Dividend policy, risk, and catering*

Gerard Hoberg
Robert H. Smith School of Business
University of Maryland
College Park, MD 20742
(301) 405-9685
ghoberg@rhsmith.umd.edu

Nagpurnanand R. Prabhala
Robert H. Smith School of Business
University of Maryland
College Park, MD 20742
(301) 405 2165
nprabhal@rhsmith.umd.edu

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ABSTRACT

Fama and French (2001a) show that the propensity to pay dividends declines significantly in the 1990s, the disappearing dividends puzzle. Baker and Wurgler (2004a, 2004b) suggest that these appearing and disappearing dividends are an outcome of firms "catering" to transient fads for dividend paying stocks. We empirically examine disappearing dividends and its catering explanation through the lens of risk. We report two main findings: (1) Risk is a significant determinant of the propensity to pay dividends and explains up to 40% of the disappearing dividends puzzle; (2) Catering is insignificant once we account for risk. Risk is also related to payout policies in general: it explains the decision to increase dividends and that to repurchase shares. Our findings affirm theories and field evidence on the role of risk in dividend policy and suggest that the 1990s increase in volatility noted by Campbell, Lettau, Malkiel, and Xu (2001) has corporate finance implications.

1 Introduction

In an interesting article, Fama and French (2001a) document a dramatic decline in the propensity to pay dividends over the last two decades. They find that while 66.5% of listed firms paid dividends in 1978, only 20.8% did so in 1999. Part of this decline in dividend paying propensity is explained by the changing characteristics of listed firms. New lists over the last two decades tend to be smaller firms with more growth opportunities, less history of profitability, and more distant payoffs. Such characteristics make firms less likely to be dividend paying. Even after controlling for changing characteristics, however, the propensity of firms to pay dividends still declined over the last two decades, a phenomenon that Fama and French call "disappearing dividends."

The Fama and French (2001a) findings are striking and demand an explanation. Why did dividends lose their popularity between the 1970s and the 1990s? DeAngelo, DeAngelo, and Skinner (2004) show that the dollar supply of dividends, which is concentrated among large payers, has not declined over the period that dividends have disappeared. Thus, the declining propensity to pay dividends mainly reflects the decreasing interest in attaining dividend paying status by smaller firms who initiate and pay small dollar dividends. The puzzle is why the desire of such firms to attain dividend paying status lost popularity between the 1970s and the 1990s.

In a series of two articles, Baker and Wurgler (2004a) and Baker and Wurgler (2004b) – henceforth BW – propose a "catering" theory to explain disappearing dividends. The catering theory hypothesizes that investors lump stocks into dividend paying and non dividend paying categories. The demand for each category of stocks is time varying and is driven by transient fads or sentiment for dividend paying stocks. BW argue that when pro-dividend payer sentiment is high, firms cater to the sentiment by becoming more likely to be dividend paying. Likewise when the fascination for dividend stocks is low, fewer firms become dividend paying.

BW report empirical evidence consistent with the catering hypothesis. They show that a proxy for catering, the valuation differential between payers and non-payers, is related to the time series variation in the propensity to pay dividends. Moreover, catering is economically significant, accounting for a large 30% of the variation in the propensity to pay dividends. BW interpret this evidence in a behavioral finance framework, suggesting that sentiment-driven fads are important determinants of firms' dividend policies.

Our paper investigates the role of a decidedly old-fashioned variable, viz., risk, in explaining the changing propensity to pay dividends. Briefly, we report three major findings. First, risk is an economically and statistically significant determinant of the propensity to pay dividends. It has a marginal effect comparable to or better than that of other determinants of dividend paying status. Second, risk is related to disappearing dividends: it can explain up to about 40% of the Fama and French (2001a) disappearing dividends phenomenon. Finally, catering becomes statistically and economically insignificant once we control for risk. The results are robust across a range of specifications, samples, and tests.

Our empirical results are organized as follows. We begin by replicating the disappearing dividends results of Fama and French (2001a). We find, as do Fama and French, that the propensity to pay declines significantly over time, indicating that our samples match closely. We then add risk as a variable to explain the propensity to pay. Risk is economically and statistically significant. Changing risk by one standard deviation decreases the propensity to pay by upwards of 40%.

Following Fama and French (2001a), we aggregate the cross-sectional logit estimates to assess the time series variation in the propensity to pay. Figure 1 provides a visual summary of the results. The dotted line in Figure 1, which depicts the propensity to pay not adjusted for risk, declines in the 1990s, consistent with Fama and French. The solid line in Figure 1 adjusts the propensity to pay for idiosyncratic risk. In the 1990s, the solid line is shifted upwards towards the X-axis relative to the dotted line, indicating that risk does explain part of the decline in the propensity to pay. The solid line continues to reside below the X-axis in the 1990s. Thus, propensity to pay remains lower in the 1990s relative to prior periods, indicating that risk does not explain the entire disappearing dividends phenomenon. Statistical tests confirm the visual patterns. A 1990s dummy has a lower coefficient and its marginal effect declines by about 40% when we control for idiosyncratic risk. However, the 1990s variable remains significant, suggesting that risk is a significant part of, but not the entire story for disappearing dividends.

We then turn our attention to the catering hypothesis. Like Baker and Wurgler, we find that catering is statistically significant and highly important with an R^2 of nearly 30% when we do not control for risk. However, once we control for risk, catering becomes insignificant. Its R^2 drops to between 1% to 4%. We supplement and affirm these main findings on risk and catering through a range of other tests. We include alternative measures of investor sentiment, analyze subsamples of initiators, and patterns in institutional shareholdings around dividend changes. We broaden our study by examining the role of risk in explaining payout policies in general, including dividend changes decisions by existing payers and share repurchase decisions. Finally, we examine the economic content of the proxy for catering used in BW, the payer-non-payer valuation differential. Traditional risk and cash flow variables are significantly related to the valuation differential, suggesting that the catering proxy does not necessarily have a clean behavioral interpretation.[1]

The rest of the paper is organized as follows. Section 2 reviews the literature on catering and dividends. Section 3 describes the data. Section 4 deals with the Fama and French disappearing dividends phenomenon. Section 5 revisits the catering hypothesis with risk controls. Section 6 presents evidence on robustness. Section 7 broadens the canvas to payout policies in general, including repurchases and dividend payments by payers, who are the dominant suppliers of dividends to the market. The appendix explores the risk and cash flow dimensions of the catering variable, the payer-non-payer valuation differential. Section 8 concludes.

[1]This discussion echoes a similar ambiguity that the literature encounters in interpreting closed-end fund discounts. See Lee, Shleifer, and Thaler (1991), Chopra, Lee, Shleifer, and Thaler (1993a), Chopra, Lee, Shleifer, and Thaler (1993b), Chen, Kan, and Miller (1993a), Chen, Kan, and Miller (1993b), and Elton, Gruber, and Busse (1998).

2 Dividend Literature

Fama and French (2001a) first document the disappearing dividends phenomenon. DeAngelo, DeAngelo, and Skinner (2004) clarify that it is mainly caused by a decline in the probability of being a payer rather than the dollar supply of dividends. Julio and Ikenberry (2004) extend the analysis to more recent periods and find that while dividends begin to reappear, the probability of being a payer is still below historical norms. International evidence on disappearing dividends is provided by Denis and Osobov (2005) for Canada, U.K., Germany, France, and Japan. Denis and osobov also test and find no support for catering.

Our work is related to the broader literature on dividend policy (see Allen and Michaely (forthcoming) for a recent survey). In particular, our work adds to theories, field evidence, and empirical studies that posit a role for risk in setting dividend policy. Field studies using survey data (e.g., Lintner (1956), Brav, Graham, Harvey, and Michaely (2004)) provide compelling evidence that risk can shape dividend policy. These studies suggest that conservatism is a central facet of managers' attitudes towards dividends. In choosing dividend levels, managers pay only what can be sustained by future earnings with a high degree of certainty. This suggests that dividend payments should be inversely related to risk. In the survey, managers also explicitly cite risk as a factor that determines their dividend decisions. As Brav et. al write, one should acknowledge "... the connection managers see between risk reduction and dividend increases." While the reference to conservatism is aimed at the decision to increase dividends by existing payers, it is perhaps even more likely that this conservatism extends to the decision to initiate a dividend program, the focus of our study.

Other arguments further suggest a negative relation between risk and dividends. Textbook descriptions of dividend policy and related studies suggest that managers are averse to cutting dividends. Empirically, stock markets exhibit a negative reaction to dividend cuts or omissions (see, e.g., Michaely, Thaler, and Womack (1995) for evidence on omissions). The negative stock market reaction to dividend omissions or cuts can be interpreted either as a cause for why firms avoid dividend cuts or as its theoretical consequence in a rational expectations world where firms are known to be averse to cutting dividends. In either case, the implication of a perceived penalty for reversing upward dividend changes is that firms with higher risk will avoid raising or initiating dividends, since risky firms are more likely to face a scenario where the decisions need to be reversed.

A role for risk is also suggested by Malkiel and Xu (2003) and Durnev, Morck, and Yeung (2003). Malkiel and Xu argue that greater idiosyncratic risk is related to greater growth in the future, while Durnev et al. argue that it manifests increased firm specific price discovery. Both factors reduce the propensity to pay dividends. A different perspective of risk comes from life cycle theories of firms. If firms become payers when they mature – hence less risky – we should find a negative relationship between risk, now viewed as a proxy for firm maturity, and the propensity to pay. This idea is supported in Venkatesh (1989) for initiations and Grullon, Michaely, and Swaminathan (2002) for dividend increases.

A study of idiosyncratic risk can be motivated from a purely empirical viewpoint. Campbell, Lettau, Malkiel, and Xu (2001) find that idiosyncratic risk has increased in the 1990s, which Pastor and Veronesi (2003) attribute to increased cash flow risk. A related point is made by Fama and French (2001b), who find a secular decrease in the survival rates of new lists over a similar period, indicating that listed firms became more risky in the 1990s. Empirically, it appears that risk increased in the 1990s. Given the additional hypothesis that risk also matters in setting dividend policy, it is certainly plausible that an increase in risk partly explains why dividends disappeared in the 1990s. Whether such a relation exists is, of course, ultimately an empirical issue that we address in this study.

3 Data

We use the sample and methodology of Fama and French (2001a) to estimate the propensity to pay dividends from 1963 through 2000. This sample is constructed as follows. The COMPUSTAT sample for calendar year t, 1963-2000, includes those firms with fiscal year-ends in t that have the following data (COMPUSTAT data items in parentheses): total assets (6), stock price (199) and shares outstanding (25) at the end of the fiscal year, income before extraordinary items (18), interest expense (15), dividends per share by ex date (26), preferred dividends (19), and (a) preferred stock liquidating value (10), (b) preferred stock redemption value (56), or (c) preferred stock carrying value (130). Firms must also have (a) stockholder's equity (216), (b) liabilities (181), or (c) common equity (60) and preferred stock par value (130). Total assets must be available in years t and t-1. The other items must be available in t. We also use, but do not require, balance sheet deferred taxes and investment tax credit (35), income statement deferred taxes (50), purchases of common and preferred stock (115), sales of common and preferred stock (108), and common treasury stock (226). We exclude firms with book equity (BE) below $250,000 or assets (A) below $500,000.

To ensure that firms are publicly traded, the COMPUSTAT sample includes only firms with CRSP share codes of 10 or 11, and we use only the fiscal years a firm is in the CRSP database at its fiscal year-end. The CRSP sample includes NYSE, AMEX, and NASDAQ securities with CRSP share codes of 10 or 11. A firm must have market equity data (price and shares outstanding) for December of year t to be in the CRSP sample for that year. We exclude utilities (SIC codes 4900-4949) and financial firms (SIC codes 6000-6999) from both samples.

3.1 Firm Characteristics

We derive the following variables based on Fama and French (2001a), and COMPUSTAT data items are in parentheses:

- **Book Equity (BE)** = Stockholder's Equity (216) minus Preferred Stock plus Balance Sheet Deferred Taxes and Investment Tax Credit (35) minus Post Retirement Asset (330). If data item 216 is not available, it is replaced by either Common Equity (60) plus Preferred Stock Par Value (130), or Assets (6) - Liabilities (181). Preferred Stock is Preferred Stock Liquidating Value (10) [or Preferred Stock Redemption Value (56), or Preferred Stock Par Value (130)].

- **Market Equity** = fiscal year closing price times shares outstanding.
- **NYP (NYSE size percentile)** = NYSE market capitalization percentile, i.e., the fraction of NYSE firms having equal or smaller capitalization than firm i in year t.
- **M/B (market-to-book ratio)** = book assets minus book equity plus market equity all divided by book assets.
- **Asset growth** = percent growth in assets (6) from year t-1 to year t.
- **Earnings/Assets (profitability)** = earnings before extraordinary items (18) plus interest expense (15) plus income statement deferred taxes (50) divided by assets (6).
- **Dividend Payer** = a firm is a dividend payer in calendar year t if it has positive dividends per share by the ex date (26) in the fiscal year that ends in year t.

3.2 Catering Variables

We derive the following variables based on Baker and Wurgler (2004a):

- **Catering (Dividend Premium)** = We follow BW in constructing this variable. We first compute the book-value-weighted average market-to-book ratio (M/B) for dividend payers, and for nonpayers. The catering incentive is the difference between the natural logarithms of these averages. The market-to-book ratio used here is defined using the calendar-year end stock price, instead of the fiscal-year end price.
- **Nixon Dummy** = A dummy variable equal to one for the years 1972 to 1974, and zero otherwise. This variable controls for the Nixon era dividend-freeze policy noted in Baker and Wurgler (2004a).

3.3 Risk Measures

We use the following measures of risk, using data on the Fama and French (1993) factors ((http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

- **Idiosyncratic Risk** = A firm's idiosyncratic risk is the standard deviation of residuals from a regression of its excess returns (raw returns less the riskless rate) on the Fama and French factors HML, SMB, and MKT. This is our primary proxy for risk.

- **Systematic Risk** = A firm's systematic risk is the standard deviation of the predicted value from the regression used to define idiosyncratic risk.

- **HML Beta** = Firm-specific exposure to the HML risk factor (high book to market ratio firms minus low book to market ratio firms, also known as value minus growth). We compute HML beta using a two-stage process with daily data in order to mitigate the effect of error-in-variables. First, we compute one time series regression for each stock in each year (t-2): daily excess returns (raw return less the riskless rate) are regressed on HML, SMB, and MKT time series. We account for non-synchronous returns by summing three coefficients for each risk factor: 1 day lag, synchronous, and 1 day forward lag. Second, in year (t-1), we group stocks into decile portfolios based on their pre-ranking HML betas. The final HML beta is the time series coefficient generated by regressing the respective daily portfolio returns on the prior year daily HML time series.

- **SMB Beta** = Firm-specific exposure to the SMB risk factor (small firms minus big firms). We compute SMB Beta in an identical fashion to how the HML Beta is computed.

- **MKT Beta** = Firm-specific exposure to the market risk factor (based on the CRSP value weighted index). We compute MKT Beta in an identical fashion to how the HML Beta is computed.

4 Risk and the propensity to pay dividends

As a starting point, we examine whether risk is related to the propensity to pay dividends. Table 1 reports estimates of a logistic regression along the lines of Fama and French (2001a). The dependent variable y_{it} is one if firm i paid a dividend in year t and zero otherwise and the explanatory variables are the market to book ratio, asset growth, profitability, and the NYSE size percentile. As in Fama and French (2001a), reported coefficients and t-statistics are based on the time series of period-by-period cross-sectional coefficients, along the lines of Fama and MacBeth (1973).

Panel A of Table 1 reports the baseline logit estimates. The results are similar to those reported in Fama and French (2001a). Firms with higher market to book ratios, i.e., those with greater expected future growth, more rapid asset growth, greater profitability, and larger firms are more likely to pay dividends. Each of these explanatory variables is significant at better than the 1% level, as reflected in the t-statistics. Panel B adds risk to the baseline Fama and French (2001a) logistic regressions. Our hypothesis is that risk is negatively related to the probability of being a dividend payer. We find that risk matters and its significance does not depend on whether we include or exclude the book to market ratio. We analyze the two specifications because while Fama and French (2001a) include the market-to-book ratio in their models, Baker and Wurgler (2004b) also display a specification without M/B. Panel B also shows that risk does not alter the significance of the other variables, suggesting that it reflects an orthogonal component of the propensity to pay not captured by the other variables. Is risk economically significant? One way of answering this question is to compute the marginal effects based on the estimates in Table 1. We find that changing idiosyncratic risk by one standard deviation shifts the logit probability of being a payer by close to 40%.

Campbell, Lettau, Malkiel, and Xu (2001) point out that idiosyncratic risk has increased in the 1990s. Their evidence is consistent with that reported in Fama and French (2001b) on the decrease in firm survival rates over a similar period. The 1990s also span a period in which the propensity to pay dividends declines. Given that risk is a significant determinant of dividend decisions, it is useful to inquire whether risk also explains the 1990s portion of disappearing dividends. Panel C of Table 1 provides one way of addressing this question. The panel reports a pooled time series cross-sectional logit regression, which includes a dummy for the 1990s period. The first row does not include a proxy for risk. The 1990s variable has a significant negative coefficient, confirming the declining propensity to pay in the 1990s. In the second row, we include a proxy for idiosyncratic risk. In light of Campbell, Lettau, Malkiel, and Xu (2001)'s results, we expect that controlling for idiosyncratic risk should reduce the magnitude of the 1990s dummy coefficient. It does so and reduces the 1990s marginal effect by about 40%, as depicted in Panel C of Table 1.

Figure 1 visually depicts the average propensity to pay dividends with and without controls for risk. As in Fama and French (2001a), the average propensity is the difference between the actual percentage of firms paying dividends in a given year less the expected percentage, which is the average predicted probability from the base logistic regressions in Table 1. The dotted line in the graph confirms that non-risk adjusted propensity experiences a sharp downward trend in the 1990s. After adjusting for idiosyncratic risk, the propensity to pay experiences an upward shift toward the X-axis in the 1990s, indicating that risk explains some part of the decline in the propensity to pay in the 1990s. The 1990s level is still below historical levels, indicating that risk only partly explains why dividend paying status lost its imprimatur in the 1990s.

Because technology firms were pervasive in the 1990s, and are likely to have more idiosyncratic risk, it is natural to ask whether the link between risk and propensity to pay is driven by technology firms. Panel D of Table 1 tests this hypothesis by adding a technology dummy variable to all specifications in Panel C. The technology dummy is one if a firm's SIC code belongs to the technology sector as identified by Loughran and Ritter (2004). The first row of Panel D shows that the technology dummy is significant and negative, so technology firms are less likely to pay dividends. The second row shows that the addition of the technology dummy has little effect on the risk coefficient or its marginal effect. For example, the idiosyncratic risk coefficient is -87 in Panel C, and -85 in Panel D. Moreover, the ability of idiosyncratic risk to explain part the 1990s portion of disappearing dividends is not affected by the technology dummy. For instance, the 1990s marginal effect still declines from -27.2% to -15.5% or -18.9% (depending on specification) in Panel C as compared to -26.2% to -15.0% or -18.2% in Panel D. We conclude that the link between risk and the declining propensity to pay dividends is not driven by technology firms.

To summarize our results thus far, risk is an important determinant of the propensity to pay, and it adds an orthogonal dimension to other variables used in previous studies. This link between dividend policy and risk can be interpreted in a number of ways. If the risk that dividend decisions are conditioned on is cash flow risk, our evidence supports the joint hypotheses that (a) stock-market volatility measures are proxies for the cash flow or earnings risk faced by firms (Pastor and Veronesi (2003)); and (b) dividend policies of firms depend on cash flow risk. This view is interesting in that it implies that the increased idiosyncratic risk in 1990s noted by Campbell, Lettau, Malkiel, and Xu (2001), Campbell and Taksler (2003), and implied by evidence in Fama and French (2001b).

Alternatively, following Durnev, Morck, and Yeung (2003), we could view increased idiosyncratic volatility as evidence of greater firm-specific information generation by the market, which could reduce the demand for the informational role of dividends and hence the propensity to pay dividends. Finally, Malkiel and Xu (2003) argue that idiosyncratic volatility is positively related to future growth prospects, which again reduces the propensity to pay because growing firms are less likely to be dividend payers. These explanations are not mutually exclusive. Disentangling their relative importance is an interesting avenue for further research.

5 Catering Revisited

Baker and Wurgler (2004a) and Baker and Wurgler (2004b) propose a catering explanation for disappearing dividends. This section revisits the catering hypothesis after controlling for risk.

Under the catering view, investors have time-varying fads for dividend paying and non-dividend paying stocks. When dividend paying stocks are in vogue, investors bid them up and the dividend premium (the value differential between payers and non-payers) becomes high. The dividend premium dips when dividend paying stocks fall from favor. The catering explanation for dividend policy posits that firms set their dividend policy to cater to these fads for dividend payers. When the dividend premium is high, firms are more likely to initiate dividends to harvest gains from the fad-driven increase in value of dividend payers. Likewise, when the dividend premium is low, firms have fewer motives to become dividend paying. The empirical implication is that the propensity to pay should be related to the dividend premium. BW find a statistically significant relation between the two consistent with the catering hypothesis. The economic and statistical strength of the catering relation suggest that fads are important drivers of dividend policy.

As Section 4 shows, risk strongly explains the propensity to pay dividends. However, risk is not included as an explanatory variable in BW. In this section, we investigate whether the BW catering results are robust to the inclusion of a risk control. Our strategy is to keep the specification the same as in Baker and Wurgler (2004b), and just add in one extra variable, viz., risk, to isolate the effect of this extra explanatory variable. As in Baker and Wurgler, we estimate the Fama and French (2001a) regressions to infer the propensity to pay. For each firm-year, we then estimate the excess propensity to pay as the actual dividend paying status (zero or one) of a firm minus its predicted probability of being a payer. The average excess propensity to pay across all firms is the economy-wide excess propensity to pay for year t, say p_t. The BW specification regresses year-to-year changes in the economy-wide propensity to pay, $\Delta p_t = p_t - p_{t-1}$, on catering, which is the logarithm of the year $t-1$ book-value-weighted average M/B of dividend payers minus the logarithm of this same quantity for non-payers.

Table 2 reports the results. We run the first stage regressions both with and without M/B in keeping with BW. Each regression incorporates the Nixon-era dividend control dummy as proposed by BW and t-statistics are based on Newey-West standard errors. Panel A of Table 2 is an attempt to replicate the Baker and Wurgler (2004b) results. We estimate the changes in dividend paying propensity *without* controlling for risk in the first stage logit regressions, and we find that catering is statistically and economically significant. It has a t-statistic of 3.52 and it explains an economically significant 29% of the variation in the changes in propensity to pay. The results are similar to those reported by Baker and Wurgler. Panel B reestimates the BW specifications, but now with controls for idiosyncratic risk in the first stage logit regressions. The panel shows that catering loses its significance and the adjusted regression R-squared drops from about 29%, to between –3.8% and +4.3%.

The main conclusion from Table 2 is straightforward: catering explains changes in dividend paying propensity when we do not control for risk, but it is neither statistically nor economically significant once we control for risk. Thus, catering is not empirically robust to controls for risk.

6 Robustness

6.1 Other sentiment indexes

The BW catering variable is the weighted average M/B of payers minus the M/B of non-payers. This is certainly a plausible variable to capture fads. If investors have time varying fads for dividend payers and non-payers, these fads should ultimately be reflected in prices of payers relative to non-payers. For the BW analysis to be correct, however, the relative value of payers versus non-payers should be driven only (or at least mainly) by sentiment. One difficulty is that prices also reflect more neoclassical considerations such as cash flow, risk, and information. In the appendix, we show that the primary catering variable is strongly related to both cash flow and risk. In any event, given the ambiguity in interpreting the payer versus non payer M/B differential, we adopt the route taken by BW by examining broader measures of investor sentiment.

Using broader sentiment measures requires the auxiliary argument that broader sentiment measures also drive the dividend payer/non-payer value differential. Making this assumption, we examine whether the other sentiment indices explain changes in the propensity to pay. Table 3 reports results of this exercise. We follow the same steps as in sections 4 and 5. We first run the Fama and French (2001a) logistic regression, and compute the aggregate propensity to pay across firms. We then regress changes in aggregate propensity to pay on the sentiment indices (rather than on the standard catering variable). Our results are remarkably similar to those in section 5. If we do not adjust for risk, sentiment matters, explaining between 20% and 40% of the changes in the propensity to pay. As before, sentiment does not matter once we control for risk in the stage one logit regressions, as seen in Panel B of Table 3, where the adjusted R squared becomes close to zero.

6.2 Initiation probability

Our next robustness exercise focuses on the subsample of firms that initiate dividends. We can think of firms in year $t-1$ as being composed of payers and non-payers. Changes in dividend paying status can occur because payers omit dividends and become non-payers or because non-payers initiate dividends and become payers. The previous analysis pools both types of firms. This section focuses on the subsample of non-payers who initiate dividends.

Our motivation for examining initiations is straightforward: the predictions of catering appear to be stronger for initiations than for omissions. Catering can have two effects: when dividend premiums are high, it can lead non-payers to initiate, and when dividend premiums are low, it can lead payers to omit dividends. Dividend initiations are associated with positive announcement effects, which would add to valuation gains firms could realize from catering and give additional incentives for non-payers to start paying. On the other hand, the surveys of Lintner (1956) and Brav, Graham, Harvey, and Michaely (2004) find that managers are extremely reluctant to cut dividends, perhaps due to the strong negative reaction associated with dividend cessation. This force acts as a brake on any incentives to cater by omitting dividends when dividends are in disfavor. Thus, catering is likely to have more bite in explaining initiations.

At the beginning of each year t, we identify all firms that do not pay dividends. We first estimate a logit regression for this subsample, in which the dependent variable for firm i is a dummy variable indicating whether firm i started paying a dividend in year t or not. The explanatory variables are those used in Fama and French (2001a) and, as needed, risk. Table 4 reports results using the same Fama and MacBeth (1973) methodology used in Table 1. In Panel A, we report results without a risk proxy. The results are, for the most part, similar to the results on the pay/don't pay regressions of Fama and French (2001a), with one notable exception. We find that asset growth is not significant in regressions that do not include the market-to-book ratio. Otherwise, large firms, profitable firms, and firms with lower growth prospects (M/B ratios) are more likely to initiate dividends.

As before, Panel B shows that risk enters with a negative sign: riskier firms are less likely to initiate dividends. Interestingly, risk subsumes the explanatory power of firm size in the specifications that exclude the market-to-book ratio. This is slightly different from the results in Table 1, where size remains significant even when risk is included in all specifications, albeit with a smaller coefficient and reduced significance. As before, idiosyncratic and systematic risk affect dividends in a similar manner. The important finding in this table is that risk is significantly negatively related to dividend initiation as predicted by conventional descriptions and theories of dividends.

Table 5 reports the second stage regressions where the year-by-year aggregate changes in propensity to initiate dividends are regressed on the catering variable and the Nixon-era dummy. In the baseline specification in Panel A of Table 4 with no control for risk, catering is positive but not significant. In Panel B, we compute initiation propensities adjusted for idiosyncratic risk. Here, the catering variable flips signs and becomes negative. Thus, firms are *less* likely to initiate when the dividend premium is high, exactly the opposite of what the catering hypothesis predicts.

While the results in Panel B of Table 5 are inconsistent with catering, the negative sign of catering does represent an empirical puzzle that demands an explanation. We investigate whether over-differencing explains the result. To motivate the issue, consider the fact that the Fama-French payer/non-payer logit regressions of Section 4 differentiate between payers and non-payers, and this predicts a stock-variable, the propensity to pay. First differences in the probability of being a payer have the interpretation of a flow variable, the change in the propensity to pay. Turning to initiations, the decision to initiate is already a flow variable. Taking differences of the probability of initiation could over-difference when its true time series correlation is less than 1.0. To account for this possibility, we could include the lagged propensity to initiate as an explanatory variable. If overdifferencing occurs, the lagged initiation propensity will have a coefficient greater than zero but less than 1 (if the LHS is the propensity to initiate) or a negative coefficient (if the LHS remains the same). Panel C of Table 5 reports estimates of such a specification. As anticipated, the negative coefficient for catering is now insignificant instead of being negative and significant. The coefficient for lagged initiation propensity is consistent with over-differencing.

Bulan, Subramanian, and Tanlu (2004) investigate the *timing* of dividend initiations using duration models. It is useful to contrast their analysis of initiations with the results in BW, Fama and French (2001a), and the results reported in our paper. A key difference between their analysis and ours is that we include risk while Bulan et al. do not analyze risk. The samples used in Bulan, Subramanian, and Tanlu (2004) are different from those in the other studies. They have 287 dividend initiators, while the other three studies have upwards of 1400 initiations. The attrition is probably because Bulan et al. require accounting and price data for a long period of 6 years surrounding an initiation. The 6-year requirement also leads to a potentially serious survivorship issue that they do not address, viz., the fact that the initiation hazard in their duration model is only observed conditional on other hazards not terminating the firm before initiation. Furthermore, in light of Fama and French (2001b), there could also be a non-stationarity issue because of structural changes in survivorship rates in the 1990s relative to prior periods. Finally, in contrast to the other three studies, Bulan et al. estimate one-on-one logit models that compare each initiator with one non-initiator. One-on-one matched comparisons are clearly not designed to capture aggregate probabilities of paying (and their time series changes), a point emphasized in Palepu (1986). Aggregate changes in the time series are, however, the central focus of our work, BW, and Fama and French.

6.3 Initiation announcement effects and Q

If the propensity to pay reflects firms' attempts to cater to the sentiment-driven demand for dividends, would-be dividend initiators should see an increase in valuation once the decision to initiate is incorporated into prices. We put this proposition to test by examining the announcement effects associated with initiations and the M/B of initiators relative to similar firms that do not initiate.[2]

We estimate initiator announcement effects as the initiator's total return for the three day period beginning one day prior to the dividend announcement, and ending one day after the announcement, minus the CRSP value weighted market return over the same three day period. Brown and Warner (1985) show that this excess return measure is statistically well-specified. We average the announcement effect for all initiators in a given year to produce the average initiation announcement effect for the year. We regress the announcement effect on a dummy indicating whether the catering variable is above the median or not (similar results are obtained when we include the catering variable itself). Table 4 reports the results. The regression coefficient is not significant and the adjusted R-squared is close to zero, suggesting that initiator announcement effects are unrelated to catering. There is no evidence that catering-induced valuation changes are manifest in dividend initiation returns.

It is possible that markets anticipate initiations of would-be initiators several months ahead of the actual initiation date. If so, the price benefits from catering to sentiment could be reflected in prices prior to the 3-day window over which we

[2]The M/B tables containing the detailed results are omitted from this draft but are available upon request from the authors.

compute announcement effects. To test this possibility, we examine the valuation of initiating firms before the initiation date. One issue in comparing initiators and non-initiators is finding a control firm that is similar to an initiator on all dimensions except that it has not initiated dividends. Dehejia and Wahba (1999), Heckman, Ichimura, and Todd (1997b), and Heckman, Ichimura, and Todd (1997a) explain how this can be accomplished while avoiding the dimensionality curse of trying to match simultaneously on a large number of observed characteristics. They show that treatment effects are consistently estimated when one matches a treated entity to an entity that has not been treated but has equal ex-ante probability of being treated. In our context, a match for an initiator should be a non-initiator that has equal ex-ante probability of initiating dividends.

We match each initiator to a non-initiator in the same year with the closest probability of initiation, where the initiation probability is computed as the predicted probability in the first stage logistic regression. Other procedures, such as weighting procedures recommended in the Heckman papers produce similar results. We find that there is a significant difference between the Q of initiators and that of matched non-initiators, but the difference is significantly *negative*. The magnitude of the difference varies based on which variables are used as controls in the first-stage logistic regression. When risk controls are included, the median (mean) difference in Q ranges from about -0.07 (-0.17) to -0.12 (-0.42) and these are statistically significant. The negative difference between the Q of initiators and non-initiators might reflect the fact that initiators have lower growth prospects, or that firms may initiate dividends to minimize the agency costs of free cash flows (Easterbrook (1984), Jensen (1986)). Markets may recognize the (unobserved) lower growth prospects of initiators and drive their Q below that of non-initiators.[3] There is little evidence that markets reward catering firms with higher stock prices.

[3]We use examine an alternative difference-in-difference specification to examine the difference in Q across years in which catering is high or low, where the classifications are based on whether catering is above its median level or not. There is no significant difference across high and low catering years.

6.4 Accounting measures of volatility

Our main analysis employs risk measures based on stock returns. One can view our tests as representing a test of the joint hypothesis that (a) stock return volatility is at least partially a proxy for future cash flow risk; and (b) dividend decisions are related to future cash flow risk. However, one question is whether accounting-based measures of risk that use earnings or cash flows could be used in explaining dividend decisions and catering. We address this issue next.

Using historical earnings measures raises two issues. Unlike prices, which incorporate expectations about the future, accounting based measures such as earnings or operating cash flow are not forward looking, while dividend policies are set by managers with an eye towards the future. A second issue is the potential lack of power. Accounting data are available, at best, on a quarterly basis, so earnings volatility estimates are likely to be imprecise and tests based on these less powerful. Nevertheless, at least at an empirical level, it is useful to investigate what the accounting measures are worth in explaining dividend decisions.

We use a version of the classical Fama and MacBeth (1973) approach to deal with the signal-to-noise issue. We compute individual firm earnings risk as the standard deviation of each firm's 12 quarterly COMPUSTAT earnings (each divided by book value of equity), reported over the three year period ending with the year of the given observation. Quarterly earnings are computed as quarterly data item 15 times quarterly data item 19, and the book value of equity is computed as in Davis, Fama, and French (2000). Each firm's earnings risk is taken as its industry-level earnings risk, where industry-level earnings risk is the natural log of the average individual firm earnings risk across its Fama-French 48 industry group. We find that earnings risk is significantly related to the payer/non-payer status: it has a Fama-Macbeth t-statistic of –14.36 in the first stage Fama and French (2001a) logit regressions. Catering is subsumed when earnings risk is included either singly or in conjunction with return based measures of risk, with t-statistics equal to between 0.35 and 1.34 and R-squareds of under 4%.

7 Payout policy in general

7.1 Dividend Increases

From the results in Table 1, it is evident that risk is an important determinant of whether a firm is a dividend payer or not. We now analyze the relation between risk and the dividend choices of existing payers.

The role of risk in dividend decisions of existing payers is interesting for a number of reasons. One, it takes us outside the domain of dividend initiation decisions, and thus provides "out-of-sample" evidence on the role of risk. Additionally, ongoing payers supply most of the dollar dividends in the market. In our sample, for instance, over 95% of the supply of dividends in year t comes from companies that paid some dividend in year $t-1$. It is thus useful to understand whether risk is important in the bigger picture regarding aggregate dividend supply. Finally, it allows us to verify evidence from surveys such as Brav, Graham, Harvey, and Michaely (2004) and Lintner (1956), which indicate that managers are risk averse towards dividend increases. If managers perceive a "bankruptcy" penalty associated with cutting future dividends, it follows that risk should be negatively related to the probability of a dividend increase.

Table 7 reports estimates of logistic regressions in which the dependent variable is one if a firm announces a dividend increase in the given year, and is zero otherwise. A firm is regarded as announcing an increase in year t if its split-adjusted dividends per share increases in a given year. We keep the independent variables the same as in Table 1. As in those tables, we report results both with and without the market-to-book ratio. The parameter estimates are Fama-MacBeth style time series averages of the cross-sectional coefficients, and t-statistics are based on the standard error of the time series estimates. Once again, we find that risk is a reliable predictor of upward changes in dividends. Thus, risk matters not only in initiations but also in the ongoing payment decisions of payers, who, as DeAngelo, DeAngelo, and Skinner (2004) point out, account for most of the dollar dividend supply in the economy.

7.2 Repurchases

While dividends have been historically favored as a means of returning cash to shareholders, share repurchases have become increasingly important vehicles for returning cash since the 1980s (see, e.g., Jagannathan, Stephens, and Weisbach (2000), Grullon and Michaely (2002), Grullon and Michaely (2003)) As Grullon and Michaely (2002) emphasize, one explanation for the growth in repurchases is the adoption of Rule 10b-18 in 1982, which provides a safe harbor from liability for manipulation under the 1934 Securities Act when an issuer (or an affiliated party) buys shares in the issuer's common stock. Given the importance of repurchases in the last two decades, we investigate whether risk matters in the decision to repurchase shares.

We use two methods for identifying which firms are share repurchasers in a given year. The first method is based on Grullon and Michaely (2002) and employs COMPUSTAT data. We define stock repurchases as annual data item 115 (purchase of common and preferred stock) less the reduction in the value of any preferred stock outstanding (annual data item 56). We define a firm as a repurchaser when this difference is greater than zero. Our second approach is based on share repurchase announcements from SDC Platinum. We define a firm as a repurchaser based this second method if they post a repurchase announcement in the SDC database in the given year. Data required for the first method is available starting in 1971, and data required for the second method is available starting in 1980. We identify 33,655 COMPUSTAT repurchasers between 1970 and 2004, and 6,095 repurchase announcers between 1980 and 2004, using these respective methods.

Table 8 reports Fama and French (2001b) logit estimates predicting the decision to repurchase shares. Given that dividends and repurchases are partial substitutes, the explanatory variables are identical to those used in explaining the payer/non-payer status in Table 1: M/B, asset growth, earnings/assets, NYP (size), and risk. We find that high M/B firms and firms with rapid growth are less likely to repurchase, while profitable firms and large firms are more likely to repurchase. Similar results are obtained whether we use the COMPUSTAT sample of repurchasers or the SDC sample of firms that announce repurchases. Risk matters: riskier firms are less likely to repurchase even after controlling for other determinants of the decision to repurchase.

Our evidence provides one perspective on a debate in the repurchase literature on the degree of substitutability between dividends and repurchases. Jagannathan, Stephens, and Weisbach (2000) argue that repurchases are different. They are associated with transient increases in cash flow while dividends are a means of paying out permanent increases in cash flow. Consistent with this view, they report that dividend payers are more stable than repurchasers. On the other hand, Grullon and Michaely (2003) argue that one must account for the unobserved counterfactual dividend increase that did not occur when firms repurchase shares. Once this is taken into account, repurchases and dividends could still be substitutes. Our evidence suggests that a middle interpretation may be in order. We find that risk *does* matter even in repurchases, but its economic significance is less than it is for dividends changes. We find that a one standard deviation increase in risk decreases the likelihood of repurchases by 3% to 6%. In comparison, a one standard deviation increase in risk decreases the likelihood of dividend increases, initiations, and dividend payments by 14%, 22%, and 46%, respectively.

8 Conclusion

Fama and French (2001a) document that the propensity to pay dividends has changed over time, and firms are less likely to achieve dividend paying status in the 1990s. We find that risk significantly explains the propensity to pay dividends with explanatory power comparable to or better than that of all other variables used to explain the propensity to pay. Such a role for risk is consistent with textbook descriptions of dividend policy, corporate finance theory, and evidence from the field, such as Brav, Graham, Harvey, and Michaely (2004) and earlier work by Lintner (1956). Idiosyncratic risk explains roughly 40% of the 1990s disappearing dividends puzzle noted by Fama and French. Risk also explains initiations, the probability that existing payers will increase dividends, and is related to the probability of undertaking a stock repurchase, although with a smaller marginal effect. In short, risk is related to a broad swathe of decisions on payout policy.

Our tests are not supportive of the catering theory of dividends. Catering matters when we do not control for risk, but once we incorporate a control for risk, it tends to lose significance. Of course, our results do *not* rule out all behavioral explanations for dividends. For instance, behavioral theories could explain changes in risk and its impact on corporate finance decisions. It is quite possible that new tests could identify and disentangle the role of behavioral factors in shaping payout policy from more neoclassical corporate finance explanations.

Finally, our results are also related to a recent and growing literature on the increase in idiosyncratic volatility in the 1990s noted in Campbell, Lettau, Malkiel, and Xu (2001) and Campbell and Taksler (2003). Our results support and complement this literature, by showing that increased idiosyncratic volatility is manifest in corporate finance decisions that theory predicts should be related to risk. This suggests that the increase in volatility noted by Campbell et al. represents an increase in risk as seen by managers setting dividend policy. Disentangling the genesis of the increase in idiosyncratic volatility represents an interesting topic for future research. It would also be interesting to examine whether risk also impacts other corporate finance decisions such as capital structure and compensation.

Appendix A

Risk and cashflow dimensions of catering

The catering variable in Baker and Wurgler (2004a) and Baker and Wurgler (2004b) is the difference in the relative value of dividend paying and non dividend paying firms. Using the dividend premium as a proxy for investor sentiment implicitly assumes that the payer/non-payer value differential is driven by time varying sentiment for payers. It is plausible that sentiment exists in this form, and that its effect is indeed reflected in prices. However, it is also well-known that prices can vary due to reasons other than sentiment. For instance, more conventional neoclassical finance variables such as risk, cash flows, and information might also be relevant. This section confirms that these neoclassical variables indeed matter in explaining the payer/non-payer value differential.

Risk

Table 9 presents a regression of changes in the BW catering variable on the Fama and French (1993) risk factors HML, SMB, MKT, plus momentum (MOM). The results are perhaps not surprising. The market and momentum coefficients are not significant, indicating that these two dimensions equate across payers and non-payers, and therefore do not load on the payer/non-payer differential. However, the other two factors, HML and SMB, are important. They explain a significant 57% of the changes in the catering variable. The regression coefficient on HML is positive, suggesting that the catering variable loads on high book-to-market portfolios. The regression coefficient on SMB is negative, suggesting that the portfolio loads on large firms. Not surprisingly, dividend payers behave like portfolios of large firms with few growth prospects.

Cash Flow

This section analyzes the potential cash flow dimensions of catering. The idea behind this analysis is fairly simple. The relative value of dividend and non dividend paying stocks could reflect information about the future cash flows of these two types of stocks, due to the informational role of prices. For instance, if the cash flows of dividend payers is expected to increase, the market value of dividend payers will increase (before the cash flow increases are realized). The book value will not increase until the cash flow increase is finally realized. Thus, if the cash flows of dividend payers are expected to increase, the M/B of these firms will rise. It is straightforward to extend the argument to the relative value of dividend and non dividend payers: when the difference in M/B ratios increases, it is likely that the relative growth of the expected cash flow to payers will also do so.

Table 10 tests whether the payer versus non-payer value differential predicts the future cash flow growth of dividend payers versus non dividend payers. Panels A and B report regressions in which the dependent variable is one of two proxies for market wide cash flow growth. The independent variable is the time t BW catering variable. In Panel A, the dependent variable is the logarithmic difference between the time $t+1$ dividend supply and the time t dividend supply. Dividend supply is the total dollar dividends paid by all firms in the given year (because only dividend payers pay dividends, it is also accurate to name this the dividend supply of payers). This variable is significantly related to catering at time t with an R-squared of about 40%. Panel B reports a similar regression where the dependent variable is the growth in earnings supply. Again, we observe a significant relation between the two, with an R-squared of roughly 24%. We conclude that the payer versus non-payer valuation differentials do contain a component driven by expected cash flow growth.

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Table 1: Logit models explaining which firms pay dividends

Panels A and B of the table report Fama-MacBeth-style logit regression coefficients with t-statistics in parentheses. One cross sectional regression is computed within each year, and reported coefficients and t-statistics are based on the time-series average of the yearly cross-sectional coefficients. Panel C reports pooled logit regression coefficients with Z-statistics in parentheses. The dependent variable is a dummy variable that is equal to one for dividend paying firms, and is zero otherwise. In all panels, one observation is one firm in one year. The independent variables are as follows. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the daily predicted values from the same regression. A firm's Market to Book is its total assets, less its book value of equity, plus its CRSP market capitalization, all divided by its book value of equity. A firm's Asset Growth is equal to its change in assets from year t-1 to year t, all divided by its assets in year t. A firm's Earnings to Assets ratio is its total earnings divided by its total assets. A firm's NYSE Percentile is the percentile of its market capitalization relative to the market capitalizations of all NYSE firms in the given year. The 1990s dummy is equal to one for all years 1990 and later, and is zero otherwise. The Nixon dummy is equal to one for years 1972 to 1974 and is zero otherwise. The Tech dummy is one if the firm's SIC code is designated a technology firm, as defined by Loughran and Ritter (2004). The marginal 1990s effect is the marginal change in the predicted probability of being a dividend paying firm given that a given firm year observation is from the 1990s.

	Dependent variable = dividend paying firm indicator										
			Fama-French Variables								
Row	Idiosyncratic Risk	Systematic Risk	Market to Book	Asset Growth	Earnings/ Assets	NYSE Percentile	Nixon Dummy	1990s Dummy	Tech Dummy	Obser- vations	Marginal 1990s Effect
				Panel A: Without Risk							
(1a)			–0.778	–0.628	11.247	4.811				98,280	
			(–14.82)	(–3.91)	(9.80)	(43.32)					
(1b)				–0.908	8.140	4.124				98,280	
				(–5.51)	(9.60)	(33.58)					
				Panel B: With Risk							
(2a)	–78.722	–129.04	–0.467	–0.554	7.261	3.296				98,280	
	(–12.78)	(–13.78)	(–9.96)	(–5.13)	(9.85)	(16.55)					
(2b)	–83.138	–139.14		–0.713	5.479	2.860				98,280	
	(–13.20)	(–14.65)		(–6.54)	(8.96)	(15.23)					
				Panel C: Pooled Regressions Including the 1990s Dummy							
(3a)			-0.689	-0.415	7.829	4.691	-0.153	-1.119		98,280	-27.2%
			(-62.69)	(-11.74)	(59.91)	(118.93)	(-4.78)	(-62.98)			
(3b)	-87.181		-0.499	-0.594	5.393	2.736	0.310	-0.630		98,280	-15.5%
	(-91.54)		(-45.06)	(-14.89)	(38.58)	(64.54)	(8.83)	(-32.17)			
(3c)	-68.469	-59.184	-0.492	-0.489	5.582	3.257	0.347	-0.767		98,280	-18.9%
	(-59.19)	(-25.81)	(-43.91)	(-12.17)	(39.66)	(67.86)	(9.80)	(-37.64)			
				Panel D: Pooled Regressions Including the 1990s and Tech Dummies							
(4a)			-0.632	-0.397	7.677	4.637	-0.176	-1.074	-1.079	98,280	-26.2%
			(-57.44)	(-11.28)	(58.40)	(117.00)	(-5.49)	(-59.93)	(-32.88)		
(4b)	-85.174		-0.463	-0.573	5.323	2.736	0.282	-0.607	-0.785	98,280	-15.0%
	(-89.30)		(-41.64)	(-14.51)	(37.90)	(64.29)	(8.03)	(-30.86)	(-22.85)		
(4c)	-67.445	-56.586	-0.458	-0.476	5.510	3.233	0.318	-0.740	-0.740	98,280	-18.2%
	(-58.26)	(-24.57)	(-40.70)	(-11.94)	(38.95)	(67.20)	(8.99)	(-36.15)	(-21.46)		

Table 2: Catering versus the propensity to pay dividends

The table reports OLS time series regression coefficients with t-statistics in parentheses. One observation is one year, and the dependent variable is the propensity to pay dividends. This variable is the difference between the actual fraction of firms paying dividends in a given year less the "expected" number of firms paying dividends. The expected number paying dividends is equal to the average predicted value from the logistic regressions presented in Table 1. The control variables used in this stage one regression are summarized below in the Stage 1 control variables column. The independent variable, catering, is the logarithmic difference in asset-weighted-average market to book for dividend paying firms less that for non dividend paying firms. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the daily predicted values from the same regression. Both types of risk are accounted for in stage one if "risk" is indicaed as a control. The Nixon dummy is equal to one for years 1972 to 1974 and is zero otherwise.

Row	Stage 1 Control Variables	Lagged Catering	Nixon Dummy	Adjusted R-Squared	Observations
	Dependent variable = Change in Propensity to Pay Dividends				
	Panel A: No Controls for Risk				
(1a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile	0.080	–0.000	0.290	38
		(3.52)	(–0.04)		
(1b)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile	0.107	–0.037	0.255	38
		(3.10)	(–4.54)		
	Panel B: Control for Risk				
(2a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	0.014	0.049	-0.028	37
		(0.16)	(1.14)		
(2b)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	0.032	0.029	-0.038	37
		(0.41)	(0.79)		

Table 3: Sentiment versus the propensity to pay dividends

The table reports OLS time series regression coefficients with t-statistics in parentheses. One observation is one year, and the dependent variable is the propensity to pay dividends. This variable is the difference between the actual fraction of firms paying dividends in a given year less the "expected" number of firms paying dividends. The expected number paying dividends is equal to the average predicted value from the logit models presented in Table 1. The control variables used in this stage one regression are summarized below in the Stage 1 control variables column. The independent variable, Closed End Discount, is the closed end mutual fund discount in the previous year. The lagged sentiment index is the Baker and Wurgler sentiment index from the previous year. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the daily predicted values from the same regression. Both types of risk are accounted for in stage one if "risk" is indicaed as a control. The Nixon dummy is equal to one for years 1972 to 1974 and is zero otherwise.

Row	Stage 1 Control Variables	Lagged Closed End Discount	Lagged Sentiment Index	Nixon Dummy	Adjusted R-Squared	Observations
	Dependent variable = Change in Propensity to Pay Dividends					
	Panel A: No Controls for Risk					
(1a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile	0.001		0.007	0.221	38
		(2.11)		(0.62)		
(1b)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile		–0.010	0.013	0.245	38
			(–2.05)	(1.12)		
(1c)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile	0.002		–0.030	0.266	38
		(3.61)		(–1.97)		
(1d)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile		–0.017	–0.020	0.385	38
			(–5.96)	(–1.85)		
	Panel B: Control for Risk					
(2a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	–0.001		0.060	–0.020	37
		(–0.27)		(1.22)		
(2b)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk		0.009	0.055	–0.016	37
			(0.13)	(1.20)		
(2c)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	–0.001		0.040	–0.038	37
		(–0.01)		(0.87)		
(2d)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk		0.004	0.037	–0.037	37
			(–0.23)	(0.88)		

Table 4: Logistic regressions explaining which firms initiate dividends

The table reports Fama-MacBeth-style logit regression coefficients with t-statistics in parentheses. One cross sectional regression is computed within each year, and reported coefficients and t-statistics are based on the time-series average of the yearly cross-sectional coefficients. The universe of firms includes only those who were not paying dividend as of the prior year. The dependent variable is a dummy variable that is equal to one for dividend initiating firms, and is zero otherwise. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the daily predicted values from the same regression. A firm's Market to Book is its total assets, less its book value of equity, plus its CRSP market capitalization, all divided by its book value of equity. A firm's Asset Growth is equal to its change in assets from year t-1 to year t, all divided by its assets in year t. A firm's Earnings to Assets ratio is its total earnings divided by its total assets. A firm's NYSE Percentile is the percentile of its market capitalization relative to the market capitalizations of all NYSE firms in the given year.

	Dependent variable = Dividend initiating firm indicator						
			Fama-French Variables				
Row	Idiosyncratic Risk	Systematic Risk	Market to Book	Asset Growth	Earnings/ Assets	NYSE Percentile	Obser- vations
			Panel A: No Risk				
(1a)			-1.138	0.620	11.645	1.553	43,901
			(-3.72)	(2.18)	(6.27)	(6.95)	
(1b)				-0.034	7.304	0.740	43,901
				(-0.23)	(7.36)	(3.88)	
			Panel B: Include Risk				
(2a)	–44.780	–50.586		–0.092	6.130	0.229	43,901
	(–6.33)	(–3.33)		(–0.45)	(6.42)	(1.06)	
(2b)	-41.733	-40.573	-1.036	0.570	10.094	0.999	43,901
	(-5.83)	(-2.73)	(-3.16)	(1.70)	(5.40)	(4.03)	

Table 5: Catering incentive versus the propensity to initiate dividends

The table reports OLS time series regression coefficients with t-statistics in parentheses. One observation is one year, and the universe of firms includes only those who were not paying dividend as of the prior year. The dependent variable is the propensity to initiate dividends. This variable is the difference between the actual fraction of firms initiating dividends in a given year less the "expected" number of firms initiating dividends. The expected number initiating dividends is equal to the average predicted value from the logistic regressions presented in Table 4. The control variables used in this stage one regression are summarized below in the Stage 1 control variables column. The independent variable, catering, is the logarithmic difference in asset-weighted-average market to book for dividend paying firms less that for non dividend paying firms. The Nixon dummy is equal to one for years 1972 to 1974 and is zero otherwise. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the daily predicted values from the same regression. Both types of risk are accounted for in stage one if "risk" is indicaed as a control. Lagged propensity is the one year lag of the dependent variable.

Dependent variable = Change in Propensity to Initiate Dividends						
Row	Stage 1 Control Variables	Lagged Catering	Nixon Dummy	Lagged Propensity	Adjusted R-Squared	Observations
	Panel A: No Controls for Risk					
(1a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile	0.022	0.028		0.003	38
		(0.23)	(1.00)			
(1b)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile	0.040	0.008		–0.025	38
		(0.41)	(0.27)			
	Panel B: Control for Risk					
(2a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	–0.073	0.061		0.356	37
		(–2.43)	(4.98)			
(2b)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	–0.062	0.048		0.249	37
		(–1.93)	(3.88)			
	Panel C: Control for Risk and Lagged Propensity					
(4a)	$\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	0.004	0.050	0.768	0.861	37
		(0.09)	(3.93)	(8.28)		
(4b)	$\frac{M}{B}$, $\frac{\Delta A}{A}$, $\frac{E}{A}$, NYSE %ile, Risk	0.028	0.037	0.707	0.829	37
		(0.52)	(3.51)	(7.26)		

Table 6: Dividend initiation announcement effects versus catering

The table reports OLS time series regression coefficients with t-statistics in parentheses. The dependent variable is the average annual announcement excess return over all firms announcing new dividends in a given year. For a given firm, its excess announcement return is its total return for the three day period beginning one day prior to the dividend announcement, and ending one day after the announcement, minus the CRSP value weighted market return over the same three day period. Lagged Catering is the logarithmic difference in asset-weighted-average market to book for dividend paying firms less that for non dividend paying firms (from year t-1). The high cater dummy is one if lagged catering is above its median value, and is zero otherwise. The Nixon dummy is equal to one for years 1972 to 1974 and is zero otherwise. t-statistics are adjusted for autocorrelation.

	Dependent variable = Dividend initiation announcement effect				
	Lagged	High Cater	Nixon	Adjusted	Obser-
Row	Catering	Dummy	Dummy	R-Squared	vations
		Panel A: Raw Abnormal Announcement Returns			
(1a)	–0.018		0.001	–0.030	38
	(–0.33)		(0.46)		
(1b)		.001	.005	–0.048	38
		(1.049)	(0.192)		
		Panel B: Normalized Abnormal Announcement Returns			
(2a)	–0.200		0.065	–0.040	38
	(–0.02)		(0.24)		
(2b)		.111	–.001	–0.046	38
		(1.164)	(–.124)		

Table 7: Logit models explaining which firms increase dividends

The table reports Fama-MacBeth-style logit regression coefficients with t-statistics in parentheses. One observation is one firm in one year. We first compute one cross sectional regression for each year, and reported coefficients and t-statistics are based on the time-series average of the yearly cross-sectional coefficients. The universe of firms includes only those who were paying dividend as of the prior year. The dependent variable, the dividend increase dummy, is one in a given year if a firm increased its dividend, and is zero otherwise. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the daily predicted values from the same regression. A firm's Market to Book is its total assets, less its book value of equity, plus its CRSP market capitalization, all divided by its book value of equity. A firm's Asset Growth is equal to its change in assets from year t-1 to year t, all divided by its assets in year t. A firm's Earnings to Assets ratio is its total earnings divided by its total assets. A firm's NYSE Percentile is the percentile of its market capitalization relative to the market capitalizations of all NYSE firms in the given year.

Dependent variable = Dividend increase dummy							
			Fama-French Variables				
Row	Idiosyncratic Risk	Systematic Risk	Market to Book	Asset Growth	Earnings/ Assets	NYSE Percentile	Obser- vations
			Panel A: No Controls for Risk				
(1)			–0.085	0.780	11.945	1.406	45,123
			(–2.17)	(5.08)	(20.82)	(22.83)	
(2)				0.726	11.303	1.375	45,123
				(4.81)	(24.79)	(25.42)	
			Panel B: With Controls for Risk				
(3)	–19.701	–18.713	–0.041	0.756	11.438	1.241	45,123
	(–5.28)	(–1.93)	(–1.04)	(6.20)	(21.99)	(17.58)	
(4)	–20.431	–17.282		0.732	11.238	1.226	45,123
	(–5.24)	(–1.82)		(6.03)	(25.16)	(18.22)	

Table 8: Logit models explaining which firms repurchase shares

The table reports Fama-MacBeth-style logit regression coefficients with t-statistics in parentheses. One cross sectional regression is computed within each year, and reported coefficients and t-statistics are based on the time-series average of the yearly cross-sectional coefficients. The dependent variable is a dummy variable that is equal to one for stock repurchasing firms, and is zero otherwise. In Panel A, stock repurchases are defined as COMPUSTAT item 115 minus COMPUSTAT item 56, and the sample is restricted to the years 1971 to 2004 due to data availability. In Panel B, stock repurchases are defined as announcements from the SDC Platinum database, and the sample is restricted to the years 1980 to 2004 due to data availability. In all panels, one observation is one firm in one year. The independent variables are as follows. A firm's idiosyncratic Risk is the standard deviation of its daily residuals from a regression of its stock return (less the risk free rate) on the three Fama-French factors: HML, SMB, and MKT. A firm's systematic risk is the standard deviation of the predicted value from the same regression. A firm's Market to Book is its total assets, less its book value of equity, plus its CRSP market capitalization, all divided by its book value of equity. A firm's Asset Growth is equal to its change in assets from year t-1 to year t, all divided by its assets in year t. A firm's Earnings to Assets ratio is its total earnings divided by its total assets. A firm's NYSE Percentile is the percentile of its market capitalization relative to the market capitalizations of all NYSE firms in the given year.

			Dependent variable = Dividend increase dummy				
			Fama-French Variables				
Row	Idiosyncratic Risk	Systematic Risk	Market to Book	Asset Growth	Earnings/ Assets	NYSE Percentile	Obser- vations
			Panel A: Repurchases Based on COMPUSAT Data				
(1)			-0.174	-0.524	3.184	0.663	97,431
			(-6.31)	(-8.27)	(9.75)	(3.83)	
(2)	-18.983		-0.132	-0.588	2.477	0.165	97,431
	(-12.09)		(-5.09)	(-8.88)	(7.58)	(1.12)	
(3)		-52.723	-0.125	-0.499	2.719	0.652	97,431
		(-15.78)	(-4.77)	(-8.12)	(8.33)	(3.74)	
(4)	-10.438	-33.922	-0.121	-0.538	2.527	0.351	97,431
	(-6.66)	(-8.82)	(-4.67)	(-8.48)	(7.56)	(2.42)	
			Panel B: Repurchases Based on SDC Platinum				
(5)			-0.346	-0.446	4.257	1.487	65,204
			(-2.90)	(-6.33)	(7.17)	(12.98)	
(6)	-18.039		-0.304	-0.494	3.741	1.000	65,204
	(-8.33)		(-2.63)	(-6.92)	(5.93)	(8.19)	
(7)		-29.239	-0.307	-0.445	4.072	1.458	65,204
		(-4.00)	(-2.88)	(-6.20)	(6.83)	(11.75)	
(8)	-21.716	14.376	-0.307	-0.507	3.759	0.881	65,204
	(-5.91)	(1.34)	(-2.81)	(-8.03)	(5.93)	(5.59)	

Table 9: Time series regressions of changes in catering versus risk factor returns

The table reports OLS time series regression coefficients with *t*-statistics in parentheses. One observation is one year, and the dependent variable is changes in catering (i.e. catering in year t minus catering in year t-1). Catering is the logarithmic difference in asset-weighted-average market to book for dividend paying firms less that for non dividend paying firms. The independent variables include the returns of the three Fama-French factors (HML, SMB, and MKT) plus the momentum factor (MOM).

	Dependent variable = Changes in Catering					
	HML Factor	SMB Factor	MKT Factor	MOM factor	Adjusted	Obser-
Row	Returns	Returns	Returns	Returns	R-Squared	vations
(1)	0.293	–0.509	–0.004	–0.196	0.572	39
	(3.40)	(–5.62)	(–0.05)	(–1.13)		
(2)	0.362	–0.491	0.019		0.554	39
	(4.29)	(–5.51)	(0.30)			
(3)	0.356	–0.484			0.566	39
	(4.45)	(–5.94)				
(4)	0.373				0.190	39
	(3.45)					
(5)		–0.496			0.381	39
		(–5.03)				
(6)			–0.212		0.068	39
			(–2.10)			
(7)				–0.235	0.024	39
				(–1.43)		

Table 10: Changes in dividend and earnings supply versus catering

The table reports OLS time series regression coefficients with t-statistics in parentheses. One observation is one year, and the dependent variable is the change in a measure of aggregate dividend or earnings supply (varies by panel). Changes in Aggregate Dividend supply (Panel A) is the logarithmic difference of the total dollar dividends paid by all firms in year t versus year t-1. Changes in Aggregate Earnings Supply (Panel B) is the logarithmic difference of the total dollar earnings by all firms in year t versus year t-1. The independent variable, catering, is the logarithmic difference in asset-weighted-average market to book for dividend paying firms less that for non dividend paying firms. The Nixon dummy is equal to one for years 1972 to 1974 and is zero otherwise.

	Dependent variable = Various (by Panel)			
Row	Lagged Catering	Nixon Dummy	R-Squared	Obser-vations
	Panel A: Dependent Variable = Changes in Dividend Supply			
(1a)	0.440	0.033	0.403	38
	(3.92)	(0.73)		
(1b)	0.464		0.413	38
	(4.69)			
	Panel B: Dependent Variable = Changes in Earnings Supply			
(2a)	0.335	0.064	0.249	38
	(2.71)	(0.99)		
(2b)	0.381		0.247	38
	(3.32)			

Figure 1. propensity to pay dividends versus time (base propensity and risk adjusted propensity).