of size three to ten percent.⁷ This leaves 167 large split events, consisting of 131 stock splits and 36 large stock dividends. All the analyses treat stock dividends as splits. For example, the 100 percent stock dividend is treated as a two for one split. I verify the prices of the funds on the day before and after each split using the *Wall Street Journal*. I was unable to locate 22 mutual funds; 15 of which split between 1965 and 1973.⁸ Hence, I am left with 145 mutual funds.

I use two basic event samples in the paper: (a) a sample of 145 funds when analyzing the prices of funds that split, and (b) a sample of 120 funds when analyzing all other characteristics of the funds such as shareholder growth and returns. The 120 fund sample is a subset of the 145 fund sample. However, none of the findings of the paper are significantly changed if I use all 145 funds, or the 120 fund sample. The sample of 145 mutual funds is reduced to 120 by discarding funds for various reasons. Seven funds were eliminated because the splits occurred shortly after the fund's shares were first offered to the public. For example, Keystone Apollo was offered on December 15, 1969 at 10 dollars a share and split two for one on April 30, 1970. In these cases, when the fund publishes its track record prior to its public offering, the returns will clearly be influenced by selection bias. Fund managers will tend to offer shares of the more successful firms to the public.

⁵ Unfortunately, data on fund restrictions on dividend reinvestment over the period of study are unavailable.

⁶ Three reverse splits and one money market fund split are excluded from the sample.

⁷ Small stock dividends occur only in the years from 1969 through 1982. They tend to be concentrated in two fund families: Anchor funds (eight) and Franklin funds (five).

⁸ Two of these were because of mergers: Templeton Global Fund's five for one split on 12/17/88 and Chase Frontier Capital Fund of Boston's twelve for one split on 11/1/71.

Table I
Annual Distribution of Mutual Fund Stock Splits

The "Total Number of Funds" columns show the total number of mutual funds reported in Arthur Weisenberger's *Investment Companies*, excluding all money market funds and tax-exchange funds. The source section is called "Statistical Survey of Mutual Funds" or "Mutual Fund Panorama". The columns labeled "No. of Splits" show the distribution by year of 167 mutual fund stock splits and large stock dividends collected from the 1966–1991 editions of Arthur Weisenberger's *Investment Companies*. The splits and dividends are reported under the individual statistical information for each fund. The table excludes 27 small stock dividend distributions ranging in size from 3 to 10 percent. The table excludes three reverse splits. All other stock dividend distributions are counted as stock splits. The "Sample Size" columns show the distribution by year of 145 mutual fund stock splits included in the largest sample.

Year	Total Number of Funds	Number of Splits	Sample Size	Year	Total Number of Funds	Number of Splits	Sample Size
1965	298	4	4	1978	541	8	6
1966	317	9	7	1979	544	8	6
1967	344	5	3	1980	549	10	10
1968	394	15	11	1981	559	9	8
1969	488	6	5	1982	595	1	1
1970	558	2	2	1983	685	16	16
1971	586	6	3	1984	814	5	5
1972	583	9	8	1985	1000	4	4
1973	573	5	3	1986	1283	13	12
1974	536	1	1	1987	1491	10	10
1975	510	1	1	1988	1803	3	2
1976	514	4	4	1989	1876	11	11
1977	524	0	0	1990	2091	2	2

Also, the record of shareholder accounts is dramatically influenced by the public offering. Two funds were eliminated because of major policy changes that could influence the number of shareholders. (For example, Ivy Institutional Investors, which had been closed since 1985, split ten for one on June 30, 1989 and became a growth and income fund open to the public.) Four funds were eliminated because they merged—in these cases there are dramatic changes in assets and numbers of shareholders. The remaining twelve funds were eliminated either because the shareholder data were unavailable after the split (eight funds) or because no information on the fund could be located after the split (four cases).

The data include year-end numbers of shareholders in the fund, year-end net asset values, income dividends, and capital gains distributions. From the *Wall Street Journal* I obtain the offer price of the fund (or its net asset value if the fund has no load) on the day before the split became effective.

The main analysis uses two control samples of mutual funds, called the price-control sample and the growth-control sample. (I also briefly footnote findings using a size-control sample.) I use the price-control sample to compare the prices of the 145 splitting funds to the average prices of other non-splitting mutual funds on the same dates. To obtain the price-control sample,

Table II

Distribution of 145 Mutual Fund Splits by Split Factor, 1965–1990

The table shows the distribution of mutual fund stock splits in the 145 fund sample in categories of stock split factor. Data on split factors are from Arthur Weisenberger’s *Investment Companies*, 1966–1991 editions. Stock splits and equivalent stock dividends are combined. For example, splits of 3-to-1 and 200 percent are combined, and splits of 2-to-1 and 100 percent are combined.

Split Factor	≥5–1	5–1	4–1	3–1	2–1	3–2	≤5–4	5–2
Number	3	7	11	28	76	10	9	1

for each of the 145 mutual funds I obtain the prices of 30 non-splitting mutual funds on the day before the split (from the *Wall Street Journal*). I choose the 30 funds that appear immediately below the splitting stock in the *Journal* listings. When I run out of funds, I go to the beginning of the list.

The growth-control sample consists of matched mutual funds chosen to have the same rate of growth of total assets and the same investment policy in the year of the split as the 120 sample funds. For this purpose I use the column in *Wiesenberger* called “Policy” that divides funds into 11 categories. Additionally, wherever possible, the funds chosen were close in total asset size in the year of the split. The purpose of the growth-control matched sample is to control for factors that influence shareholder growth in mutual funds.⁹ In the split year (year t) the mean (median) rates of growth of assets of sample and control are 49.2 (22.2) and 47.5 (22.4) percent, respectively, and the Wilcoxon Z -statistic is only 0.058. (See the lower panel of Table V.)

III. Findings: Prices

A. Split Factors and Sample Information

Table II shows the distribution of split factors in the 145 fund sample. The split factors are similar to the conventional split factors observed for common stocks, that is, two for one, three for two, five for four, etc. The most common split is the two for one split: 76 of the 145 splits, or 52.4 percent, are two for one stock splits. The next highest category is the three for one split at 28 or 19.3 percent. The percentage of splits greater than 100 percent is 33.8 percent. Only six percent of common stock splits are larger than 100 percent in Grinblatt, Masulis, and Titman’s (1984) sample.¹⁰

Among the 145 funds, 129 distinct funds have splits. There are 14 mutual funds with repeat splits. Splits are spread over a variety of fund families,

⁹ Patel, Zeckhauser, and Hendricks (1992) show that funds having higher returns tend to attract new shareholders.

¹⁰ This suggests that there is less urgency to split a mutual fund when the price becomes high, or that the costs of not splitting a mutual fund are less serious than the costs of not splitting a common stock.

Table III
Fractile Values of Mutual Fund Prices, 1965–1991

Row one, Sample Pre-Split, shows mean, standard deviation, and fractiles of the distribution of prices prior to the split of the 145 fund sample of funds that split. Prices are from various issues of the *Wall Street Journal* on the day prior to the split. For each fund, on the same day, a sample of 30 mutual funds is taken from the *Wall Street Journal*. The average prices of the 30 funds are found. The Control Group row shows mean, standard deviation, and fractiles of the 145 samples of 30 funds. The Sample Post-Split row shows mean, standard deviation, and fractiles of the distribution of prices after the split of the 145 fund sample of funds that split. The post-split sample prices are obtained by dividing the pre-split sample prices by the split factor. For example, a pre-split price of \$20 and a split factor of 3-to-2 result in a post-split price of \$13.34.

	Lowest	10%	50%	90%	Highest	Mean	Std. Dev.
Sample pre-split	9.26	15.26	23.46	43.14	223.72	30.56	25.80
Control group	6.78	8.58	12.84	19.08	22.06	13.30	3.83
Sample post-split	4.36	7.42	10.52	17.66	55.93	11.93	5.78

small and large, including individual funds and well-known families with many funds. Of the 129 funds that have splits, 96 are load funds and 33 are no-load funds. I also note that the funds include a broad range of investment policies, including all types of stock funds, international funds, funds that use options, high yield funds, balanced funds, and sector funds. In sum, at one time or another, diverse kinds of mutual funds have stock splits. There is no apparent common denominator in the splitting fund according to fund family, load, size, or investment policy.

B. Pre-Split Prices

Table III summarizes information about the distribution of prices of 145 mutual funds that split as compared with the distribution of the average prices of the price-control sample of non-splitting mutual funds. The median (mean) price of the funds that splits is 23.46 (30.56) dollars, and the median (mean) price of the price-control samples is 12.84 (13.30) dollars. This suggests immediately that the prices of splitting funds are much higher than the prices of non-splitting funds. The prices in the price-control samples provide information on the average mutual fund prices over the course of many years. From 1968 through 1979, the average prices fluctuated around a mean of 9.75 dollars. Over the years 1980 through 1990, the average prices were distinctly higher, fluctuating around a mean of 16.10 dollars. Although the mean price of all mutual funds appears stationary over periods as long as a decade, over even longer periods the mean price is not a stationary time series.

A matched-pairs Wilcoxon test of the splitting funds' pre-split prices and the control sample prices produces a Wilcoxon Z-statistic of 10.19, which is highly significant. Indeed, for 139 out of the 145 comparisons, the pre-split price is greater than the average price-control sample price, with the aver-

age percentage difference in price being approximately 142 percent. Pre-split prices are also in the distribution tails. Ranking the 31 prices that comprise the pre-split price and the 30 funds forming the price-control sample yields an average rank of the pre-split price of 28.2, where 1 is the rank of the lowest price and 31 is the rank of the highest price. I conclude that pre-split mutual fund prices are significantly higher than the prices of other non-splitting mutual funds.

C. Post-Split Prices

I estimate the post-split price of the splitting mutual funds by applying the split factors to the pre-split prices. The sample post-split median (mean) price is 10.52 (11.93) dollars. The latter prices are close to those of the price-control sample, suggesting that mutual fund managers choose split factors that result in post-split prices being in the conventional price range as defined by the prices of other mutual funds. Actually, post-split prices, although within a few dollars of control group means, are significantly lower (Z-statistic of -4.03). The average rank of the post-split price is 15.10 after the split.

In order to understand how fund managers choose split factors, I regress the split factors (SPFAC) cross-sectionally against the percentage deviations (DEV) of the pre-split fund price from the mean price of each fund's relevant 30-fund price-control sample average price.

$$\text{SPFAC} = 2.02 + 0.375 \text{ DEV} \quad (R^2 = 30.8\%).$$

(17.92) (8.07)

The percentage deviations explain 30.8 percent of the variation in the split factors, and the deviations are highly significant (t -value of 8.07).¹¹ In other words, higher split factors are associated with higher deviations of fund prices from the existing mean of fund prices. Apparently managers of mutual funds choose split sizes that bring fund prices near the means of existing prices.

D. Splits and Market Movements

Fama et al. (1969) find that "for the exchange as a whole the number of splits increases dramatically following a general rise in stock prices." To investigate this I begin by regressing each year's number of mutual fund splits (shown in columns three and seven of Table I) against concurrent and lagged annual returns of the S&P 500 Index (SPRET). For all 167 mutual fund splits, I find (t -values in parentheses)

$$\text{Number of Splits} = 4.26 + 0.072 \text{ SPRET}_t + 0.129 \text{ SPRET}_{t-1} \quad (R^2 = 20.0\%).$$

(3.71) (1.46) (2.57)

¹¹ All regression results report heteroskedasticity-consistent test statistics.

For the sample of 145 funds used in this paper, a similar regression produces stronger results. The adjusted R -square is 0.271. Concurrent and lagged S&P returns have t -values of 1.85 and 2.92, respectively.¹²

I conclude that the number of mutual fund splits tends to increase after periods of rising stock prices as measured by the S&P 500 Index. However, if the percentage of funds that split remains the same and the number of funds rises after returns are high in the stock market, it may account for splits rising after high return years. To examine this possibility, I define *Percent Splits* as the number of splits divided by the total number of mutual funds in that year. I then conduct OLS and Tobit estimations with *Percent Splits* as the dependent variable and *Returns* as the independent variable. Both estimations (not reported) produce the same result—namely, concurrent and past returns have no explanatory power for the percent of funds that split. Hence, although the number of mutual fund splits is positively associated with stock market returns, the relation appears to be driven by an increase in mutual fund numbers as returns rise.

E. Split Frequency

The frequency of mutual fund splits—that is, the number of splits divided by the total number of funds—varies from a low of 0.00 percent in 1977 to a high of 3.81 percent in 1968. The average annual frequency from 1965 through 1990 is 1.08 percent. Lakonishok and Lev (1987) report that the frequency of common stock splits averages 6.03 percent from 1963 through 1982, ranging from a low of 1.75 percent in 1974 to a high of 11.43 percent in 1981. It is clear that mutual funds do not split as frequently as common stocks.

If signaling and tick size hypotheses are not applicable to mutual funds, then we expect no mutual fund splits for those reasons. Hence we expect fewer splits among funds than common stocks. Therefore I interpret the low frequency of mutual fund splits as providing indirect support for signaling and/or tick size hypotheses of common stock splits.

IV. Findings: Returns and Shareholder Growth

A. Mutual Fund Returns

Table IV provides comparisons between the sample and the growth-control mutual fund sample. Controlling on assets also controls on return in the year of the split. The sample has a return of 16.2 percent in the year of the split compared to 16.1 percent for the growth-control firms. There is also no significant difference in returns in year $t - 1$ (Z -statistic is 1.70). In year $t + 1$, control firms' returns average 7.21 percent compared to 3.74 percent for returns of the sample funds, a difference that is significant at the 0.001 level.

¹² In a Poisson regression, concurrent and lagged returns have t -values of 2.33 and 3.99, respectively.

Table IV
Returns of Sample and Growth-Control Mutual Funds

The sample is 120 mutual funds that split in the period 1965 through 1990. Year t is the year of the split. The growth-control sample consists of non-splitting mutual funds matched on growth in asset size in the year of the split and investment policy in the year of the split and secondarily by total asset size. Panel A shows mean returns including income distributions (dividends), capital gains distributions, and capital gains (price change in net asset value). Panel B shows the income distribution component of return, that is, income distributions divided by prior end-of-year net asset value. Panel C shows the capital gains distribution component of return, that is, capital gains distributions divided by prior end-of-year net asset value. Panel D shows the capital gains component of return, that is, net asset value in year t divided by net asset value in year $t - 1$. The test of differences between the sample and control fund returns uses the Wilcoxon Z -statistic.

Year	Sample	Control	Z-statistic	Sample Size
Panel A: Average Overall Returns				
$t - 1$	0.257	0.216	1.70	118
t	0.162	0.161	-1.16	118
$t + 1$	0.0374	0.0721	-2.92 ^a	114
Panel B: Dividend Component of Return				
$t - 1$	0.0243	0.0333	-3.55 ^a	118
t	0.0210	0.0308	-3.51 ^a	118
$t + 1$	0.0232	0.0319	-3.00 ^a	114
Panel C: Capital Gains Distribution Component of Return				
$t - 1$	0.0525	0.0586	-1.23	118
t	0.0702	0.0686	-0.38	118
$t + 1$	0.0504	0.0503	-1.19	114
Panel D: Capital Gains Component of Return				
$t - 1$	0.181	0.124	2.57 ^a	118
t	0.0704	0.0615	0.20	118
$t + 1$	-0.0361	-0.0101	-1.96 ^b	114

^aSignificant at less than the 0.001 level.

^bSignificant at less than the 0.05 level.

After the split, splitting funds underperform nonsplitting funds that display similar returns and asset growth in the year of the split. Hence, fund returns provide no evidence of signaling of managerial ability in the fund split.

The dividend yields of the splitting funds are significantly *lower* than the dividend yields of the matched pair funds (Z -statistic of -3.51 in the year of the distribution). Splitting funds do not tend to pay higher than average capital gains distributions in years $t - 1$, t , or $t + 1$ even though in year $t - 1$ the capital gains component of the sample funds is 18.1 percent compared to 12.4 percent for the matched pairs, and the Wilcoxon Z -statistic is 2.57. I do

Table V
**Growth in Number of Shareholders and Assets for Sample
and Growth-Control Mutual Funds**

The sample is 120 mutual funds that split in the period 1965 to 1990. Year t is the year of the split. The growth-control matching sample consists of non-splitting mutual funds matched on growth in asset size and investment policy in the split year and secondarily on total asset size. The table shows summary statistics of annual rates of growth of shareholders and assets. The test of differences between the sample and control fund characteristic uses the Wilcoxon Z -statistic.

Year	Fund Set	Median	Mean	Std. Dev.	Sample Size	No. Times Sample > Control	Z-Statistic
Panel A: Shareholder Growth of Sample and Matching Growth-Control Sample							
t	Sample	0.102	0.657	1.84	113	71	2.54 ^b
	Control	0.0829	0.418	0.936			
$t + 1$	Sample	0.0489	0.210	0.538	120	54	0.047
	Control	0.0247	0.222	0.582			
Panel B: Growth in Total Assets of Sample and Matching Growth-Control Sample							
t	Sample	0.222	0.492	0.906	120	60	0.058
	Control	0.224	0.475	0.887			
$t + 1$	Sample	0.030	0.147	0.447	120	52	-0.78
	Control	0.067	0.185	0.500			

^aSignificant at less than the 0.001 level.

^bSignificant at less than the 0.005 level.

not find evidence that funds with high capital gains split in order to facilitate high capital gains distributions.¹³

B. Growth in Number of Shareholders

In year t shareholder growth is significantly higher in the sample than in the matched pairs growth-control funds (see Table V). The mean is 65.7 percent in the sample compared to 41.8 percent in the control funds. In year $t + 1$, however, the Wilcoxon Z -statistic is 0.047 and there is no significant difference in shareholder growth. Hence, although the fund has split, its shareholder base grows no more rapidly than that of a non-splitting fund with the same rate of growth of assets (and same return) in the year of the

¹³ I also construct a size-control sample by pairing each fund in the sample with a fund that, as nearly as possible, has the same asset size, same investment policy, and same percentage of assets invested in stocks. In year $t - 1$, the sample mean return is 27.0 percent compared to 18.1 percent for the matched size-control sample (Z -statistic of 4.20). In the year of the split, the return differential favors the splitting fund by 2.9 percent (Z -statistic is 1.88). Clearly, mutual funds that split tend to have significantly higher returns than mutual funds of equivalent size and investment policy in the year prior to and the year of the split. In the year after the split, the mean returns of the splitting and non-splitting size-control funds are close (3.6 and 4.1 percent, respectively) and the Z -statistic is -0.88.

split. There is no evidence that the split causes an increase in the rate of growth of shareholders.¹⁴

A possible benefit of the split would be that it leads shareholders to place more funds at the management's disposal. In this case, assets should grow more rapidly for the splitting funds. In fact the mean growth in the sample after the split is 14.7 percent, but the growth-control firms have a mean growth of 18.5 percent (Table V). Hence, there is no evidence that the split causes the mutual fund to experience higher asset growth.

C. Ownership Characteristics

The fund split could affect the distribution of ownership, such as through assets per shareholder account. Sample (growth-control) funds average 9,651 (10,234) dollars per shareholder in the year of the split and 10,273 (10,523) dollars in the following year. To test the hypothesis, I conduct a Wilcoxon matched-pairs test on assets per shareholder account using the 120 fund sample and the growth-control sample. In the year of the split and the year after the split, Wilcoxon *Z*-statistics are -0.48 and -0.50 , respectively. Hence, there is no significant difference in assets per shareholder in the sample and control funds. I also test the growth in assets per shareholder for the sample and matched control funds. The Wilcoxon *Z*-statistic is -1.66 . Hence, there is no significant difference in median rate of growth of assets per shareholder account between sample and control funds.

Clearly, if dollar holdings in splitting and non-splitting funds are almost the same and prices of splitting funds are far higher than prices of non-splitting funds, then shareholders in splitting funds must hold fewer shares per account. Indeed, before the splits occur, the mean (median) shares held per account are 420 (272) and 899 (602) in the 120 fund sample and growth-control funds, respectively. The difference is significant (Wilcoxon *Z*-statistic of -5.98).¹⁵ After the splits, per account shareholdings have a mean (median) of 1053 (714) and 1074 (640), respectively, in the sample and growth-control funds. The difference is not significant (*Z* of 0.61).¹⁶

I observe that shareholders in splitting funds did not have higher average dollar holdings than control funds. Moreover, the split brings their shares held per account into line with those of control funds. If shareholders find it easier to liquidate or reinvest shares when the absolute number of shares they hold is higher, then perhaps fund managers provide the added convenience by splitting the fund's shares.

¹⁴ Compared with funds matched only on size, splitting funds have significantly higher shareholder growth in years $t - 1$, t , and $t + 1$.

¹⁵ Similar results occur in the 145 fund sample and using size-control funds.

¹⁶ Compared to the size-control funds, post-split numbers of shares per account are higher in the sample (median of 642) than in the control funds (median of 549). The *Z*-statistic of 1.88 favors the sample funds.

V. Summary and Conclusions

On average, about one in a hundred mutual funds splits in a given year. As with common stocks, the most popular split factor is two for one, the splitting funds have above-average prices, and the split brings the price into or below the conventional price range. Cross-sectionally, mutual fund split factors are positively related to the deviation of the asset's price from average prices.

As with common stocks, the fund split tends to be preceded by a period of high returns. With common stocks the split appears to be a signal, evidenced by announcement day return behavior and subsequent earnings behavior. I find that mutual fund splits are not associated with higher returns after the split.

Nor are fund splits associated with subsequent higher capital gains realizations, higher rates of growth of numbers of shareholders, higher assets per shareholder or higher total assets. Mutual fund splits do accomplish one thing. They raise the average per account number of shares held by the shareholders back into the range found in other funds. My analysis provides no support for several versions of the trading range hypothesis. For example, if the lower price advertised high returns and attracted shareholders to funds, higher shareholder growth or higher asset growth would occur as a result of the split. Neither does.

The frequency of mutual fund splits is far lower than that of common stock splits. This suggests that company managers have more compelling reasons to split than fund managers. Because signaling and tick size are irrelevant to fund managers, then perhaps the higher frequency of splits among common stocks provides indirect evidence that signaling and tick size (or possibly other reasons) persuade company managers to split common stocks.

In this paper I present evidence that at the old price of the fund the average per account shareholdings are sub-normal. Bringing shareholdings up to the norm is the most likely rationale for the mutual fund split that is suggested by my evidence. Doing so may provide shareholders with convenience or may overcome fund restrictions on dividend reinvestment.

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