Predicting Corporate Distributions*

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Abstract

Corporate distribution events, including stock splits, stock dividends, special dividends, and increases in regular dividends, are predictable, in part because they tend to recur periodically. The market partially anticipates such recurring events, as average abnormal announcement returns are smaller if the event is more predictable. Nevertheless, a simple trading strategy that involves purchasing firms with high predicted probabilities of recurring distribution events earns significant abnormal monthly returns. These results parallel, but are distinct from, previously documented return anomalies related to predictable earnings and dividend announcements.

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Predicting Corporate Distributions

1. Introduction

We document that corporate distribution events, including stock splits, stock dividends, special dividends, and increases in regular dividends, are predictable. The likelihood of event occurrence is much higher for a firm that has recently engaged in the same event, and spikes in particular in the 12th month after the event. In addition, economic variables such as profitability, cash balances, and share price appreciation help to predict the occurrence of distribution events.

A degree of recurrence in distribution events is not unexpected. Firm characteristics that are relevant to distribution decisions, including free cash flow and profitability, may well persist over time.[1] Further, directors and CEOs may adopt firm-specific policies. For example, while some firms use stock splits to keep share prices in a desired trading range, other firms such as Berkshire Hatheway under CEO Warren Buffett specifically disavow the practice.[2] In addition, the board meetings at which distribution decisions and dividend changes are approved typically occur at regular calendar intervals, including quarterly and annually.[3]

Our paper makes three key contributions. First, we document the striking *degree* to which these corporate distributions are predictable. Second, we show that the markets anticipate the predictable nature of these events to an extent. Third, and, most important we document a new capital market anomaly. In particular, the evidence indicates that the market fails to fully incorporate in prices the value implications of the predictability of follow-on distribution events,

[1] See, for example, Allen and Michaely (2001), Kalay and Lemmon (2008), and DeAngelo, DeAngelo, and Skinner (2009) for overviews of the extensive literature on the determinants of corporate payout policy.
[2] Studies considering optimal trading range as an explanation for splits include Lakonishok and Lev (1987), Muscarella and Vetsuypens (1996), Angel (1997), Schultz (2000), Easley, O'Hara, and Saar (2001), and Anshuman and Kalay (2002).
[3] DeAngelo, DeAngelo, and Skinner (2000) document that special dividends are quite persistent and hence predictable, particularly prior to 1995. However, they do not assess the valuation implications of this predictability, as we do.

leading to abnormal stock returns to simple trading strategies that involve buying stocks with high estimated probabilities of follow-on events. As such, our findings provide an additional challenge to those who seek to understand or build theoretical models of how markets value securities.

As a point of comparison, we first record the unconditional probabilities that each distribution event occurs for a given firm/month for common stocks in the CRSP monthly database for the interval 1963 to 2012. These are 0.24% for special dividends, 0.37% for stock dividends, 0.47% for stock splits, and 1.18% for increases in regular dividends.

We then assess the probability that each event will be observed for a firm/month that occurs within a given calendar interval after observing the same event at the same firm. Most striking, conditional event probabilities jump on the anniversaries of preceding events. In the 12^{th} month after a preceding like event, the probability of a special dividend is 32.6% (136 times the unconditional probability), the probability of a stock dividend is 29.2% (79 times the unconditional probability), the probability of a stock split is 4.7% (10 times the unconditional probability), and the probability of a regular dividend increase is 32.9% (28 times the unconditional probability). In addition, we show that economic variables such as profitability, cash balances, and share price appreciation contribute to the ability to forecast distribution events.

If the market recognizes the tendency for these distribution events to recur, then announcement effects should be smaller for events that are more predictable, other things equal. Consistent with this reasoning, we document smaller CARs for follow-on events. Further, among follow-on events, we find a negative relationship between CARs and our estimated probability that the follow-on event will occur. These observations indicate that markets are aware, to some degree, of the forecastable nature of corporate distribution events.

However, in light of finding that distribution events are quite predictable and that the market has substantial positive reactions even to follow-on events, we evaluate the potential profitability of simple trading strategies focused on these regularities. To do so, we first estimate a formal model of the probability of a follow-on distribution event for the sample of firms that initially engaged in each type of distribution. To capture the tendency for the events to recur at specific calendar intervals, we rely on the proportional hazard model of Cox (1972). In addition to elapsed calendar time, we include in the estimation of the hazard model economic variables suggested by the relevant theory. We then assess returns to portfolios that take long positions in those firm/months with the highest estimated probabilities of follow-on events.

These trading strategies lead to positive abnormal returns. In particular, “alphas” estimated while using the four Fama/French/Carhart factors to adjust for common factor exposures, are predominately positive and significant, ranging from approximately 50 to 65 basis points per month for dividend increases to 130 to 160 basis points per month for special dividends, depending on the portfolio weighting method and other parameters. The positive abnormal returns to these simple trading strategies are consistent with the reasoning that the market fails to fully incorporate in prices the predictability of corporate distributions.

The prior literature has documented anomalous returns related to earnings announcements (e.g. Beaver, 1968, Bernard and Thomas, 1990, and Frazzini and Lamont, 2006) and cash dividend payments (e.g. Kalay and Loewenstein, 1985, and Hartzmark and Solomon, 2013), each of which also tend to occur at predictable calendar intervals. In particular, Bernard and Thomas (1990) document that market reactions to earnings announcements can be predicted based on prior earning announcements. Our results parallel theirs, in that we document that the market reacts positively to distribution events that can be predicted based on prior events and other economic variables. However, we show that our findings are distinct from these previously-documented regularities, as they are observed even in samples that exclude earnings or dividend events.

2. Data Sources and Descriptive Statistics

2.1. Sample Construction

We study four distribution events: cash dividend increases, special dividends, stock dividends, and stock splits, announced during the period January 1963 to December 2012.[4] Events are identified using the CRSP distribution master file. We focus on distributions to common stocks (share code equal to 10 or 11).

To enter our sample of increases in regular cash dividends, we require (1) the cash dividend is in US dollars, (2) the dividend is quarterly, semi-annual, or annual, (3) the dividend is taxable, and (4) the dividend increase is greater than five percent.[5] Also, following Grullon, Michaely, and Swaminathan (2002), the previous quarterly cash dividend must be paid within a window of 20-90 trading days prior to the current dividend announcement.[6] We construct our special dividend sample following DeAngelo, DeAngelo, and Skinner (2000). In particular, we require (1) the special dividend to be cash, in US dollars, (2) the dividend is taxable, and (3) the dividend is coded as "extra or special" or "year-end or final". The stock dividend and stock split samples include all new issues of existing common stock. Stock splits are identified by CRSP

[4] The sample period starts in 1963 because we require accounting data from Compustat that is not available for earlier years. We also examined share repurchases, and find that events recur, but to a lesser degree. The noisier evidence with regard to share repurchases may be attributable in part to errors in share repurchase announcement dates, as documented by Banyi, Dyl, and Kahle (2008).

[5] The last of these requirements serves to eliminate firms that regularly increase their dividend by a small amount, such as one cent. However, our central results are robust to either not imposing a minimum rate of increase or to raising the minimum increase to ten percent.

[6] We extend the window to 20-180 trading days for semi-annual cash dividends and 20-360 trading days for annual dividends.

distribution code “5523,” while stock dividends are identified by CRSP distribution codes of “5533” or “5538”. The samples contain 36,970 dividend increases, 7,673 special dividends, 11,626 stock dividends, and 14,654 stock splits.

2.2. Recurrence of Distribution Events

Table 1 provides descriptive statistics regarding the occurrence and recurrence of the corporate distribution events. Panel A reports on the probability of observing each event for a given stock/month, unconditionally and conditional on previously observing the same event at the same firm. Panel B focuses on follow up events, reporting the frequency distribution by number of months since the preceding event, while Figure 1 displays the same data. Several results are noteworthy. First, a large percentage of distribution events occur at firms that have recently engaged in the same event. Comparing the number of follow-on events that occur within 36 months (Table 1, Pane B) to total sample sizes, we observe that the majority of stock dividends (66.3%), special cash dividends (60.2%), and dividend increases (74.6%) occur at firms that engaged in the same event during the prior three years. A lower, but still substantial, 30.8% of stock splits are recurrences.

Second, recurring distribution events tend to occur on anniversaries of preceding events, as evidenced by the spikes observable on Figure 1 at 12, 24, and 36 months. For each of the events, the spike at 12 months is the most noteworthy. More than half (54.4%) of all follow-on special dividends occur exactly one year after the preceding event. Nearly half of the follow-on events occur after one year for dividend increases (43.5%) and stock dividends (45.1%). For stock splits we also observe an increase, but less dramatic (15.2% of follow-on events), twelve months after the preceding event.

The tendency for distribution events to recur implies that probabilities of observing these events are much higher for firms that previously engaged in the same event as compared to the full sample of firms in the CRSP data. Unconditional probabilities, computed based on the number of sample events relative to the number of CRSP stock/months in the sample, are fairly low. Specifically, the unconditional probabilities of an event at a random firm in a given month (Panel A of Table 1) are 0.24% for special dividends, 0.37% for stock dividends, 0.47% for stock splits, and 1.18% for increases in regular dividends.

In contrast, the probability of follow-on events is much higher. In particular, the probability of an event during a month that falls within the twelve months after a like event at the same firm exceeds one percent for stock splits, exceeds four percent for special dividends, stock dividends, and cash dividend increases. In the 12th month after a same-firm event the probability of a follow-on event is particularly high, equal to 32.9% for increases in cash dividends, 32.6% for special dividends, 29.2% for stock dividends, and 4.7% for stock splits.

Stated alternatively (and displayed on Figure 2), a firm that announced a dividend increase twelve months earlier is 28 times as likely (32.9% vs. 1.2%) to announce a dividend increase as compared to the full sample. A firm that announced a special dividend twelve months earlier is 136 times as likely (32.6% vs. 0.24%) to announce another special dividend as compared to the full sample. A firm that announced a stock dividend twelve month earlier is 79 times as likely (29.2% vs. 0.37%) to announce another stock dividend, while a firm that announced a stock split twelve months earlier is 10 times as likely (4.7% vs. 0.47%) to announce another stock split.

The data reported on Table 1 and Figure 1 support the conclusion that firms that have recently engaged in distribution events are much more likely than other firms to repeat the event, particularly on the first anniversary. In fact, the majority of the stock dividends, special cash dividends, and increases in regular dividends observed in the CRSP data from 1963 to 2102 occur at firms that recently engaged in the same event, while almost a third of observed stock splits occur at firms that have recently split their stock.

2.3. Stock Returns in the Month of Corporate Event Announcement

Consistent with extant literature, the average announcement effect for each of the four distribution events is positive and significant.[7] On Panel A of Table 2 we report average five-day cumulative abnormal returns (CARs) around the announcement dates.[8] These are 1.18%, 2.31%, 2.35%, and 3.24% for dividend increases, special dividends, stock dividends, and stock splits, respectively. During the full month of the announcement, cumulative stock returns average 3.42%, 4.48%, 5.71%, and 9.05%, for the four events, much greater than the average equal-weighted market return of 1.12% per month. Panel A of Table 2 also reports five-day CARs and monthly returns separately for the 1963 to 1987 and 1988 to 2012 subsamples. We observe positive and significant announcement returns for both subsamples.

The results reported on Table 1 and Figure 1 indicate that distribution events are much more frequent for firms that previously engaged in the same event. However, some tendency for distribution events to recur should not be surprising, as firm characteristics associated with a propensity to make distributions are likely to persist through time, and the decisions themselves occur at periodically scheduled board meetings.

[7] See Lie (2000) and Grullon, Michaely, and Swaminathan (2002) for stock returns around announcements of cash dividend increases. See Brickley (1983), DeAngelo, DeAngelo, and Skinner (2000), and Lie (2000) for announcement returns of special dividends. Studies on announcement returns around stock splits and stock dividends include Fama, Fisher, Jensen, and Roll (1969), Grinblatt, Masulis, and Titman (1984), Brennan and Copeland (1988), McNichols and Dravid (1990), and Pilotte and Manuel (1996).

[8] CARs are computed over days -2 to +2 around the event date, based on the market model (Brown and Warner, 1980), with beta estimated over the period from 60 to 425 days prior to the announcement date.

As Malatesta and Thompson (1985) observe, announcement returns depend both on the economic importance of the event and on the degree to which market participants anticipate the event. If the market is aware of the tendency for distribution events to be repeated then, other things equal, the abnormal stock returns to follow-on events should be smaller than to initial (non-follow-on) events. On Panel B of Table 2 we report average five day CARs and event month returns separately for follow-on and initial distribution events.[9] Consistent with the reasoning that the market anticipates to some extent the tendency for distribution events to recur, average CARs are smaller for follow-on events. The difference is modest for stock splits (3.4% for initial events vs. 3.0% for follow-on events) and for dividend increases (1.4% for initial events vs. 1.1% for follow-on events). In contrast, the difference is more notable for special dividends (3.5% for initial events vs. 1.6% for follow-on events) and for stock dividends (3.4% for initial events vs. 1.9% for follow-on events).

The results reported to this point support the conclusions that (i) corporate distribution events tend to recur periodically, and (ii) the market is aware of this phenomenon, at least to a degree. We next delve further into these issues. We first implement a formal model to estimate the probability of a follow-on distribution event. We then assess whether the market makes efficient use of the fact that the probability of follow-on distribution events can be forecast.

3. The Probability of Follow-on Distribution Events

We implement the proportional hazard model of Cox (1972) to more formally estimate the probability that a firm will announce a follow-on corporate event in a given month after a preceding event. More specifically, we estimate the "hazard rate," which in our application is

[9] We consider an event to be a follow-on if the same firm engaged in the same distribution event within the preceding 36 months, and as an initial event otherwise.

the probability that the firm will announce a follow-on corporate event in month *t,* conditional on (i) the firm announced the same event in month 0, and (ii) the firm has not announced a follow-on corporate event before month t. The hazard rate is modeled as:

$$h_i(t) = h_0(t) exp\ (\beta X_{it}), \tag{1}$$

where $h_0(t)$ is a "baseline" hazard rate that depends only on the elapsed time since the previous corporate event and X_{it} is a vector of firm-specific explanatory variables. Explanatory variables are winsorized at the upper and lower one percent boundaries to mitigate the effect of outliers.

3.1. Estimating the Hazard Model

In addition to the effect of elapsed time, we consider the potential role of firm-specific explanatory variables in predicting the probability of a follow-on event. Grullon, Michaely, and Swaminathan (2002) and Lie (2000) present evidence that the decision to increase cash dividends depends on firm profitability and cash balances, while DeAngelo, DeAngelo, and Skinner emphasize the importance of free cash flow in explaining cash dividend payments. In line with this reasoning we include as explanatory variables when modeling the likelihood of increases in regular dividends and special dividends the firm's return on assets (ROA) and cash balance.[10] We also include as explanatory variables the size of the previous dividend increase or the amount of the previous special dividend, the five-day CARs at the previous announcement of a dividend increase or special dividend, and the market capitalization of the stock measured at the end of the previous announcement month. A large dividend increase and special dividend reduce the firm's cash holding by more and thus are expected to be less likely to be followed by

[10] Following Fama and French (1993), we measure ROA and cash holdings for July of year *Y* to June of year *Y*+1on the basis of outcomes as of the end of the fiscal year that falls in calendar year *Y-1*. In order to increase the sample size, we replace missing ROA and cash holding data with the market median in the fiscal year when predicting the probability of a follow-on dividend increase or a follow-on special dividend. This does not significantly affect the estimated probability of a follow-on corporate event. In unreported results (available upon request), we find that excluding the observations with missing ROA and cash does not alter our results.

another dividend increase and special dividend *ceteris paribus*. A large announcement return signals the market's appreciation of the distribution event and may encourage the firm to announce a follow-on. In addition, we include stock size to assess the potential impact of firm size on the distribution events.

To model the probability of follow-on stock splits or stock dividends, we include the ratio of the nominal stock price at the end of month *t*-1 to the stock price at the end of month 0. This reflects that the widely studied "trading range" hypothesis implies that stock splits and dividends are used to return the stock price to a preferred level in the wake of stock price increases. To be consistent with the estimation of the hazard model for dividend increases and special dividends, we also use as explanatory variables the size of the preceding stock dividend or the split factor, the five-day CARs around the previous announcement of stock dividend or stock split, and the market capitalization of the stock.

Panel A of Table 3 provides summary statistics regarding the magnitude of prior events, CARs at the prior events, and the market capitalization of sample firms. On average, increases in cash dividends average 27.0% of the existing dividend, the special dividend is 3.0% of the equity value, the size of the stock dividend is 10.7% of shares outstanding, and the split factor is 76.8%. The average 5-day announcement CARs range between 1.2% for dividend increases and 3.2% for stock splits. Firms that pay stock dividends are the smallest, with an average market capitalization of $0.57 billion.[11] Stocks that increase their regular cash dividend are the largest, with an average market capitalization of $3.95 billion, followed by the stock splitters with an average market capitalization of $3.13 billion, and by firms that pay special dividends, with an average capitalization of $2.11 billion.

[11] Market capitalization amounts are adjusted for inflation, and are expressed in 2012 dollars.

We estimate the proportional hazard model (1) for each of the distribution events. Figure 3 depicts the estimated baseline hazard rate, $\hat{h}_0(t)$, estimated from the first sixty months of data. Consistent with the results in Figure 1 and Table 2, the hazard rate jumps notably at t = 12, particularly for dividend increases, special dividends, and stock dividends. Smaller jumps in the baseline hazard rate are also observable at t = 24 and t = 36 months since the prior event.

In Panel B of Table 3 we report coefficient estimates obtained when estimating the hazard model for increases in regular dividends and for special dividends. For each explanatory variable, the first row reports the estimated coefficient ($\hat{\beta}$), while the second row reports the hazard ratio ($\exp(\hat{\beta})$). The third row reports t-statistic in parentheses.

The stock's market capitalization is positively associated with the hazard rate for dividend increases (but not for special dividends), indicating that large firms are more likely to announce follow-on dividend increases. On the other hand, both ROA and cash holding are positively associated with the hazard rate of a follow-on special dividend and that of a follow-on increase in regular cash dividend. The size of the previous special dividend and of the prior dividend increase (each of which reduces cash holding) are each negatively associated with the probability of a follow-on event.

Table 3 Panel C reports estimation results for stock dividends and stock splits. The size of the latest stock dividend is negatively associated with the hazard rate, indicating a smaller probability of a follow-on if the prior stock dividend was large. Similarly, the probability of a follow-on stock split declines if the prior split factor was larger. Market capitalization is positively associated with the probability of a follow-on stock dividend and that of a follow-on stock split. Consistent with the optimal trading range hypothesis, growth in the stock price since the prior event is positively associated with the probability of both a follow-on stock dividend and a follow-on stock split. Lastly, the announcement return at the prior event is positively associated with the probability of a follow-on stock split, but is not significantly associated with that of stock dividend.

3.2 The Accuracy of the Hazard Model Predictions

We predict the hazard rate for follow-on corporate events in each month s using the sample of corporate events announced during months s-120 to s-1. The choice of the ten-year estimation window reflects a tradeoff of sample size (and thus the accuracy of the estimation) and the relevance of data from the more distant past. The estimation results are based entirely on data and parameter estimates that would, in principle, have been available to market participants prior to month s. As such, our estimates, and the results of the trading strategies evaluated in Section 4 below, should be viewed as "out of sample".

We report results of tests intended to assess whether the hazard model generates good predictions of the likelihood of follow-on events. To do so, for each sample month we divide sample stocks with a corporate distribution event during the prior T (= 12, 24, or 36) months into ten deciles based on the predicted probability of a follow-on event in the month. We then compute the average predicted probability and the average fraction of stocks that do announce a follow-on event, i.e., the average realized probability, for each decile/month. Table 4 presents the results of a pooled regression of realized probabilities on predicted probabilities.

An ideal prediction would yield a slope coefficient of one and an intercept of zero in this regression. Estimated slope coefficients are indeed significantly positive, and close to the benchmark of one. For follow-on stock dividends the estimated slope coefficient ranges from 0.96 to 0.97, depending on T (the number of prior months included in the sample selection). For dividend increases estimated slope coefficients range from 0.89 to 0.93. For special dividends the slope coefficients range from 0.88 to 0.89, and for stock splits the estimated slope coefficients range from 0.80 to 0.88. All of the estimated slope coefficients differ significantly from zero and are economically substantial, indicating that stocks with higher estimated probabilities of announcing distribution events are indeed more likely to do so. Further, the estimated intercepts reported on Table 4 are generally economically small, ranging from zero to about 0.004. However, in most instances differences between the estimated slope coefficients and the benchmark of one and differences between the estimated intercepts and the benchmark of zero are statistically significant. On balance, these results indicate that the hazard model implemented here generates good, but imperfect, predictions of the likelihood of distribution events.

3.3 The Probability of Follow-on Events and Announcement Returns

As noted, the stock market price response to an event announcement depends both on the economic magnitude of the event and on the degree to which the market is surprised by, i.e. did not anticipate, the event.[12] We provide some evidence as to whether the market anticipates the degree to which corporate distribution events are predictable by assessing the relation between the 5-day CAR on announcement of a recurring event and the estimated probability of the event. In an efficient market this relation should be negative, other factors equal.

For each type of event, we estimate a regression with the 5-day CAR as dependent variable, and the fitted month probability of the event from the estimated hazard model as explanatory variable, while also controlling for the magnitude of the event (size of dividend increase, size of special dividend, size of stock dividend, or split factor). Results are reported on Table 5. As would be expected, CARs are positively and significantly related to event

[12] Malatesta and Thompson (1985) provide a formal model of this intuition.

magnitudes for dividend increases, special dividends, and stock dividends. In contrast, the CAR for stock splits is only marginally related (*t*-statistic = 1.34) to the split factor.

The relation between the 5-day CAR and the estimated probability of the event is negative for all four types of events, and is statistically significant for all events except special dividends. Finding that announcement returns are smaller when the market is less surprised (i.e. the estimated probability of the event is higher) is consistent with market efficiency. We note, though, that the estimated coefficients are economically rather small for special dividends, dividend increases, and stock dividends. The point estimates imply that a 10% increase in the estimated event probability is associated with a CAR reduction of 13 basis points for dividend increases, 4 basis points for special dividends, 12 basis points for stock dividends, and 131 basis points for stock splits.

While the cross-sectional evidence reported in Table 5 is consistent with market efficiency, we note (i) that the average CARs associated with follow-on events are economically substantial, ranging (Table 2, Panel B) from 1.1% for dividend increases to 3.0% for stock splits, and (ii) that follow-on events are quite predictable, even when relying only on elapsed time since the prior event (Figure 3). We next turn to more specific tests of market efficiency that are based on returns to portfolios that invest in stocks with high estimated probabilities of follow-on events.

4. Returns to Portfolios Formed Based on Estimated Follow-on Event Probabilities

We assess whether it is possible to profit from simple trading rules that exploit the predictability of follow-on corporate distribution events. We focus on strategies that simply involve purchasing securities with high estimated probabilities of a follow-on event in the upcoming month. We assess raw returns to these strategies, and also alphas estimated with respect to the four Fama-French-Carhart factors.

At the beginning of each month from January 1963 to December 2012, we identify all stocks with a corporate distribution event during the prior *T* (= 12, 24, or 36) months. We estimate the probability that each stock will announce a follow-on event in the month using the hazard model (1) and the sample of corporate events during the preceding ten years. Then, for each month, we form a portfolio of stocks with the highest estimated probability of a follow up event during the month. We report results obtained when the portfolio contains those stocks with the highest *K* (=1% or 5%) probabilities. On Table 6 we report returns to portfolios of stocks formed on the basis of the individual distribution events, while on Table 7 we report returns to a pooled portfolio of stocks that includes firms with a high estimated probability of any of the four distribution events. Returns to the latter portfolio will be estimated more precisely, due to the inclusion of a larger number of stocks in any given month.

4.1. Raw Portfolio Returns

Panel A of Tables 6 and 7 present average raw returns to the portfolios of stocks with high predicated probabilities of a follow-on corporate event and the fraction of portfolio stocks that do announce a follow-on corporate event in the portfolio month. The realized probability of follow-on corporate distribution events for portfolios of stocks selected on the basis of high estimated probabilities is also high, particularly for dividend increases, special dividends, and stock dividends. Realized probabilities range from 36.4% to 49.3% for dividend increases, from 23.7% to 40.0% for special dividends, and from 31.2% to 48.3% for stock dividends. For stock splits the realized probabilities are lower, ranging between 6.6% and 13.4%. The lower realized probabilities for stock splits indicate that these follow-on events are harder to forecast, in part because of a lower degree of event clustering in month *t* = 12 after the prior event. For the pooled portfolio formed across all four distribution events (Panel A of Table 7) realized event probabilities range from 30.0% to 51.2%.

We next assess average portfolio returns on both an equal- and value-weighted basis.[13] Portfolios formed on the basis of the estimated probability of a follow-on stock split generate the smallest average returns, ranging from 1.1% per month (*K* = 5% estimated probability in the *T* = 36 month sample, with equal weighting) to 2.0% per month (*K* = 1% estimated probability in the *T* = 12 month sample, with equal weighting).

Portfolios formed on the basis of the estimated probability of a dividend increase are notably uniform across methods, ranging from 1.4% per month (*K* = 5% probability in both the *T* = 24 month and the *T* = 36 month samples, with value-weighting) to 1.6% per month (*K* = 5% probability in the *T* = 12 month sample, with equal-weighting).

Portfolios formed on the basis of the estimated probability of a special dividend generate higher average returns, ranging from 1.2% per month (*K* = 5% probability in the *T* = 36 month sample, with value-weighting) to 2.6% per month (*K* = 1% probability in the *T* = 24 month sample, with equal-weighting). Predicted stock dividends provide similar results, with average portfolio returns ranging from 1.6% per month (*K* = 5% probability for the *T* = 36 month sample with value-weighting) to 2.4% per month (*K* = 1% probability in the *T* = 12 month sample, with equal-weighting.)

For portfolios aggregated across all four distribution events, returns vary from 1.3% per month (*K* = 5% probability for the *T* = 24 month sample with value-weighting) to 1.80% per month (*K* = 1% probability for the *T* = 36 month sample with equal-weighting). These mean

[13] Asparouhova, Bessembinder, and Kalcheva (2013) show that noise in transaction prices leads to upward bias in equal-weighted portfolio returns. We implement their correction, which simply involves weighting each return by the prior-period gross return on the same security.

returns are uniformly significant at the 1% probability level, which reflects both the large economic magnitude of the estimates and the reduction in standard errors due to combining stocks across types of distribution events.

4.2. Portfolio 4-Factor Alphas

The trading portfolios we evaluate contain only long positions in stocks, and are therefore exposed to market-wide risk factors. We next assess whether these portfolios earn excess returns, after allowing for exposure to standard risk factors. In particular, in Columns 1 and 2 of Table 6 Panel B we report the estimated "Jensen's alpha" for portfolio formed based on each of the four distribution events, while the corresponding columns of Table 7 report results for the portfolio formed from firms with high probabilities of any of the four distribution events. Each alpha is the intercept in an OLS regression, where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk free interest rate, and the independent variables are the three Fama-French (1993) factors and the Carhart (1997) momentum factor.

For portfolios formed based on predicted dividend increases, the estimated four factor alpha ranges from 0.49% to 0.67% per month, and is statistically significant in all cases. Turning to portfolios formed on the basis of predicted special dividends, the estimated alpha for equal-weighted portfolios range from 0.76% to 1.64% and are always statistically significant at the one percent level. The estimated alpha based on value-weighted portfolio returns is 0.27% and statistically insignificant for the trading strategy with $K = 5\%$ and $T = 36$. For the other five trading strategies, the alpha estimates range from 0.45% and 1.34% and are always statistically significant.

For stock dividends, the estimated alpha is always statistically significant, ranging from 0.46% to 1.30% per month. For stock splits results are somewhat weaker, as alphas for portfolios of top 5% probabilities are significant only at the T = 12 month horizon. However, alphas for portfolios of top K = 1% probabilities are virtually always statistically significant, and range from 0.34% to 0.89%. These results indicate that it is sufficiently more difficult to predict follow-on stock splits when the previous stock splits are announced more than twenty-four months ago that it is difficult to trade profitably at the longer horizon.

Alphas for the portfolios formed from stocks with high probabilities of any of the four distribution events are uniformly positive, and all are statistically significant at the 1% level (Panel B of Table 7). Individual alpha estimates range from 0.40% per month (K = 5% probability for both the T = 12 and T = 24 month samples with value-weighting) to 0.74% per month (K = 1% probability equal weighting, at all three horizons).

On balance, these results indicate significant positive returns to the portfolio strategies considered here, even after allowing for exposure to market-wide risk factors. The evidence of positive abnormal returns is generally stronger when investing in stocks with a higher predicted probability of a follow-on distribution event.

5. Potential Explanations for the Positive Abnormal Returns

The results reported in Section 4 indicate that corporate distribution events can be forecast to a substantial degree, and that portfolio strategies that simply involve purchasing stocks with high estimated probabilities of distribution events earn significant abnormal returns. We next assess several possible explanations for these findings, including the possibility that our findings overlap with existing evidence regarding abnormal returns associated with earnings and dividend announcements, and implement various robustness tests.

5.1 Are the Positive Alphas Due to Omitted Risk Factors?

The positive alpha estimates for the portfolios with high estimated probabilities of follow-on events could arise for at least two reasons. The first is that the market fails to fully recognize the high likelihood that these events will occur and therefore does not incorporate in prices the value implication of the potential announcement. This explanation parallels that offered by Bernard and Thomas (1990) for their finding that the market reacts to earnings announcements that could have been forecast based on earlier announcements. The second possibility is that our use of the Fama-French-Carhart 4-factor model as the benchmark for normal returns is insufficient. That is, stocks with high probabilities of follow-on events might be exposed to additional risk factors or might possess certain characteristics that are associated with higher average returns.[14]

To distinguish between these possibilities, we separate portfolio stocks into two groups. The first consists of stocks with a high estimated probability of a follow-on event, where the forecasted event *did* occur, ex post. The second consists of stocks with a high estimated probability of a follow-on event, where the forecasted event *did not* occur. If the positive portfolio returns are attributable to unobserved risks or characteristics that pertain to all high-event-probability stocks, or if portfolio risks are unusually high at times when the likelihood of distribution events is high, then average returns should not differ significantly across groups. Alternatively, if the positive portfolio returns for the full portfolio are driven by the high rate of event occurrences, then returns for the first group, where the distribution event occurred, should be higher than for the second group, where the event did not occur. Further, to the extent that

[14] For example, Kalay and Loewenstein (1985) observe that risk increases around predicted dividend announcements. More recently, Bessembinder and Zhang (2013) document that the apparent abnormal long run returns to firms issuing equity can be attributed to failure to control for differences in firm characteristics, including illiquidity and idiosyncratic volatility, that are related to average returns.

market prices prior to the portfolio formation month incorporate the *ex ante* high likelihood of event occurrence, then the *ex post* abnormal return conditional on the event *not* occurring should be negative.

Columns (4) to (9) of Table 6 Panel A present average raw returns to portfolios of high probability stocks where the predicted event did occur, to portfolios where the predicted event did not occur, and the difference in mean returns across occurrence and non-occurrence portfolios, for each of the four distribution events. The corresponding columns of Table 7 report the same results for portfolio formed from stocks with high estimated probabilities of any of the four distribution events. Columns (3) to (8) of Panel B of Tables 6 and 7 report the corresponding alphas, computed after allowing for exposure to the four Fama-French -Carhart factors.

Most notably, average returns for stocks where the predicted event did occur exceed returns for stocks where the predicted event did not occur, and the differences are both economically and statistically significant. This conclusion holds for all four events, for equal- and value-weighted portfolios, for both probability cutoffs (K = 1% and 5%) and for all horizons (T = 12, 24, and 36) considered, with and without adjustment for exposure to the Fama-French-Carhart factors. The difference in mean monthly returns across stocks with and without event occurrence are economically large, averaging about 500 basis points for stock splits, 100 basis points for cash dividend increases, 200 basis points for special dividends and stock dividends, and about 150 basis points for the combined portfolio. This result comprises strong evidence that positive returns for portfolios of high event probability stocks do not arise simply because high probability stocks have characteristics or un-modeled risks that explain the high average returns.

This conclusion is bolstered by the paucity of negative alpha estimates for firms where the estimated event probability is high, but the event did not occur. Event occurrence is associated with large positive abnormal returns. The failure of the event to occur should therefore be accompanied by a negative abnormal ex post return, conditional on the anticipated event not being realized. Estimated alphas for firms with a high probability of dividend increases, but where the dividend increase did not occur, do not differ significantly from zero, for any weighing method, time horizon, *T*, or probability cutoff, *K*. The same conclusion applies for firms with a high probability of stock dividends, but where no stock dividend was announced. In the case of firms with a high probability of a stock split, but where no stock split was announced, estimated alphas are all insignificant, with two exceptions of the equal-weighted portfolio at the $T = 24$ and $T = 36$ month horizons with a $K = 5\%$ cutoff. For stocks with a high predicted probability of a follow-on special dividend but no recurrence, estimated alphas based on value-weighted portfolio returns are all statistically insignificant, while those based on equal weighting are statistically significant, but positive rather than negative as anticipated, at the $T = 36$ month horizon for both *K*'s and at the $T = 12$ month horizon when $K = 5\%$.[15] For the combined portfolios formed from stocks with a high estimated probability of any of the four distribution events (columns 5 and 6, Table 7, Panel B) the estimated alpha conditional on event non-occurrence never differs significantly from zero.

The positive differential between mean returns conditional on event occurrence and event non-occurrence reported on Panels A and B of Tables 6 and 7 indicate that the corporate distribution events studied here are value enhancing when they occur. The absence of

[15] The significant positive alphas conditional on event non-occurrence for special dividends is consistent with the reasoning that these stocks have characteristics or factor exposures associated with higher average returns. However, we observe significantly higher returns conditional on event occurrence than non-occurrence, implying that special dividends are value enhancing, and that the market fails to fully forecast their occurrence.

significant negative abnormal returns conditional on event non-occurrence reported on Panel B of Tables 6 and 7 indicates a lack of negative news in event non-occurrence, which is consistent with the notion that the market failed to forecast the high likelihood that the distribution events would occur. In combination, these results are consistent with the interpretation that the positive abnormal returns to long positions in stocks with high predicted distribution event probabilities occur because the market did incorporate in prices the extent to which the distribution events studied here are forecastable.

5.2 ***Are the Results Robustness over Time and Across Stocks of Differing Size?***

We next examine whether the key results reported here are robust across time. In particular, we divide the 50-year sample period into two subperiods, 1963-1987 and 1988-2012. To conserve on space, we focus here and in subsequent robustness tests on results for portfolios that include stocks with high estimated probabilities of any of the four distribution events. As noted, returns to these portfolios are estimated more precisely than for the individual distribution events, due to the inclusion of more stocks.

Alpha estimates for each subperiod are reported in the first four columns of Table 8. Estimated alphas for the latter period tend to be slightly smaller in magnitude (though this observation does not hold for every combination of T and K), but each estimate remains positive and statistically significant in both subsamples. In general these results support the interpretation that the anomalous returns associated with follow-on corporate distribution events are largely robust across time.

Many capital market anomalies are stronger for smaller firms, which tend to be characterized by less liquidity and more idiosyncratic volatility, each of which can impede arbitrage. We divide sample stocks into two size groups. The small-size group contains stocks with market capitalization below the median of all NYSE-listed stocks at the beginning of the portfolio month. The large-size group contains the stocks with market capitalization above the median. Estimated alphas for the two size groups are reported in columns 5 to 8 of Table 8. These estimates indicate that the anomalous returns are indeed somewhat greater for smaller firms. For example, with K = 1% and a T = 12 month horizon, estimated alphas for smaller stocks are 0.87% per month equal weighted or 0.62% per month value weighted, while alpha estimates for larger stocks are 0.49% per month equal weighted or 0.50% per month value weighted.

Finding larger alpha estimates for smaller firms is consistent with the reasoning (e.g. Pontiff, 2006, and Stambaugh, Yu, and Yuan, 2012) that it is more difficult for traders to act on and correct mispricing in smaller stocks, due to illiquidity and greater idiosyncractic risk. Nevertheless, positive and significant alphas are observed for large firms as well, indicating that the anomalous return patterns documented here are not unique to small firms.

5.3. Are Results Robust with regard to the Probability Cutoff?

The results we have reported to this point are based on portfolios formed from the stocks with the highest K = 1% and K = 5% estimated probabilities of follow-on distribution events. We next assess the effect of altering the definition of "high probability" stocks to reflect absolute probabilities of the event rather than the relative probability across stocks. In particular, we form portfolios of stocks with estimated probabilities of a follow-on corporate event above the cutoffs of X = (5%, 10%, 20%, or 40%). We focus for brevity on the portfolio that includes firms with a high estimated probability of any of the four distribution events.

The resulting alpha estimates are reported in Table 9, and vary from 0.29% per month (X = 5% estimated probability of event, with value weighting of returns, and a T = 24 or T = 36 month horizon) to 0.78% (*X* = 40% estimated probability of event, with equal weighting of returns and a *T* = 24 month horizon). Every alpha estimate is positive and differs significantly from zero at the one percent level. We conclude that the key results reported here are robust to the selection of portfolio stocks on the basis of high absolute probabilities of follow-on corporate events. The results are also suggestive that abnormal returns tend to be stronger when portfolios are formed on the basis of higher absolute estimates of the probability that the distribution events will occur.

5.4 Do These Results Simply Reflect Known Anomalies Related to Earnings Announcements?

The predictability of the corporate distribution events we study stems in part from the tendency for distribution events to be announced twelve or twenty four months after a like preceding event. Of course, other corporate events, including earnings announcements, also recur at regular calendar intervals. Beaver (1968) and Frazzini and Lamont (2006) have documented abnormal returns in earnings announcement months. In addition, Bernard and Thomas (1990) document stock price responses to earnings announcements, even when earnings could have been forecast based on prior earnings. This result parallels our own findings of stock price responses to distribution events that could have been forecast. It is possible that the results we report overlap with the findings of these authors, particularly if earnings announcements coincide with announcements of distribution events.

We assess the frequency of such coincidence, and report results on Panel A of Table 10. Since firms typically announce earnings on a quarterly basis we would anticipate a 33% rate (four announcements per twelve months) of coincidence if earnings announcements and distribution announcements are statistically independent events. The observed frequencies of coincidence differ little from this benchmark. In particular, 28.5% of special dividends are announced in the same month as an earnings announcement. The probability of coincidence is 29.5% for stock dividends, 36.2% for stock splits, and 37.1% for increases of regular cash dividends. While formal statistical tests reject that these rates of coincidence equal one third, we conclude that there is not a strong tendency for distribution announcements to occur in the same month as earnings announcements.

To investigate this issue further, we estimate abnormal returns (four factor alphas) to portfolios of stocks with high estimated probabilities of any of the four distribution events, while excluding those stocks that are anticipated to make an earnings announcement in the portfolio month. Following Frazzini and Lamont (2006), a stock is expected to announce earnings in a given month if it announced earnings in the same month of the previous year.[16]

The last two columns of Table 10 Panel B report estimated Jensen's alphas for portfolios that exclude predicted earnings announcement months, while the first two columns report for comparison alphas for portfolios without this exclusion. Excluding predicted earnings announcement months from the sample results in slightly smaller estimated alphas when portfolios are formed based on value weighting. In contrast, estimated alphas for the portfolios based on probability cutoff of K = 1% and equal weighting become larger after excluding predicted earnings announcement months. All of the estimated alphas remain statistically significant for all portfolios after excluding predicted earnings announcement months. On balance, we conclude that the results reported here stand independently of the previously-documented abnormal returns in earnings announcement months.

[16] This analysis is restricted to the post January 1973 period (following Frazzini and Lamont (2006)), because of the poor coverage of earnings announcement dates in the Compustat database before 1973.

5.5.Are these Results Distinct from the Evidence of Abnormal Returns Related to Regular Dividends?

Hartzmark and Solomon (2013) report positive abnormal returns of about thirty to fifty basis points during the ex-date month for regular cash dividends. Their analysis updates and expands on that of Kalay and Loewenstein (1985), who document abnormally large returns associated with predictable dividend announcements. Since regular cash dividends tend to recur on a quarterly or annual basis the possibility arises that our findings with regard to distribution events could overlap with these findings regarding abnormal returns related to regular dividends.

We first assess the degree of coincidence between our corporate distributions events and months that contain ex-dividend dates, reporting the results on Panel A of Table 11. The rate of coincidence is about 21% for both stock dividends and stock splits. The rate is substantially higher for the other two distribution events, equal to 47% for increases in regular cash dividends, and for 33% for special dividends.

To provide specific evidence by which to gauge whether the results reported here overlap with or are separate from those reported by Hartzmark and Solomon, we form portfolios of stocks that have a high estimated probability of any of the four distribution events studied here, but that exclude stocks that are anticipated to have an ex-dividend date during the month. We identify stocks with predicted ex-dividend dates following Hartzmark and Solomon. [17]

The last two columns of Table 11 report estimated four-factor alphas for portfolios of stocks with a high estimated probability of any of the four distribution events, but that exclude stocks with a predicted ex-date during the month, while the first two columns of Table 11 report for comparison estimated alphas for portfolios of stocks without this exclusion. We observe that

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[17] In particular, we identify a company as having a predicted dividend in month *t* if it paid a quarterly dividend in months *t*-3, *t*-6, *t*-9, or *t*-12, a semi-annual dividend in months *t*-6 or *t*-12, an annual dividend in months *t*-12, or a dividend of unknown frequency in months *t*-3, *t*-6, *t*-9, or *t*-12.

excluding stocks with predicted ex-dates during the month reduces estimated alphas for portfolios with probability cutoff of $K = 5\%$ and time horizons of $T = 24$ and 36, but only modestly. For the other portfolios, excluding ex-date months results in larger alphas in most cases. Most important, estimated alphas remain uniformly positive and statistically significant after excluding predicted ex-date months. These results support the conclusion that the results we report for distribution events stand independently of the previously-documented abnormal returns associated with regular dividends, and therefore have a distinct economic explanation.

6. Conclusions

We document that corporate distribution events, including increases in cash dividends, special dividends, stock dividends, and stock splits, are quite predictable. Much of the predictability stems from the fact that announcements of such events tend to occur on anniversaries, particularly the first, of previous announcements. However, economic variables such as profitability, cash balances, and share price growth also contribute to the predictability.

We also report results consistent the notion that the market displays some awareness of this predictability. In particular, positive returns at event announcement are smaller for "follow-on" (when preceded by the same event at the same firm in the preceding 36 months) events than for "initial" (no same event in the prior 36 months) events. Further, among follow-on events, abnormal announcement returns are smaller for events with a higher predicted probability of occurrence.

Most importantly, however, we report results that support the interpretation that the market does not fully incorporate in prices the predictability of follow-on distribution events. Simple trading strategies that involve purchasing those stocks with high estimated probabilities of follow-on distributions earn significant positive returns, after allowing for exposure to market risk factors. The excess returns vary from about 0.4% to 1.5% per month, depending on the type of distribution event and portfolio formation choices.

These results parallel the influential findings of Bernard and Thomas (1990), who document abnormal returns associated with earnings announcements, even when the level of earnings is predictable. However, we document that our results are distinct from theirs, and from other studies that assess abnormal returns associated with predictable earnings and dividend events, as our key results hold even in portfolios of stocks that exclude dividend and earnings months.

This study contributes to the literature in two important dimensions. First, we document the striking degree to which corporate distribution events tend to recur and can be forecast. Second, we present a new anomaly. While the market appears to appreciate to a degree that distribution events are forecastable, the value implications are not fully incorporated in price, as evidenced by significant abnormal returns to simple trading strategies that exploit the forecastability.

We offer one potential managerial-based interpretation for the observed results. A firm that intends to increase regular dividends by a given amount or that wishes to distribute a given amount as a special dividend may choose to make a single large dividend increase or special dividend, or may make smaller but recurring periodic dividend increases or special cash distributions. Similarly, a firm that intends to increase shares outstanding by a given proportion may choose to do so in a single issue, or may elect to issue a smaller number of new shares at regular intervals. To the extent that corporate managers recognize that the market reacts positively even to predictable recurring distribution events as documented here, they have incentives to engage in a series of small distributions instead of a single large distribution, because the former offers more flexibility in terms of both the timing and the magnitude of follow-on distributions. Such flexibility is especially valuable in adverse market conditions. The finding here indicating that the likelihood of a distribution is negatively related to the size of the previous distribution is consistent with this interpretation.

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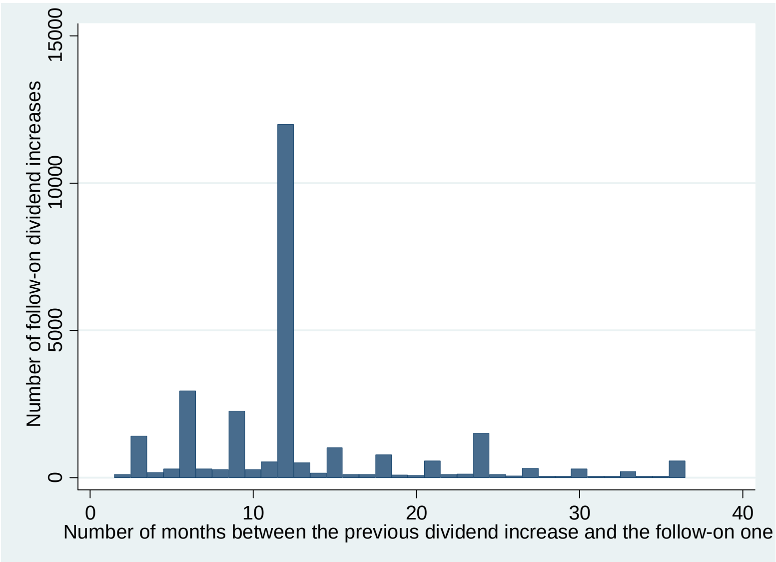
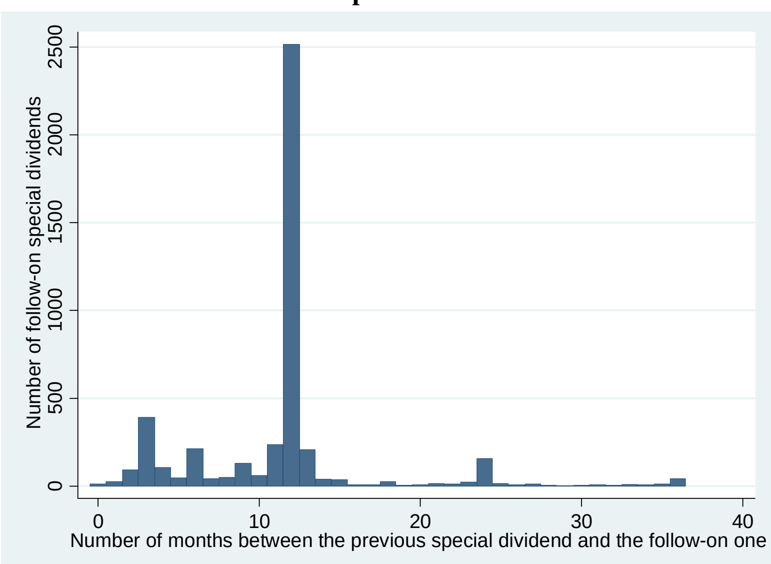
Figure 1: Frequency of follow-on corporate events

This figure depicts the numbers of four types of follow-on corporate events—dividend increases, special dividends, stock dividends, and stock splits—grouped by the number of months between the previous corporate event and the follow-on event of the same type. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

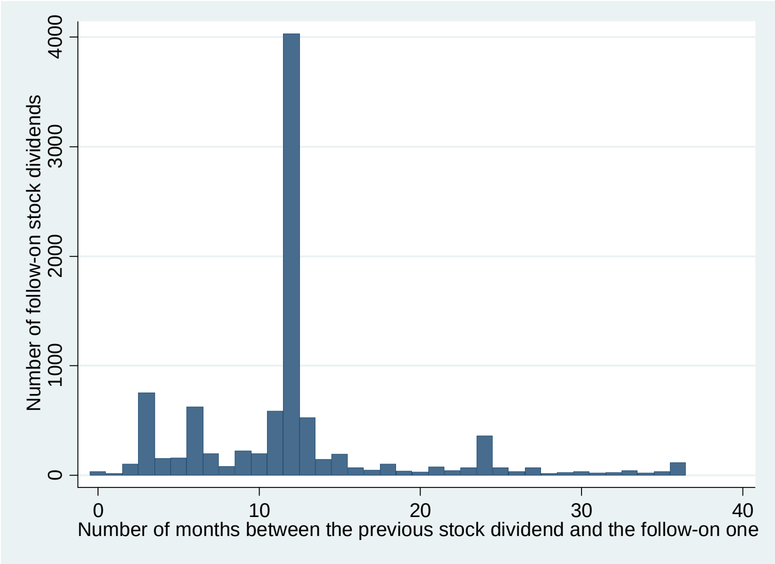
Panel A: Number of follow-on dividend increases



Panel B: Number of follow-on special dividends



Panel C: Number of follow-on stock dividends



Panel D: Number of follow-on stock splits

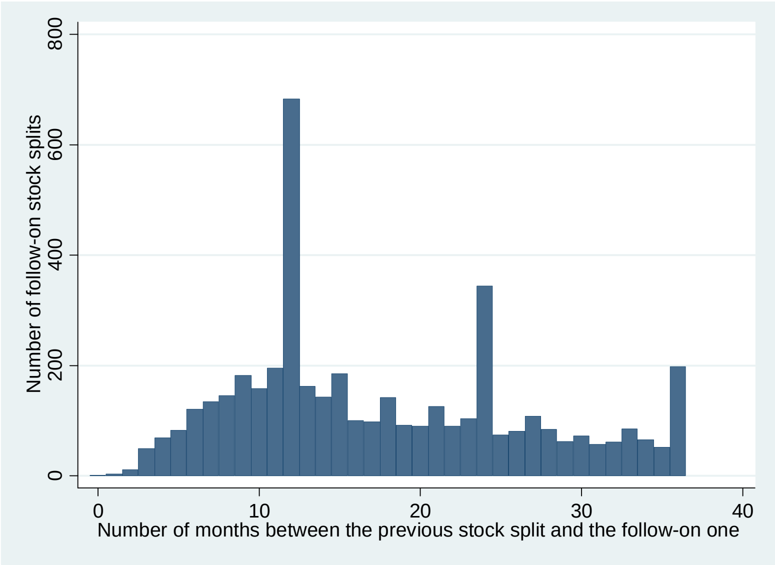


Figure 2: Comparison of the unconditional probability of a corporate event versus the probability of a follow-on corporate event in the 12th month after the previous one

This figure compares the unconditional probability that a random firm announces a corporate event in a random month to the probability that a firm will announce a follow-on event, conditional on the same firm announcing the same event twelve months earlier. The unconditional probability is calculated as the number of corporate events announced in a month in year *s* divided by the number of common stocks in the CRSP universe at the end of year *s*-1, and results are aggregated across years by weighting by the number of stocks. The conditional probability is the fraction of stocks that announce a follow-on corporate event in the 12th month after the announcement of the previous corporate event of the same type. The sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

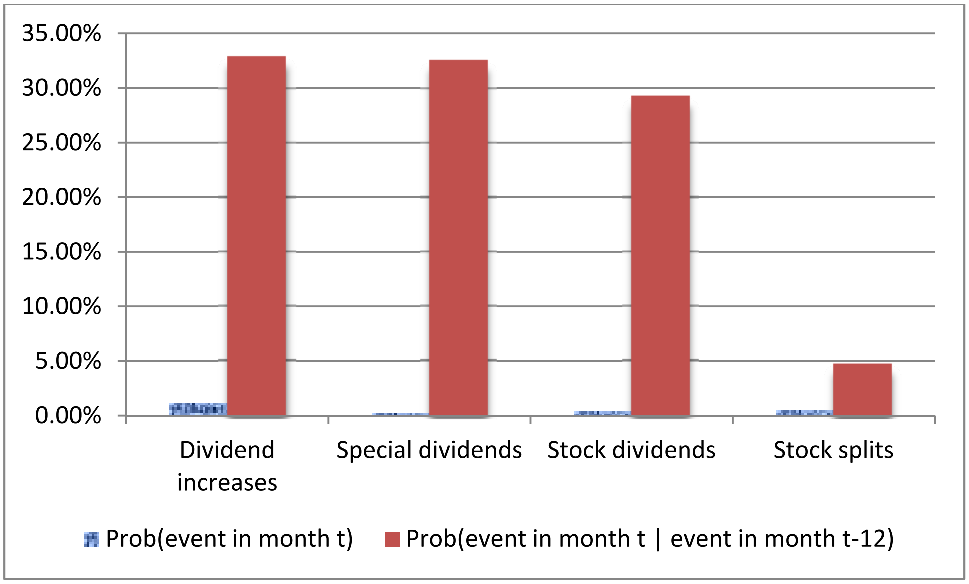
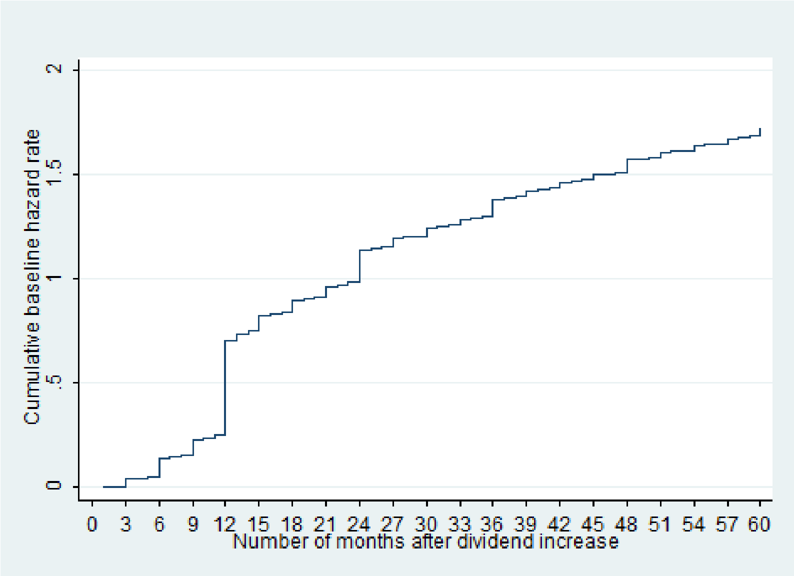


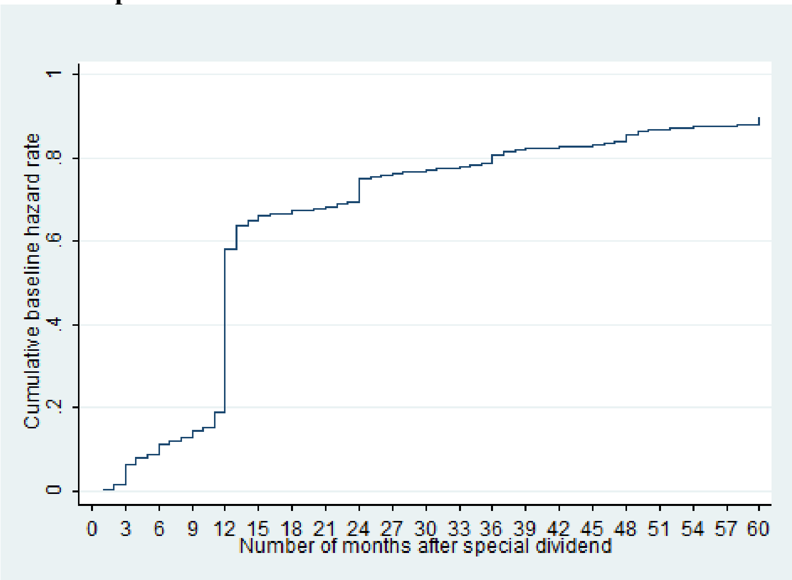
Figure 3: Estimated baseline hazard rate of a follow-on corporate event

This figure plots the cumulative baseline hazard rate (cumulative $\hat{h}_0(t)$) of a follow-on corporate event in the t^{th} month after the previous corporate event of the same type, estimated using the proportional hazard model. The length of the vertical line at each month *t* in the figure is the estimated baseline hazard rate for the t^{th} month after the previous corporate event. Depicted is the baseline hazard rate estimated from the first 60 months of data, commencing in 1963. The overall hazard rate in the t^{th} month for stock *i* is modeled as $h_i(t) = h_0(t)\exp(\beta X_{it})$. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

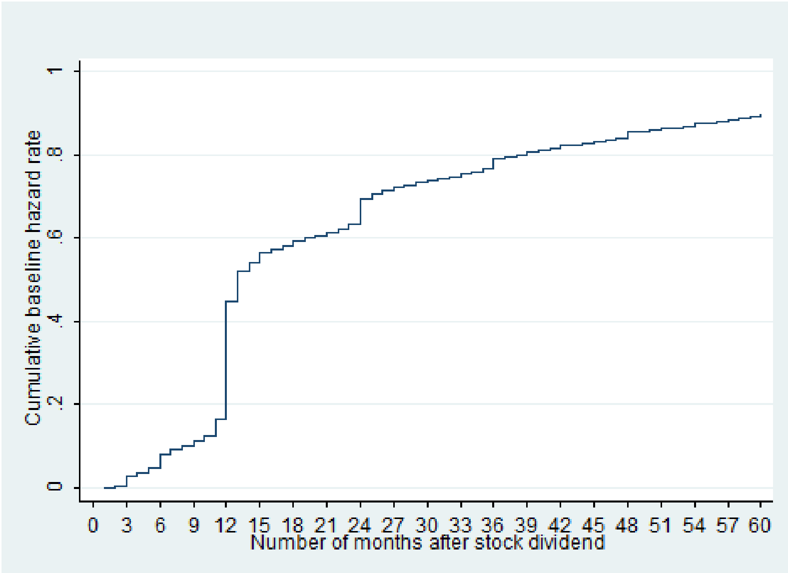
Panel A: Dividend increases



Panel B: Special dividends



Panel C: Stock dividends



Panel D: Stock splits

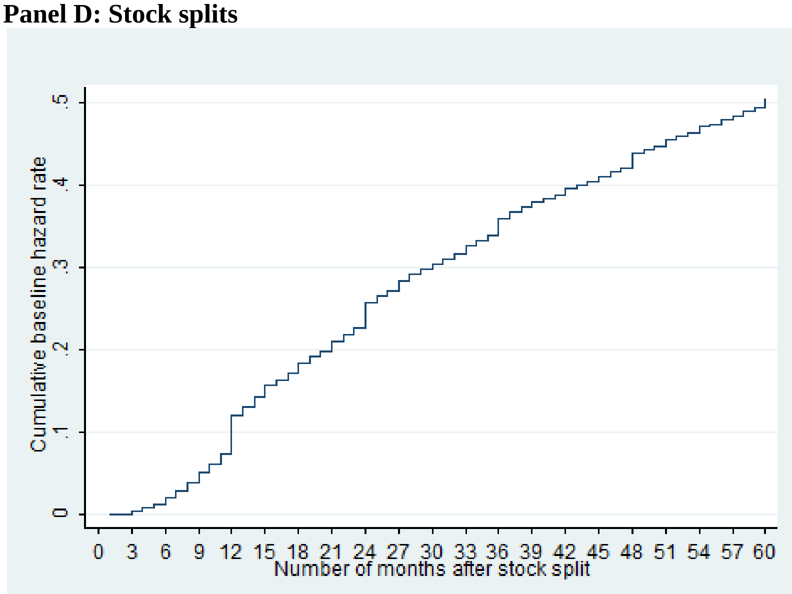


Table 1: Probability of corporate events

Panel A reports the frequency of four corporate events: dividend increases, special dividends, stock dividends, and stock splits. The unconditional probability of a corporate event is calculated as the number of corporate events announced in a month in year *s* divided by the number of common stocks in the CRSP universe at the end of year *s*-1, and weighted across time by the number of common stocks. The conditional probability is the probability that a firm announces a corporate event in month *t* conditional on that the same firm announced the same corporate event during the previous *S* (= 12, 24, or 36) months or in the n^{th} (12^{th}, 24^{th}, or 36^{th}) month before month *t*. Panel B reports the numbers of follow-on corporate events grouped by the number of months between the previous corporate event and the follow-on one of the same type. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

Panel A: Unconditional and conditional probabilities of corporate events

	Dividend increases	Special dividends	Stock dividends	Stock splits
Prob(event in month *t*)	1.18%	0.24%	0.37%	0.47%
Prob(event in month *t* | event over months *t*-12 to *t*-1)	4.67%	4.24%	4.11%	1.04%
Prob(event in month *t* | event over months *t*-24 to *t*-1)	2.95%	2.41%	2.55%	1.00%
Prob(event in month *t* | event over months *t*-36 to *t*-1)	2.12%	1.65%	1.79%	0.85%
Prob(event in month *t* | event in month *t*-12)	32.94%	32.59%	29.24%	4.65%
Prob(event in month *t* | event in month *t*-24)	4.23%	2.01%	2.48%	2.34%
Prob(event in month *t* | event in month *t*-36)	1.61%	0.55%	0.73%	1.35%

Panel B: Frequency of follow-on corporate events

Number of months between the previous corporate event and the follow-on one	Number of follow-on dividend increases	Number of follow-on special dividends	Number of follow-on stock dividends	Number of follow-on stock splits
0	0	13	16	1
1	0	27	7	3
2	117	93	80	11
3	1420	392	382	49
4	181	107	116	69
5	299	49	138	82
6	2945	213	492	121
7	295	42	185	134
8	268	50	73	145
9	2255	131	160	182
10	268	60	172	158
11	543	237	547	195
12	11988	2514	3471	683
13	509	209	501	162
14	152	39	137	143
15	1020	37	140	185
16	117	9	59	100
17	104	7	43	98
18	772	26	78	142
19	99	6	32	92
20	81	9	29	90
21	566	17	47	126
22	105	13	37	90
23	122	24	58	104
24	1517	156	298	344
25	112	16	63	74
26	66	7	30	81
27	322	14	45	108
28	40	5	14	84
29	43	3	25	62
30	301	6	22	72
31	50	9	17	57
32	40	5	20	61
33	204	10	34	85
34	42	7	17	65
35	48	14	30	52
36	570	43	89	198
Total	27581	4619	7704	4508
Total, as % of all events	74.6%	60.2%	66.3%	30.8%

Table 2: Stock returns in the month of corporate event announcement

This table presents the average monthly returns to the stocks that announce a corporate distribution event in the month, as well as the five-day cumulative abnormal returns (CARs) around the announcement, and the average equal-weighted monthly market return. Panel A reports the returns for the full sample and two subsamples. In Panel B, we distinguish between the corporate events that are preceded by the same event at the same firm during the preceding 36 months versus those that are not. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively.

Panel A: Returns over different time periods

	Dividend increases		Special dividends		Stock dividends		Stock splits		
Year	Monthly stock returns	5-day CARs	Monthly stock returns	5-day CARs	Monthly stock returns	5-day CARs	Monthly stock returns	5-day CARs	Monthly market returns
1963-1987	4.08%***	1.60%***	4.16%***	2.03%***	5.99%***	2.63%***	8.61%***	3.51%***	1.17%***
1988-2012	2.67%***	0.70%***	5.06%***	2.82%***	5.08%***	1.73%***	9.52%***	2.96%***	1.09%***
1963-2012	3.42%***	1.18%***	4.48%***	2.31%***	5.71%***	2.35%***	9.05%***	3.24%***	1.12%***

Panel B: Returns of first corporate event over a 36-month period versus follow-on events

	Dividend increases		Special dividends		Stock dividends		Stock splits	
	Monthly stock returns	5-day CARs	Monthly stock returns	5-day CARs	Monthly stock returns	5-day CARs	Monthly stock returns	5-day CARs
With events during the past 36 months	3.27%***	1.09%***	3.60%***	1.58%***	4.79%***	1.87%***	8.64%***	3.00%***
No events during the past 36 months	3.84%***	1.43%***	5.85%***	3.45%***	7.54%***	3.35%***	9.23%***	3.35%***
Difference	-0.57%***	-0.34%***	-2.25%***	-1.87%***	-2.75%***	-1.48%***	-0.59%*	-0.35%**

Table 3: Estimate the probability of announcing a follow-on corporate event

For each of the four corporate events—dividend increases, special dividends, stock dividends, and stock splits—we estimate the probability (hazard rate) of that a follow-on corporate event of the same type is announced using the proportional hazard model. The hazard rate in the t^{th} month after the previous corporate event for stock i is modeled as $h_i(t) = h_0(t)\exp(\beta X_{it})$. Panel A presents the summary statistics of the time-invariant explanatory variables. Panel B and Panel C present the estimated β of the proportional hazard model. The estimated baseline hazard rate, $\hat{h}_0(t)$, is plotted in Figure 3. Dividend increase is percentage increase in the prior cash dividend. The amount of prior special dividend is scaled by the stock price at the end of the month prior to the special dividend announcement. Split factor is the increase in the number of shares outstanding after the prior stock split, divided by the number of shares outstanding before the split. Market capitalization is measured at the end of the month when the previous corporate event is announced (month 0). ROA is income before extraordinary items scaled by total assets. Cash is the amount of cash and short-term investments scaled by total assets. For July of year Y to June of year Y+1, ROA and cash are measured at the fiscal year end in calendar year Y-1. Relative stock price is the stock price at the end of month t-1, divided by the stock price at the end of month 0. The variables are winsorized at the upper and lower one percent when estimating the proportional hazard model. The first row reports the estimated coefficient ($\hat{\beta}$) and the second row reports the hazard ratio (exp ($\hat{\beta}$)). The associated t-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

Panel A: Summary statistics

Variable	N	Mean	sd	p5	p25	Median	p75	p95
				Dividend increases				
Dividend increase	36970	0.2697	1.3939	0.0602	0.0952	0.1429	0.2500	0.5000
5-day announcement CARs	36936	0.0118	0.0505	-0.0575	-0.0147	0.0065	0.0338	0.0971
Market capitalization ($B)	36912	3.9535	17.7846	0.0328	0.1324	0.4701	1.9576	15.2863
				Special dividends				
Dividend amount	7577	0.0296	0.0857	0.0014	0.0040	0.0088	0.0195	0.1112
5-day announcement CARs	7545	0.0231	0.0755	-0.0623	-0.0119	0.0104	0.0469	0.1410
Market capitalization ($B)	7581	2.1140	12.3207	0.0159	0.0506	0.1440	0.5521	6.4368
				Stock dividends				
Size of stock dividend	11626	0.1071	0.1950	0.0200	0.0400	0.0500	0.1000	0.5000
5-day announcement CARs	11438	0.0235	0.0717	-0.0708	-0.0128	0.0136	0.0526	0.1450
Market capitalization ($B)	11577	0.5664	2.7846	0.0147	0.0443	0.1056	0.3165	2.2570
				Stock splits				
Split factor	14654	0.7679	0.6747	0.2500	0.5000	0.5000	1.0000	1.5000
5-day announcement CARs	13930	0.0324	0.0786	-0.0662	-0.0089	0.0226	0.0640	0.1579
Market capitalization ($B)	14599	3.1274	16.1795	0.0301	0.1342	0.4261	1.5293	10.5989

Panel B: Estimation results for dividend increases and special dividends

	(1)	(2)
	Dividend increases	Special dividends
Dividend increase (or amount of special dividend)	-0.1782***	-3.7056***
	0.8368***	0.0246***
	(-6.232)	(-9.245)
5-day announcement CARs	0.1659	-0.2018
	1.1805	0.8173
	(1.314)	(-0.770)
Log market capitalization	0.0227***	-0.0115
	1.0229***	0.9886
	(6.806)	(-1.296)
ROA	0.3769***	1.5211***
	1.4577***	4.5773***
	(2.959)	(5.659)
Cash	0.1521**	0.5368***
	1.1643**	1.7106***
	(2.420)	(4.813)
Observations	847,197	266,310
Pseudo R2	0.0002	0.0033

Panel C: Estimation results for stock dividends and stock splits

	(1)	(2)
	Stock dividends	Stock splits
Size of stock dividend (or split factor)	-2.9289***	-0.1126***
	0.0535***	0.8935***
	(-21.580)	(-3.726)
5-day announcement CARs	0.1646	0.9195***
	1.1789	2.5081***
	(0.943)	(5.410)
Log market capitalization	0.0232***	0.0512***
	1.0234***	1.0525***
	(3.079)	(7.350)
Relative Stock price	0.2053***	2.1564***
	1.2279***	8.6400***
	(9.697)	(112.718)
Observations	442,817	1,024,497
Pseudo R2	0.0078	0.0759

Table 4: Accuracy of the predicted probability

At the beginning of each month *s* from January 1963 to December 2012, we identify common stocks whose latest announcement of a corporate distribution event is during the previous *T* (= 12, 24, or 36) months. We then divide the stocks into ten deciles based on the predicted probability and calculate the average estimated probability of each decile as well as the fraction of firms that indeed announce a follow-on corporate distribution event in month *s* (realized probability). The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. This table presents the pooled OLS regression results where the dependent variable is the realized probability and the independent variable is the predicted probability of each decile. All model specifications employ robust standard errors. The second row reports the associated *t*-statistics of the test of whether the coefficient in front of the estimated probability equals to one. The fourth row reports the associated *t*-statistics of the test of whether the constant equals to zero. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. We consider four corporate events of common stocks (share code is 10 or 11) announced between 1963 and 2012: cash dividend increases, special dividends, stock dividends, and stock splits.

Dependent variable	Realized probability					
T	12	24	36	12	24	36
	Dividend increases			Special dividends		
Estimated probability	0.8947***	0.9216***	0.9280***	0.8838***	0.8902***	0.8948***
	(8.702)	(6.935)	(6.299)	(5.841)	(5.108)	(4.340)
Constant	0.0029***	0.0021***	0.0020***	0.0039***	0.0030***	0.0023***
	(6.877)	(5.571)	(5.880)	(4.872)	(4.338)	(3.727)
Observations	5,890	5,899	5,898	5,994	5,977	5,883
R-squared	0.845	0.848	0.846	0.682	0.723	0.748
	Stock dividends			Stock splits		
Estimated probability	0.9642	0.9626*	0.9702	0.8827**	0.8449***	0.8004***
	(1.583)	(1.848)	(1.381)	(2.202)	(3.600)	(5.760)
Constant	0.0009	0.0002	-0.0004	0.0004	0.0007**	0.0011***
	(1.040)	(0.339)	(-0.639)	(0.863)	(2.087)	(4.068)
Observations	5,987	5,997	5,993	5,454	5,696	5,749
R-squared	0.672	0.717	0.736	0.386	0.479	0.509

Table 5: Estimated probability of a follow-on corporate event and announcement returns

This table presents OLS regression estimates, where the dependent variable is the five-day CAR around the announcement of a follow-on corporate event. The explanatory variable of interest is the estimated probability, as of *s*-1, that the firm will announce a follow-on corporate event in month *s*, the announcement month. The variables are winsorized at the upper and lower one percent in the regressions. The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. Dividend increase is the percentage increase in cash dividend. The amount of special dividend is scaled by the stock price at the end of the month prior to the special dividend announcement. Split factor is the increase in the number of shares outstanding after the stock split, divided by the number of shares outstanding before the split. All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

	(1)	(2)	(3)	(4)
	Dividend increases	Special dividends	Stock dividends	Stock splits
Dependent variable	5-day announcement CARs			
Estimated probability of a follow-on corporate event	-0.0128***	-0.0042	-0.0124***	-0.1307***
	(-10.567)	(-1.144)	(-3.467)	(-5.387)
Dividend increase	0.0109***			
	(7.557)			
Dividend amount		0.4305***		
		(11.170)		
Size of stock dividend			0.0465***	
			(6.772)	
Split factor				0.0029
				(1.338)
Constant	0.0118***	0.0106***	0.0179***	0.0296***
	(25.085)	(8.192)	(15.866)	(15.777)
Observations	30,613	4,891	8,195	6,660
R-squared	0.007	0.069	0.011	0.005

Table 6: Estimated probability of a follow-on corporate event and stock returns: Trading portfolios based on individual distribution event

At the beginning of each month *s* from January 1963 to December 2012, we identify common stocks whose latest announcement of a corporate distribution event is during the previous *T* (= 12, 24, or 36) months. Among the identified stocks, we form a portfolio of stocks whose estimated probability (hazard rate) of announcing a follow-on corporate event of the same type in month *s* is among the top *K* percent (= 1% or 5%). We form the portfolio for each of the following four distribution events: dividend increases, special dividends, stock dividends, and stock splits. The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. Panel A presents the realized probability and the average equal-weighted (EW) or value-weighted (VW) portfolio returns. Realized probability is the fraction of the portfolio stocks that do announce a follow-on corporate event in the portfolio month. Columns (2)-(3) present the returns of the portfolios of all stocks with high estimated probabilities; Columns (4)-(5) present the returns of the portfolio stocks that do announce a follow-on corporate event in the month; Columns (6)-(7) present the returns of the portfolio stocks that do *not* announce a follow-on corporate event in the month; Columns (8)-(9) present the differences in portfolio return between the stocks that do announce a follow-on corporate event in the month versus the stocks that do *not*. The equal-weighted portfolio return is weighted by the prior-month gross return to correct for biases due to noise in transaction prices. Panel B presents the estimated Jensen's alpha for the portfolios. Columns (1)-(2) present the estimated Jensen's alpha for the portfolios of all stocks with high estimated probabilities; Columns (3)-(4) present the estimated alpha for the portfolio stocks that do announce a follow-on corporate event in the month; Columns (5)-(6) present the estimated alpha for the portfolio stocks that do *not* announce a follow-on corporate event in the month; Columns (7)-(8) present the differences in portfolio return between the stocks that do announce a follow-on corporate event in the month versus the stocks that do *not*. The difference is the coefficient in front of the dummy variable indicating whether the portfolio return corresponds to stocks that announce a follow-on corporate event in the month. The alpha is estimated using the OLS regression where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk-free interest rate and the independent variables are the four risk factors—MKT, SMB, HML, and UMD—constructed by Fama and French (1993) and Carhart (1997). All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes increases of cash dividends, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

Panel A: Returns of stocks with high estimated probabilities

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Returns of portfolios of stocks with high estimated probabilities							
		Realized	All stocks		Event realized		Event not realized		Diff. (realized - not)	
T	*K*	probability	EW	VW	EW	VW	EW	VW	EW	VW
					Dividend increases					
12	5%	0.4222	0.0163***	0.0143***	0.0231***	0.0190***	0.0112***	0.0104***	0.0119***	0.0085***
12	1%	0.4931	0.0152***	0.0146***	0.0227***	0.0225***	0.0093***	0.0093***	0.0134***	0.0132***
24	5%	0.3891	0.0154***	0.0140***	0.0240***	0.0193***	0.0102***	0.0102***	0.0138***	0.0091***
24	1%	0.4838	0.0156***	0.0147***	0.0229***	0.0215***	0.0103***	0.0101***	0.0127***	0.0114***
36	5%	0.3635	0.0156***	0.0140***	0.0243***	0.0195***	0.0110***	0.0110***	0.0133***	0.0085***
36	1%	0.4826	0.0161***	0.0150***	0.0230***	0.0211***	0.0112***	0.0110***	0.0118***	0.0101***
					Special dividends					
12	5%	0.3003	0.0201***	0.0162***	0.0367***	0.0326***	0.0153***	0.0140***	0.0214***	0.0186***
12	1%	0.3991	0.0238***	0.0201***	0.0409***	0.0383***	0.0154***	0.0115**	0.0255***	0.0268***
24	5%	0.2589	0.0180***	0.0133***	0.0353***	0.0302***	0.0124***	0.0106***	0.0228***	0.0197***
24	1%	0.3943	0.0260***	0.0234***	0.0426***	0.0395***	0.0146***	0.0120***	0.0280***	0.0275***
36	5%	0.2370	0.0181***	0.0124***	0.0347***	0.0287***	0.0141***	0.0111***	0.0206***	0.0176***
36	1%	0.3813	0.0255***	0.0214***	0.0403***	0.0365***	0.0182***	0.0151***	0.0221***	0.0215***
					Stock dividends					
12	5%	0.4019	0.0227***	0.0214***	0.0354***	0.0283***	0.0143***	0.0158***	0.0211***	0.0125**
12	1%	0.4825	0.0241***	0.0218***	0.0360***	0.0341***	0.0143***	0.0160***	0.0217***	0.0181**
24	5%	0.3517	0.0205***	0.0190***	0.0372***	0.0284***	0.0121***	0.0131***	0.0251***	0.0153***
24	1%	0.4787	0.0223***	0.0213***	0.0312***	0.0277***	0.0136***	0.0158***	0.0176***	0.0118*
36	5%	0.3117	0.0189***	0.0155***	0.0367***	0.0271***	0.0107***	0.0101***	0.0260***	0.0170***
36	1%	0.4740	0.0221***	0.0203***	0.0315***	0.0283***	0.0139***	0.0146***	0.0176***	0.0136*
					Stock splits					
12	5%	0.0749	0.0146***	0.0136***	0.0795***	0.0717***	0.0095***	0.0102***	0.0700***	0.0614***
12	1%	0.1343	0.0195***	0.0188***	0.0589***	0.0592***	0.0129***	0.0118**	0.0460***	0.0474***
24	5%	0.0709	0.0116***	0.0118***	0.0707***	0.0599***	0.0071***	0.0091***	0.0635***	0.0509***
24	1%	0.1213	0.0193***	0.0181***	0.0576***	0.0550***	0.0129***	0.0117***	0.0447***	0.0433***
36	5%	0.0658	0.0112***	0.0119***	0.0683***	0.0577***	0.0072***	0.0094***	0.0611***	0.0483***
36	1%	0.1083	0.0155***	0.0173***	0.0578***	0.0526***	0.0103***	0.0122***	0.0475***	0.0404***

Panel B: Estimated Jensen's alpha of stocks with high estimated probabilities

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Estimated Jensen's alpha of portfolios of stocks with high estimated probabilities							
		All stocks		Event realized		Event not realized		Diff. (realized - not)	
T	*K*	EW	VW	EW	VW	EW	VW	EW	VW
					Dividend increases				
12	5%	0.0065***	0.0052***	0.0134***	0.0099***	0.0014	0.0012	0.0118***	0.0084***
		(6.673)	(3.992)	(8.940)	(5.735)	(1.215)	(0.761)	(6.495)	(3.750)
12	1%	0.0059***	0.0056***	0.0132***	0.0134***	0.0001	0.0008	0.0125***	0.0123***
		(3.589)	(3.054)	(5.977)	(5.990)	(0.024)	(0.294)	(4.040)	(3.705)
24	5%	0.0053***	0.0051***	0.0140***	0.0103***	0.0001	0.0007	0.0136***	0.0089***
		(5.548)	(4.147)	(10.309)	(6.341)	(0.125)	(0.463)	(8.432)	(4.367)
24	1%	0.0062***	0.0061***	0.0128***	0.0122***	0.0014	0.0016	0.0114***	0.0103***
		(4.534)	(3.716)	(6.426)	(5.931)	(0.714)	(0.687)	(4.255)	(3.399)
36	5%	0.0054***	0.0049***	0.0142***	0.0106***	0.0007	0.0016	0.0130***	0.0083***
		(6.137)	(4.309)	(11.228)	(7.004)	(0.725)	(1.171)	(8.580)	(4.362)
36	1%	0.0067***	0.0064***	0.0126***	0.0116***	0.0017	0.0022	0.0108***	0.0092***
		(5.150)	(4.133)	(6.662)	(5.824)	(0.996)	(1.023)	(4.273)	(3.182)
					Special dividends				
12	5%	0.0099***	0.0072***	0.0273***	0.0234***	0.0052**	0.0045	0.0209***	0.0181***
		(5.040)	(2.899)	(7.847)	(6.264)	(2.179)	(1.504)	(5.141)	(3.881)
12	1%	0.0141***	0.0103***	0.0298***	0.0274***	0.0050	0.0008	0.0251***	0.0264***
		(3.802)	(2.662)	(5.922)	(5.319)	(1.095)	(0.175)	(3.862)	(4.004)
24	5%	0.0076***	0.0045**	0.0256***	0.0207***	0.0025	0.0017	0.0222***	0.0190***
		(4.669)	(2.101)	(7.912)	(5.850)	(1.263)	(0.633)	(6.174)	(4.438)
24	1%	0.0164***	0.0134***	0.0330***	0.0293***	0.0057	0.0031	0.0267***	0.0260***
		(5.341)	(3.874)	(6.996)	(6.281)	(1.537)	(0.801)	(4.657)	(4.428)
36	5%	0.0076***	0.0027	0.0250***	0.0194***	0.0035*	0.0008	0.0200***	0.0170***
		(5.230)	(1.310)	(8.037)	(5.785)	(1.892)	(0.346)	(5.849)	(4.277)
36	1%	0.0160***	0.0123***	0.0311***	0.0272***	0.0079**	0.0049	0.0213***	0.0206***
		(5.653)	(3.778)	(7.037)	(6.026)	(2.272)	(1.336)	(3.921)	(3.587)
					Stock dividends				
12	5%	0.0109***	0.0107***	0.0238***	0.0174***	0.0022	0.0044	0.0208***	0.0121***
		(5.009)	(4.803)	(9.761)	(6.111)	(0.663)	(1.247)	(5.307)	(2.818)
12	1%	0.0130***	0.0119***	0.0236***	0.0218***	0.0003	0.0029	0.0238***	0.0201***
		(3.332)	(2.885)	(6.053)	(5.343)	(0.058)	(0.515)	(3.879)	(3.203)
24	5%	0.0085***	0.0078***	0.0253***	0.0174***	0.0003	0.0019	0.0251***	0.0150***
		(4.842)	(3.639)	(11.094)	(6.425)	(0.121)	(0.718)	(7.472)	(4.051)
24	1%	0.0102***	0.0107***	0.0191***	0.0171***	-0.0003	0.0028	0.0190***	0.0132**
		(2.709)	(2.644)	(5.287)	(4.461)	(-0.059)	(0.520)	(3.504)	(2.375)
36	5%	0.0070***	0.0046**	0.0251***	0.0165***	-0.0012	-0.0011	0.0261***	0.0169***
		(4.307)	(2.489)	(11.429)	(6.312)	(-0.571)	(-0.500)	(8.479)	(5.104)
36	1%	0.0101***	0.0086***	0.0203***	0.0182***	0.0004	0.0010	0.0186***	0.0145***
		(3.413)	(2.909)	(6.269)	(5.114)	(0.108)	(0.247)	(3.713)	(2.785)
					Stock splits				
12	5%	0.0040**	0.0041*	0.0613***	0.0546***	-0.0008	0.0007	0.0654***	0.0572***
		(2.269)	(1.926)	(9.594)	(8.103)	(-0.444)	(0.348)	(10.588)	(8.733)
12	1%	0.0089***	0.0086**	0.0459***	0.0459***	0.0022	0.0011	0.0433***	0.0446***
		(2.706)	(2.375)	(5.981)	(5.798)	(0.639)	(0.301)	(5.299)	(5.178)
24	5%	0.0013	0.0024	0.0551***	0.0452***	-0.0030**	-0.0004	0.0607***	0.0481***
		(0.974)	(1.474)	(12.093)	(9.399)	(-2.283)	(-0.229)	(13.492)	(10.075)
24	1%	0.0084***	0.0077***	0.0441***	0.0410***	0.0020	0.0010	0.0429***	0.0414***
		(3.252)	(2.718)	(7.593)	(6.616)	(0.728)	(0.328)	(6.882)	(6.117)
36	5%	0.0002	0.0019	0.0532***	0.0433***	-0.0036***	-0.0007	0.0581***	0.0453***
		(0.176)	(1.378)	(13.424)	(9.866)	(-3.150)	(-0.467)	(14.396)	(10.202)
36	1%	0.0034	0.0053**	0.0440***	0.0374***	-0.0019	0.0003	0.0447***	0.0371***
		(1.572)	(2.117)	(7.707)	(6.015)	(-0.859)	(0.113)	(7.624)	(5.872)

Table 7: Estimated probability of a follow-on corporate event and stock returns, for portfolios containing stocks with high estimated probabilities of any of the four distribution events

At the beginning of each month *s* from January 1963 to December 2012, we identify common stocks whose latest announcement of four distribution events—dividend increases, special dividends, stock dividends, and stock splits—is during the previous *T* (= 12, 24, or 36) months. Among the identified stocks, we form a portfolio of stocks whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is among the top *K* percent (= 1% or 5%). The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. Panel A presents the realized probability and the average equal-weighted (EW) or value-weighted (VW) portfolio returns. Realized probability is the fraction of the portfolio stocks that do announce a follow-on corporate event in the portfolio month. Columns (2)-(3) present the returns of the portfolios of all stocks with high estimated probabilities; Columns (4)-(5) present the returns of the portfolio stocks that do announce a follow-on corporate event in the month; Columns (6)-(7) present the returns of the portfolio stocks that do *not* announce a follow-on corporate event in the month; Columns (8)-(9) present the differences in portfolio return between the stocks that do announce a follow-on corporate event in the month versus the stocks that do *not*. The equal-weighted portfolio return is weighted by the prior-month gross return to correct for biases due to noise in transaction prices. Panel B presents the estimated Jensen's alpha for the portfolios. Columns (1)-(2) present the estimated Jensen's alpha for the portfolios of all stocks with high estimated probabilities; Columns (3)-(4) present the estimated alpha for the portfolio stocks that do announce a follow-on corporate event in the month; Columns (5)-(6) present the estimated alpha for the portfolio stocks that do *not* announce a follow-on corporate event in the month; Columns (7)-(8) present the differences in portfolio return between the stocks that do announce a follow-on corporate event in the month versus the stocks that do *not*. The difference is the coefficient in front of the dummy variable indicating whether the portfolio return corresponds to stocks that announce a follow-on corporate event in the month. The alpha is estimated using the OLS regression where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk-free interest rate and the independent variables are the four risk factors—MKT, SMB, HML, and UMD—constructed by Fama and French (1993) and Carhart (1997). All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

Panel A: Returns of stocks with high estimated probabilities

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			Returns of portfolios of stocks with high estimated probabilities							
		Realized	All stocks		Event realized		Event not realized		Diff. (realized - not)	
T	*K*	probability	EW	VW	EW	VW	EW	VW	EW	VW
12	5%	0.4067	0.0175***	0.0134***	0.0274***	0.0196***	0.0109***	0.0102***	0.0165***	0.0095***
12	1%	0.5122	0.0177***	0.0151***	0.0251***	0.0207***	0.0117***	0.0112***	0.0134***	0.0095**
24	5%	0.3444	0.0162***	0.0132***	0.0281***	0.0199***	0.0103***	0.0099***	0.0179***	0.0100***
24	1%	0.5033	0.0178***	0.0143***	0.0248***	0.0184***	0.0121***	0.0104***	0.0127***	0.0080**
36	5%	0.3002	0.0156***	0.0137***	0.0290***	0.0211***	0.0102***	0.0107***	0.0188***	0.0103***
36	1%	0.4914	0.0180***	0.0141***	0.0257***	0.0183***	0.0114***	0.0096***	0.0143***	0.0087**

Panel B: Estimated Jensen's alpha of stocks with high estimated probabilities

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		Estimated Jensen's alpha of portfolios of stocks with high estimated probabilities							
		All stocks		Event realized		Event not realized		Diff. (realized - not)	
T	*K*	EW	VW	EW	VW	EW	VW	EW	VW
12	5%	0.0068***	0.0040***	0.0167***	0.0106***	0.0003	-0.0002	0.0165***	0.0095***
		(7.412)	(3.405)	(14.228)	(7.062)	(0.226)	(-0.160)	(10.912)	(4.495)
12	1%	0.0074***	0.0055***	0.0146***	0.0115***	0.0019	0.0012	0.0134***	0.0094***
		(5.113)	(3.290)	(7.546)	(5.571)	(0.840)	(0.518)	(5.013)	(3.128)
24	5%	0.0055***	0.0040***	0.0176***	0.0112***	-0.0005	-0.0001	0.0179***	0.0100***
		(6.885)	(3.678)	(16.133)	(7.724)	(-0.612)	(-0.055)	(13.574)	(5.356)
24	1%	0.0074***	0.0051***	0.0139***	0.0090***	0.0019	0.0004	0.0126***	0.0079***
		(5.859)	(3.326)	(8.473)	(4.565)	(1.038)	(0.181)	(5.587)	(2.842)
36	5%	0.0048***	0.0045***	0.0184***	0.0123***	-0.0007	0.0009	0.0188***	0.0103***
		(6.475)	(4.503)	(16.967)	(8.559)	(-0.895)	(0.762)	(14.753)	(5.825)
36	1%	0.0074***	0.0046***	0.0148***	0.0088***	0.0009	-0.0003	0.0143***	0.0087***
		(6.395)	(3.113)	(9.343)	(4.519)	(0.574)	(-0.177)	(6.656)	(3.294)

Table 8: Estimated probability of a follow-on corporate event and stock returns: Results by time period and by firm size

At the beginning of each month *s* from January 1963 to December 2012, we identify common stocks whose latest announcement of four distribution events—dividend increases, special dividends, stock dividends, and stock splits—is during the previous *T* (= 12, 24, or 36) months. Among the identified stocks, we form a portfolio of stocks whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is among the top *K* percent (= 1% or 5%). The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. Columns (1) and (2) present the estimated Jensen's alpha for the portfolios over the period from 1963-1987, while Columns (3) and (4) present the estimated alpha over the period from 1988-2012. We also divide the portfolio stocks into two portfolios based on the market capitalization of the stock at the end of month *s*-1. The portfolio of small (large) stocks contains those with market capitalization below (above) the median of all NYSE-listed stocks. Columns (5) and (6) present the estimated Jensen's alpha for small stocks, and Columns (7) and (8) are for large stocks. The alpha is estimated using the OLS regression where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk-free interest rate and the independent variables are the four risk factors—MKT, SMB, HML, and UMD—constructed by Fama and French (1993) and Carhart (1997). The equal-weighted portfolio return is weighted by the prior-month gross return to correct for biases due to noise in transaction prices. All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		1963-1987		1988-2012		Small		Large	
T	*K*	EW	VW	EW	VW	EW	VW	EW	VW
12	5%	0.0075***	0.0036***	0.0074***	0.0050**	0.0088***	0.0077***	0.0039***	0.0040***
		(8.658)	(2.737)	(5.516)	(2.578)	(6.741)	(6.490)	(4.032)	(3.253)
12	1%	0.0084***	0.0043*	0.0074***	0.0076***	0.0087***	0.0062**	0.0049***	0.0050***
		(4.491)	(1.847)	(3.505)	(3.128)	(3.019)	(2.143)	(2.956)	(2.710)
24	5%	0.0067***	0.0045***	0.0055***	0.0041**	0.0065***	0.0052***	0.0037***	0.0040***
		(9.914)	(3.908)	(4.646)	(2.296)	(5.839)	(5.067)	(4.559)	(3.475)
24	1%	0.0092***	0.0043**	0.0069***	0.0067***	0.0086***	0.0069***	0.0038**	0.0041**
		(6.183)	(1.979)	(3.525)	(3.005)	(3.649)	(2.898)	(2.408)	(2.388)
36	5%	0.0062***	0.0046***	0.0047***	0.0050***	0.0056***	0.0047***	0.0034***	0.0045***
		(9.804)	(4.275)	(4.326)	(3.153)	(5.547)	(4.710)	(4.571)	(4.350)
36	1%	0.0095***	0.0047**	0.0066***	0.0054**	0.0090***	0.0080***	0.0035**	0.0036**
		(7.089)	(2.344)	(3.805)	(2.394)	(4.604)	(3.835)	(2.427)	(2.232)

Table 9: Estimated probability of a follow-on corporate event and stock returns: Results for portfolios formed based on absolute probabilities of events

At the beginning of each month *s* from January 1963 to December 2012, we identify common stocks whose latest announcement of four distribution events—dividend increases, special dividends, stock dividends, and stock splits—is during the previous *T* (= 12, 24, or 36) months. Among the identified stocks, we choose those whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is greater than *X* percent (= 5%, 10%, 20%, or 40%) percent. The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. This table presents the estimated Jensen's alpha for the portfolios. The alpha is estimated using the OLS regression where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk-free interest rate and the independent variables are the four risk factors—MKT, SMB, HML, and UMD—constructed by Fama and French (1993) and Carhart (1997). The equal-weighted portfolio return is weighted by the prior-month gross return to correct for biases due to noise in transaction prices. All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

	(1)	(2)	(3)	(4)	(5)	(6)
	T = 12		*T* = 24		*T* = 36	
X	EW	VW	EW	VW	EW	VW
5%	0.0037***	0.0032***	0.0031***	0.0029***	0.0031***	0.0029***
	(5.629)	(4.476)	(5.004)	(5.007)	(5.147)	(5.245)
10%	0.0066***	0.0052***	0.0050***	0.0040***	0.0049***	0.0043***
	(8.061)	(4.458)	(6.647)	(3.744)	(6.598)	(4.085)
20%	0.0074***	0.0056***	0.0072***	0.0053***	0.0071***	0.0057***
	(8.580)	(4.598)	(8.536)	(4.392)	(8.434)	(4.704)
40%	0.0077***	0.0052***	0.0078***	0.0050***	0.0076***	0.0051***
	(7.369)	(3.703)	(7.445)	(3.601)	(7.329)	(3.654)

Table 10: Robustness check: Distribution event announcement versus earnings announcement

Panel A summarizes the fraction of corporate events announced in the same month as earnings announcement. We carry out *t*-test of whether the fraction equals to one third. Superscript *** corresponds to statistical significance at the one percent level. Panel B presents estimated Jensen's alphas for portfolios of stocks with high predicted probabilities of a follow-on distribution event. At the beginning of each month *s* from January 1973 to December 2012, we identify common stocks whose latest announcement of a corporate distribution event is during the previous *T* (= 12, 24, or 36) months. Among the identified stocks, we form a portfolio of stocks whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is among the top *K* percent (= 1% or 5%). The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. Columns (1) and (2) of Panel B present estimated alphas for these portfolios. We also exclude stocks with expected earnings announcement in month *s* from the pool of identified stocks, and form a portfolio of stocks whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is among the top *K* percent (= 1% or 5%) of the remaining stocks. Columns (3) and (4) of Panel B present estimated alphas for the non-earnings-announcement portfolios. The alpha is estimated using the OLS regression where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk-free interest rate and the independent variables are the four risk factors—MKT, SMB, HML, and UMD—constructed by Fama and French (1993) and Carhart (1997). The equal-weighted portfolio return is weighted by the prior-month gross return to correct for biases due to noise in transaction prices. All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

Panel A: Overlap between earnings announcement and distribution event announcement

	Fraction of corporate events announced in the same month of earnings announcement
Dividend increases	37.14%***
Special dividends	28.54%***
Stock dividends	29.48%***
Stock splits	36.20%***

Panel B: Estimated Jensen's alpha of portfolios of stocks with high probabilities of a follow-on distribution event: Including versus excluding predicted earnings announcement months

		(1)	(2)	(3)	(4)
		All stocks with high predicted probabilities		Exclude predicted earnings announcement	
T	*K*	EW	VW	EW	VW
12	5%	0.0065***	0.0052***	0.0065***	0.0033**
		(6.673)	(3.992)	(6.685)	(2.425)
12	1%	0.0059***	0.0056***	0.0077***	0.0056***
		(3.589)	(3.054)	(4.248)	(2.652)
24	5%	0.0053***	0.0051***	0.0043***	0.0033***
		(5.548)	(4.147)	(5.106)	(2.753)
24	1%	0.0062***	0.0061***	0.0080***	0.0047**
		(4.534)	(3.716)	(5.250)	(2.503)
36	5%	0.0054***	0.0049***	0.0039***	0.0037***
		(6.137)	(4.309)	(5.083)	(3.529)
36	1%	0.0067***	0.0064***	0.0079***	0.0061***
		(5.150)	(4.133)	(5.955)	(3.364)

Table 11: Robustness check: The announcement month versus the ex-date month

Panel A summarizes the fraction of each distribution event whose announcement month coincides with the ex-date month of regular cash dividends. Panel B presents estimated Jensen's alphas for portfolios of stocks with high predicted probabilities of a follow-on distribution event. At the beginning of each month *s* from January 1963 to December 2012, we identify common stocks whose latest announcement of a corporate distribution event is during the previous *T* (= 12, 24, or 36) months. Among the identified stocks, we form a portfolio of stocks whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is among the top *K* percent (= 1% or 5%). The probability (hazard rate) of a follow-on corporate event in month *s* is estimated with the proportional hazard model using announcements of the corporate event during months *s*-120 to *s*-1. Table 3 has more details of the proportional hazard model. Columns (1) and (2) of Panel B present estimated alphas for these portfolios. We also exclude stocks whose expected ex-date month of regular cash dividends is in month *s* from the pool of identified stocks, and form a portfolio of stocks whose estimated probability (hazard rate) of announcing any of the four follow-on corporate events in month *s* is among the top *K* percent (= 1% or 5%) of the remaining stocks. Columns (3) and (4) of Panel B present estimated alphas for the non-ex-date portfolios. The alpha is estimated using the OLS regression where the dependent variable is the equal- or value-weighted portfolio return in excess of the risk-free interest rate and the independent variables are the four risk factors—MKT, SMB, HML, and UMD—constructed by Fama and French (1993) and Carhart (1997). The equal-weighted portfolio return is weighted by the prior-month gross return to correct for biases due to noise in transaction prices. All model specifications employ robust standard errors. The associated *t*-statistics are reported in the parentheses below each coefficient. Superscripts ***, **, and * correspond to statistical significance at the one, five, and ten percent levels, respectively. Our sample includes cash dividend increases, special dividends, stock dividends, and stock splits of common stocks (share code is 10 or 11) announced between 1963 and 2012.

Panel A: Overlap between distribution event announcement month and ex-date month of regular cash dividends

	Fraction of corporate events with announcement date and ex-date of regular cash dividends in the same month
Dividend increases	47.24%
Special dividends	33.48%
Stock dividends	21.84%
Stock splits	21.56%

Panel B: Estimated Jensen's alpha of portfolios of stocks with high probabilities of a follow-on distribution event: Including versus excluding predicted ex-date month of regular cash dividends

		(1)	(2)	(3)	(4)
		All stocks with high predicted probabilities		Exclude predicted ex-date month	
T	*K*	EW	VW	EW	VW
12	5%	0.0065***	0.0052***	0.0049***	0.0054***
		(6.673)	(3.992)	(4.578)	(3.586)
12	1%	0.0059***	0.0056***	0.0067***	0.0054**
		(3.589)	(3.054)	(3.544)	(2.487)
24	5%	0.0053***	0.0051***	0.0030***	0.0022*
		(5.548)	(4.147)	(3.584)	(1.835)
24	1%	0.0062***	0.0061***	0.0082***	0.0062***
		(4.534)	(3.716)	(5.437)	(3.293)
36	5%	0.0054***	0.0049***	0.0023***	0.0025**
		(6.137)	(4.309)	(2.971)	(2.260)
36	1%	0.0067***	0.0064***	0.0074***	0.0067***
		(5.150)	(4.133)	(5.550)	(3.733)