Are Dividends Informative About Future Earnings?

Michelle Hanlon
University of Michigan

James Myers
Texas A&M University

Terry Shevlin*
University of Washington

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Abstract:
This paper investigates whether dividends are informative about a firm's future earnings. We examine this issue by investigating the association between current year stock returns and current and future earnings for firms that pay dividends in the current year as compared to firms that do not pay dividends. The data reveal that relative to non-dividend paying firms, dividend paying firms have current returns that are more associated with future earnings. In addition, we report results consistent with the market having a better understanding of a firm's future earnings after a dividend initiation relative to before. Overall, our results are consistent with dividends providing relevant information about future earnings to the market that is not in current earnings and that this information is incorporated into stock price.

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*Corresponding author: Terry Shevlin, Box 353200 University of Washington,
Seattle, WA 98195-3200
phone: 206-543-7223, email: shevlin@u.washington.edu

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1. Introduction

In this paper we investigate whether dividends provide information about future earnings. Specifically, we examine whether dividends affect the relation between current annual stock returns and future earnings. There is a long line of literature that investigates whether managers use dividends to signal the future prospects of their firm—known as the dividend information content hypothesis. Most interpret and test the information content hypothesis by investigating whether changes in firms' dividends translate directly into changes in firms' future earnings.[1] The information content hypothesis is important as evidenced by this long line of research; however, the empirical literature offers little support for the hypothesis that current dividend changes signal future earnings changes.

We provide new evidence on the information content hypothesis by investigating the association between current-year stock returns and future earnings for firms that pay dividends in the current year as compared to firms that do not pay a dividend. Other researchers have employed this methodology, developed in Collins, Kothari, Shanken, and Sloan (CKSS, 1994) to examine whether disclosures 'bring the future forward' (Lundholm and Myers, 2002) and whether income smoothing increases the informativeness of earnings (Tucker and Zarowin, 2006). The key concept underlying this approach is that the greater the association between current returns and future earnings (hereafter the future earnings response coefficient, or FERC), the more the information about future earnings that is provided by, in our case, dividends, that is

[1] For examples see Watts, 1973; Penman, 1983; Healy and Palepu, 1988; Leftwich and Zmijewski, 1994; DeAngelo, DeAngelo, and Skinner, 1996; Benartzi, Michaely, and Thaler, 1997; Nissim and Ziv, 2001; Grullon, Michaely, Benartzi, and Thaler, 2003; as well as summaries by Allen and Michaely, 2002 and Brav et al., 2005.

not reflected in current and past earnings. That is, investors are better able to predict future earnings for dividend paying firms resulting in current returns reflecting more of future earnings.

Assuming semi-strong market efficiency, the CKSS approach examines how much information about future earnings is reflected in the change in current period stock price. This approach differs from, and is arguably superior to, estimating the direct relation between a firm's future earnings and its current and past earnings for two reasons. First, although current and past realized earnings are often used to directly predict future earnings, the earnings information can be indirectly used by investors in earnings predictions when investors combine it with information from other sources (Christensen and Demski, 2002, Chapter 10). By using the stock price, which aggregates all publicly available information, the CKSS approach considers both the direct and indirect roles of current and past realized earnings. Second, investors may revise their expectation of future earnings due to a current period shock that has no effect on current earnings (for example, the signing of a major order for delivery in the coming year). Such information will not be captured by current earnings but will be impounded in current stock price (and future earnings).

Our paper is important because while the information content hypothesis is a long-standing hypothesis in financial economics, evidence on what dividends are informative about is elusive and an open-ended question. A greater understanding of the information provided by dividends, if any, is warranted due to the inconsistent results in prior literature regarding the information hypothesis. For example, most papers cannot document results consistent with an increase in future earnings following a current dividend increase, which leads Allen and Michaely (2002) to conclude that "…the empirical evidence provides a strong prima facie case against the traditional dividend signaling models." However, if dividend paying firms' future

earnings response coefficients are higher than non-dividend paying firms', this provides support for the information hypothesis even if a dividend change does not signal a future earnings change. More specifically, a significantly higher future earnings response coefficient for dividend paying firms is consistent with dividends providing the market with information about future earnings, beyond information captured in current earnings.[2]

Our evidence is consistent with dividend paying firms having significantly higher FERCs than non-dividend paying firms. Our results are robust to the exclusion of loss firms, suggesting that dividend payments are not simply acting as a proxy for profitability. Our results are also robust to the inclusion of control variables shown in previous research to affect earnings response coefficients. Thus, while the FERC at least in part is likely driven by greater persistence, greater predictability of earnings, and other factors in the information environment, after controlling as best we can for these factors the evidence is still consistent with dividend paying firms having a significantly greater FERC than non-dividend paying firms. As a result, we conclude that dividend paying status contains additional information (or is associated with other economic factors that contain additional information) that helps investors better forecast future earnings.

In additional tests, the data are consistent with large dividend payers having a higher FERC than small dividend payers consistent with the magnitude of the dividend payment also providing information about future earnings. We also perform an analysis of firms' FERCs prior to and after dividend initiations for the firms that initiate a dividend during our sample period. The data are consistent with firms' FERCs increasing following a dividend initiation suggesting

[2] We follow Watts (1973) and recognize that the requirement that dividends enable a better prediction of future earnings "…is a necessary but not sufficient condition of the information hypothesis. Even if this condition were met, dividends would not convey information if the factors responsible for the better prediction were known to market participants via other sources. Effectively the objective here is to test whether dividends have the *potential* to convey information" (page 193).

that the dividend payment provides the market with additional information about future earnings that the market did not receive before the firm started paying dividends. We view these results as providing support for our main cross-sectional tests based on CKSS.

We also investigate whether the level of repurchases influences a firm's FERC. Although repurchases do not commit the firm to future payouts as do dividends, repurchases could still provide information about future earnings because repurchases can in some cases substitute for dividends (consistent with Skinner, 2006 and Grullon and Michaely, 2002). In addition, repurchases can convey information about current earnings shocks (i.e., that they are transitory) which aids investors in the prediction of future earnings (consistent with Guay and Harford, 2000). However, the data are not consistent with repurchasers having a higher FERC relative to non-repurchasers, on average, regardless of dividend paying status. We then examine the magnitude of repurchases and find that even large repurchases do not provide any information about future earnings when the firm is also a dividend payer, and in fact, the FERC is lower than if no repurchases occurred. However, when the firm is a non-dividend payer we find evidence of a large repurchase providing information about future earnings, consistent with repurchases acting as a substitute for dividends in those instances.

We recognize that dividend paying firms are different in many respects than non-dividend paying firms and that these underlying differences could be affecting or driving our results. We include a host of controls for these factors in Table 6, including future growth prospects (proxied by the book-to-market ratio), and our results with respect to dividend paying status of the firm continue to hold. We also document that large dividend payers have a higher FERC than small dividend payers (yet both are dividend payers) and that the same firm has a higher FERC after initiating a dividend relative to before the initiation. Both of these results

(along with the tests which include the controls) should alleviate concerns about the inherent differences between dividend paying and non-dividend paying firms, but, of course, we cannot eliminate the possibility that these differences may still be affecting our results to some extent. We also recognize that using the CKSS method is an indirect approach of testing whether the information content of dividends exists. Although the data are consistent with dividend paying firms having a higher FERC than non-dividend paying firms, we cannot identify what is driving the higher association (i.e., we do not know the precise underlying economics). As mentioned above, we have ruled out or controlled for the obvious economic determinants of the higher FERC. We leave a more detailed investigation of the drivers to future research.

The paper proceeds as follows. Section 2 provides a discussion of prior research and Section 3 explains our research design and empirical predictions. Section 4 discusses our sample, variables, main results, and tests of dividend initiators. Section 5 presents results from additional analyses such as the examination of repurchases, the inclusion of additional control variables, and our separate investigation of loss firm-years. Section 6 concludes.

2. Literature Review

Much prior literature has investigated what, if any, information is contained in dividends. However, to date, little consensus has emerged. For example, theoretical models by Bhattacharya (1979) and Miller and Rock (1985) predict that changes in dividend policy convey news about future cash flows (i.e. dividend increases (decreases) signal future increases (decreases) in future cash flows) (the dividend signaling hypothesis). The models then predict a positive (negative) price reaction around the announcement date of a dividend initiation or increase (omission or decrease) because of the conveyed information about future cash flows.

Empirical evidence strongly supports the price reaction prediction and has been used to justify the theory about dividend changes signaling future cash flow changes (Asquith and Mullins, 1983; Healy and Palepu, 1988; among others).

However, the premise of the models is that dividend changes should be followed by changes in profitability in the same direction, which is presumably what the market is reacting to. Benartzi, Michaely, and Thaler (1997) test this premise and find that earnings growth rates of firms that increase dividends do not subsequently increase. Firms that decrease dividends, however, experience significant increases in growth rates in the two years following the dividend decrease. This evidence contradicts the central theory of the dividend signaling hypothesis (Grullon et al., 2002). In addition, a recent survey paper, Brav et al. (2005) report that they find little evidence to support the traditional signaling hypothesis.

Grullon et al. (2002) question why the price reaction is consistent with the theory but the future earnings do not materialize in the predicted manner. They relate dividend changes to a firm's life cycle and hypothesize that the dividend change announcement period stock returns are in response to changes in firms' systematic risk. Grullon et al. (2002) examine whether dividend changes signal changes in systematic risk by testing for shifts in the weights on the three factors in the Fama and French (1993) model around the dividend change announcement month. They find results consistent with their theory – firms that increase dividends experience a significant decline in their systematic risk while firms that decrease dividends experience a significant increase in systematic risk.

Nissim (2004) argues, however, that the risk (the weights on the three factors in the Fama-French model) changes before the dividend announcement so changes in risk cannot

explain the dividend announcement effect. That is, dividend changes cannot be signaling the change in risk –they are only *associated with* changes in risk.[3]

While the above papers examine the traditional dividend signaling hypothesis by investigating the market reaction to announcement of dividend changes, and future changes in earnings, other papers have started to investigate the information content hypothesis in a different manner. For example, Skinner (2004) investigates the information content of dividends by examining the persistence (sustainability) of earnings.[4] He motivates his hypothesis by the earnings "persistence parameter" from Miller and Rock (1985). Skinner reports evidence consistent with reported current earnings of dividend paying firms being more persistent in future periods and that this is more pronounced for firms with larger dividend payouts, for large firms, and for large firms with larger payouts.

Another recent paper is Caskey and Hanlon (2005) who investigate whether dividends provide information about earnings quality by examining the dividend payout policies of firms accused by the Securities and Exchange Commission (SEC) of committing financial accounting fraud. They report evidence consistent with the alleged fraud firms paying out dividends less often and of a lower amount than a matched sample of firms not accused of financial accounting fraud. However, Caskey and Hanlon (2005) report that the alleged fraud firms did pay

[3] Chen et al. (2006) extend Grullon et al. (2002) by adding an information risk factor (based on a measure of accruals quality) to the Fama-French three factor model used in Grullon et al. (2002). Chen et al. (2006) hypothesize and report results showing a decrease (increase) in the weight on the information risk factor returns in the months surrounding firms' announcement of dividend initiations and increases (dividend omissions and decreases). These results are consistent with dividend changes signaling changes in firms' information risk. However, the pricing of the change in information risk in Chen et al. (2006) occurs prior to the dividend announcement leading the authors to conclude that the two are merely associated rather than dividends signaling this change in risk to the market.

[4] This line of thinking is also consistent with other research. For example, Lintner (1956) provides evidence consistent with managers being reluctant to increase dividends unless they believe that dividends can be sustained at the new level. Indeed, Brav et al. (2005) report that more than two-thirds of the financial executives they survey state that the stability of future earnings is an important factor affecting dividend decisions. In addition, two-thirds of the chief financial officers (CFOs) say that a sustainable change in earnings is important or very important for dividends. In addition, Koch amd Sun (2004) provide evidence consistent with investors revising their expectations about the persistence of past earnings changes upon a change in dividends.

significant dividends while perpetrating the frauds and conclude that although dividends indicate higher earnings quality on average they do not constitute a preventative measure against financial accounting fraud.

We extend this literature by testing whether *current* returns reflect more information about *future* earnings for dividend paying firms. Similar to the above two papers, our research question is not about the information content of a change in dividends or why the market reacts as it does when firms change their dividends. We instead investigate a more general question about the information content of dividends: whether the market understands and can better predict future earnings for dividend paying firms.

3. Research Design and Empirical Predictions

3.1 Future Earnings Response Coefficients

CKSS (1994) examine two explanations for the low contemporaneous returns-earnings relation – the lack of timeliness of earnings and the value-irrelevant noise in earnings. They report that consistent with earnings lacking timeliness (i.e., prices leading earnings) current and future earnings explain roughly 3 to 6 times as much of the annual return variation as current earnings alone.

CKSS base their model on the discounted cash flow model and assume that revisions in dividend expectations are correlated with revisions in earnings expectations. They contend that the primary implication of earnings' lack of timeliness is that only a portion of earnings growth or change is a surprise to the market and that investors will look beyond the current earnings number to other sources of information which affect their expectations of future earnings. Thus, their returns-earnings relation is modeled as follows (equation (3) in CKSS):

$$R_t = \beta_0 + \beta_1 UX_t + \sum_{k=1}^{3} \beta_{k+1} \Delta E_t(X_{t+k}) + e_t \qquad (1)$$

where R_t is the continuously compounded return for year t, X_t is the continuously compounded growth rate of earnings, $UX_t = X_t - E_{t-1}(X_t)$ is the unanticipated earnings growth rate, and ΔE_t is the revision in market expectations from the beginning to the end of period t. In their model, β_1 is the current period earnings response coefficient (ERC) and β_{k+1} is the future earnings response coefficient (FERC), both of which are predicted to be positive.

CKSS use the reported earnings for year t-1 as the proxy for the expectation component of UX_t. CKSS use the realized earnings for year t+k as a proxy for the expectation formed at the end of year t, and use past earnings to form an expectation at the beginning of year t. However, there are errors in variables problems in the model because investor expectations are unobservable. Ideally, the explanatory variables in a return-earnings regression should only reflect information that arrives during period t. However, the variable X_t includes old information that has already been reflected in past returns. Similarly, any surprises in X_{t+k} are unrelated to R_t and also act as measurement error in the X_{t+k} variables. To reduce the measurement error in using realized future earnings to proxy for investor expectations, CKSS include future returns in the model. The logic underlying the inclusion of future returns is that if realized earnings are higher (lower) than expectations, stock price should increase (decrease) accordingly from year t+1 to t+k. This positive correlation leads to a predicted negative coefficient on the future returns in the regression.

CKSS implicitly assume that annual earnings follow a random walk and use earnings changes as the independent variables. Lundholm and Myers (2002; hereafter LM) use the CKSS model to investigate whether firms with better disclosures as measured by AIMR ratings have a higher FERC than firms with a lower rating. LM use the levels of past, current, and future

earnings to allow for a more general form of earnings expectations model and they aggregate the three future years' earnings into one variable E_{t3} and the three future years' returns into R_{t3}.[5] We follow this aggregation method and implement CKSS as follows:

$$R_t = b_0 + b_1 E_{t-1} + b_2 E_t + b_3 E_{t3} + b_4 R_{t3} + u_t \qquad (2)$$

where E_{t-1} and E_t are the earnings for year t-1 and t, respectively, and E_{t3} is the sum of earnings over year t+1 to t+3. R_{t3} is the aggregate stock return in year t+1 to t+3 with annual compounding. The coefficient on past earnings (b_1) is predicted to be negative, the current ERC (b_2) is predicted to be positive, the FERC (b_3) is predicted to be positive, and the coefficient on future returns (b_4) is predicted to be negative. Similar to Lundholm and Myers (2002) we do not use analyst forecast errors because analyst forecasts are affected by other sources of information beyond earnings and would therefore misrepresent the information contained in current earnings. Likewise, the accounting value relevance literature has also used only current and past earnings as its proxy for UX_t (see, for example, Francis and Schipper (1999) and Lev and Zarowin (1999)).

3.2 Dividend Measurement and Empirical Predictions

Our main research question is whether dividends provide information about future earnings as reflected in the future earnings response coefficient. Our main empirical prediction is that if dividends contain information about earnings beyond the information contained in current earnings, then the FERC will be higher for dividend paying firms than for non-dividend paying firms. We create an indicator variable, DP_t, that is set equal to 1 for a firm if a regular

[5] CKSS limit the growth rates to be computed over a period of three years as well because amounts further out in time add little explanatory power. In addition, LM show that the full model (where each future earnings and future returns variable is included separately) and the reduced model where earnings and returns are aggregated over three years yields similar conclusions.

cash dividend is paid in year t and 0 otherwise. We include this indicator as an independent variable and interact it with the other variables in regression (2) to test the differential between dividend payers and non-dividend payers. Our main expanded model is as follows:

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 DP_t + \beta_6 DP_t * E_{t-1} + \beta_7 DP_t * E_t + \beta_8 DP_t * E_{t3} + \beta_9 DP_t * R_{t3} + u_t \quad (3)$$

where all variables are as defined above. If dividends provide information to the market regarding the future earnings of the firm then we expect the coefficient β_8 to be significantly positive.

We also test whether the magnitude as well as the existence of dividend payments is likely to be important in the information content of the dividends. In order to test this, we create two new indicator variables. The first, SDP_t *(Small Dividend Payment)*, is set equal to one for firm-years in which a regular cash dividend is paid but where the payment is not classified as a large dividend payment and zero otherwise. The second, LDP_t *(Large Dividend Payment)*, is set equal to one for firm-years where the firm has paid cumulative regular cash dividends greater than or equal to 33% of cumulative earnings between year t-2 and year t, and zero otherwise.[6] Because cumulative earnings are the denominator in these tests, problems arise for firms with cumulative losses. The ratio of dividends to earnings for these loss firms is uninterpretable because these firms are paying positive dividends even in loss years, which in some sense is a very large dividend yet the payout ratio is a negative number (although by cumulating over three years we mitigate the issue of loss firms to some extent because fewer firms have three year cumulative losses). We classify these loss observations as *Small Dividend Payments.* Our model expanded to test the magnitude of dividend payments is as follows:

[6] Note there are 325 firm years that pay enough dividends in prior years that they would be *LDP* even though current year's dividends are zero. We code these firms to be *LDP*=0.

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 SDP_t + \beta_6 LDP_t + \beta_7 SDPt*E_{t-1} + \beta_8 SDP_t*E_t + \beta_9 SDP_t*E_{t3} + \beta_{10} SDP_t*R_{t3} + \beta_{11} LDP_t*E_{t-1} + \beta_{12} LDP_t*E_t + \beta_{13} LDP_t*E_{t3} + \beta_{14} LDP_t*R_{t3} + u_t \qquad (4)$$

where all variables are defined above. If large dividends strengthen the relation between future earnings and current returns then we expect β_{13} to be significantly positive.

4. Sample, Variables, and Results

4.1 Sample

We use the 2005 combined annual industrial CRSP/Compustat data for the years 1970-2004. To be included in the analysis, we require firms to be incorporated in the U.S., have sufficient financial statement and stock returns data to estimate equation (3), which provides an initial sample size of 88,312 firm years.[7] We use all available data for estimation, so some tests have fewer observations than others.

4.2 Variables and Descriptive Statistics

Table 1 presents descriptive statistics for our variables – Panel A presents statistics for dividend paying firms and Panel B presents statistics for non-dividend paying firms.[8] R_t is the buy and hold return over the 12 months of the fiscal year t. R_{t3} is the buy and hold returns calculated in the 36 months beginning in the first month following the end of fiscal year t. The mean one-year and three-year annual raw returns are in line with those reported by Tucker and Zarowin (2006) and Lundholm and Myers (2002). All three of the earnings measures use

[7] In untabulated sensitivity analyses, we also conduct all of our tests after eliminating utilities (SIC 4000-4999) and financial services firms (SIC 6000-6999) and obtain the same inferences.

[8] Ordinary cash dividends are determined based on the CRSP distribution code. To be classified as an ordinary dividend, the first digit of the distribution code must be 1; the second digit must be between 0 and 4 and a third digit other than 6, 7 or 9.

earnings before extraordinary items (Compustat annual data item 18), scaled by beginning market value of equity (data 25 × data 199). E_{t3} is the sum of earnings from year t+1 to t+3, scaled by market value of equity at the beginning of year t. The mean current earnings for dividend payers is 11% of lagged market value of equity and the three year sum is 39% of lagged market value. The mean current earnings for non-dividend payers is 1% of market value, while the three-year sum is 10% of lagged market value of equity. LDP_t *(Large Dividend Payment)* is an indicator variable set equal to one for firm-years where the firm has paid cumulative regular cash dividends greater than or equal to 33% of cumulative earnings between year t-2 and year t and 0 for other firms. SDP_t *(Small Dividend Payment)* is an indicator variable set equal to one for firm-years where a dividend is paid but the dividend is not large enough to classify the observation as having a LDP_t.

SRP_t (*Small Repurchase*) is an indicator set equal to one when the firm repurchases an amount greater than zero but less than the median repurchase amount of the market value of equity in year t for our sample. LRP_t (*Large Repurchase)* is an indicator variable set equal to one when the firm repurchases an amount above the median repurchase amount (1.9%) of the market value of equity in year t for our sample.[9] Of note, is that the dividend paying firms also have positive net share repurchases 15% of the time and non-dividend paying firms have positive net repurchases only 9% of the time. Such low net repurchase numbers might appear surprising given the extent of repurchase activity – but the net numbers reflect, and are consistent with,

[9] We measure repurchases as net repurchases – share repurchases less the effect of share issuances. We follow the approach in Fama and French (2001) and Skinner (2006) by using the increase in common treasury stock (Compustat #226) if the firm uses the treasury stock method for repurchases. If the firm uses the 'retirement' method instead (which we infer from the fact that treasury stock is zero in the current and prior year), we measure repurchases as the difference between stock purchases (#115) and stock issuances (#108) from the statement of cash flows. If our computed net repurchase amount is negative, we reset it to zero. It is preferable to use the change in treasury stock, if available, rather than net purchases (#115 - #108) because the change in treasury stock nets out any associated issuances, including non-cash issuances.

many firms repurchasing shares to reissue as employee options are exercised. *Income Smoothing* is from Tucker and Zarowin (2004) and is measured as the correlation between discretionary accruals and pre-discretionary income over the five years ending in year t.[10] *BTM* is the book-to-market ratio and is the ratio of the book value of common equity to the market value of equity (data 60/(data 25 * data 99). *MVE* is the market value of equity at the beginning of year t (data 25 * data 199), our proxy for size. *ROA* is the return on assets and is measured as the earnings before extraordinary items (data 18) scaled by beginning of the period total assets (data 6). The *AIMR Score* is the score given for the firm's disclosure and is the variable used in Lundholm and Myers (2002). This score is based on the ratings published in the Report of the Association for Investment Management Research (AIMR).[11] The *Number of Analysts* is the count of analysts in the last mean forecast of annual earnings per share for the fiscal year. *Persistence* is measured separately for each firm year as the coefficient from an OLS regression of split adjusted annual earnings per share on lagged split adjusted annual earnings per share over years t-5 to t.

The dividend paying firms are on average larger, have a greater analyst following, and have higher earnings persistence as expected. The mean market value of equity for dividend paying firms is 4 times larger than the mean for non-dividend paying firms ($1,433 vs. $356 million). There are also almost twice as many analysts for the dividend paying firms (8.05 vs 4.61). To mitigate the influence of outliers, all variables are winsorized (reset) at 1% and 99% of their distributions.

[10] This measure is explained in more detail below.
[11] The AIMR scores are discussed more fully below.

4.3 Main Empirical Results

Future earnings response regressions are likely to suffer from both cross-sectional correlation (correlation across firms within a year) and time series correlation (over time within the same firm). The time series correlation results from the fact that the same returns that are on the right hand side of the regression for one period are on the left hand side of the regression in the next period for any individual firm. In all of our tables we follow Petersen (2006) and control for time series correlation by including year dummies and cross-sectional correlation by allowing for error clustering within firms (Rogers standard errors).

Table 2 panel A presents the results from our estimate of equation (2) (i.e., current returns regressed on prior, current and future earnings, and future returns). The coefficients are all highly significant and the coefficient estimate on future earnings (i.e., the FERC) is essentially identical to the estimate in Tucker and Zarowin (2006). Because of the reasons stated above and because prior literature provides evidence consistent with earnings response coefficients varying with the inclusion of loss firms, we present our results throughout the paper on the full sample and on a sub-sample of non-negative earnings firm-years only. The results for the non-negative earnings firm-years are also reported in panel A. The inferences with regard to both samples for this initial baseline test (i.e., before we include a dividend variable) are similar.

Table 2 Panel B presents the results of estimating equation (3), which includes the dividend indicator variable, DP_t, and the interaction of DP_t with all of the other independent variables. The primary coefficient of interest is β_8, which is the coefficient on the interaction between DP_t and future earnings (the incremental effect of being a dividend paying firm on the FERC). In the full sample, the estimate of β_8 is positive and highly significant indicating that current market returns incorporate future earnings information much more strongly for dividend

payers than for non-payers. In fact, for dividend payers current returns are 3.6 times more sensitive to future earnings ($\beta_3 + \beta_8$=0.341) than for non-dividend payers (β_3=0.095). This result is consistent with the hypothesis that dividend payments provide information to the market about future earnings over and above the information provided by current earnings. That is, for dividend paying firms the market seems able to anticipate a larger portion of future earnings. The inferences are similar with regard to the FERC for the sub-sample of firm-years with non-negative earnings.[12]

Table 3 presents the results of estimating equation (4) which investigates whether firms that pay a large dividend have a higher FERC than firms that pay no dividend or a small dividend. The two primary coefficients of interest are β_9, which reflects the incremental FERC for small dividend paying firms relative to non-dividend paying firms (as reflected in the base case coefficient β_3), and β_{13}, which reflects the incremental FERC for large dividend paying firms relative to non-dividend paying firms. For both the full sample (including loss firm-year observations) and the sub-sample of firm-years with non-negative earnings only, the estimate of the coefficient on the FERC for small dividend paying firms, β_9, is significantly positive (p-value < 0.05), consistent with small dividend paying firms having a higher FERC than non-dividend paying firms. Thus, firms that do not pay a dividend have a lower FERC than firms that pay a relatively small dividend. The results for whether firms paying a large dividend have a higher FERC than firms not paying a dividend are also similar across the two samples of firms.

[12] We also estimate our baseline regression from panel B in table 2 using two alternative specifications. First, we estimate the regression including each years' (t+1, t+2, and t+3) earnings and return variables separately rather than combined. We find that the FERC for dividend paying firms is significantly positive in two (t+1, t+3) out of the three future years. We conjecture that the coefficient on the year t+2 FERC is smaller than year t+1 because it is further out in time and thus earnings are harder to predict but it does not proxy for all future earnings as does year t+3. Second, we estimate the regression without future returns to check whether the future returns are indeed capturing measurement error from using realized returns as the market's expectations as discussed above. We find that after excluding future returns from the regression, FERC for dividend paying firms is still significant and positive but the coefficient declines consistent with the future returns capturing the measurement error.

The coefficient of interest, β_{13}, is positive and significant in both specifications (two-tailed p-value of < 0.05). An F-test indicates that the β_8 and β_{13} coefficients are significantly different (with $p < 0.05$). Thus, large dividends provide more information to the market about future earnings than small dividends.

4.4 Dividend Initiators

To provide additional support for our cross sectional tests above, we investigate whether a firm's FERC increases after they initiate a dividend. To conduct this analysis we obtain a sample of all dividend initiators by including firms with a regular cash dividend in CRSP in year t and no regular cash dividend in CRSP for the prior year. We then estimate a regression of current returns on lagged earnings, current earnings, future earnings, and future returns as before but now with the inclusion of an indicator variable, *AFTE*R, which is set equal to one in the firm-years after the firm initiates an ordinary cash dividend and zero otherwise (i.e., the firm-years prior to the firm initiating dividends). Because some firms initiate seemingly very small dividends (e.g., less than or equal to one cent per share), we include only dividend initiations which are economically meaningful by dropping the initiators in the bottom 25th percentile of the dividend per share distribution of dividend initiating firms. The year of the initiation (year t) as well as the one year immediately preceding and following the initiation are excluded from the analysis in order to obtain a clean identification of the dividend paying year versus the non-dividend paying years.[13] Thus we include the years t-3, t-2, t+2, and t+3. The regression is as follows (all variables as defined earlier):

[13] For example, if firms announce a dividend initiation at the same time they announce annual and fourth quarter earnings, the market has the dividend information with which to interpret that years earnings. However, in our data only the year in which the dividend was paid (not the year the earnings announcement was for) would be identified

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 AFTER + \beta_6\, AFTER*E_{t-1} + \beta_7\, AFTER*E_t + \beta_8 AFTER*E_{t3} + \beta_9 AFTER*R_{t3} + u_t \quad (5)$$

In this specification, β_8, the incremental FERC for the years after dividend initiation relative to the years before dividends were paid, is the variable of interest. Table 4 presents the results. The data are consistent with the future earnings response coefficient being significantly more positive after firms initiate a dividend relative to the firm-years prior to the dividend initiation (p-value < 0.02, one-tailed). We interpret this evidence as providing additional support for our main cross-sectional results – dividends provide information to the market about future earnings above and beyond the information in current earnings.[14]

5. Additional Analyses

5.1 Examining Repurchases

Repurchases represent another way for firms to return cash to shareholders. Repurchases generally do not represent a commitment by management to continue payouts in the future in the same manner that current dividends commit management to future dividends. For example, the market does not penalize a firm which has repurchased stock in the past for not making a repurchase in a subsequent year. The market does, however, severely penalize firms for cutting or eliminating

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as a dividend paying year. Thus, we eliminate the year prior and year after the dividend initiation in order to obtain a cleaner sample.

[14] In untabulated results, we also estimate the regression including only years t-2 and t+2 and find similar but stronger results, with the p-value on the β_8 coefficient falling to 0.005, one-tailed. Again, the analysis of dividend initiators is conducted over only firm-years that have non-negative earnings in the year of dividend initiation. If we include loss firm-years in which there was a dividend initiation the sample size increases by 317 observations (firm-years) but results with respect to the FERC after dividend initiation become insignificant. Thus, it appears that dividend initiation for loss firms does not immediately increase the information available to the market about future earnings.

dividend payments.[15] Thus, one may think that a lower commitment to continue to make payouts would result in repurchasing firms having the same FERC as non-repurchasing firms. However, a repurchase may also provide information that helps investors predict future earnings. Guay and Harford (2000) hypothesize and report evidence consistent with firms choosing dividend increases to distribute relatively permanent cash-flow shocks and repurchases to distribute more transient shocks. Thus, because repurchases indicate less permanent or more transitory earnings relative to dividends the market could still use the repurchases to predict future earnings (they will revert) so repurchasing firms could have a higher FERC than non-repurchasing firms.[16]

In addition, repurchases could be used as a substitute for dividends and thus could contain the same information as dividends. For example, Skinner (2006) examines the relation between earnings and corporate payout policy over the last 50 years and finds that repurchases are used in place of dividends, which he argues explains why dividend policies have become increasingly conservative. Thus, while repurchases may be thought to contain less information than dividends because of the lower commitment, there is evidence in Skinner (2006) that shows repurchasing shares is a substitute for dividends in many cases and might therefore be expected to be equally informative about future earnings.[17]

We test for the information in repurchases by replacing the dividend paying variables in Tables 2 and 3 (DP_t, SDP_t and LDP_t) with the variables RP_t *(Repurchase),* SRP_t (*Small Repurchase*), and LRP_t (*Large Repurchase).* As stated above, we measure repurchases following Fama and French (2001) and Skinner (2006) as the net repurchases of the firm (repurchases less share issuances). Because many firms both pay dividends and repurchase shares in the same year, we

[15] See Charest (1978), Brickley (1983), Asquith and Mullins (1983), and Healy and Palepu (1988).
[16] Note that Guay and Harford (2002) also provide evidence consistent with the stock price reaction to a dividend increase being more positive than the reaction to repurchases.
[17] See also Grullon and Michaely (2002) which presents evidence consistent with repurchases substituting for dividends.

present the analysis for both dividend payers and non-dividend payers separately. As stated above, we classify a firm as having a *Large Repurchase* if the firm has net repurchases more than the median net repurchase amount for the sample (1.9% of market value of equity).

Recall the results in Table 2 are consistent with dividend paying firms having a higher FERC than non-dividend paying firms and the results in Table 3 are consistent with relatively large dividend paying firms having a significantly higher FERC than relatively small dividend paying firms and small dividend payers having a higher FERC than non-dividend payers. In contrast, Table 5, Panel A, shows that firms that repurchase shares do not have a significantly larger FERC (β_8 is insignificant) than firms that do not repurchase shares. This result obtains for both the dividend paying and non-dividend paying sub-samples.

Panel B of Table 5, presents results partitioning share repurchases into small and large repurchases. β_3 is the estimated FERC for firms that do not repurchase shares, β_9 is the incremental FERC for small-repurchase firms, and β_{13} is the incremental FERC for large repurchase firms (relative to non-repurchasers). The results in Table 5, panel B, show that *dividend paying firms* that repurchase a relatively large amount of outstanding equity do not have a significantly higher FERC than firms that do not repurchase shares (i.e., β_{13} is not significantly positive). In contrast, the FERC is significantly negative implying that the market has less information about future earnings for firms that pay a dividend and repurchase a large amount of shares relative to firms that just pay a dividend. The coefficient on the incremental FERC for small repurchasers is not statistically different from zero for dividend paying firms. For *non-dividend paying firms*, the incremental FERC for small repurchasers (β_9) is not statistically different from zero. However, β_{13}, which represents the incremental FERC for large repurchasers is statistically positive (two-tailed p-value of 0.010). Thus, for non-dividend payers it appears that large repurchases provide some information to the market

about future earnings.[18] Because we observe this relation for non-dividend payers but not for dividend payers we interpret the evidence as suggesting that for large repurchase firms where no dividends are paid, the repurchase of shares serves as a substitute for dividends consistent with the evidence in Skinner (2006) rather than repurchases providing incremental information beyond the information in dividends.

In sum, the evidence is consistent with information from share repurchases not being as useful to the market relative to dividends in interpreting future earnings – repurchasers do not have a higher FERC that non-repurchasers, on average, and small repurchases do not provide additional information relative to non-repurchases. We do find, however, that if the firm is a non-dividend payer and repurchases a relatively large amount, then the repurchase appears to serve as a substitute for dividends and provides the market with additional information about future earnings relative to a firm which neither pays dividends nor repurchases shares.

5.2 Discussion of Current Earnings Response Coefficients and Loss Firms

Our main tests are about the future earnings response coefficients and not the current earnings response coefficients. However, some discussion of our results with respect to the current earnings response coefficients are warranted. There are inconsistent predictions and results in the literature with respect to the effect of dividends on firms' *current* earnings response coefficients. Kallapur (1994) uses Jensen's (1986) free cash flow theory to predict that in the presence of a free cash flow problem, firms' earnings response coefficients depend positively on payout ratios because shareholders prefer that earnings be paid out as dividends rather than be

[18] We also conduct an F test for the difference between the FERCs of large repurchasers and small repurchasers. We find that for non-dividend paying firms, the FERC of large repurchasers is significantly larger than the FERCs of both small repurchasers and non-repurchasers. However, the FERC for small repurchasers is not statistically larger than for non-repurchasers.

wastefully retained (thus, earnings are more highly valued if they translate into a larger, rather than a smaller, amount of dividend currently). However, Francis, Schipper and Vincent (2005) predict that "…the informativeness of earnings declines as dividends increase" (p. 345) and report that they "…generally find smaller coefficients on EARN [their earnings independent variable] for firms with higher dividend yields…suggesting that investors place smaller weights on earnings when the firm pays more dividends" (p. 347). Thus the effect of dividends on current earnings response coefficients is not clear.

Because we include future earnings in the regression, the current earnings response coefficient is not directly comparable with these prior papers. In regressions without future earnings included, the coefficient on current earnings includes some of the FERC – the current ERC captures changing expectations about future earnings (e.g., higher expected future earnings growth will result in a larger coefficient). Furthermore, when future earnings are in the regression, the current earnings variable proxies for the market's prior expectation about future earnings and thus may confound the traditional interpretation of the earnings response coefficient.[19]

In our tests, we find that the effect of current dividend payments on the current ERC varies depending on whether we include loss firm-years in the sample. If we examine the relation over only firm-years with non-negative earnings (in year t) we find results consistent with the current earnings response coefficient being smaller for dividend paying firms relative to non-dividend paying firms. We interpret this as consistent with our FERC results above: prices

[19] In untabulated tests and results, we estimate a regression of current returns on current earnings, DP_t and the interaction of DP_t and current earnings (i.e., future earnings are not included). The results indicate that the current ERC is significantly lower for dividend paying firms than non-dividend paying firms (coefficient of -0.54) indicating that these firms have a lower current earnings response coefficient than non-dividend paying firms, consistent with the results in Francis et al. (2005), although that is not their main analysis and they do not provide an explanation for the result. We interpret the lower ERC as consistent with the idea that if prices lead earnings more for dividend paying firms then the current ERC will be lower. We do not condition our sample on firms having a free-cash flow problem so we cannot directly compare our results to Kallapur (1994).

lead earnings more for these firm-years (because dividends are providing information outside of current earnings) so the current earnings response coefficient is lower for dividend paying firms. That is, for dividend paying firms, the stock market learns about a larger portion of future earnings in the current period. The result is that the ERC is smaller and the FERC is larger for dividend payers.

However, when we include loss firm-years in the sample then the current earnings response coefficient is significantly more positive for dividend paying firms than non-dividend paying firms. We interpret this result in light of recent research using price-level regressions that show firms with greater losses exhibit higher market value of equity. The reasoning for this relation is that the losses are incurred because the firm is investing heavily in research and development (R&D) or other positive net present value (NPV) projects. However, dividend paying firms are not generally growth or high investment stage firms and are not likely incurring losses due to these reasons. As a result, we interpret our result that the ERC is higher for dividend paying loss firms relative to non-dividend paying loss firms as the market interpreting the losses for the dividend paying firms as more negative news (i.e., not resulting from current investments in positive NPV projects).

5.3 Robustness Checks after the Inclusion of Additional Control Variables

Similar to Lundholm and Myers (2002) and Tucker and Zarowin (2006) we recognize that our results could be affected if dividends are proxying for other more fundamental determinants of the earnings response coefficient. While the determinants of the future earnings response coefficient may not be the same as those of the traditional earnings response coefficient, to the extent that future earnings and future returns do not perfectly capture

expectations about future earnings, the variables identified in prior research may still be important to include in our tests. Further, it could be that the underlying differences between dividend paying and non-dividend paying firms are affecting our results and thus, controls for these differences should be included in our regressions.

Growth, risk, firm size, earnings persistence, and the presence of an accounting loss have all been shown to be significantly related to the coefficient on current earnings and some of these are known to be correlated with dividend paying status (e.g., high growth firms generally do not pay dividends). Thus, we estimate a model similar to equation (3) above but with the addition of a proxy for growth (*BTM*), a proxy for risk (*Earnings STD*), a proxy for firm size (MVE_t), and a measure of earnings persistence (*Persistence* – calculated separately for each firm year as the coefficient from an OLS regression of split adjusted annual earnings per share on lagged split adjusted annual earnings per share over years t-5 to t), each separately interacted with our earnings and future returns variables as well as included individually. All variables are winsorized at the 1% and 99% of their distributions. We also include controls for the main variables of interest in Lundholm and Myers (2002), the *AIMR Score*, and in Tucker and Zarowin (2004), *Income Smoothing*. The *AIMR Score* is based on the ratings published in the Report of the Association for Investment Management and Research (AIMR) for the years 1982-1996 and is the same score used in Lundholm and Myers (2002) to test the effect of firm disclosures on FERCs.[20] The sample using the *AIMR Scores* is restricted to 2,769 firms (2,469 firms with non-negative earnings) with available data.

[20] The AIMR score is a ranking of disclosure activity in the industry for a year based on the analysis by committees of analysts, organized by industry, that consider the quality of a firm's annual published information, quarterly and other published information, and investor relations. The result is a ranking of the disclosure activity in the industry for that year. Because the number of firms vary by industry, we convert the AIMR rankings to percentiles: (rank - 1)/(number of firms in the industry -1). This yields the percentile of a firm's rank within its industry-year, where the percentiles range from 0 (for the lowest ranking firm) to 1 (for the highest ranking firm). Because the AIMR score

We follow Tucker and Zarowin and estimate the degree of *Income Smoothing* that a firm has used in the recent past by measuring the correlation between pre-discretionary income and discretionary accruals over a 5 year window ending in year t. Firms with stronger negative correlation are classified as having more smoothing. We begin by estimating a Jones model as modified by Kothari, Leone, and Wasley (2004)

$$Accruals_t = a\,(1/Assets_{t-1}) + b\,\Delta\,Sales_t + c\,PPE_t + d\,ROA_t + \varepsilon_t$$

where accruals, change in sales (data 12), and PPE (data 8) are scaled by beginning of the year total assets (data 6). This equation is estimated cross-sectionally within industry each year for all industries with at least 10 available observations. The error term, ε_t, is the discretionary accruals measure (DA). Pre-discretionary income (PDI) is calculated as the difference between earnings and discretionary accruals.

$$PDI_t = Earnings_t/Assets_{t-1} - DA_t.$$

We then calculate the correlation between PDI_t and DA_t over the 5 years ending in year t, denoted Corr(ΔDAP_t, ΔDPI_t). Finally, as in Tucker and Zarowin, *Income Smoothing* is calculated as the reverse normalized rank of the correlation. That is, the firm with the most positive correlation (the least observed smoothing) will have *Income Smoothing* equal to 0 and the firm with the most negative correlation (most observed smoothing) will have *Income Smoothing* equal to 1.

In addition to all of the above, we include a control for *Number of Analysts* as another control for the information environment of the firm that may be correlated with being a dividend payer. For example, dividend paying firms are generally larger and have more analysts following the firm (as documented in Table 1) which increases the amount of information

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is constructed as a within industry-year comparison of firms' disclosure quality, it does not measure trends in disclosure quality over time, nor is it likely to be affected by changes in mandatory disclosure requirements.

available to the market. *Number of Analysts* is the count of analysts in the consensus earnings per share forecast on IBES for the last period of year t. Observations with no earnings forecasts on IBES have the *Number of Analysts* set to zero.

We conduct our analyses throughout the paper for two samples: one which includes loss firm-years and one which does not. Thus, we do not control for losses here. However, we do control for profitability in general (proxied by *ROA*) as an additional test. Our regression model including the controls is as follows:

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 DP_t + \beta_6 DP_t{*}E_{t-1} + \beta_7 DP_t{*}E_t + \beta_8 DP_t{*}E_{t3} + \beta_9 DP_t{*}R_{t3} + \beta_{10} Control + \beta_{11} Control{*}E_{t-1} + \beta_{12} Control{*}E_t + \beta_{13} Control{*}E_{t3} + \beta_{14} Control{*}R_{t3} + u_t \quad (7)$$

where *Control* is each of the above named control variables. The results of this analysis are presented in Table 6, panels A and B. For both samples (the full sample and the non-negative earnings firm sample) the coefficient on the FERC for the dividend paying firms is significantly positive indicating that the presence of dividend payments is not simply proxying for one of these other factors that affect earnings response coefficients. We note that in the subsample of firms where AIMR data are available the significance of the dividend paying variable interacted with future earnings (the FERC) is reduced to a p-value of 0.07 one-tailed when the AIMR score is included. However, when the sample is restricted to only firm-years with non-negative earnings the FERC is again highly significant at less than 0.05, two-tailed. In sum, even after controlling for previously identified determinants of the current earnings response coefficient and other variables documented to affect the FERC or affect the information environment of the firm, the data are consistent with dividends revealing information about future earnings.[21, 22]

[21] Some of these control variables are included because prior literature has shown the ERC to vary as a function of these variables and generally our ERC results are consistent with the prior literature. For example, growth firms (high market to book ratio) and more profitable firms exhibit larger ERCs in both the pooled and non-negative

6. Conclusions

In this paper, we investigate whether dividends are informative about future earnings; specifically, whether dividends affect the relation between current annual stock returns and future earnings. There is a long line of literature that investigates whether managers use dividends to signal the future prospects of their firm—known as the dividend information content hypothesis. Most interpret and test the information hypothesis by investigating whether changes in firms' dividends translate directly into changes in firms' future earnings; however, the empirical literature offers little support for the hypothesis that current dividend changes signal future earnings changes.

We re-examine the information hypothesis using the approach of Collins, Kothari, Shanken, and Sloan (1994), which employs a regression of current-year stock returns on lagged earnings, current earnings, future earnings, and future returns. We augment their model with an indicator variable for whether the firm is a dividend paying firm in the current year to investigate the difference, if any, in the relation between current stock returns and future earnings (the FERC) between dividend paying and non-dividend paying firms. The key concept underlying this approach is that the greater the association between current returns and future earnings, the more relevant the information about future earnings that is provided by, in our case, dividends, that is not reflected in current earnings.

Our evidence is consistent with dividend paying firms having significantly higher FERCs than non-dividend paying firms. This result is robust to the exclusion of loss firms, suggesting

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earnings samples. Somewhat surprisingly, firms with non-negative earnings exhibit higher ERCs as a function of the standard deviation of earnings. We have no predictions for the effects of the control variables on the FERC and the interaction term is just included for completeness of the model.

[22] The results of the effect of *Income Smoothing* on the current ERC are consistent with those reported by Tucker and Zarowin (2006). *Income Smoothing* increases the current ERC for the pooled sample (which includes loss firm-year observations) but has no significant effect when the sample is restricted to the non-negative earnings observations.

that dividend payments are not simply acting as a proxy for profitability. The results are also robust to the inclusion of other control variables identified in prior literature as affecting the current and/or future earnings response coefficients, suggesting that dividends contain additional information about future earnings beyond current earnings, persistence, predictability, and other factors in the information environment (at least as best we can measure these). We also test whether firms paying a large dividend have a higher FERC than firms paying a small dividend. The data are consistent with large dividend payers having a higher FERC than small dividend payers, suggesting that the magnitude of the dividend is important to the information revelation. We also perform an analysis of firms' FERCs prior to and after dividend initiations for the firms that initiate a dividend during our sample period. The data are consistent with firms' FERCs increasing following a dividend initiation suggesting that the dividend payment provides the market with additional information about future earnings. We view these additional results (inclusion of control variables, small versus large dividend payers, and tests of dividend initiations) as providing support for our main cross-sectional tests and that it is likely not just underlying differences between dividend payers and non-dividend payers that are driving our results.

Our paper is important because what dividends are informative about is elusive and an open-ended question. A greater understanding of the information contained in dividends is warranted due to the inconsistent results in prior literature regarding the dividend information content hypothesis. Because our evidence is consistent with dividend paying firms' future earnings response coefficient being higher than non-dividend paying firms', this provides support for dividends providing the market with information about future earnings beyond information captured in current earnings. However, while we include controls for the obvious

differences between dividend and non-dividend paying firms, the exact economics or determinants of the higher FERC remain a puzzle which we leave for future research.

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Table 1
Descriptive Statistics

Panel A: Dividend Paying Firms

	0.18	0.43	-0.08	0.13	0.36	47,023
Variable	**Mean**	**Std. Dev.**	**25%**	**Median**	**75%**	**N**

Table 1

R_t						
E_{t-1}	0.10	0.08	0.06	0.09	0.13	47,023
E_t	0.11	0.11	0.06	0.09	0.15	47,023
E_{t3}	0.39	0.44	0.18	0.32	0.55	47,023
R_{t3}	0.60	0.97	0.00	0.42	0.96	47,023
SDP_t	0.53	0.50	0.00	1.00	1.00	47,023
LDP_t	0.47	0.50	0.00	0.00	1.00	47,023
SRP_t	0.09	0.28	0.00	0.00	0.00	47,023
LRP_t	0.06	0.23	0.00	0.00	0.00	47.023
Income Smoothing	-0.79	0.33	-0.98	-0.93	-0.76	5,222
Earnings STD	0.05	0.08	0.01	0.03	0.06	46,608
BTM_t	0.89	0.62	0.48	0.75	1.14	46,860
MVE_t	1,433	7,483	43.00	161.26	680.50	47,023
ROA_t	-0.01	0.07	0.02	0.05	0.94	46,608
AIMR Score	0.52	0.31	0.26	0.53	0.80	2,364
Number of Analysts	8.05	7.88	2.00	5.00	12.00	24,459
Persistence	0.42	1.07	-0.06	0.40	0.93	44,369

(continued)
Descriptive Statistics

Panel B: Non-Dividend Paying Firms

Variable	**Mean**	**Std. Dev.**	**25%**	**Median**	**75%**	**N**
R_t	0.22	1.00	-0.30	0.01	0.45	41,289
E_{t-1}	-0.02	0.23	-0.04	0.03	0.07	41,289
E_t	0.01	0.21	-0.04	0.04	0.10	41,289
	0.10	0.72	-0.17	0.10	0.37	41,289

Table 1

E_{t3}						
R_{t3}	0.57	1.61	-0.45	0.08	0.97	41,289
SRP_t	0.05	0.22	0.00	0.00	0.00	41,289
LRP_t	0.04	0.23	0.00	0.00	0.00	41,289
Income Smoothing	-0.62	0.47	-0.95	-0.83	-0.46	8,193
Earnings STD	0.14	0.09	0.03	0.06	0.13	40,616
BTM_t	0.84	0.80	0.31	0.60	1.09	40,146
MVE_t	356	4,837	10.86	33.39	117.95	41,289
ROA_t	-0.01	0.07	-0.04	0.03	0.08	41,289
AIMR Score	0.487	0.32	0.20	0.50	0.75	405
Number of Analysts	4.61	5.20	1.00	3.00	6.00	16,947
Persistence	0.22	1.09	-0.23	0.17	0.65	38,671

(continued)
Descriptive Statistics

Notes to Table 1: Descriptive statistics for firm-years with non-missing data for R_t, E_{t-1}, E_t, E_{t3} and R_{t3} between 1970 and 2004. R_t is the buy and hold return calculated over the fiscal year t. E_t is earnings before extraordinary items (data 18) scaled by market value of equity at the beginning of year t. E_{t3} is the sum of earnings over years t+1, t+2 and t+3 scaled by the market value of equity at the beginning of year t. R_{t3} is the buy and hold return calculated over the 36 months following the end of fiscal year t. DP_t is set equal to 1 if firm pays a regular cash dividend in year t, zero otherwise. LDP_t is set equal to one for firms that pay cumulative regular cash dividends greater than or equal to 33% of cumulative earnings between year t-2 and year t and 0 otherwise. SDP_t is an indicator variable set to one for firm-years in which a dividend is paid but it is not large enough to classify the observation as a LDP_t. Note that in panel B, SDP_t and LDP_t are both zero in all columns so were not included. SRP_t is an indicator variable equal to 1 when firms repurchase shares during year t but do not purchase an amount greater than the median amount of repurchases in our sample. LRP_t is an indicator variable set equal to one when firms repurchase more than 1.9% (the median net repurchase amount) of market value of equity in year t, zero otherwise. We measure repurchases following Fama and French (2001) and Skinner (2006) as the increase in common treasury stock (Compustat #226), if the firm uses the treasury stock method for repurchases. If the firm uses the 'retirement' method instead (which we infer from the fact that treasury stock is zero in the current and prior year), we measure repurchases as the difference between stock purchases (#115) and stock issuances (#108) from the statement of cash flows. If either of these amounts (the change in treasury stock or the difference between #115 and #108) is negative, repurchases are set to zero. *Income Smoothing* is the reversed normalized rank of the correlation between the discretionary accruals proxy and the pre-discretionary income and is estimated over the 5 years ending in year t. *Earnings STD* is the standard deviation of earnings, a proxy for risk. BTM_t is the ratio of common equity to market value of equity, (data 60/data 25*data 199) and MVE_t is the market value of equity at the beginning of year t (data 25*data 199). ROA_t is earnings before extraordinary items (data 18) scaled by beginning of the period total assets (data 6). *AIMR Score* is the normalized rank (by industry and year) of total disclosure score. *Number of Analysts* is the count of analysts in the last mean forecast of annual earnings per share for the fiscal year. *Persistence* is measured separately for each

firm year as the coefficient from an OLS regression of split adjusted annual earnings per share on lagged split adjusted annual earnings per share over years t-5 to t. All variables are winsorized at the 1% and 99% of their distributions.

Table 2
Regression Results of Current Returns on Lagged, Current, Future Earnings and Future Returns

Panel A: Benchmark CKSS Model

$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + u_t$ (2)

		Full Sample		Non-Negative Earnings Sample	
		Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	β_o	0.102	(4.35)	0.099	(3.50)
E_{t-1}	β_1	-0.794	(-16.85)	-0.775	(-10.17)
E_t	β_2	1.107	(26.02)	2.787	(37.13)
E_{t3}	β_3	0.137	(9.86)	0.167	(9.77)
R_{t3}	β_4	-0.077	(-24.49)	-0.095	(-23.59)
Adj. R^2		13.1%		23.7%	
N		88,312		71,782	

Panel B: Test of Dividend Paying Status

$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 DP_t + \beta_6 DP_t{*}E_{t-1} + \beta_7 DP_t{*}E_t + \beta_8 DP_t{*}E_{t3} + \beta_9 DP_t{*}R_{t3} + u_t$ (3)

		Full Sample		Non-Negative Earnings Sample	
		Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	β_o	0.145	(6.11)	0.112	(3.91)
E_{t-1}	β_1	-0.717	(-13.82)	-0.624	(-7.09)
E_t	β_2	1.035	(21.05)	3.130	(28.88)
E_{t3}	β_3	0.095	(5.68)	0.128	(5.67)
R_{t3}	β_4	-0.074	(-20.49)	-0.096	(-18.56)
DP_t	β_5	-0.190	(-30.79)	-0.031	(-3.16)
$DP_t{*}E_{t-1}$	β_6	-0.024	(-0.30)	-0.196	(-1.66)
$DP_t{*}E_t$	β_7	0.516	(7.00)	-1.091	(-8.30)
$DP_t{*}E_{t3}$	β_8	0.246	(11.59)	0.205	(7.53)
$DP_t{*}R_{t3}$	β_9	-0.038	(-7.89)	-0.015	(-2.41)
Adj. R^2		14.3%		24.6%	
N		88,312		71,782	

Notes to Table 2: The above table presents the coefficient estimates and t-statistics from a pooled regression of the benchmark model (Panel A) and the benchmark model augmented with an indicator variable for dividend paying firms (Panel B). We estimate the regression with data from 1970 through 2004 with year dummies (suppressed in table for parsimony) and allowing for clustering of errors within firms and heteroscedasticity. R_t is the buy and hold return calculated over the fiscal year t. R_{t3} is the buy and hold return calculated over the 36 months following the end of fiscal year t. E_t is earnings before extraordinary items scaled by market value of equity at the beginning of year t. E_{t3} is the sum of earnings over years t+1, t+2 and t+3 scaled by the market value of equity at the beginning of year t. DP_t is set equal to 1 if firm is a regular cash dividend payer in year t, zero otherwise. Dividends are ordinary cash dividends calculated using the CRSP monthly tape.

Table 3
Regression Results of Current Returns on Lagged, Current, Future Earnings and Future Returns: Tests of Large Dividend Payers

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 SDP_t + \beta_6 LDP_t + \beta_7 SDP_t * E_{t-1} + \beta_8 SDP_t * E_t + \beta_9 SDP_t * E_{t3} + \beta_{10} SDP_t * R_{t3} + \beta_{11} LDP_t * E_{t-1} + \beta_{12} LDP_t * E_t + \beta_{13} LDP_t * E_{t3} + \beta_{14} LDP_t * R_{t3} + u_t \quad (4)$$

		Full Sample		Non-Negative Earnings Sample	
		Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	β_o	0.141	(5.96)	0.110	(3.85)
E_{t-1}	β_1	-0.739	(-13.93)	-0.643	(-7.18)
E_t	β_2	1.066	(21.10)	3.126	(28.78)
E_{t3}	β_3	0.093	(5.55)	0.132	(5.75)
R_{t3}	β_4	-0.075	(-20.47)	-0.097	(-18.58)
SDP_t	β_5	-0.150	(-22.59)	-0.022	(-2.15)
LDP_t	β_6	-0.202	(-28.70)	-0.037	(-3.53)
SDP_t*E_{t-1}	β_7	0.240	(3.28)	-0.042	(-0.38)
SDP_t*E_t	β_8	0.191	(2.67)	-0.972	(-7.20)
SDP_t*E_{t3}	β_9	0.228	(10.32)	0.155	(5.55)
SDP_t*R_{t3}	β_{10}	-0.031	(-5.80)	-0.007	(-1.13)
LDP_t*E_{t-1}	β_{11}	-0.043	(-0.46)	-0.022	(-0.16)
LDP_t*E_t	β_{12}	0.268	(3.23)	-1.560	(-11.08)
LDP_t*E_{t3}	β_{13}	0.279	(11.97)	0.255	(8.57)
LDP_t*R_{t3}	β_{14}	-0.042	(-7.50)	-0.019	(-2.75)
Adj. R^2		14.3%			24.6%
N		88,312			71,782

Notes to Table 3: The above table presents the coefficient estimates and t-statistics from a pooled regression of the benchmark model augmented with an indicator variable for large dividend paying firms estimated with data from 1970 through 2004 with year dummies (suppressed in table for parsimony) and allowing for clustering of errors within firms and heteroscedasticity. R_t is the buy and hold return calculated over the fiscal year t. R_{t3} is the buy and hold return calculated over the 36 months following the end of fiscal year t. E_t is earnings before extraordinary items scaled by market value of equity at the beginning of year t. E_{t3} is the sum of earnings over years t+1, t+2 and t+3 scaled by the market value of equity at the beginning of year t. SDP_t (*Small Dividend Payment*) is set equal to 1 for firms that pay a dividend in year t, but do not pay a large dividend, and zero otherwise. LDP_t (*Large Dividend Payment*) is set equal to 1 for firms that pay cumulative regular cash dividends greater than or equal to 33% of cumulative earnings between year t-2 and year t and 0 for other firms. Dividends are regular cash dividends calculated using the CRSP monthly tape.

Table 4
Test of the FERC for Dividend Initiators Before and After Dividend Initiation

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 AFTER + \beta_6 AFTER*E_{t-1} + \beta_7 AFTER*E_t + \beta_8 AFTER*E_{t3} + \beta_9 AFTER*R_{t3} + u_t \quad (5)$$

		Non-Negative Earnings Sample	
		Coefficient	t-Statistic
Intercept	β_o	-0.254	(-4.04)
E_{t-1}	β_1	-0.123	(-0.93)
E_t	β_2	1.564	(6.14)
E_{t3}	β_3	0.192	(3.88)
R_{t3}	β_4	-0.098	(-7.03)
AFTER	β_5	-0.031	(-0.93)
$AFTER*E_{t-1}$	β_6	-0.485	(-2.13)
$AFTER_t*E_t$	β_7	0.323	(0.97)
$AFTER_t*E_{t3}$	β_8	0.151	(2.11)
$AFTER_t*R_{t3}$	β_9	-0.026	(-1.20)
Adj. R^2		39.8%	
N		3,069	

Notes to Table 4: The above table presents the coefficient estimates and t-statistics from the benchmark model augmented with an indicator variable for dividend paying firms estimated over data from 1970 through 2004 with year dummies (suppressed in table for parsimony) and allowing for clustering of errors within firms and heteroscedasticity. The sample is made up of firm years surrounding the initiation of a significant ordinary cash dividend. A significant dividend is defined as a dividend initiation where the first dividend is greater than or equal to 8 cents per share (the 25th percentile of dividend initiations). The year of the initiation as well as the one year immediately preceding and following the initiation are excluded from the analysis. The remaining years t-3 through t+3 are included. Firms must have at least one year of available data both before and after the initiation to be included in the analysis. R_t is the buy and hold return calculated over the fiscal year t. R_{t3} is the buy and hold return calculated over the 36 months following the end of fiscal year t. E_t is earnings before extraordinary items scaled by market value of equity at the beginning of year t. E_{t3} is the sum of earnings over years t+1, t+2 and t+3 scaled by the market value of equity at the beginning of year t. *AFTER* = 1 for t+2 and t+3 after the dividend initiation in year t, *AFTER* = 0 for t-3 and t-2. Dividends are ordinary cash dividends calculated using the CRSP monthly tape.

Table 5
Stock Market Repurchases: Non-negative Earnings Sample

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 RP_t + \beta_6 RP_t{*}E_{t-1} + \beta_7 RP_t{*}E_t + \beta_8 RP_t{*}E_{t3} + \beta_9 RP_t{*}R_{t3} + u_t$$

Panel A: Test of Repurchasers versus Non-Repurchasers

		Dividend Paying		Non-Dividend Paying	
		Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	β_o	0.118	(5.85)	0.080	(1.65)
E_{t-1}	β_1	-0.719	(-12.70)	-0.622	(-6.45)
E_t	β_2	2.115	(29.63)	3.274	(26.44)
E_{t3}	β_3	0.266	(19.68)	0.145	(5.57)
R_{t3}	β_4	-0.096	(-24.34)	-0.103	(-16.90)
RP_t	β_5	-0.013	(-1.20)	-0.074	(-3.45)
$RP_t{*}E_{t-1}$	β_6	0.143	(1.22)	0.068	(0.46)
$RP_t{*}E_t$	β_7	-0.107	(-0.70)	-0.798	(-3.67)
$RP_t{*}E_{t3}$	β_8	-0.047	(-1.45)	0.043	(0.96)
$RP_t{*}R_{t3}$	β_9	0.020	(2.57)	0.023	(1.89)
Adj. R^2		37.7%			21.0%
N		44,363			27,419

Table 5
Stock Market Repurchases: Non-negative Earnings Sample

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 SRP_t + \beta_6 LRP_t + \beta_7 SRP_t{*}E_{t-1} + \beta_8 SRP_t{*}E_t + \beta_9 SRP_t{*}E_{t3} + \beta_{10} SRP_t{*}R_{t3} + \beta_{11} LRP_t{*}E_{t-1} + \beta_{12} LRP_t{*}E_t + \beta_{13} LRP_t{*}E_{t3} + \beta_{14} LRP_t{*}R_{t3} + u_t$$

Panel B: Tests of Small and Large Repurchasers

		Dividend Paying		Non-Dividend Paying	
		Coefficient	t-Statistic	Coefficient	t-Statistic
Intercept	β_o	0.119	(5.87)	0.078	(1.63)
E_{t-1}	β_1	-0.719	(-12.70)	-0.622	(-6.45)
E_t	β_2	2.115	(29.62)	3.274	(26.44)
E_{t3}	β_3	0.267	(19.69)	0.145	(5.57)
R_{t3}	β_4	-0.096	(-24.35)	-0.103	(-16.91)
SRP_t	β_5	0.002	(0.18)	-0.057	(-1.70)
LRP_t	β_6	-0.037	(-2.38)	-0.116	(-5.43)
$SRP_t{*}E_{t-1}$	β_7	0.091	(0.60)	0.049	(0.26)
$SRP_t{*}E_t$	β_8	-0.123	(-0.53)	-0.334	(-1.01)
$SRP_t{*}E_{t3}$	β_9	-0.032	(-0.68)	-0.013	(-0.20)
$SRP_t{*}R_{t3}$	β_{10}	0.010	(1.13)	0.029	(1.50)
$LRP_t{*}E_{t-1}$	β_{11}	0.198	(1.23)	0.201	(1.05)
$LRP_t{*}E_t$	β_{12}	-0.065	(-0.41)	-1.224	(-5.36)
$LRP_t{*}E_{t3}$	β_{13}	-0.076	(-2.15)	0.108	(2.58)
$LRP_t{*}R_{t3}$	β_{14}	0.035	(3.48)	0.018	(1.61)
Adj. R^2		37.7%			21.1%
N		44,363			27,419

Notes to Table 5: The above table presents the coefficient estimates from a pooled regression of the benchmark model but replacing the dividend paying status of the firm with indicators for repurchase status of the firm. The regression is estimated with data from 1970 through 2004 with year dummies (suppressed in table for parsimony) and allowing for clustering of errors within firms and heteroscedasticity. SRP_t (*Small Repurchase*) is an indicator variable equal to 1 when a firm has positive net share repurchases shares but does not repurchase shares in a large enough amount to be classified as a large repurchaser during year t. LRP_t *(Large Repurchase)* is an indicator variable set equal to 1 when a firm has net repurchases of greater than 0.13% (the median repurchase amount) of market value of equity in year t. We measure repurchases following Fama and French (2001) and Skinner (2006) as the increase in common treasury stock (Compustat #226), if the firm uses the treasury stock method for repurchases. If the firm uses the 'retirement' method instead (which we infer from the fact that treasury stock is zero in the current and prior year), we measure repurchases as the difference between stock purchases (#115) and stock issuances (#108) from the statement of cash flows. If either of these amounts (the change in treasury stock or the difference between #115 and #108) is negative, repurchases are set to zero. R_{t3} is the buy and hold return calculated over the 36 months following the end of fiscal year t. E_t is earnings before extraordinary items scaled by market value of equity at the beginning of year t. E_{t3} is the sum of earnings over years t+1, t+2 and t+3 scaled by the market value of equity at the beginning of year t.

Table 6
Tests Including Other Potentially Correlated Omitted Variables

$$R_t = \beta_o + \beta_1 E_{t-1} + \beta_2 E_t + \beta_3 E_{t3} + \beta_4 R_{t3} + \beta_5 DP_t + \beta_6 DP_t{*}E_{t-1} + \beta_7 DP_t{*}E_t + \beta_8 DP_t{*}E_{t3} + \beta_9 DP_t{*}R_{t3} + \beta_{10} Control + \beta_{11} Control{*}E_{t-1} + \beta_{12} Control{*}E_t + \beta_{13} Control{*}E_{t3} + \beta_{14} Control{*}R_{t3} + u_t \quad (7)$$

Panel A: Full Sample

Control Variable		*BTM*	*Earnings STD*	*MVE*	*Persistence*	*AIMR Score*	*Income Smoothing*	*Number of Analysts*	*ROA*
Intercept	β_o	**0.327**	**0.140**	**0.136**	**0.140**	**0.114**	**0.220**	**0.154**	**0.065**
E_{t-1}	β_1	**-1.347**	**-0.289**	**-0.598**	**-0.739**	**-0.500**	**-0.796**	**-0.669**	**-0.642**
E_t	β_2	**1.621**	**0.970**	**0.924**	**1.051**	**0.691**	**1.075**	**0.994**	**1.282**
E_{t3}	β_3	**0.092**	**0.061**	**0.099**	**0.104**	0.146	-0.140	**0.080**	**0.081**
R_{t3}	β_4	**-0.101**	**-0.134**	**-0.069**	**-0.076**	-0.062	**-0.065**	**-0.072**	**-0.076**
DP_t	β_5	**-0.229**	**-0.179**	**-0.206**	**-0.192**	**-0.071**	**-0.292**	**-0.196**	**-0.131**
$DP_t{*}E_{t-1}$	β_6	**0.553**	**-0.142**	0.221	0.023	0.043	**0.771**	**0.239**	**0.183**
$DP_t{*}E_t$	β_7	**0.578**	**0.524**	**0.393**	**0.412**	**0.639**	0.304	**0.379**	**-0.358**
$DP_t{*}E_{t3}$	β_8	**0.186**	**0.244**	**0.247**	**0.239**	0.137	**0.564**	**0.222**	**0.277**
$DP_t{*}R_{t3}$	β_9	**-0.034**	**-0.027**	**-0.035**	**-0.036**	-0.009	-0.014	**-0.036**	**-0.038**
Control	β_{10}	**-0.284**	**0.066**	**0.000**	**0.028**	-0.049	-0.085	**-0.002**	**0.591**
Control $*E_{t-1}$	β_{11}	**0.521**	**-0.533**	**-0.688**	0.016	0.042	**-1.452**	**-0.116**	-0.795
Control $*E_t$	β_{12}	**-0.559**	0.134	**0.543**	**0.062**	-0.461	**1.114**	**0.082**	**4.598**
Control $*E_{t3}$	β_{13}	**0.0003**	**0.034**	-0.019	0.001	**0.417**	**0.487**	**0.021**	0.072
Control $*R_{t3}$	β_{14}	**0.046**	**0.085**	-0.016	0.002	0.009	**-0.072**	**-0.002**	0.031

Table 6 (continued)
Tests Including Other Potentially Correlated Omitted Variables

Panel B: Non-Negative Earnings Firm-Years

Control Variable		*BTM*	*Earnings STD*	*MVE*	*Persistence*	*AIMR Score*	*Income Smoothing*	*Number of Analysts*	*ROA*
Intercept	β_o	**0.215**	**0.119**	**0.098**	**0.103**	-0.069	0.060	**0.110**	0.024
E_{t-1}	β_1	**-1.358**	**-0.278**	**-0.447**	**-0.683**	-0.068	**-0.563**	**-0.567**	**-0.415**
E_t	β_2	**4.867**	**2.339**	**3.073**	**3.175**	**3.177**	**4.413**	**3.098**	**2.342**
E_{t3}	β_3	**0.095**	**0.090**	**0.132**	**0.128**	0.058	0.040	**0.110**	**0.155**
R_{t3}	β_4	**-0.123**	**-0.094**	**-0.113**	**-0.097**	-0.057	**-0.084**	**-0.095**	**-0.069**
DP_t	β_5	**-0.081**	**-0.028**	**-0.045**	**-0.037**	0.028	**-0.062**	**-0.040**	**-0.044**
DP_t*E_{t-1}	β_6	**0.446**	**-0.284**	0.149	-0.087	-0.327	0.056	0.086	0.181
DP_t*E_t	β_7	**-1.024**	**-0.955**	**-1.257**	**-1.144**	-0.805	**-1.662**	**-1.215**	**-0.893**
DP_t*E_{t3}	β_8	**0.146**	**0.229**	**0.208**	**0.200**	**0.248**	**0.343**	**0.178**	**0.186**
DP_t*R_{t3}	β_9	-0.012	**-0.018**	**-0.023**	**-0.014**	-0.017	0.021	**-0.013**	**-0.016**
Control	β_{10}	**-0.259**	**0.098**	**0.000**	**0.034**	0.022	-0.019	**-0.002**	**1.534**
Control $*E_{t-1}$	β_{11}	**0.663**	-0.418	**-1.080**	**-0.128**	-0.540	**-1.293**	**-0.130**	**-6.156**
Control $*E_t$	β_{12}	**-1.298**	**0.895**	0.516	0.003	-1.049	-0.118	**0.089**	**3.731**
Control $*E_{t3}$	β_{13}	**0.000**	**0.055**	-0.003	0.021	**0.411**	0.383	**0.025**	0.006
Control $*R_{t3}$	β_{14}	**0.054**	-0.009	**0.052**	0.002	0.013	**-0.083**	**-0.002**	**-0.330**

Table 6 (continued)
Tests Including Other Potentially Correlated Omitted Variables

Notes to Table 6: The above table presents the coefficient estimates from a pooled regression of the benchmark model augmented with an indicator variable for dividend paying firms and various control variables estimated with data from 1970 through 2004 with year dummies (suppressed in table for parsimony) and allowing for clustering of errors within firms and heteroscedasticity. Significance of the coefficient at the 5% level (two-tailed) is indicated by bold type. R_t is the buy and hold return calculated over the fiscal year t. R_{t3} is the buy and hold return calculated over the 36 months following the end of fiscal year t. E_t is earnings before extraordinary items scaled by market value of equity at the beginning of year t. E_{t3} is the sum of earnings over years t+1, t+2 and t+3 scaled by the market value of equity at the beginning of year t. DP_t is set equal to 1 if firms that pay a dividend in year t, zero otherwise. Dividends are ordinary cash dividends calculated using the CRSP monthly tape. Book t*o* market *(BTM)* is book value of equity divided by market value of equity both measured at the end of year t. *Earnings STD* is measured as the within industry fractional rank of split adjusted earnings per share over years t+1 through t+3 scaled by price at the beginning of year t. *Persistence* is measured separately for each firm year as the coefficient from an OLS regression of split adjusted annual earnings per share on lagged split adjusted annual earnings per share over years t-5 to t. *AIMR Score* is the normalized total rank (by industry and year) of total disclosure score. The AIMR sample is restricted to 2,769 firms with available data (2,469 with non-negative earnings) between 1982 and 1996. *Income Smoothing* is the reversed normalized rank of the correlation between the discretionary accruals proxy and the pre-discretionary income and is estimated over the 5 years ending in year t. *Number of Analysts* is the count of analysts used in the calculation of consensus earnings per share forecast for year t in the last statistical period of the year. Observations with no earnings forecast on IBES have number of analysts set equal to zero.