



American Finance Association

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Source: *The Journal of Finance*, Vol. 42, No. 4 (Sep., 1987), pp. 913-932

Published by: Blackwell Publishing for the American Finance Association

Stable URL: <http://www.jstor.org/stable/2328298>

Accessed: 26/11/2009 08:12

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Stock Splits and Stock Dividends: Why, Who, and When

JOSEF LAKONISHOK and BARUCH LEV*

ABSTRACT

This study investigates empirically why firms split their stock or distribute stock dividends and why the market reacts favorably to these distributions. The findings suggest that stock splits are mainly aimed at restoring stock prices to a "normal range." Some support can also be found for the oft-mentioned signalling motive of stock splits. Stock dividends are altogether different from stock splits, and they appear to be a decreasing phenomenon. The clue to stock dividend distributions may lie in their perceived substitution for relatively low cash dividends.

NEITHER STOCK SPLITS NOR stock dividends are recent phenomena. The latter dates back to the Elizabethan age. Among the first to declare such dividends was the East India Company, which, while enjoying great prosperity, declared in 1682 a stock dividend of one hundred percent.¹ During the eighteenth and nineteenth centuries, stock dividends were quite frequently distributed by British companies. In the United States, an early and frequently discussed stock dividend distribution was that of the New York Central Railroad just prior to its union with the Hudson River Railroad in 1869. Surprisingly, stock dividends were quite popular in the U.S. despite their being subject to federal income tax. Thus, for example, during the seven years prior to 1922, the year in which the Supreme Court exempted the recipients of stock dividends from taxes, the ratio of stock dividends to all dividend distributions was 14.5 percent. This ratio increased to a staggering forty-seven percent during the seven years succeeding the Supreme Court decision. During 1936 to 1937, some American companies distributed stock dividends to avoid the "undistributed profit tax."

As for stock splits, they became quite common as early as the beginning of this century. For example, out of the 837 common stocks listed on the New York

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¹ See Dewing [11] (pp. 816-17 and 1237-46) for an elaboration of the case histories and statistics presented in this section.

Stock Exchange as of December 31, 1930, no less than 150 had been split once or more between 1921 and 1930. The data to be presented in Section II attest to the continued popularity of stock splits up to the present day. Stock dividends, on the other hand, appear to be a declining phenomenon.

Two fundamental questions are raised by stock split and stock dividend distributions. Taken at face value, such distributions are just a finer slicing of a given "cake"—the total market value of the firm—and as such should have no effect on firms and investors. Yet, if splits and stock dividends are no more than cosmetic changes, why do a substantial number of firms continue to engage in such financial manipulations, particularly when real costs are incurred in the process? Furthermore, why are these distributions associated with statistically significant stock price revaluations and unusual volumes of trade and return variances around the announcement dates and, even more surprisingly, around the ex-dividend dates?²

The current study addresses the above two questions by comparing the operational performance and other characteristics of firms that have split their stock and distributed stock dividends with those of a control group of nondistributing, but otherwise similar, firms. This comparison reveals systematic differences in firm performance (growth in earnings and dividends) and levels of stock prices that appear to provide new insights into the persistence of the phenomena and the positive stock price reaction.

Essentially, stock splits are executed by firms that have enjoyed an unusual growth in earnings and stock prices. The main objective of the split appears to be the return of the stock price to a "normal" range in wake of the unusual growth period. The targeted price is a function of a market-wide average price, an industry-wide average price, and a firm-specific price. While reversion to a "normal" price appears to be the major objective of stock splits, some signalling of a probable dividend increase cannot be ruled out. Our findings do not support the claim that stock splits improve marketability to the extent that marketability is measured by volume of trade. Regarding stock dividends, the characteristics of firms engaged in such distributions are markedly different from those of stock-splitting firms. It is clear that stock dividends are not just small stock splits.

² For empirical evidence on the abnormal stock price reaction to stock splits and stock dividends, see Fama et al. [14], Bar-Yosef and Brown [3], Charest [7], and Grinblatt et al. [15]. For evidence on price reaction at ex-dates, see Chottiner and Young [8], Woolridge [27], Eades et al. [12], Grinblatt et al. [15], and Lakonishok and Vermaelen [18]. For evidence of an increase in the variance of stock prices at ex-split dates, see Ohlson and Penman [23]. Evidence on volume of trade will be presented below. It should be noted that Grinblatt et al. [15] observed a higher abnormal stock return for a "pure" sample of splits, where no other announcements (earnings or cash dividends) were made at the vicinity of the split announcement, than for a "contaminated" sample. This refutes the supposition (e.g., Copeland [10]) that the observed price revaluation is caused by other information items released in conjunction with the split announcement.

As background to the following discussion, the magnitudes of the average price reactions to splits and stock dividends reported in the recent Grinblatt et al. [15] study were as follows. The stock split two-day announcement return was 3.03 percent, while the stock dividend two-day return was 4.9 percent. (Corresponding returns for the "pure samples" were 3.31 percent and 5.8 percent). As to returns around the ex-dates, the mean three-day return for the stock splits (NYSE) was .77 percent, while that for the stock dividends (NYSE) was 1.86 percent.

The order of discussion is as follows. Section I surveys the available hypotheses and the accumulated empirical evidence concerning splits and stock dividends. Section II presents various characteristics of these distributions and of the firms that engage in them. Sections III and IV present the empirical results, while Section V concludes the paper.

I. Hypotheses and Available Evidence

Numerous hypotheses have been advanced to explain the persistence of stock splits and stock dividends and the associated price reactions, yet none appears so far to be strongly supported by the data. These hypotheses can be broadly classified into two groups: signalling and optimal price.

A. Signalling

It has been suggested that, given asymmetric information between managers and investors, the former might use financial decisions, such as stock splits and stock dividend distributions, to convey favorable information to the latter (Ross [24] and Leland and Pyle [19]). However, for a signalling device to be valid, there should be a cost associated with sending false signals; namely, it should be costly for firms with below-average expected performance to mimic the signalling decisions of those firms enjoying above-average performance. A case for costly signalling can be made for stock dividends. As mentioned in Grinblatt et al. [15], accounting principles require that stock dividend distributions will be accompanied by a decrease in the firm's balance of retained earnings. Accordingly, it is argued, such distributions will be made only when managers do not expect the balance of retained earnings to constrain future cash dividend payments.³ The case for costly signalling by stock splits is unclear.

Surprisingly, despite being often mentioned, the signalling hypothesis has yet to be conceptually substantiated and empirically examined. Absent are studies associating splits and stock dividends and their market consequences with subsequent *long-term* changes in firms' earnings performance. Grinblatt et al. [15], for example, examined only the short-term postannouncement changes in dividends and confirmed earlier findings (Fama et al. [14]) that split and stock dividend announcements are frequently associated with increases in the subsequent quarterly dividend.

B. Optimal Price

It is a widely held belief, particularly among practitioners, that stock splits are intended to keep the price of shares within some "optimal" range. Specifically, investors of small means are presumably penalized by high stock prices that deny

³ Many loan contracts and state laws restrict such distributions as cash dividends, share repurchase, or other asset distributions to shareholders by the firm's balance of retained earnings. (See Kalay [16].) Accordingly, the reduction of retained earnings caused by stock dividend distributions may be associated with costs of restricting future managerial actions. Stated differently, managers will distribute stock dividends only if they expect future earnings (and, hence, the retained earnings balance) to be sufficiently large to support dividends.

them the economies of buying stocks in round lots. On the other hand, wealthy investors and institutions will save brokerage costs if securities are priced high because of the fixed per-share transaction cost component. Therefore, the argument goes, there exists an optimal price range that equilibrates the preferences of these classes of investors. Managers interested in a broad and heterogeneous stockholder base or in "wider marketability" may strive to adjust stock prices to such an optimum by splitting their stock or distributing stock dividends.⁴ It is interesting to note here that a survey of managers' motives for stock splits revealed that 98.4 percent of the respondents indicated that splits make it easier for small investors to purchase round lots, and 93.7 percent believed that splits keep a firm's stock price in an optimal range and increase the number of stockholders. (See Baker and Gallagher [1].)

Versions of the "optimal price" argument abound. For example, Grinblatt et al. [15] maintain that, given the cost associated with splits and stock dividends, if managers possess unfavorable information about future growth, they may decide against increasing the number of shares (split) even if they perceive the stock price to be "too high" because they anticipate that, when this information is disclosed, stock prices will revert to the norm anyway. Accordingly, an announcement of such distributions may convey favorable information to the market.

It might also be argued that there are industry norms for stock prices similar to the well-known norms for financial ratios and that managers use splits and stock dividend distributions to adjust stock prices to such norms, as is probably done in the case of financial ratios. (See Lev [20].) This might explain the cases in which stocks with low prices (e.g., ten to thirty dollars) relative to the market average were split.

II. Characteristics of Stock Splits, Stock Dividends, and the Distributing Firms

The data for this study, covering the twenty-year period 1963 to 1982, were drawn from three sources: the University of Chicago's CRSP tape, the Merged Annual Compustat tape, and the Compustat Prices-Dividends-Earnings (PDE) monthly tape. The CRSP tape was the source of data for the announcement dates and ex-dividend dates of stock splits and stock dividends. The Merged Annual Compustat tape provided firms' total assets and the market values of equity. The PDE tape provided data on prices, dividends, earnings, and volumes of trade.⁵ The union of these three data sources resulted in a test sample of 1015 stock split events and 1257 stock dividend events. For the distinction between

⁴ It can be argued that managers concerned with a takeover threat prefer a broad and heterogeneous stockholder base. Institutional investors, it is believed, are primarily concerned with short-term portfolio performance and will therefore be quick to tender shares to a bidder. Many individual investors, on the other hand, may not even be aware of takeover bids, let alone respond to them quickly.

⁵ The "Annualized Dividend Rate Series" was used for dividend data. For earnings data, we used "Earnings Per Share Excluding Extraordinary Items and Discounted Operations, 12 Month Moving." As for the fiscal year-end month, the figure in the series will be the same as the annual EPS reported in the annual statements.

stock splits and stock dividends, we have used the CRSP tape classification, which is based on *Moody's Dividend Record* (based, in turn, on managers' own classification). Throughout our analysis, "month zero" was defined as the month in which the stock split or stock dividend was *announced*.

In addition to the test sample, a control sample was constructed by matching every company that had a stock split or a stock dividend announcement with a company from the same four-digit Standard Industrial Classification (SIC) industry code with an asset size as close as possible to the test company. Total assets (at the end of the calendar year preceding the announcement) were preferred as the size measure over the market value of equity because, in the period preceding the announcement of splits, there were, in general, substantial increases in the market value of equity.⁶ Month zero for the control firm was matched with the announcement month of its stock split or stock dividend mate. The analysis in the following sections will be primarily based on comparing the test and control samples.

Some characteristics of stock splits and stock dividends and of the distributing firms are presented in Table I. Stock splits are quite a frequent phenomenon. In most of the twenty years examined, between five and ten percent of the firms listed on the CRSP tape (the "population") split their stock. In recent years, the percentage of companies engaged in splits is, in general, slightly higher than the 6.03 percent twenty-year average. The situation is markedly different for stock dividends. The number of firms distributing stock dividends as a percentage of the "population" has decreased almost monotonically during the examined period, from 13.45 percent in 1968 to 4.48 percent in 1982.

The data in Table I also indicate that the average rate of split was eighty-five percent and that of stock dividends was eleven percent. The twenty-year average of the median stock price for splitting firms is \$43.50, versus \$16.37 for stock dividend-paying firms.⁷ We also examined the industry concentration of splits and stock dividends by comparing across industries the frequency of such distributions. No industry concentration could be detected.

As to the size of the distributing firms, the data in Table I indicate that splitting firms are substantially larger than typical firms in the "population." The medians of both market values of equity and total assets (not reported in Table I) of splitting firms in practically every year are larger than the medians of the "population." Since, as will be seen below, splitting firms are characterized by an unusually high growth of earnings and market values prior to the split, this finding is not unexpected. On the other hand, firms distributing stock dividends tend to be smaller than typical firms in the "population." Thus, the

⁶ To check the robustness of our classification to the definition of size, we also constructed a control sample based on the market value of equity as the size measure. The two control samples were very similar in their composition.

⁷ One of the reasons that the median price for stock splits and stock dividends firms declines over time is the survivalship bias in Compustat data. We have used the 1982 version of the tape, and, therefore, the percentage of small firms is lower in the earlier years. Stated differently, many small firms that existed in the 1960's and early 1970's disappeared, due to bankruptcy, etc., and hence are not included in the 1982 tape. It is well known that small firms tend to have lower prices (see, for example, Stoll and Whaley [25]), hence, probably, the decrease over time in median prices.

Table I
Characteristics of Stock Splits and Stock Dividends and of the Distributing Firms

Year	Stock Splits				Stock Dividends				Population	
	Percentage of Population ^a	Average Distribution	Median Price	Median Market Value ^b	Percentage of Population ^a	Average Distribution	Median Price	Median Market Value ^b	Median Market Value ^b	Median Market Value ^b
1963	3.05	0.95	\$50.00	126.1	13.45	0.08	\$33.87	43.9	32.3	32.3
1964	5.72	1.07	75.75	193.2	12.11	0.10	34.13	31.1	35.0	35.0
1965	6.56	0.89	77.25	136.8	10.77	0.15	37.31	38.2	42.8	42.8
1966	7.70	0.93	65.31	105.9	10.50	0.08	24.44	27.2	36.2	36.2
1967	5.07	0.87	68.07	181.8	10.91	0.07	29.12	46.6	60.4	60.4
1968	10.06	0.91	54.50	139.5	8.62	0.11	30.00	55.7	77.3	77.3
1969	9.11	0.97	55.26	151.5	9.32	0.14	26.37	42.5	53.5	53.5
1970	1.96	1.29	59.00	114.8	8.47	0.10	18.00	42.3	42.6	42.6
1971	4.24	0.85	46.38	106.1	8.06	0.24	26.37	42.8	52.0	52.0
1972	5.23	0.99	50.00	166.6	10.10	0.23	26.25	44.0	52.2	52.2
1973	3.78	0.96	59.25	269.6	7.25	0.07	13.25	21.2	30.3	30.3
1974	1.75	1.09	43.44	147.2	6.49	0.06	9.13	17.0	20.4	20.4
1975	2.30	0.87	39.62	112.3	6.50	0.12	10.62	21.8	31.2	31.2
1976	5.11	0.81	37.06	128.1	7.15	0.10	12.25	29.4	45.2	45.2
1977	5.59	0.67	33.87	114.6	6.52	0.07	12.87	26.8	51.6	51.6
1978	7.47	0.76	31.62	122.6	6.32	0.07	12.13	24.3	57.7	57.7
1979	7.94	0.77	34.37	183.8	6.05	0.08	12.63	30.8	76.1	76.1
1980	10.74	0.76	39.38	278.8	5.83	0.10	12.00	36.8	99.7	99.7
1981	11.43	0.81	37.69	225.5	5.40	0.09	12.13	33.4	95.0	95.0
1982	5.75	0.69	31.00	198.8	4.48	0.06	11.25	50.2	123.7	123.7
Average	6.03	0.85	43.50	160.2	8.22	0.11	16.37	35.3	55.8	55.8
Total Number	3008				4259					
NYSE	2228				2388					
AMEX	780				1871					

^a The data, only for computing these frequencies (not for average distribution, median price, and median market value), are based on all the firms listed on the CRSP tape.

^b In millions of dollars.

data in Table I indicate that stock dividends are not just small stock splits. There are systematic differences between firms that split their stock and those that distribute stock dividends and in the characteristics of these distributions.

III. Empirical Findings: Firm Performance

To test the signalling hypothesis, we analyzed the behavior of two major indicators of corporate performance: growth in earnings and in cash dividends. Growth was measured as the percent change in the value of earnings or dividends in the last quarter of an examined period relative to the corresponding values at the beginning-of-period quarter. The examination of these growth measures was conducted for a period of five years prior to and five years after the month in which the split or the stock dividend was announced and for the various subperiods thereof. The subperiods prior to month zero (the announcement month) were zero to three (the quarter preceding the split or stock dividend announcement), the preceding three quarters (three to six, six to nine, and nine to twelve), and the entire year preceding the announcement (zero to twelve). Additional subperiods were twelve to twenty-four, twenty-four to thirty-six, thirty-six to forty-eight, and forty-eight to sixty (the second, third, fourth, and fifth years, respectively, preceding the announcement) and zero to twenty-four, zero to thirty-six, and zero to sixty (the entire two-year, three-year, and five-year periods, respectively, preceding the announcement). Identical growth measures were computed for corresponding periods *subsequent* to the split or stock dividend announcements. The earnings and dividends growth measures over the entire samples were summarized by a simple average and median.⁸ The empirical findings follow.

⁸ The drawbacks of the average measure are well known: first, a firm's growth measure is undefined when the initial value of earnings (the denominator of the growth measure) is negative, and, second, for the sample distribution, extreme observations will have a significant impact on the sample average. Ad hoc procedures were applied to mitigate these difficulties. Namely, cases where the denominator was negative (it can occur only for the earnings growth) were deleted from the average computation, and extreme values, defined as cases having an impact of 5 percent or more on the average, were truncated to the closest admissible values. These procedures affected, on average, 2.2 percent of the test sample and 2.4 percent of the control sample for the earnings measures. As to the dividend measures, 1.4 percent and 1.1 percent of the test and control samples, respectively, were affected by these procedures. Sample growth measures were also computed as the median of all the individual cases. The median summary measure mitigates the problem of extreme values, and, therefore, no truncation was needed.

We have also measured earnings and dividend growth by a "portfolio-based" measure, where an equal amount of money was "invested" in each firm:

$$G = [\sum_{i=1}^N (ED_{it}/P_{i,t-m})]/[\sum_{i=1}^N (ED_{i,t-m}/P_{i,t-m})],$$

where ED_{it} is earnings or dividends per share of firm i , t months following the stock split or stock dividend announcement, and $P_{i,t-m}$ is the price per share of firm i , $t - m$ months following the split or stock dividend announcement. (All ED 's and P 's are adjusted for stock splits and stock dividends.) N is equal to the number of cases in the sample. In this growth measure, the denominator indicates the earnings (dividends) that an investor would have received from initially investing one dollar in each firm in period $t - m$, while the numerator indicates the earnings (dividends) that such an investor would receive m months later (period t). Note that this growth measure obviates the need to delete from the sample cases with negative earnings.

A. Stock Splits

Table II presents the median growth rates of earnings and dividends for the test and control samples. (Results of the "portfolio-based" growth rates were similar and are therefore not reported.) The data confirm previous findings (e.g., Fama et al. [14]) that splitting firms enjoyed an unusually favorable earnings performance during the presplit period relative to similar, nonsplitting firms. The median growth measures indicate that, in each of the four quarters (zero to three through nine to twelve) and the four years (zero to twelve through thirty-six to forty-eight) preceding the split announcement, there was a statistically significant difference between the earnings growth rates of splitting and control firms. Furthermore, these differences widen as the date of the split announcement approaches—from a difference in the earnings medians of 5.75 percent in the fourth year before split (months thirty-six to forty-eight) to a difference of 12.40 percent in favor of splitting firms in the last year preceding the split (months zero to twelve). It should be noted that the *average* test-control earnings-growth differentials (not reported here) are uniformly higher than the median differentials reported in Table II. Thus, for example, while the median earnings-growth difference during the year preceding the split announcement was 12.40 percent in favor of the splitting firms, the difference in the average growth rates for the same period was 26.45 percent. The substantially higher earnings-growth differentials based on the mean relative to the median suggest that the splitting sample included some exceptionally high performers.

The above-normal earnings growth of splitting firms still persists in the first postsplit year although the test-control difference is considerably smaller than in the preannouncement years; the postannouncement one-year median growth in earnings of the test sample is only 16.31 percent, versus 13.28 percent for the control sample. In succeeding postsplit years, the differences in earnings growth rates of splitting and control firms are not statistically significant. Postsplit test-control differences based on average growth rates were quite similar to the differences in the medians. Thus, exceptionally high performers (relative to control) could be found in large numbers only during the presplit period.

As to dividends, the preannouncement data indicate that the dividend growth rates of splitting firms are higher than those of control firms.⁹ For example, the presplit five-year (zero to sixty) median growth differential in favor of the splitting firms is 32.92 percent. However, it should be noted that the differences in the dividend growth rates between the test and control samples are substantially smaller than those of the earnings growth rates discussed earlier. This is

⁹ Note that, in Table II, especially for the three-month periods, the median growth rates of dividends for both the test and control samples are often zero. The reason is that most firms do not change dividends per share from quarter to quarter. However, the chi-square test can still reveal statistically significant differences between the two samples, as it is based on the number of observations above and below the grand median, which is, in general, zero for the quarterly dividend growth rates for each of the two samples. Therefore, to the extent that the tendency to increase dividends is higher for the test sample relative to the control sample, the test sample can significantly differ from the control although the medians for the two samples are the same. For more details, see Conover [9] (pp. 167–68).

Table II
Stock Splits: Median Growth Rates of Earnings and Cash Dividends for Various Pre- and Postsplit
Announcement Periods (in Percentages)

Growth Rate Period (in Months)	Preannouncement				Postannouncement			
	Earnings		Dividends		Earnings		Dividends	
	Test	Control	Test	Control	Test	Control	Test	Control
0-3	5.64**	3.50	0.00*†	0.00	4.80**	3.64	7.40**	0.00
3-6	5.90**	3.48	0.00	0.00	4.03**	3.27	0.00*	0.00
6-9	5.63**	3.56	0.00*	0.00	3.23*	2.69	0.00	0.00
9-12	5.64**	2.80	0.00**	0.00	2.73	2.41	0.00**	0.00
12-24	22.15**	13.33	12.50**	10.00	8.61	7.96	10.11**	7.14
24-36	18.95**	14.94	11.90*	10.11	8.02	9.26	6.91*	4.18
36-48	18.76**	13.01	10.15*	8.00	10.26	9.51	6.67*	2.12
48-60	15.42	13.22	9.69*	5.47	9.90	10.84	6.74*	3.96
0-12	26.35*	13.95	13.35**	9.90	16.31*	13.28	18.18**	9.09
0-24	54.13**	28.44	26.57**	21.15	22.06*	18.79	31.25**	18.08
0-60	143.07**	81.38	93.02**	60.10	41.23	50.25	50.00**	36.75

* The growth rates of the test and control samples differ at the significance level of .05 (two-tailed test), using a chi-square test (Conover [9], pp. 167-68).

** The growth rates of the test and control samples differ at the significance level of .01 (two-tailed test), using a chi-square test.

† See footnote 9 for additional information about the chi-square test.

expected since dividend changes are, in general, smoother than (lag behind) earnings changes (e.g., Fama and Babiak [13]).

For the period following the split announcement, results indicate that the dividend growth for the test sample is, in general, higher than for the control sample, and the differences tend to be statistically significant. The most dramatic increase in dividends occurs in the first quarter following the split announcement; the test-sample median growth is 7.40 percent (versus zero percent for the control sample). This is the only quarter having a median quarterly growth rate that is larger than zero. The differences in dividend growth rates between the test and control samples diminish after the first postsplit year. However, these differences are still significant even for period forty-eight to sixty (fifth year after the split). For the combined five-year period following the split announcement, the test sample outperforms the control sample in dividend growth by 13.25 percent.

Do the above findings support the signalling hypothesis? Consider the market's *presplit* expectations regarding the future performance of the splitting firms. If these expectations are for continued buoyant growth, then obviously the lackluster postsplit performance should come as a grave disappointment. However, the voluminous evidence on the time-series properties of firms' earnings suggests that such expectations are highly unrealistic. The behavior of most firms' annual earnings series was found to be best characterized by a random walk or by a submartingale model; such behavior is obviously inconsistent with a persistent, systematic, above-normal growth.¹⁰ Furthermore, there is some evidence (e.g., Brooks and Buckmaster [6]) that unusual earnings growth tends to be followed by a reversal of fortunes. Thus, a reassuring signal indicating to the market that earnings will *stabilize* at the newly reached plateau might be interpreted as mildly good news. The large dividend increase observed for many of the firms in the first postannouncement quarter might accordingly be interpreted as a managerial "guarantee" that no reversal of fortunes is expected.

There is an additional piece of evidence corroborating the preceding argument that the market's *presplit* expectations reflect some misgivings about the continued growth of the splitting firms. The average *presplit* E/P ratio (earnings per share divided by price) for the test firms was 7.89 percent, versus 7.58 percent for the control firms. (This difference is statistically significant at the fifteen percent level for the two-tailed *t*-test.) Since the E/P ratio reflects the market's expectations about the future growth of earnings (see, for example, Beaver and Morse [4]), these two E/P figures suggest that, on average, the market's expectations about the future growth of the test firms were not higher, and were possibly lower, than the expectations about the growth of the control firms. Such investor reservations concerning the future of the splitting firms is indeed striking, given their unusual past and present growth record. The market's apparent concern about a reversal of fortunes may have thus been alleviated by the split announcement. After the split announcement, the average E/P ratios of the two samples were indeed practically identical (7.37 percent versus 7.34 percent for test and control, respectively), indicating a price increase for the

¹⁰ For such evidence, see, for example, Ball and Watts [2] and Watts and Leftwich [26].

splitting firms of about four percent, which is consistent with the Grinblatt et al. [15] findings.

All in all, the evidence seems consistent with some signalling conveyed by stock splits, with respect to either stabilization of earnings growth subsequent to the abnormal presplit growth, improved cash dividends prospects, or both.

B. Stock Dividends

The data in Table III indicate significant differences between the preannouncement performance of firms distributing stock dividends and that of firms that split their stock. Stock dividend firms did enjoy a somewhat higher preannouncement earnings growth than control firms; yet the differences between the test and control firms for the stock dividend cases are much smaller than those of the stock split cases. Furthermore, for many subperiods of the stock dividend cases, the earnings differences between test and control are not statistically significant. For example, the differences in the median earnings growth rates (Table III) for each of the four quarters preceding the announcement are statistically insignificant. The difference in growth rates for the twelve months preceding announcement (zero to twelve) is only 2.05 percent in favor of the test firms, while the corresponding difference for the stock split sample was 12.40 percent. Here again, results based on the average and the "portfolio-based" measures turned out to be similar to those of medians and hence are not reported.

Turning to the dividend growth in the preannouncement period, it is clear that, in line with the earnings behavior, there are hardly any differences between the test and the control samples. For many subperiods, the dividend growth is even higher for the control sample than for the stock dividend test sample. Thus, the modest above-average earnings performance of the stock dividend firms in the preannouncement period is not reflected in higher cash dividend growth rates.

A clue to the motives underlying stock dividend distributions might be found in the average dividend yields (cash dividends divided by stock price) of the test and control samples at the end of the month preceding the stock dividend announcement: 1.69 percent and 2.10 percent for the test and control samples, respectively. (This difference is statistically significant at the five percent level, using the two-tailed *t*-test.) Three years before the stock dividend announcement, the dividend yields of the two samples were practically identical, 1.57 percent and 1.58 percent. Thus, stock dividend firms experienced, on average, a drop in their dividend yield relative to control firms during the three years preceding the stock dividend announcement. This finding is consistent with a frequently mentioned argument in accounting and finance textbooks that stock dividends might be a temporary substitute for cash dividend, although it is by no means clear why anyone would regard them as such.¹¹

Turning to the postannouncement period, whereas the growth rates of earnings for the test and control samples are very close, the dividends' growth rate is

¹¹ Just as an anecdotal example: In 1971 Braniff suspended cash dividends ("to conserve cash for investment in new airplanes") and replaced it by a three percent stock dividend.

Table III
Stock Dividends: Median Growth Rates of Earnings and Cash Dividends for Various Pre- and Postsplit Announcement Periods (in Percentages)

Growth Rate Period (in Months)	Preannouncement				Postannouncement			
	Earnings		Dividends		Earnings		Dividends	
	Test	Control	Test	Control	Test	Control	Test	Control
0-3	3.17	2.75	0.00	0.00	3.68*†	2.95	2.01**	0.00
3-6	3.25	3.14	0.00	0.00	2.50	3.17	0.00**	0.00
6-9	3.37	2.84	0.00	0.00	2.79	3.11	0.00	0.00
9-12	3.53	3.00	0.00	0.00	2.32	3.04*	0.00	0.00
12-24	14.07	13.37	4.10	7.23*	9.88	9.77	7.00	6.66
24-36	12.26	14.08	4.05	5.26	9.87	10.25	5.04	5.26
36-48	11.98	12.50	3.97	2.78	10.40	9.96	4.35	4.11
48-60	10.94	11.29	3.63	2.95	11.08	10.11	5.11	2.43
0-12	14.22*	12.17	4.59	5.61*	11.78	12.59	9.45*	5.33
0-24	27.87	22.96	13.78	16.48	20.64	20.69	21.07**	16.66
0-60	70.71*	56.99	41.46	37.41	47.68	45.55	54.33*	33.33

* The growth rates of the test and control samples differ at the significance level of .05 (two-tailed test), using a chi-square test (Conover [9], pp. 167-68).

** The growth rates of the test and control samples differ at the significance level of .01 (two-tailed test), using a chi-square test.

† See footnote 9 for additional information about the chi-square test.

somewhat different; the stock dividend firms exhibited a higher cash dividend growth rate than the control firms. This difference is due mainly to a large cash dividend increase in the first postannouncement quarter.

Thus, stock dividends are distributed by firms that only marginally outperform similar, nondistributing firms. The stock dividend announcement is frequently followed by a relatively large cash dividend increase. Whether this explains the stock price appreciation observed around the announcement date is still an open question. Again, a clue can be found in the differences between the preannouncement average E/P ratios of the two samples: 9.22 percent versus 7.75 percent for the test and control samples, respectively. (The difference is statistically significant at the five percent level, using the two-tailed *t*-test.) This difference might reflect the market's misgivings with respect to the future prospects of the firms that later paid out stock dividends. The stock dividend distribution, frequently coupled with a substantial quarterly cash dividend increase, might, therefore, constitute a signal that the prospects of stock dividend-paying firms are no worse than those of other, control, firms, as indeed is confirmed by the almost identical postannouncement earnings growth of the two samples. All in all, however, as indicated in Table I, stock dividends appear to be a decreasing phenomenon, and, therefore, the observed abnormal returns around the announcement dates might mainly reflect the situation existing in the early part of the test period.

IV. Empirical Findings: Stock Prices and Volumes of Trade

A. Stock Prices

Table IV presents the sample averages of the closing monthly stock prices for splitting and control firms. It is clear that, during the four to five years before the split (months forty-eight and sixty), the average stock prices of the two samples are quite close, whereas a gap in favor of the splitting firms appears thereafter. This gap widens monotonically up to the split announcement month zero, when the difference in average prices (\$54.12 versus \$32.37) is close to seventy percent! The widening price gap reflects, of course, the superior operational performance of the splitting firms, which, on average, experienced a ninety-six percent price growth over the five-year period, relative to only twenty-eight percent price growth for control firms.

Moving to the postannouncement period, it is evident that the presplit trend is reversed. The average price gap between the two samples quickly narrows and vanishes altogether in the fourth month after the split announcement. Thereafter, in remarkable regularity, the average stock prices of two groups are almost identical. Given that the split ex-date occurs, on the average, two months after the announcement and that, after four months following the announcement, practically all the firms had had their ex-day, it can be concluded that, by splitting their firms' stocks, managers were, in an unbiased manner, adjusting their stock prices to the average prices of "regular" firms. This and the following evidence strongly supports the contention that a major motivation of stock splits is to adjust prices to an "acceptable" or "normal" level.

Table IV

Stock Splits: Average Stock Prices and Average Monthly Volume of Trade for Various Pre- and Postannouncement Periods^a

Month	Preannouncement				Postannouncement			
	Prices		Volumes [†]		Prices		Volumes [†]	
	Test	Control	Test	Control	Test	Control	Test	Control
0	\$54.12** (1.00)	\$32.37 (1.00)	.054** (1.00)	.041 (1.00)	\$54.12** (1.00)	\$32.37 (1.00)	.054** (1.00)	.041 (1.00)
1	51.85** (.96)	32.10 (.99)	.049** (.91)	.041 (1.00)	48.73** (.90)	32.50 (1.00)	.048* (.89)	.041 (1.00)
2	49.74** (.92)	31.80 (.98)	.048** (.89)	.039 (.95)	40.59** (.75)	32.49 (1.00)	.038 (.70)	.039 (.95)
3	47.64** (.88)	31.35 (.97)	.046** (.85)	.039 (.95)	35.72* (.66)	32.54 (1.01)	.041 (.76)	.039 (.95)
4	46.13** (.85)	31.03 (.96)	.045* (.83)	.039 (.95)	32.56 (.60)	32.35 (1.00)	.039 (.72)	.039 (.95)
5	44.56** (.82)	30.71 (.95)	.047** (.87)	.037 (.90)	32.18 (.58)	31.93 (.99)	.037 (.69)	.039 (.95)
6	43.43** (.80)	30.35 (.94)	.045 (.83)	.040 (.98)	30.88 (.57)	31.55 (.97)	.039 (.72)	.039 (.95)
7	42.21** (.78)	30.15 (.93)	.044* (.81)	.038 (.93)	30.81 (.57)	30.93 (.96)	.039 (.72)	.037 (.90)
8	41.44** (.77)	30.09 (.93)	.046* (.85)	.038 (.93)	30.60 (.57)	30.40 (.94)	.035 (.65)	.036 (.88)
9	40.42** (.75)	29.76 (.92)	.044 (.81)	.040 (.98)	30.63 (.57)	30.60 (.95)	.036 (.67)	.034 (.83)
10	39.34** (.73)	30.03 (.93)	.042 (.78)	.038 (.93)	30.61 (.57)	30.15 (.93)	.035 (.65)	.033 (.80)
11	38.44** (.71)	30.03 (.93)	.043 (.80)	.039 (.95)	30.38 (.56)	29.99 (.93)	.034 (.63)	.037 (.90)
12	37.78** (.70)	29.85 (.92)	.044* (.81)	.038 (.93)	30.38 (.56)	29.46 (.91)	.035 (.65)	.034 (.83)
24	32.08** (.59)	26.86 (.83)	.035 (.65)	.033 (.80)	30.12* (.56)	26.65 (.82)	.032 (.59)	.032 (.78)
36	30.81** (.57)	25.45 (.79)	.031 (.57)	.030 (.71)	30.59 (.57)	28.06 (.87)	.028 (.52)	.029 (.71)
48	27.89** (.52)	25.27 (.78)	.029 (.54)	.028 (.68)	31.16 (.58)	28.14 (.87)	.028 (.52)	.030 (.73)
60	27.63* (.51)	25.22 (.78)	.027 (.50)	.027 (.66)	29.52 (.55)	27.22 (.84)	.026 (.48)	.027 (.66)

^a The numbers in parentheses are prices and volumes scaled relative to month zero. (Prices are not adjusted for the split.)

[†] Turnover per month.

* The test and control samples differ at the significance level of .05 (two-tailed test), using the *t*-test.

** The test and control samples differ at the significance level of .01 (two-tailed test), using the *t*-test.

The situation is again different in the case of stock dividends, as illustrated in Table V. In the preannouncement period, there appears to be an almost constant average price differential in favor of the control firms. The gap in month zero is \$1.49 (\$22.76 for the control versus \$24.25 for the test) although the average

Table V

Stock Dividends: Average Stock Prices and Average Monthly Volumes of Trade for Various Pre- and Postannouncement Periods^a

Month	Preannouncement				Postannouncement			
	Prices		Volumes†		Prices		Volumes†	
	Test	Control	Test	Control	Test	Control	Test	Control
0	\$22.76 (1.00)	\$24.25* (1.00)	.040 (1.00)	.037 (1.00)	\$22.76 (1.00)	\$24.25* (1.00)	.040 (1.00)	.037 (1.00)
1	22.27 (1.00)	24.26* (1.00)	.034 (.85)	.035 (.95)	22.11 (.97)	24.43* (1.01)	.032 (.80)	.034 (.92)
2	21.87 (.96)	24.20* (1.00)	.033 (.83)	.034 (.92)	21.78 (.96)	24.63** (1.02)	.032 (.80)	.035 (.95)
3	21.56 (.95)	24.04* (.99)	.036 (.90)	.037 (1.00)	21.48 (.94)	24.61** (1.01)	.032 (.80)	.035 (.95)
4	21.29 (.94)	24.10** (.99)	.032 (.80)	.035 (.95)	21.23 (.94)	24.76** (1.02)	.032 (.80)	.036* (.97)
5	21.23 (.93)	24.14** (1.00)	.031 (.78)	.034 (.92)	21.40 (.94)	24.75** (1.02)	.034 (.85)	.037 (1.00)
6	21.16 (.93)	23.90** (.99)	.034 (.85)	.038** (1.03)	21.50 (.94)	24.44** (1.01)	.033 (.83)	.036 (.97)
7	21.16 (.93)	23.98** (.99)	.033 (.83)	.036 (.97)	21.36 (.94)	24.48** (1.01)	.032 (.80)	.035 (.95)
8	21.05 (.92)	23.91** (.99)	.033 (.83)	.035 (.95)	21.40 (.94)	24.17** (1.00)	.032 (.80)	.034 (.92)
9	21.34 (.94)	23.77** (.98)	.034 (.85)	.037 (1.00)	21.60 (.95)	24.40** (1.01)	.034 (.85)	.036 (.97)
10	21.29 (.94)	23.61** (.97)	.031 (.78)	.038** (1.03)	21.57 (.95)	24.45** (1.01)	.032 (.80)	.036 (.97)
11	21.31 (.94)	23.73** (.98)	.032 (.80)	.036* (.97)	21.78 (.96)	24.60** (1.01)	0.33 (.83)	.034 (.92)
12	21.52 (.95)	23.85* (.98)	.036 (.90)	.034 (.92)	22.17 (.97)	24.65** (1.02)	.035 (.88)	.035 (.95)
24	20.72 (.91)	24.02* (.99)	.032 (.80)	.033 (.89)	21.55 (.95)	24.63** (1.02)	.032 (.80)	0.33 (.89)
36	20.76 (.91)	25.08* (1.03)	.030 (.75)	.031 (.84)	20.83 (.92)	23.11** (.95)	.030 (.75)	.033 (.89)
48	20.73 (.91)	24.25* (1.00)	.029 (.73)	.031 (.84)	20.50 (.90)	22.87** (.94)	.030 (.75)	.033 (.89)
60	19.90 (.87)	22.38 (.93)	.029 (.73)	.030 (.81)	20.10 (.88)	22.93** (.95)	.029 (.73)	.032 (.86)

^a The numbers in parentheses are prices and volumes scaled relative to month zero. (Prices are not adjusted for the stock dividend.)

† Turnover per month.

* The test and control samples differ at the significance level of .05 (two-tailed test), using the *t*-test.

** The test and control samples differ at the significance level of .01 (two-tailed test), using the *t*-test.

price of stock dividend firms grew over the five-year period slightly faster (fourteen percent) than the price growth of control firms (eight percent). By the time all the test firms had their ex-day, month three, this gap widens to \$3.13. Comparing pre- and postannouncement prices, stock dividend distributions ap-

pear to exert a small effect on average prices, and, therefore, price adjustment does not appear to be a major motive for stock dividend distributions.

Returning to the price consequences of stock splits (Table IV), the apparent unbiased postsplit adjustment to the average prices of control firms deserves further examination. It appears that stock prices of splitting firms are adjusted to a certain target, but what is this target? The simplest hypothesis consistent with the "optimal price" motivation for stock splits (discussed in Section I) appears to be that, by splitting their firms' stock, managers attempt to adjust prices to a *market-wide price average*. (The alternative hypothesis would, of course, be that the split factor or size of split distribution is chosen randomly.) Accordingly, the "implicit target price," namely the stock price of a splitting firm j before the split announcement ($P_{-1,j}$), divided by the size of split ($1 + SP_j$), is set equal to the market-wide average price at that date, P_M :

$$\frac{P_{-1,j}}{1 + SP_j} = P_M, \quad (1)$$

where SP_j is the size of the split distribution (e.g., .5 if the split increased the number of shares by fifty percent). Expression (1) can be rewritten as

$$1 + SP_j = P_{-1,j}/P_M. \quad (2)$$

The interpretation of (2) is that the larger the relative deviation of a firm's stock price from the market-wide average price, $P_{-1,j}/P_M$, the larger the size of stock split (SP_j). A cross-sectional regression estimate of expression (2) in log form yielded the following result:

$$\ln(1 + SP_j) = .477 + .225 \ln(P_{-1,j}/P_M); \quad R^2 = .26. \quad (3)$$

(51.39) (16.33)

(t -values in parentheses below the coefficients)

Thus, the market-wide price average indeed appears to be a target for the size of stock splits, and the ratio of the firm's own presplit stock price to the market average "explains" about one quarter of the cross-sectional variability in the split factors. A one percent deviation of the stock price from the market-wide average price is associated with a .225 percent increase in the size of the split.

It is clear, however, that the market-wide price average is not the only determinant of stock split factors. Casual observation suggests that some firms split their stock even though their presplit stock prices were rather low relative to market averages (twenty-five to thirty-five dollars during the examined period). Thus, for example, the presplit prices of twenty-five percent of the splitting firms in our sample were below thirty dollars per share, and ten percent of companies had presplit prices below twenty dollars per share. This suggests the modified hypothesis that the size of split ($1 + SP_j$) is a function of both the deviation of the firm's price from a market-wide average ($P_{-1,j}/P_M$) and the deviation from an industry-wide price average ($P_{-1,j}/P_I$). The motivation for adding an industry-wide price average stems from the widely recognized "industry norms" for financial ratio analysis. Accordingly, if firms are evaluated by analysts against such norms apparently leading managers to adjust financial data to these norms

(e.g., Lev [20]), it stands to reason that they might also adjust stock prices to industry-wide averages, namely to stock prices of “comparable” firms.¹² A regression incorporating both the market-wide and the industry price averages yielded the following estimates:

$$\ln(1 + SP_j) = .469 + .202 \ln(P_{-1,j}/P_M) + .029 \ln(P_{-1,j}/P_I); R^2 = .32. \quad (4)$$

(46.49) (11.51) (2.01)

The coefficient of the industry-wide differential ($P_{-1,j}/P_I$) is statistically significant, as evidenced by the 2.01 *t*-ratio, and the R^2 of the two-target model increases to .32.

The preceding regression analysis suggests that the market-wide price average and, to a lesser extent, the industry-wide average are targets for the size of split. More precisely, the larger the deviation of the firm’s presplit stock price from these targets, the larger the split factor. Additional, firm-specific factors, such as the past prices, might also affect both the timing and size of split.¹³

B. Volume of Trade

Finally, with regard to volume of trade, the measure used in this study was the monthly number of shares traded relative to the number of shares outstanding at the same date for a given stock.¹⁴ Data on volumes were derived from the Compustat Prices-Dividends-Earnings (PDE) monthly tape. The average volumes of trade for the stock split and stock dividend firms and for the matched control firms are presented in Tables IV and V. Results based on the medians of the volumes were essentially the same as those of the averages and will therefore not be reported separately. For the first year surrounding the announcement, results are presented on a monthly basis (months zero through twelve). In addition, monthly volume averages for the years two through five surrounding the announcement are also presented in Tables IV and V and are denoted by twenty-four, thirty-six, forty-eight, and sixty, respectively.

The data in Table IV (stock splits) indicate that, up to one year before the announcement (months sixty, forty-eight, thirty-six, and twenty-four), the average trading volumes of the test and control samples were almost identical although, as noted earlier, substantial differences in the prices of the two samples were observed as long as four years before the split announcement. Systematic and statistically significant differences in trading volumes between the split and control samples appear twelve months before the split announcement and, in particular, eight months before it. These differences peak in month zero, where the average monthly turnover of the splitting sample is 5.4 percent (an annual

¹² It should be re-emphasized that the various “target price” hypotheses outlined above are not derived from a widely accepted valuation theory, as no such theory exists for optimal prices. These hypotheses are just intended to guide the search for an implied target for stock splits.

¹³ We have also experimented with adding the firm’s own price appreciation during the year before the split ($P_{-1,j}/P_{-12,j}$) to expression (4). Results indicate that all three explanatory variables—market, industry, and the firm’s own past price—are statistically significant. However, the explanatory power of this three-variable model was $R^2 = .33$, a negligible improvement over the $R^2 = .32$ of the two-variable model (4).

¹⁴ Lakonishok and Smidt [17] used the same measure of trading volume.

turnover of around 65 percent), versus 4.1 percent for the control sample. The difference in trading volume between the two samples vanishes by the second month following the split announcement (i.e., around the average ex-date). Thus, the announcement of a split is an important event that generates a substantial increase in trading activity.

It is worth noting that Copeland [10] provided evidence (based on a sample size of twenty-five stocks) suggesting a decrease in the volume of trade subsequent to a stock split and interpreted this finding as implying a decrease in the marketability of the split stocks. The volume data presented in Table IV do not support a decrease in marketability. Clearly, compared with the peak volume during the eight to twelve months preceding the split announcement, the postannouncement volume is lower. However, this peak volume is obviously abnormal for the splitting firms, reflecting their unusual operational performance. There is ample evidence indicating that trade volume increases abnormally (relative to past "normal" volume) around the announcement of unexpectedly large earnings and subsides thereafter (e.g., Morse [22]). Recall (Table II) that splitting firms experienced particularly large earnings increases during the year preceding the split announcement. Thus, the large volume of splitting firms' stocks during the year before announcement (relative to their past volume and to the contemporaneous volume of control firms) can be attributed to the unusual operational performance of these firms. Abstracting from this abnormal volume (roughly twelve months preceding the announcement), it is clear that the splitting firms' average postannouncement volume (around four percent) is very similar to the postsplit average volume of the control firms. Thus, stock splits do not appear to exert a permanent effect on volume of trade. Yet it might be that splits affect other aspects of marketability, such as the composition of stockholders (e.g., a shift from institutional to individual investors), the number of stockholders, or transaction costs. The effect of splits on marketability is, therefore, still an open issue.

Table V presents average trading volumes for the stock dividend sample. The trading volume of these companies is hardly distinguishable from that of control firms in both the pre- and postannouncement periods. Similar to the stock-splitting sample, the announcement month is associated with the highest trading volume, four percent. This monthly volume constitutes about a twenty percent increase relative to surrounding months, and it is a statistically significant increase. It thus confirms earlier findings that the announcement of a stock dividend conveys new information to the market.

V. Concluding Remarks

Why do some firms split their stock or distribute stock dividends, and what explains the positive market reaction to these distributions? The data for the twenty-year period, 1963 to 1982, suggest that stock splits are mainly aimed at restoring stock prices, which increased considerably during an unusual growth period, to a normal range, defined in terms of market and industry-wide price

averages and firm-specific prices.¹⁵ The data also provide some support for the signalling motive of stock splits; the splitting firms exhibited a somewhat higher growth in earnings and especially in dividends than control firms, after the split announcement. The three to four percent abnormal stock price increase observed around the split announcement may thus be related to improved performance prospects. Overall, however, the price-correction motive seems more strongly supported by the data than the signalling motive.

As to marketability, our result shows that splits do not appear to affect permanently the volume of trade. Yet, it might be that other aspects of marketability, such as the composition of stockholders, are influenced by splits.

Stock dividends are a different creature. They are not distributed by highly successful firms as splits are. They are obviously not intended to "adjust" stock prices to "normal levels," as evidenced by the relatively low prices of stock dividend firms and the relatively small increase in the number of shares. The clue to such distributions may lie in the relatively low cash dividend yields of the distributing firms; managers may believe (or may have believed) that stock dividends will be temporarily regarded by some investors as a substitute for cash dividends. Given, however, the substantial decrease in the frequency of such distributions, it may not be very productive to exert much effort in the investigation of this phenomenon.

The price-correction motive of stock splits suggested by the above findings leads to some interesting future research hypotheses. While not affecting volume of trade, splits might be aimed at changing the composition of stockholders. Thus, for example, tests can be conducted to find out whether, subsequent to the split, the ratio of individual investors increased relative to that of institutional investors. More fundamentally, the possible existence of preferences by some investors for low-priced stocks deserves further attention.¹⁶ Addressing these and related questions might provide a final resolution to the stock-split puzzle.

¹⁵ Interestingly, when foreign stocks trade in the U.S., the ADR's (American Depositary Receipts) appear to be packaged to bring the price per share to some "normal level". For example, Hitachi is traded on NYSE in ADR units, which are equivalent to ten regular shares of the same company on Tokyo Stock Exchange (TSE). Hitachi in mid-January 1986 had a market value of equity around ten billion dollars (U.S.); its price on TSE was \$3.75 ("too low" for such a big company on NYSE), and the NYSE price was \$37.50.

¹⁶ For example, "Noise traders may prefer low-priced stocks to high-priced stocks. If they do, then splits will increase both the liquidity of a stock and its day-to-day volatility" (Black [5], p. 534).

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