Dividend Announcements, Security
Performance, and Capital
Market Efficiency

by

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I. INTRODUCTION

The allocative efficiency of capital markets depend on
the extent to which capital asset prices fully reflect information
that affects their value. A limited number of empirical investi-
gations have attempted to measure market's reaction to major in-
formation generating events, and for the most part the evidence
is in support of the efficient market's hypothesis.[1] Since each
test has looked at only one kind of information the validity of
the hypothesis is confirmed only as more kinds of information are
studied. The primary purpose of this paper will be to offer
further evidence about the validity of the efficient market's
hypothesis by estimating the speed and accuracy with which market
prices react to announcements of changes in the level of dividend
payments. In addition, the nature of the investigation is such
that it provides evidence on the hypothesis that changes in divi-
dend levels convey important information to market participants.

A number of writers have suggested that a considerable
amount of information is conveyed by changes in dividends. Lint-
ner [12] offered empirical support to the hypothesis that dividend
payments, at least for large firms, were inflexible downward.
Firms tended to increase dividends only when there was a high
probability that cash flows in the future would be sufficient to
support the higher rate of payment, and dividends were decreased

only when management was assured that cash flows were insufficient to support the present dividend rate. If this is an accurate picture of the way in which firms operate, then it follows that changes in dividend payments supply the market with information regarding managements' assessment of the level of the firm's long run cash flows.

The importance of this information depends upon whether the information about long run earnings is already available to market participants. For instance, the greater the extent to which reported earnings imply something about the level of long run earnings, and the extent to which public statements by management are accurate and enlightening, the less would be the informational content of announcements about dividend changes.

There is, however, reason to believe that new and significant information is conveyed by dividend announcements. First, managers are to some extent restricted as to the kind of public statements they can make regarding the future earnings generating ability of the firm. Second, due to random factors reported earnings may vary substantially from long run normalized earnings and market participants may be unable to distinguish these random effects. In light of this, the management of a firm may use dividend payments (or a lack of them) as a method of indicating their estimates of the firm's earning power and liquidity.[2]

II. DIVIDEND ANNOUNCEMENTS AND
CAPITAL MARKET EFFICIENCY

In an efficient market current prices fully and without
bias reflect all published, widely available information. This
implies that the return expected from a security in one period is
independent of all information available in the previous period
since the security's price already reflects the effect of this in-
formation.[3] Announcements of changes in dividends would be immediate-
ly and unbiasedly reflected in the security's price resulting in a
one time actual return that exceeds (if a dividend increase) or falls
short of (if a dividend decrease) the expected security return. In
this kind of a market, no trader, relying on publically available in-
formation, can consistently make a return that exceeds the equilibrium
risk adjusted return.

A market that is inefficient would be characterized by firms
with abnormal returns that tend to exist over a period of time after
the announcement; implying either that it takes considerable time for
the information to be disseminated across the market, or that there is
a tendency to either systematically understate or overstate the effect
of such information on the price of the security.

Abnormal security performance prior to an announcement may --
but does not necessarily -- imply that the market is inefficient. The
market would be considered to be inefficient if this apparent "antici-

pation" effect was the result of purchases or sales by investors who have access to relevant information that has, for some reason, been withheld from the rest of the market, or the unique ability of some investors to use publically available information to predict more accurately announcements to be made. The market would not be considered to be inefficient, however, if the apparent anticipation effect was the result of previous announcements that are related to or correlated with the favorable or unfavorable news conveyed by a dividend announcement.

For example, a firm that announced a dividend increase may have in previous months reported significantly improved earnings that were reflected in the security's performance prior to the dividend announcement. Such price performance may be perfectly consistent with an efficient stock market, yet it would not be possible to discriminate between this case and one in which the anticipation was the result of investors acting on the basis of insider information. To attempt to overcome this difficulty in assessing market efficiency this study attempts to hold constant correlated announcements made in periods prior to the dividend announcement date.

In this paper only one piece of information coming onto the market is being studied. Therefore, results consistent with the hypothesis cannot prove the theory correct but can only lend support to its confirmation. On the other hand, results inconsistent with the

hypothesis would cause the hypothesis to be rejected -- at least for this very important piece of information -- and would lay the groundwork for a system that would provide excess profits to the investor who had knowledge of the inefficiencies that tend to exist.

III. MEASURING RISK ADJUSTED ~~

The Market Model and Security Performance
~~ Security Performance

To develop a meaningful measure of performance, that ade-
quately abstracts from the different risk characteristics of
firms, this study makes use of the "market model". The market
model argues that a security's return is the result of two factors.
One factor, common to all securities, results in the tendency for
stock prices to move together. The other factor, unique to the
individual firm, affects only the return on the securities of
that firm.

Mathematically, the market model posits a linear relation-
ship between the return on the individual security and the return
on the market, or

(1) $R_{it} = \alpha_i + \beta_i R_{mt} + \underset{\sim}{u}_{it}$.

R_{it} is the investment relative of the ith security in time period
t, R_{mt} is the investment relative of the market, and $\underset{\sim}{u}_{it}$ is a
random error term incorporating the effect of factors that affect
only the ith security. The slope coefficient, β_i, measures the
response of this security's return to factors that affect the re-
turns on all securities and, since the effect cannot be diversified
away, serves as a relative measure of the risk of holding the ith
security. The random error term, $\underset{\sim}{u}_{it}$, is presumed to satisfy the
usual requirements of a well specified linear regression model.[4]

Since the first two terms on the right hand side of equation
(1) supply a conditional expected return for the ith security, the
difference between the actual return in period t and the conditional
expected return in period t, given by,

(2) $$\delta_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}),$$

serves as a measure of the risk adjusted abnormal performance of
the security.[5] In an efficient market the value of δ_{it} would be
determined by information coming onto the market that is unique to
the ith firm. In this study δ_{it} will be used to measure the effect
of dividend announcements and the efficiency with which the effect is
impounded into the price of the security.

Estimating the Market Model Parameters

There are some econometric problems that may affect the
estimation of the expected return segment of equation (2).
First, the coefficients of the model must be estimated from time
periods that are different from the periods in which the effect
of the unique factor is being studied, since the expected value

of the error term, u_{it}, on or about the date of the dividend announcement would be non-zero. The regression line would be biased upward when the residual was expected to be positive and downward when the residual was expected to be negative. This would have the effect of dampening the size of the difference between the actual and estimated values of the investment relative, thus reducing the models' effectiveness in discriminating the affect of dividend changes. For this reason all coefficients are estimated from observations at least 12 months prior to the announced dividend change.

Second, the parameters of the market model may not be stationary over time. For an individual firm the last term in equation (2) will not then be an unbiased estimate of the expected return and the absolute value of δ_{it} will, on the average, be unduly large. If the slope coefficient, β, is independent of the dividend change announced and varies randomly over time, then averaging δ_{it} across firms should effectively remove any potential bias in measuring risk adjusted performance. The only effect will be to increase the cross-sectional distribution of δ_{it} which may reduce the generality of the results.

If there is a tendency for the relative risk, β_i, to change in a particular direction, then the overstatement of the unique component will be related to the level of risk and the market return during the period studied. Blume [3] found

some evidence of a tendency for β_i to regress towards 1.0 over time. Thus for $\beta_i < 1.0$ the bias will be positively related to the market return, and for $\beta_i > 1.0$ the bias will be negatively related to the market return. The net extent of the bias depends on whether there is a preponderance of low or high risk firms in the sample, whether the market return was unusually high or low in the period studied, and what kind of an ex-post relationship the market has generated between risk and unconditional security return.[6] The "regression tendency" may become important if dividend changes are, as one might expect, related to the overall performance of the market. This potential source of bias is reconsidered briefly in the section on the empirical results.

IV. THE SAMPLE

Monthly Data

The announcement dates of all dividend changes for a set
of 625 New York Stock Exchange firms for the period January 1964
through June 1968 were collected from the Wall Street Journal
Index. Investment relative and dividend data were taken from
a tape constructed by the Center for Research in Security Prices
at the University of Chicago updated at the University of Penn-
sylvania. Quarterly earnings information came from Standard
and Poor's Quarterly Compustat Tapes.[7] There were approximately
1000 dividend changes announced by these firms over this period,
exclusive of extra or special dividends that may have been paid.
All apparent dividend changes were double checked for accuracy
from Standard and Poor's Annual Dividend Record.

The coefficients of the market model were estimated by
regressing monthly firm investment relatives against the link
relatives of Fisher's "Combination Investment Performance In-
dex".[8] The number of months used in the regression varied be-
tween 24 and 111, and in all cases the last observation used in
the regression was twelve months before the announcement.

Daily Data

Daily price information was also collected for 135 an--

nouncements made in the 1967-1969 period. The performance
measure, δ_{it}, was estimated using the NYSE composite index after
transforming α_i and β_i, originally calculated using Fisher's
index, to take account of the differential slope coefficient
for a firm between the two indices.

Dividend and Earnings Variables

For each month during the four and a half year period
studied, firms were categorized according to their earnings
and dividend performance. Dividend announcements were cate-
gorized into seven mutually exclusive classes on the basis of
the quarter to quarter change in the payment as follows: omis-
sions, reductions, no change, less than 10 percent increase, 10
percent to less than 25 percent increase, 25 percent or greater
increase, and an initial payment.[9] As mentioned previously, in
order to distinguish the separate effect of a dividend announce-
ment on security performance it's necessary to hold constant
other types of information that may be related to dividend changes.
Numerous previous studies have shown a close relation between
dividend changes and reported earnings.[10] Accordingly, in this
study it's necessary to hold constant the effect on performance
of reported earnings.

To hold constant the effect of reported earnings firms
were classified into different categories according to whether

actual earnings during the period exceeded or fell short of "expected earnings". Expected earnings were calculated conditional on a measure of the general level of corporate profits during the period, and the firm's historical relationship with this general profit figure.[11] The difference between actual and estimated earnings per share is meant to be a proxy for earnings information supplied to the market in that period. The definitions of the earnings classes that were developed are described more completely in the following section.

Much of the difference between actual and expected earnings may be attributed to changes in accounting practices, financing decisions (and other risk characteristics), strikes, and many other factors. Nevertheless, these factors can probably be expected to occur randomly over time (independent of the firm's asset's earning power) so that the difference is at least an unbiased estimate of new information regarding the current earnings power of the firm, and is, therefore, a reasonably good proxy for the variable we wish to hold constant. The fact that reported earnings may be subject to a number of aberrations provides some justification as to why dividend changes may convey information that is of significant value to the market.

V. EMPIRICAL RESULTS

The results of the empirical tests of the hypotheses are presented in two ways. First, the abnormal performance value, δ_{it}, is averaged over all firms in each dividend-earnings class for a period surrounding the dividend announcement date. This figure represents the unexpected monthly (or daily) return that would have accrued to an investor with an equal investment in each security in a class.
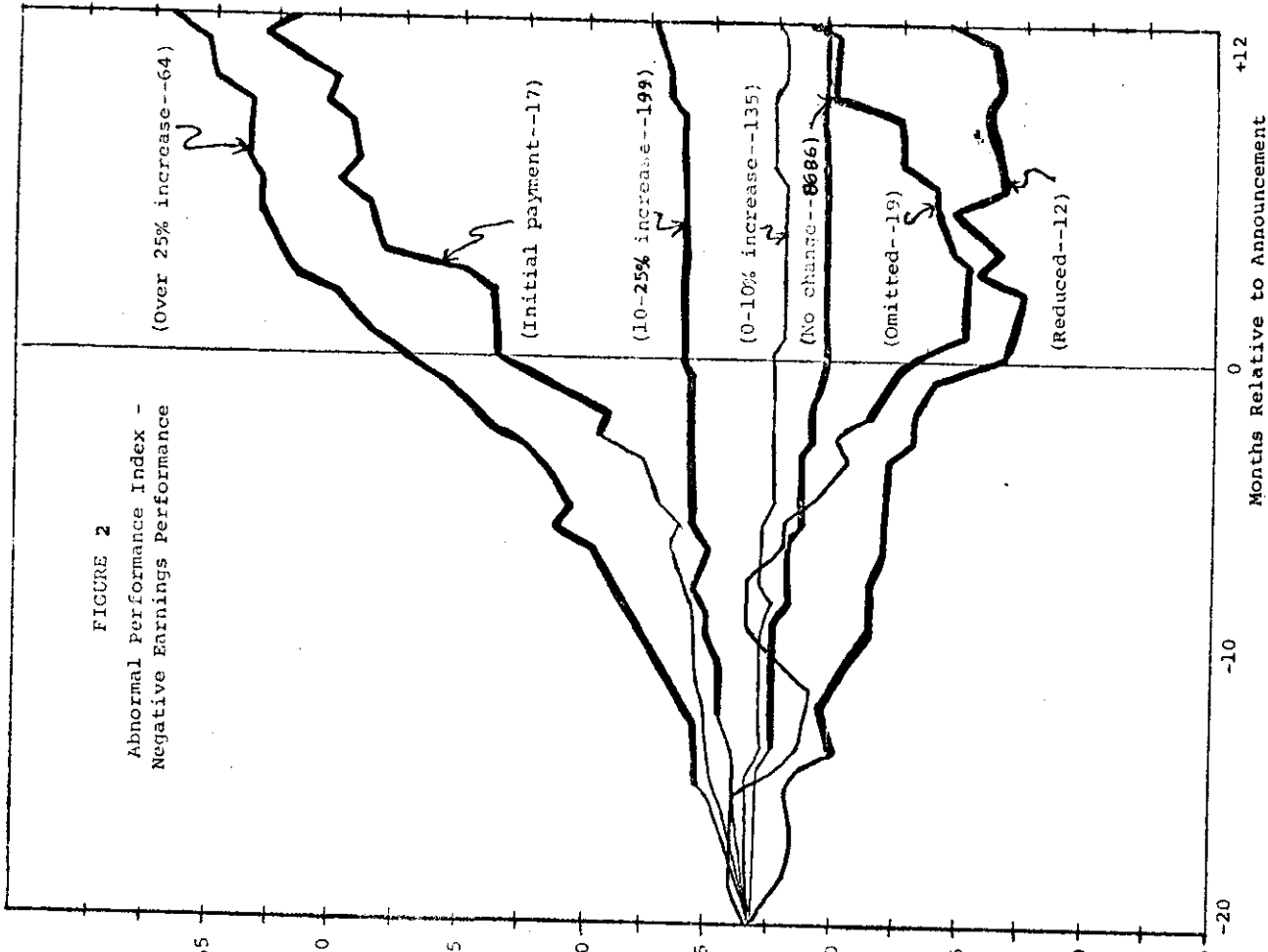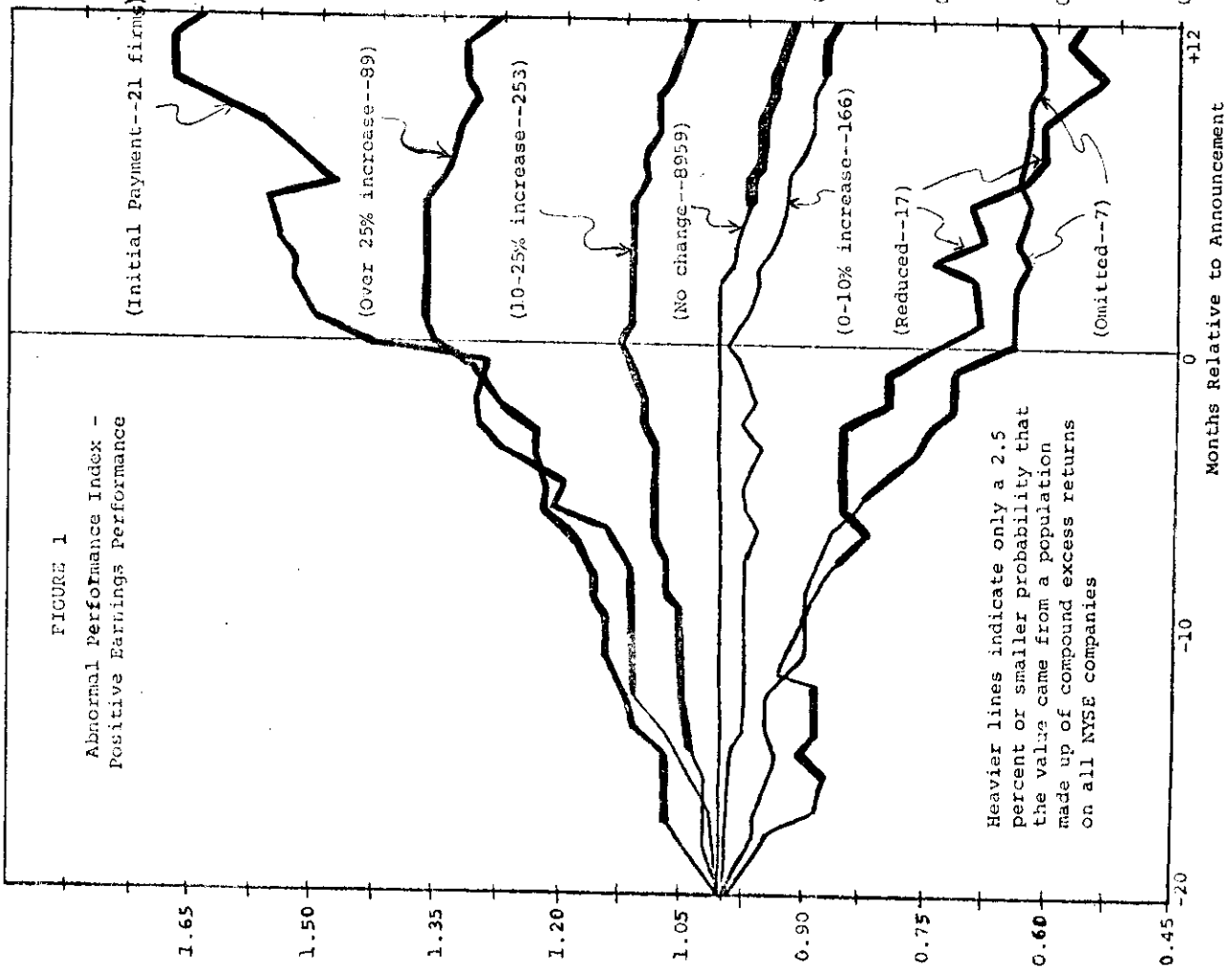
Second, an index of performance is calculated by compounding the periodic average unexpected return from a number of periods before to a number of periods after the announcement date, or

$$(3) \quad API_{\tau} = \prod_{t=1}^{\tau} \left(1 + \frac{1}{n} \sum_{i=1}^{n} \delta_{it}\right).$$

API_{τ} is an index representing one plus the percentage change in wealth that would accrue to an investor who contracted to receive only the difference between actual returns and expected returns, and, at the end of each period reallocated gains or losses equally over all securities to be held in the coming period.[12]

The Informational Content of Dividends

Figures 1 and 2 present the monthly abnormal performance index values for each of the dividend classes for positive and

FIGURE 2

Abnormal Performance Index -
Negative Earnings Performance

(Over 25% increase--64)

(Initial payment--17)

(10-25% increase--199)

(0-10% increase--135)

(No change--8686)

(Omitted--19)

(Reduced--12)

Months Relative to Announcement

FIGURE 1

Abnormal Performance Index -
Positive Earnings Performance

(Initial Payment--21 firms)

(Over 25% increase--89)

(10-25% increase--253)

(No change--8959)

(0-10% increase--166)

(Reduced--17)

(Omitted--7)

Heavier lines indicate only a 2.5
percent or smaller probability that
the value came from a population
made up of compound excess returns
on all NYSE companies

Months Relative to Announcement

negative earnings performance. Earnings performance was based on the expectational model described previously. In all cases the adjusted quarterly earnings variable used was the most recent one announced in or before the dividend announcement month. Table 1 gives the mean and standard deviation of the performance value for three months before to three months after the announcement month, and performance index values from the announcement month to three months after the announcement.

These results tend to support the proposition that market participants make considerable use of the information implicit in announcements of changes in dividend payments. The market reacts very dramatically to these announcements when dividends are reduced or when a substantial increase takes place. The effect of a more moderate dividend increase is proportionately less. The top section of Table 1 reveals that, with few exceptions, the largest single effect occurs in the announcement month. For this month the performance value was significantly different from 1.0 for all but one of the dividend categories.[13]

The fact that a good deal of the effect of the announcement seems to have been impounded into the price prior to the announcement month may be either the result of previous announcements that are correlated with the dividend announcement, or the result of the actions by those with information about the impending dividend change. If this apparent "anticipation" effect is the result of the actions of insiders, then the market cannot be

Table 1

Performance Values for Months Surrounding Dividend Announcement Dates -- Two Earnings Categories

	Month Relative to Announcement Date	Negative Earnings Performance							Positive Earnings Performance						
	t	Omitted	-1% to -99%	No Change	1% to 10%	10% to 25%	Over 25%	Initial	Omitted	-1% to -99%	No Change	1% to 10%	10% to 25%	Over 25%	Initial
Performance Values $\frac{1}{n}\sum_{i=1}^{n}(1+\delta_{it})$	-3	1.022	0.977	0.995	1.000	1.006	1.035	1.059	0.997	0.970	0.999	1.008	1.010	1.008	1.021
	-2	0.943	0.998	0.993	0.999	0.995	1.034	0.986	0.925	0.976	1.001	0.988	1.002	1.030	1.003
	-1	0.972	0.958	0.994	0.991	0.997	1.029	1.062	1.004	0.988	0.999	1.010	1.007	1.027	0.992
	0	0.953	0.902	0.995	0.994	1.017	1.034	1.042	0.915	0.904	0.998	1.012	1.015	1.043	1.117
	1	0.953	0.972	0.997	0.989	1.006	1.034	1.009	0.953	0.987	0.996	0.988	0.992	0.995	1.041
	2	0.998	0.986	0.998	0.995	0.995	1.033	0.997	0.994	1.002	0.995	0.990	1.001	1.008	1.020
	3	0.968	1.094	0.998	1.004	0.993	1.024	1.037	1.085	0.988	0.994	0.994	0.994	0.995	1.003
Performance Index $\frac{1}{n}\sum_{i=1}^{n}\prod_{t=0}^{\tau}(1+\delta_{it})$	0	0.953	0.902	0.995	0.994	1.017	1.034	1.042	0.915	0.904	0.998	1.012	1.015	1.043	1.117
	1	0.908	0.877	0.992	0.983	1.023	1.069	1.051	0.872	0.892	0.994	1.000	1.007	1.029	1.163
	2	0.906	0.855	0.990	0.978	1.018	1.104	1.048	0.867	0.894	0.989	0.990	1.003	1.047	1.182
	3	0.877	0.945	0.998	0.982	1.011	1.130	1.087	0.941	0.893	0.993	0.994	1.002	1.043	1.186
Standard Deviation $\sqrt{Var_t(\delta_i)}$	-3	0.157	0.041	0.079	0.114	0.076	0.092	0.196	0.085	0.073	0.081	0.089	0.066	0.073	0.129
	-2	0.091	0.112	0.078	0.058	0.063	0.085	0.051	0.105	0.048	0.081	0.059	0.067	0.097	0.076
	-1	0.062	0.086	0.082	0.056	0.062	0.085	0.111	0.052	0.087	0.080	0.074	0.068	0.096	0.073
	0	0.075	0.050	0.081	0.060	0.067	0.150	0.136	0.127	0.079	0.080	0.065	0.072	0.104	0.339
	1	0.068	0.044	0.081	0.062	0.070	0.158	0.141	0.107	0.060	0.081	0.067	0.056	0.081	0.170
	2	0.084	0.039	0.083	0.064	0.063	0.107	0.093	0.098	0.073	0.081	0.083	0.071	0.080	0.105
	3	0.089	0.266	0.081	0.105	0.071	0.111	0.107	0.114	0.081	0.081	0.070	0.065	0.076	0.103

considered to be perfectly efficient. In contrast, if the effect

is the result of previous or coincidental announcements, then

the market could still be considered to be efficient, however,

the total effect of the _dividend_ announcement would be overstated.

A comparison of Figures 1 and 2 suggests virtually no earn-

ings announcement effect. Given this rather surprising result

an attempt was made to capture an earnings effect by redefining

the earnings classification scheme. In one case four earnings

classes were developed by dividing a standard normal earnings

variate into approximately four equal sized classes. An analysis

of variance was performed on each of the seven periods and the

analysis of variance F-ratios are shown in Table 2. A strong

dividend effect is apparent in the month of the announcement. The

earnings effect, however, was not significant in any of the periods.

Table 2

Analysis of Variance F-Ratios

t	-3	-2	-1	0	1	2	3
Earnings	1.93	2.05	1.72	.98	1.42	.20	.43
Dividends	1.64	5.05	1.36	18.01*	3.72	1.37	.34

*Significant at 1 percent level.

In various other cases firms were classified on the basis

of the most recent twelve months earnings, using as the reference

date the month of the most recent earnings announcement, and by

observing only those firms who happen to announce earnings and

dividends in the same month. In none of these did the analysis

of variance show a significant earnings effect, while the dividend effect in one or more periods remained strong.

These results demonstrate that substantial information is conveyed by announcements of dividend changes. But more than this, the results imply that a dividend announcement, when forthcoming, may convey significantly more information than the information implicit in an earnings announcement.[14]

Figure 3 and Table 3 present analogous results for the 135 dividend announcements studied on a daily basis. The results closely parallel those shown earlier for the monthly data. The most dramatic movement occurs in days zero and one although the trend for those classes that move substantially is evident three days prior to the announcement. It should be noted that it's not possible to determine the exact day of the announcement since a number of announcements may have been made after the market closed on that day. One might expect this to be especially the case when the announcement was of particular importance, e.g. a reduction or a large increase. The only unusual thing about Figure 3 is the relatively small effect on performance of the announcements of changes that exceeded 25 percent.

Capital Market Efficiency

Monthly Data. The anticipation effect apparent in the monthly results, as noted earlier, may be the result of correlated
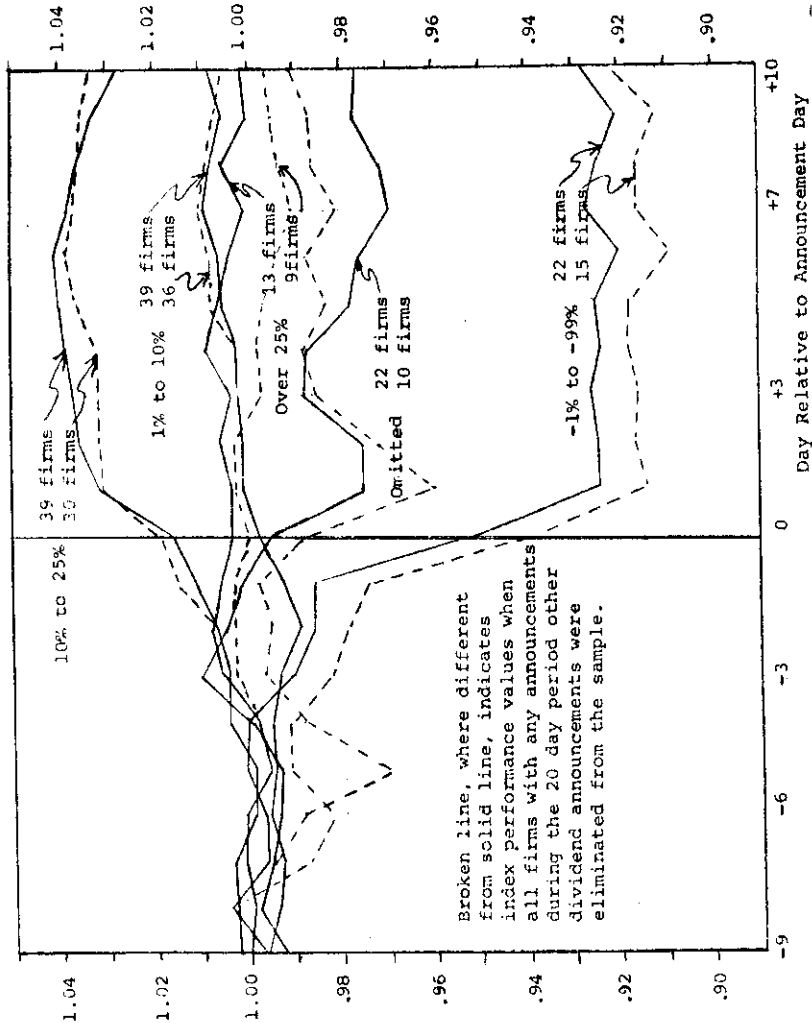
Table 3

Performance Values for Days Surrounding Dividend Announcement Dates

	Day Relative to Announcement Date	Omitted	-1% to -99%	1% to 10%	10% to 25%	Over 25%
Performance Values $\frac{1}{n}\sum_{t=1}^{n}(1+\delta_{it})$	t = -3	1.0120	0.9905	0.9995	1.0001	1.0074
	-2	0.9957	0.9953	0.9952	1.0021	1.0015
	-1	0.9975	1.0000	1.0038	1.0046	0.9989
	0	0.9921	0.9631	1.0053	1.0050	0.9979
	1	0.9797	0.9737	1.0033	1.1510	1.0005
	2	1.0001	1.0002	0.9999	1.0035	1.0022
	3	1.0111	1.0017	1.0012	1.0017	0.9974
Performance Index $\frac{1}{n}\sum_{t=0}^{n}(1+\delta_{it})$	t = 0	0.9921	0.9631	1.0053	1.0050	0.9979
	1	0.9776	0.9378	1.0038	1.0202	0.9984
	2	0.9777	0.9380	1.0087	1.0239	1.0006
	3	0.9888	0.9397	1.0099	1.0256	0.9980
Standard Deviation $\sqrt{Var_t(\delta_i)}$	t = -3	0.0477	0.0470	0.0394	0.0489	0.0285
	-2	0.0504	0.0475	0.0409	0.0497	0.0223
	-1	0.0521	0.0558	0.0392	0.0612	0.0182
	0	0.0673	0.0793	0.0409	0.0662	0.0266
	1	0.0734	0.0941	0.0448	0.0762	0.0254
	2	0.0674	0.0879	0.0461	0.0736	0.0333
	3	0.0626	0.0862	0.0471	0.0760	0.0399

Figure 3

Abnormal Performance Index -- Daily Dividend Announcements

10% to 25%

1% to 10%   39 firms / 36 firms

39 firms / 39 firms

Over 25%   13 firms / 9 firms

Omitted   22 firms / 10 firms

-1% to -99%   22 firms / 15 firms

Broken line, where different from solid line, indicates index performance values when all firms with any announcements during the 20 day period other than dividend announcements were eliminated from the sample.

Day Relative to Announcement Day

announcements or the result of some investors having access to
the information prior to its announcement. Correlated earnings
announcements were not found to be particularly important, how-
ever, other types of announcements could have been made prior to
the dividend change that could were of significant value to in-
vestors. Clearly, in some cases, an announcement of a forthcom-
ing dividend change could have been made by management prior to
its publication in the Wall Street Journal. Some of the antici-
pation effect may be the result of this type of announcement. To
the extent that the systematic rise or fall in the performance
index prior to month zero was the result of these other announce-
ments, then the anticipation effect is consistent with an effi-
cient market.

However, some of the anticipation effect is probably the
result of actions by those with access to unpublished information,
and implies a market that is less than perfectly efficient. How
much of the effect can be attributed to those acting with the
benefit of unpublished information is impossible to determine if
for no other reason than because it's often difficult to assess
what is and what is not published information, and when it became
available to a broad range of market participants.

After the major change in performance recorded in the an-
nouncement month there was no obvious tendency for the market to
either under- or over-react to the dividend announcement. Subse-

quent to the major change in month zero in some dividend cate-
gories there was a tendency for the index value to increase. In
some categories there was a tendency to decrease. For most, how-
ever, the index value seemed to fluctuate randomly subsequent to
the announcement date about the value that existed as of that date.
For the most part this pattern implies that, on the average, the
market makes unbiased value estimates from the information sup-
plied, and that these estimates are fully reflected in the secur-
ity's price as of the announcement month. An important exception,
however, may be those firms who announced initial payments. For
both earnings classes the performance index after the announce-
ment indicated an excess return of about 16 percent over the sub-
sequent 12 months.[15] The implication, of course, is that the
market is less than efficient and does not fully and immediately
react to the information implicit in the announcement of an ini-
tial dividend payment.

Daily Data. The daily performance values from Figure 3
show that in all cases the effect of the announcement is completely
impounded into security prices as of day one. There is no dis-
cernible trend in the API values after that date. Prior to the
day of announcement there is little in the way of an anticipation
effect, but what anticipation effect there is probably is the re-
sult of investors acting on the basis of the information to be
announced. Correlated announcements occuring in this 4 week period

were not widespread. Thirty-five firms had some other kind of announcement in the Wall Street Journal during this period. With these firms eliminated the performance index behaved as described by the broken lines in Figure 3. Once again the results are generally consistent with the definition of an efficient capital market.

The Dispersion of Performance Values Within Classes. The standard deviation of the performance measure, δ_{it}, is given in the lower section of Table 1 for monthly figures and in Table 3 for the daily figures. For the month of the announcement, and the month immediately after the announcement, the dispersion was larger than in other months only for firms who announced an initial payment, and for firms whose increase exceeded 25 percent. This provides some evidence that the market tends to react rather consistently and without large error (except for these two groups) across firms to similar announcements. This is weak evidence, however, and about all one can say is that the results are consistent with a market that correctly values assets.[16]

VI. SUMMARY AND IMPLICATIONS

The results of this investigation clearly support the proposition that the market makes use of announcements of changes in dividend payments in assessing the value of a security. Management's

fear of reducing or omitting dividends seems well founded and leads
to a desire to delay increasing dividends until the level of cash
flows can be estimated with little uncertainty. The importance of
these announcements suggests at least two conclusions regarding the
rules and regulation of corporate disclosure. First, if the infor-
mation implicit in the announcement could be conveyed to the market
in a different way, then the financing alternatives available to the
firm would be broader. Second, the use of dividends as an information
disseminating device is inefficient since it's an imperfect means of
describing the firms' future prospects. Allowing or encouraging the
publication of managerial expectations might reduce uncertainty more
than by conveying the information through dividend changes. As a
result one might expect more correct asset pricing and improved allo-
cative efficiency.

Most of the information implicit in the announcement is
reflected in the securities' prices as of the end of the announcement
period (the largest change, in most categories, occuring in the an-
nouncement period). This lends support to the proposition that the
market is reasonably efficient on both a monthly and daily basis.
The rather large anticipation effect evident in the monthly data could
be the result of either the use of insider information (an inefficient
market) or the result of announcements related to the dividend change

(an efficient market). The small anticipation effect in the daily data, however, when correlated announcements were not a large factor, implies that the use of insider information is not a major factor affecting short run returns.

FOOTNOTES

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[1]In this paper the term efficiency is meant to imply that asset prices fully, immediately and without bias reflect currently available information. This concept of efficiency is discussed more fully in Section II. It should be emphasized at this juncture, however, that I am not implying the exact nature of the relationship that exists between rates of return on securities with various risk characteristics as is implied in the definition of efficiency in the capital assets pricing model of Sharpe [15] and others.

[2]A number of authors [4,9,12] have attempted to assess the impact of managerial expectations on dividend payments. Especially thorough, however, was the work of Darling [5]. There are two other arguments that are often mentioned that attempt to rationalize the observed positive relationship between dividend payments and stock prices. First, investors may have a preferred consumption pattern and the existence of transactions costs makes a particular dividend pattern a more desirable way to achieve his preferences than by selling securities. In this world securities would tend to attract investors whose desired consumption pattern approximates the firm's payment pattern. As a firm changes its dividend payment pattern some shareholders may sell the security finding it less desirable. In an efficient market, however, this excess supply would be quickly absorbed. A positive relation between dividends and performance could only occur if there was a pent-up demand for firms with an early dividend payment pattern. Given that there is a higher tax rate on dividends than on capital gains, it's doubtful that any such pent-up demand exists.

Second, Gordon [10], among others, has argued that the investor need not be indifferent as to the distribution of returns between dividends and capital gains if he is risk adverse, and associates a higher degree of risk with dividends received further in the future. However, the fact that investors may associate greater risk to dividends received further in the future will be irrelevant to the distribution of the one period gain on a share between the dividend and price appreciation <u>as long as the appropriate cost of capital is used in making investment decisions</u>. If the correct cost of capital is used then even if risk increases with the reinvestment of earnings, the stockholder will be adequately compensated and share price should not decline.

[3]Since extensive discussions of the "fair game" models of security pricing in efficient capital markets are available (c.f. Samuelson [13] and Fama [6] , our discussion here will be limited only to formulating a testable hypothesis.

[4]The empirical validity of the model requires that

$$\text{Cov}(R_{mt}, \underset{\sim}{u}_{it}) = 0 \quad \text{and} \quad \text{Cov}(\underset{\sim}{u}_{it}, u_{it+s}) = 0 \quad \text{for } s \neq 0.$$

The second condition, in effect, implies the absence of a strong industry factor. Blume [2] has examined the market model as it applies to common stocks listed on the New York Stock Exchange. He found evidence in support of the linearity assumption and his data suggest that the market model can be used for cross-sectional analysis of differences between conditional expected and actual rates of return. Blume, as well as Fama [6], give evidence that the distribution of returns closely parallels the distribution of non-gausian stable variates. Wise [22], however, shows that coefficients estimated from the regression of non-gausian stable variates are unbiased estimates.

[5]Equation (2) strictly speaking is not just a transformation of equation (1) because the time period for which δ_{it} may be calculated is different than the time period used to develop estimates of the constants α_i and β_i.

[6]Friend and Blume [9] have some evidence that, probably because borrowing rates exceed lending rates, the slope of the market relationship between portfolio risk and expected return is non-linear (effectively the conditions leading to the separation theorem are not met in actual capital markets) and bends towards the risk axis. In the presence of the tendency for β to regress toward 1.0 over time this would increase the possibility of a positive bias on net. The opposite would tend to exist if the market function in risk return space curved toward the return axis.

[7]Marshall Blume constructed the combined file from which the relevant data was extracted.

[8]The construction of this index is explained in Lawrence Fisher [8].

[9]An omitted dividend was defined to include only those cases when a positive payment had been made in the previous quar-

ter. Occasionally, when dividends were omitted no announcement
was forthcoming in the Wall Street Journal. In these cases --
and they were relatively few compared with those firms who an-
nounced an "omitted" payment or who announced they were taking
"no action" on the usual quarterly dividend -- the relevant date
on which the omission was assumed to be information available
for investors was two months after the last ex-dividend month.
No attempt was made to determine if any announcement was made
prior to the assumed omission date regarding an impending divi-
dend omission.

The initial payment classification included all firms
that paid no dividends in the previous quarter. In most cases
this constituted the first dividend paid in a number of years.

All dividend changes that were negative or exceeded one
hundred percent were double checked for accuracy. As a result,
all apparent dividend omissions were double checked to determine
if the dividend had been omitted or if the apparent omission was
the result of missing data. In addition, all apparent initial
dividend payments were checked to determine if the initial pay-
ment occurred as a result of missing data in the previous quarter.

[10]Lintner [12] and Brittain [4] both found that the vari-
able that contributes the most to explaining dividend changes was
current earnings.

[11]An expectational model was constructed in the following
way: quarterly net earnings per share adjusted for all capital
changes were regressed against time, and a seasonal component
was estimated. Usually four years of quarterly data from 1964
through mid-1968 were used. The seasonally adjusted earnings
per share were regressed against Standard and Poor's earnings
per share index. A standard normal variate was calculated by

$$Z = \frac{\left(\begin{array}{c}\text{actual seasonally}\\ \text{adjusted e.p.s.}\end{array}\right)_t - \left(\begin{array}{c}\text{estimated}\\ \text{e.p.s.}\end{array}\right)_t}{\text{standard error of regression estimate}} \ .$$

This earnings model cannot be considered to be well
specified. It's undoubtedly autocorrelated and probably suffers
from an omitted industry variable. As a result, both the numer-
ator and denominator of the equation are understated. For my
purposes (of investigating the impact of information supplied by
dividends) this misspecification should be of only minor impor-
tance. The cost of correcting the model was deemed to be too
high.

[12]This index is less subject to the unusual performance of an individual security than an alternative formulation that averages the compound individual security returns.

I am presently investigating the sampling properties of both of these indices. Preliminary results on a random sample of monthly excess returns for 800 NYSE firms, not classified on the basis of risk, shows a negative trend of about one-tenth of one percent per month for the compound average of returns and a positive trend of about the same amount for the average of the compound returns. The distribution of performance values is skewed to the high end but converges to a symmetric distribution quite rapidly as the portfolio size is increased.

[13]Only for the less than ten percent increase was the value not significant at the five percent level.

The fact that the index drifts downward for the cases when the firms did not change dividends is expected since the change would normally be positive. An explanation for the poor performance of the less than ten percent increase group after the announcement may simply be because small dividend changes provide little positive information for the market to go on. The no change group includes a large portion of months when the possibility of dividend changes is minimal (e.g. the month after a previous announcement). The less than ten percent increase group obviously includes only months in which dividend changes may be expected. Over the 33 month period the no change group declined about nine percent for both earnings classes. This is consistent with the dividend yield on all stocks over the period of slightly more than three percent per year.

[14]This is substantially different than saying that there is no earnings announcement effect. Thus, these results are not inconsistent with those of Ball and Brown [1]. Ball and Brown, however, do not adjust for dividend payments in measuring the performance of firms in their two earnings categories. Thus, their earnings effect may be the result of a confounding of an earnings effect and a dividend effect.

[15]This figure is significantly different from the population compound excess 12 month returns on all NYSE companies at the one percent level.

[16]Even for two categories in which this did hold true, it's not necessarily the case that the reaction was highly variable. It may be due to the broadness of these classes. One might expect substantially different reaction to a firm that doubled its dividend as opposed to one that increased it by 25 percent, yet they have been included in the same class in this study.

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