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Has the Propensity to Pay Out Declined?

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Abstract

Recent studies document both a significant decline in firms' propensity to pay dividends and a significant increase in firms' propensity to repurchase shares and issue equity over the past 30 years. In this paper we test whether firms' net cash disbursements to equity holders have declined in a pattern similar to firms' propensity to pay dividends. Contrary to the evidence using dividends, we find no evidence that the conditional propensity to distribute net cash to equity holders has declined over the past 3 decades. Surprisingly, we find that, conditional on firm characteristics, net payout yields have been increasing over time.

I. Introduction

Over the past 30 years, public firms in the U.S. appear increasingly reluctant to return cash to their shareholders through dividend payments. For example, Fama and French (2001) show that the proportion of firms paying dividends falls sharply from 1978 to 1999, even after conditioning on firm characteristics. Such a widespread disappearance of dividends might suggest that firms' earnings have become more transitory over time (see Dittmar and Dittmar (2008)). However, DeAngelo, DeAngelo, and Stulz (2006) find that the declining propensity to pay is especially large among firms with high retained earnings. This is surprising given that Almeida and Campello (2010) argue that such firms generally have low external financing costs and a relatively moderate need to hoard cash for investment purposes.

From a capital markets perspective, evidence of a declining propensity to pay dividends raises important questions about the allocation of corporate funds.

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Has the decline in dividends been fully offset by an increase in share repurchases or a decrease in equity issues? Or, alternatively, does the decline in the incidence of dividend payments reflect a broader shift in the pattern of net cash exchanges between firms and shareholders? If it does, then the unexplained, large-scale disappearance of net payouts represents a significant puzzle in corporate finance. In this paper we test whether firms' net cash disbursements to equity holders have declined in a pattern similar to firms' propensity to pay dividends.

Theoretically, investors should be more concerned about net capital market flows than about the amount of cash distributed through any particular channel. For example, in Miller and Rock's (1985) signaling model, investors infer the firm's level of earnings by observing the firm's net dividends (dividend payments minus additional funds raised). Moreover, agency theories such as the free cash flow hypothesis (e.g., Jensen (1986)) imply that net payouts are critical because excess cash declines only when firms make positive net cash disbursements to investors.

Boudoukh, Michaely, Richardson, and Roberts (2007) illustrate the value in focusing on net payouts when examining the time-series behavior of corporate payout policy in the U.S. They show that the net cash flows to shareholders are more informative about asset prices than any particular form of payout alone. Given this evidence suggesting that what matters to shareholders is the net amount of cash that they receive from the firm, this paper focuses on the time series of net payouts rather than on the time series of dividends.

It is possible that identifying firms that pay dividends and firms with positive net payout would produce nearly the same classifications in the data. Empirically, we show that this is not the case. We find that, at any given time, a significant number of firms classified as nondividend payers are actually positive net payers and a significant number of firms that are classified as dividend payers are actually negative net payers. Furthermore, we find that this difference in classification is higher for firms with relatively high retained earnings. This is significant because the disappearing dividends puzzle is most severe for these firms, as shown by DeAngelo et al. (2006).

Since our net payout indicator does lead to a significantly different classification of firms that pay, we examine the extent to which net payout behavior trends over time. Consistent with the evidence in Fama and French (2001), we find that the unconditional proportion of net payers drops from approximately 63% in the 1970s to 30% in the 2000s. These results are also broadly consistent with recent studies by Skinner (2008) and Grullon and Michaely (2002), who show an increasing substitution from dividends to share repurchases, but still an overall decline in the propensity to pay. Thus, despite the fact that firms substitute repurchases for dividends and recycle equity, the disappearing payout puzzle documented by Fama and French is not resolved simply by broadening the definition of payout to a measure of net payout.

We then test the hypothesis that the *conditional* net propensity to return cash to shareholders has remained constant over time. Specifically, we use the framework in Fama and French (2001) and DeAngelo et al. (2006) to estimate both actual and expected payers, focusing instead on the time-series behavior of firms with positive net payout. Not surprisingly, many of the firm characteristics

shown to predict dividend payment also predict positive net payout (e.g. Fama and French (2001), DeAngelo et al. (2006), and Hoberg and Prabhala (2009)). Importantly, we find that the conditional propensity to pay out has been relatively constant over the past 30 years. That is, after controlling for firm characteristics, we find that firms are as likely to be net payers in the 2000s as they are in the 1970s. These results are consistent across a number of alternative methods of measuring payouts and different econometric specifications.[1]

Finally, we also examine the time-series behavior of payout *yields*. We find that the average dividend yield and the average net payout yield experienced a significant decline after the 1970s. *Conditional on changes in firm characteristics*, though, actual net payout yields have been *increasing* relative to expected net payout yields. This finding suggests that, given the changes in firm characteristics, corporations are currently distributing more net cash to their shareholders than in the past.

The remainder of the paper is as follows. Section II describes the sample selection procedure, defines the variables, and provides summary statistics. Section III discusses the importance of measuring net payouts. In Section IV we examine the time-series behavior of the unconditional propensity to pay. Section V examines whether, after controlling for changes in firm characteristics, the proportion of firms making net payments to shareholders has been declining over time. Section VI examines the propensity to pay in terms of payout levels. Section VII presents concluding thoughts.

II. Sample and Data

Our sample selection procedure closely follows that of DeAngelo et al. (2006). We select firms that: i) are domestic firms present on both the Center for Research in Security Prices (CRSP) and Compustat databases; ii) are not utilities or financials (Standard Industrial Classification (SIC) codes 4900–4999 or codes 6000–6999); iii) are publicly traded on the NYSE, NASDAQ, or AMEX; iv) have CRSP codes 10 or 11; and v) have available data on dividends and earnings. These selection criteria generate a sample of 136,308 firm-year observations from 1973 to 2006. On average, we have 4,009 firms in our sample each year. The highest number of firms is 5,598 in 1997, and the lowest is 3,030 in 1973.

To control for the effect of firm characteristics on the propensity to pay, we focus on the following variables in our main analyses:

i) Firm size (NYE): This variable is equal to the percentile in which the firm falls on the distribution of equity market values for NYSE firms in year t.[2]

[1] We also replicate all of our tests using net payments to all owners of the firm (dividends plus repurchases minus equity issues plus debt repayments minus debt issues). Our main findings (not reported in a table) are qualitatively unchanged by this broader definition of total capital market net payout.

[2] Following Fama and French (2001) and DeAngelo et al. (2006), we use the NYSE percentile breakpoints as a proxy for size to mitigate the effect of the natural growth in firm size over time. However, the use of alternative measures of size such as the logarithm of the market value of equity (MVE) does not affect any of our empirical results.

ii) Market-to-book ratio (M/B): This variable is defined as the ratio of firm value to the book value of total assets (Compustat item 6), where firm value is measured as the MVE (Compustat item 25 $\times$ Compustat item 199) plus the difference between total assets and total common equity (Compustat item 60).

iii) Return on assets (ROA): This variable is computed as the operating income before depreciation (Compustat item 13) scaled by the book value of assets (Compustat item 6).

iv) Sales growth rate (SGR): This variable is computed as the annual percentage change in total sales (Compustat item 12).

v) Volatility (VOL): This variable is computed as the annual standard deviation of daily stock returns.

vi) Retained earnings to total assets (RE/TA): This variable is equal to retained earnings (Compustat item 36) scaled by the book value of assets (Compustat item 6).

vii) Firm age (AGE): Following Fink, Fink, Grullon, and Weston (2010), we define age as the number of years since a firm's founding, incorporation, or listing date (whichever is earliest).[3] It is important to note that our methodology differs from the common alternative, which is to use the date of a firm's earliest occurrence on CRSP. Using the first CRSP appearance can induce a significant bias because the average age of a firm at its initial public offering (IPO) date has fallen dramatically over the last 40 years.

Table 1 contains descriptive statistics for our entire sample.[4] While summary statistics over such a long time period are hard to interpret, it is useful to benchmark the magnitude of some sample characteristics. For example, most firms have a reasonable M/B ratio between 1 and 2, and the median ROA and SGR are both in the range of 11%–12%. The average firm in our sample is 28.6 years old, though there are many young firms. Given that the median age is 16 years (in a 30-year sample), the declining propensity to pay dividends may be tied to the increase of listings by small, less profitable firms with more investment opportunities than the typical listed firm at the beginning of the sample. In general terms, our sample of firms represents the lion's share of the whole market, and most of the firm-specific data that we collect are consistent with past studies in terms of means, medians, standard deviations, etc.

[3]We rely on a variety of sources for this data. Some data are graciously provided by Jovanovich and Rousseau (2001) and Loughran and Ritter (2004). In addition to these samples, we have filled in/supplemented this database using incorporation and founding dates collected from various issues of the *Mergent Industrial Manual and News Reports*, *Mergent Bank and Finance Manual*, and *Mergent OTC Manual*, all published by Moody's Investors Service.

[4]To mitigate the effect of outliers, all of the control variables are Winsorized at the 1% and 99% levels. However, our empirical results remain virtually the same if we do not Winsorize the data.

TABLE 1

Summary Statistics

Table 1 reports summary statistics for various firm characteristics based on annual firm-year data over the sample period 1973–2006. The sample consists of firms that: i) are present on both CRSP and Compustat; ii) are not a utility (SIC codes 4900–4999) or a financial firm (SIC codes 6000–6999); iii) are publicly traded on the NYSE, NASDAQ, or AMEX; iv) have securities with CRSP codes 10 or 11; v) are incorporated in the U.S. as per Compustat; and vi) have available data on dividends and earnings. NYE is equal to the percentile in which the firm falls on the distribution of equity market values for NYSE firms in year *t*. M/B is equal to the ratio of firm value to the book value of total assets, where firm value is measured as the market value of equity plus the difference between total assets and total common equity. ROA is equal to the operating income before depreciation scaled by the book value of assets. SGR is equal to the annual percentage change in total sales. AGE is defined as the number of years since the firms' founding, incorporation, or listing date, whichever is earliest. VOL is equal to the annual standard deviation of daily returns. RE/TA is equal to the ratio of retained earnings to total assets. To mitigate the effect of outliers, all of the variables are Winsorized at the 1% and 99% levels.

Firm Characteristics	Mean	SD	25%	50%	75%
NYSE equity value percentile (NYE)	0.22	0.26	0.02	0.09	0.34
Book-to-market ratio (M/B)	1.83	1.57	0.98	1.30	1.98
Return on assets (ROA)	0.07	0.22	0.04	0.12	0.18
Sales growth rate (SGR)	0.24	0.70	–0.01	0.11	0.27
Firm age (AGE)	28.63	31.80	7.00	16.00	38.00
Volatility (VOL)	0.04	0.03	0.02	0.03	0.05
Earned equity to total assets (RE/TA)	–0.18	1.26	–0.12	0.16	0.36

III. The Characteristics of Net Payout

A. Measuring Net Payouts

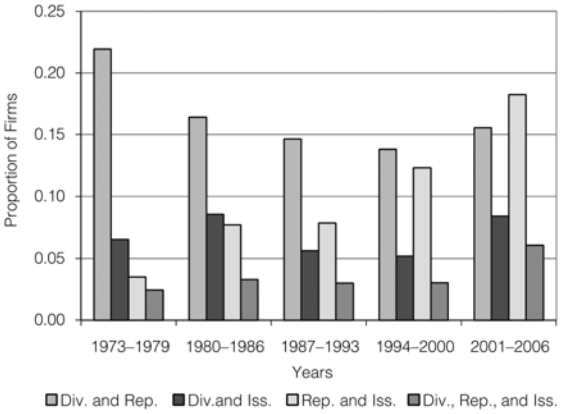
Different channels of equity flows (both into and out of the firm) are often analyzed in isolation, rather than taken as a whole. However, analyzing a single component provides a potentially incomplete picture of a firm's net payout behavior because many firms raise and distribute capital at the same time. To illustrate this issue, Figure 1 depicts, for 5 different subperiods, the fraction of firms that i) both pay a dividend and repurchase shares, ii) both pay a dividend and issue stock, iii) both repurchase shares and issue stock, and iv) pay a dividend, repurchase shares, and issue stock. Consistent with the idea that equity flows occur simultaneously through multiple channels, this figure shows that a large fraction of dividend paying and repurchasing firms also raise capital in the same year. Further, it shows that a nontrivial fraction of firms simultaneously pay dividends, repurchase shares, and issue equity. These findings highlight the importance of focusing on net payouts because it is not clear a priori whether a firm with positive dividends or repurchases is indeed raising funds or returning cash to the capital markets.

Following Fama and French (2001), we classify a firm as a dividend payer if the total amount of dividends paid by the firm during a given fiscal year (Compustat item 21) is greater than 0. Additionally, we classify a firm as a *net* payer if the net payout of the firm (dividends plus share repurchases minus equity issues) during a given fiscal year is greater than 0. Unfortunately, there is no empirical consensus regarding how share repurchase activity should be measured. For this reason, we use several alternative measures of repurchases. Following Grullon and Michaely (2002) and Boudoukh et al. (2007), we construct our main proxy of net payouts using data on share repurchases and equity issues from the flow of funds statement. Specifically, we define net payout as total dividends plus purchases of common and preferred stock (Compustat item 115) minus sales of

FIGURE 1

Activity in Multiple Payout Channels

Figure 1 presents the average proportion of firms in our sample that i) pay a dividend and repurchase shares in the same year; ii) pay a dividend and issue equity in the same year; iii) repurchase shares and issue equity in the same year; and iv) pay a dividend, repurchase shares, and issue equity in the same year. These proportions are presented over 5 different subintervals spanning the period 1973–2006.



common and preferred stock (Compustat item 108). One advantage of this proxy over alternative measures is that we do not need to make assumptions regarding the prices at which the company issues or buys back shares because equity issues and share repurchases are expressed in total dollar amounts.

For robustness, we consider 2 alternative definitions of net payout using other approaches for measuring net repurchases. Following Stephens and Weisbach (1998), we also use the changes in shares outstanding reported by CRSP. In this approach we define the number of shares acquired (issued) by the firm as the decrease (increase) in the number of shares outstanding over a quarter. We adjust the number of shares outstanding for stock splits, stock dividends, and other events using the cumulative factor to adjust shares. We do not know, however, at what prices the firm acquired or issued the shares. In light of this missing information, we multiply the change in the number of shares by the average share price (scaled by the cumulative factor to adjust prices) over the same quarter to estimate the quarterly amount of net equity issues (equity issues minus share repurchases). Finally, we calculate an annual measure of net equity issues by aggregating the quarterly data over a year. Our alternative measure of net payout is thus equal to total dividends minus the annual net equity issues.

As a second alternative measurement scheme for net payout, we follow the methodology in Fama and French (2001) and use the change in the dollar value of Treasury stock (Compustat item 226) as a proxy for net share repurchases. Using this measure, we define net payouts as total dividends plus the change in the dollar value of Treasury stock. If the firm uses the retirement method, we then use the difference between share repurchases and equity issues from the flow of funds statement as a proxy for net repurchases (see Fama and French for a detailed discussion of this issue). Although this is an intuitive approach, it has one serious limitation: Data on the change in the dollar value of Treasury stock are only

available after 1982. Thus, it is impossible for us to determine using this measure whether a firm is a net payer before 1983. This is a significant issue because for our main analysis we need to estimate the parameters of logit regressions modeling the probability of being a net payer over the 1970s. As a compromise, we use our main proxy for net payouts (based on the flow of funds statement) to estimate the parameters of the logit regressions during the preestimation period and use the proxy for net payouts based on the changes in the dollar value of Treasury stock during the postestimation period.

B. The Importance of Examining Net Payouts

It is possible that dividend status serves as a very accurate proxy for net payout status. If this is the case, then there is little scope for an analysis of net payout to contribute significantly to our understanding of firms' payout policy relative to existing research. Table 2 displays the degree of concordance between the dividend payment dummy variable and the positive net payout dummy variable, where net payout is measured using information from the flow of funds statement.[5] For about 83% of the firm-year observations where the dividend indicator is 0, the net payout indicator is also 0. But this means that 17% (almost 13,000 observations) of the firms classified as nondividend payers actually had positive net payout to shareholders once repurchases and equity issues are taken into account. Conversely, 4,755 firm-year observations that were classified as positive dividend payers actually had nonpositive net payout. This represents about 11% of the positive dividend dummy observations.

TABLE 2

The Congruence between the Propensities to Pay a Dividend and to Pay Out Cash on Net

Table 2 reports the number and fraction of nondividend payers with nonpositive and positive net payouts and the number and fraction of dividend payers with nonpositive and positive net payouts. The dividend dummy variable is equal to 1 if the total amount of dividends paid by the firm during a given fiscal year is positive, and 0 otherwise. The positive net payout dummy variable is equal to 1 if the net payout of the firm (dividends plus share repurchases minus equity issues) during a given fiscal year is positive, and 0 otherwise. Net payout is computed using information from the flow of funds statement. Results for the alternative net payout measures are very similar and are omitted in order to conserve space.

	Positive Net Payout Dummy		
	0	1	Total
Dividend Dummy			
0	62,254 (82.97%)	12,781 (17.03%)	75,035 (100%)
1	4,755 (11.07%)	38,196 (88.93%)	42,951 (100%)
Total	67,009 (56.79%)	50,977 (43.21%)	117,986 (100%)

In Table 3 we dig deeper into the difference between measuring net payouts and dividends. Specifically, we identify all firm-year observations where the

[5]Results for the alternative measures of net repurchases are very similar and are omitted in order to conserve space.

dividend payment status does not reflect the net payout status of a firm and report averages across 3 subperiods and across retained earnings quintiles. A difference in classification occurs when a nondividend payer pays out on net or when a dividend payer does not pay out on net. Panel A reports results using our main proxy for net payout, based on repurchase and issuance data from the flow of funds statement. Panels B and C report results for alternative net payout measures based on changes in shares outstanding reported by CRSP and changes in the dollar value of Treasury stock, respectively.

TABLE 3

Differences in Classification

Table 3 reports the total fraction of observations in which the dividend dummy variable does not reflect the net payout status of a firm across 3 subperiods and across retained earnings quintiles. A difference in classification occurs when a nondividend payer has a positive net payout or a dividend payer has a nonpositive net payout. A firm is classified as a dividend payer if the total amount of dividends paid by the firm during a given fiscal year is greater than 0. A firm is classified as a net payer if the net payout of the firm (dividends plus share repurchases minus equity issues) during a given fiscal year is greater than 0. In Panel A, net payout is computed using information from the flow of funds statement. In Panel B, net payout is computed using the (adjusted) change in shares outstanding reported by CRSP, multiplied by the average share price. In Panel C, net payout is computed using the change in the dollar value of Treasury stock as a proxy for net share repurchases. See Section III of the paper for detailed discussion of these 3 alternative net payout measures.

Retained Earnings Quintile	Full Sample	1980–1988	1989–1997	1998–2006
Panel A. Flow of Funds Information				
1	0.09	0.10	0.08	0.08
2	0.15	0.18	0.13	0.15
3	0.20	0.21	0.18	0.21
4	0.22	0.19	0.21	0.25
5	0.19	0.13	0.18	0.26
Panel B. Changes in CRSP Shares				
1	0.08	0.08	0.05	0.09
2	0.16	0.17	0.13	0.17
3	0.20	0.18	0.17	0.23
4	0.19	0.16	0.17	0.25
5	0.16	0.09	0.14	0.23
Panel C. Changes in Treasury Stock				
1	0.11	0.11	0.08	0.12
2	0.16	0.17	0.12	0.19
3	0.16	0.15	0.13	0.21
4	0.15	0.12	0.13	0.21
5	0.12	0.07	0.11	0.18

Two patterns emerge from the data. First, the difference in classification occurs most frequently in the 3 highest retained earnings quintiles. This is intuitive, since firms with little retained earnings are often relatively young firms that are unlikely to be returning cash to investors under any definition of payout. Second, for the 2 highest retained earnings quintiles, the difference in classification increases over time. This finding is consistent with the substitution hypothesis studied by Grullon and Michaely (2002) and Skinner (2008). Firms with high retained earnings have cash available to return to investors. Early in our sample period, dividends effectively served as the sole channel for returning cash to investors. Later in our sample, repurchases became available as an additional channel for distributing cash, contributing to a more substantial divergence in payout classification between the 2 measures. Comparing results across the 3 panels of

Table 3, these patterns are highly robust to the choice of measurement scheme for net payout.

It is worth emphasizing that discordance between dividend status and net payout status does not solely result from the substitution phenomenon. Equity issuance patterns also contribute significantly to differences in classification status. Consistent with evidence in Weld (2008), we find that a nontrivial fraction of firms are "recyclers": That is, they actually issue equity while paying a dividend or repurchasing equity (or both). Panel A of Table 4 gives the fraction of firms in the various retained earnings quintiles that i) pay a dividend or repurchase shares and ii) simultaneously issue equity in an amount that exceeds the total payout in dividends and repurchases. For firms in the middle 3 retained earnings quintiles, at least 10% of the firms are recyclers, and this holds true for each of the 3 subperiods examined. These firms would be classified as payers whether we used a dividend-only classification or a total payout classification (dividends plus repurchases). On net, however, they are raising cash from shareholders during the period. Panel B indicates that, even for firms that are in fact positive net payers, a large fraction of payout is recycled. For example, firms in the lowest retained earnings quintile fund (on average) approximately 50% of their repurchases and dividends through equity issues. The fraction of payout funded by equity issues increases from the first to the last subperiod for all of the retained earnings quintiles.

TABLE 4

Equity Recycling

Table 4 presents the proportion of "recycling" firms in our sample, where recycling refers to the practice of simultaneously issuing equity and either paying dividends or repurchasing shares (or both). Panel A presents the proportion of firms that pay a dividend or repurchase shares and simultaneously issue equity in excess of the value of total payout (dividends plus repurchases). Panel B depicts the proportion of total payout that is recycled. This is computed for each firm as the positive level of payout net of equity issues (1 – (max [0, dividends + repurchases – equity issues])/(dividends + repurchases)). Net payout is computed using information from the flow of funds statement. Results for the alternative net payout measures are very similar and are omitted in order to conserve space.

Retained Earnings Quintile	Full Sample	1980–1988	1989–1997	1998–2006
Panel A. Proportion of "Recycling" Firms				
1	0.09	0.10	0.06	0.12
2	0.13	0.15	0.12	0.15
3	0.13	0.15	0.14	0.16
4	0.10	0.10	0.11	0.14
5	0.04	0.04	0.05	0.06
Panel B. Proportion of Total Payout That Is Recycled				
1	0.52	0.58	0.55	0.65
2	0.39	0.35	0.49	0.51
3	0.35	0.36	0.42	0.44
4	0.27	0.26	0.31	0.39
5	0.18	0.14	0.21	0.29

The results presented in this section highlight the importance of examining net payout patterns over time. Since sorting firms according to net payout status versus dividend status leads to substantially different classifications, and since this difference increases through time, studying net payout patterns may lead to new insights regarding corporate payout policy.

IV. Variation in the Propensity to Pay

We first consider the time-series behavior of the *unconditional* propensity to pay out. Given that the composition of publicly listed firms has shifted dramatically over the past 30 years toward firms that are younger and less profitable, it is natural to expect that the time series of the fraction of firms returning cash to shareholders trends downward over this period. Since small, young firms are more likely to be financially constrained (e.g., Fazzari, Hubbard, and Petersen (1988)), they have an incentive to save most of their earnings to internally finance their investment projects. Consistent with this view, Almeida, Campello, and Weisbach (2004) show that financially constrained firms (e.g., small firms) retain a larger fraction of their incremental cash inflows than do unconstrained firms.

To investigate the unconditional trend in payout policy, we show in Figure 2 the fraction of firms in each year that had either i) positive dividend payout or ii) positive net payout (dividends plus repurchases less equity issues). Clearly, whether considering dividends or net payout, the *unconditional* propensity to pay out cash declines over the period from the 1970s through the 2000s. With respect to dividend payout, Figure 2 replicates the unconditional pattern documented by Fama and French (2001). The time series for the propensity to pay out on *net* illustrates that, unconditionally, shifting to a net payout measure "explains" only about one-quarter of the decline in payout observed using dividends alone as a measure of payout.[6]

FIGURE 2

Payout Incidence over Time

Figure 2 presents the average proportion of firms i) paying a dividend; and ii) with positive net payout over 5 different subintervals spanning the period 1973–2006. Net payout is defined as dividends plus total repurchases less equity issues. Net payout is computed using information from the flow of funds statement as described in detail in Section III.

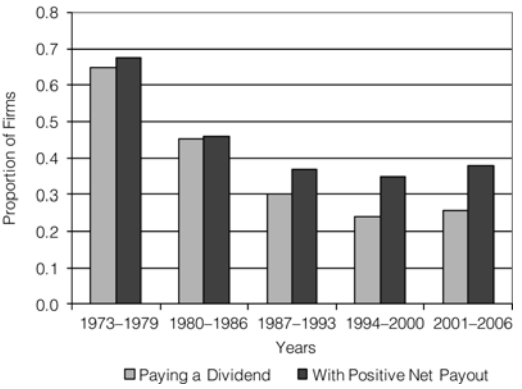


Figure 2 also demonstrates that a substantial portion of the overall decline in propensity to pay, whether measured using dividends or net payout, occurs

[6]These results are broadly consistent with Skinner (2008), who finds a modest increase in the fraction of firms that do not pay dividends or repurchase shares, although his sample starts in 1980. This misses much of the relatively large drop in *dividends* from the late 1970s to the early 1980s, which is not the focus of Skinner's paper.

between the 1970s and 1980s. While safe harbor provisions related to share repurchases were enacted in 1982, repurchasing activity accelerated only gradually until the mid 1990s (see, e.g., Grullon and Michaely (2002), Allen and Michaely (2003), and Skinner (2008)). Thus, in an unconditional setting, the substitution of repurchases for dividends cannot fully explain the declining propensity to pay from the late 1970s to the present. This is consistent with Fama and French (2001), who consider repurchases as a potential resolution to the puzzle but conclude that since repurchases are largely done by firms already paying dividends, repurchases alone cannot explain why firms are less likely to return cash to shareholders.

V. Changing Firm Characteristics and the Propensity to Pay

A. Has the Conditional Propensity to Pay Declined?

In this section we turn to the central question of our paper: Is there a declining propensity to return cash to shareholders after controlling for the changing characteristics of firms over the last 30 years?

In order to benchmark our results against past studies, we begin by replicating the main findings in Fama and French (2001). The basic empirical strategy is simple. First, we run pooled logit regressions of the "pay/no pay" decision for some initial formation period (in our base case, we use 1973–1978).[7] This provides a model of how firms' propensity to pay depends upon firm characteristics such as size, profitability, and growth opportunities. We then use this estimated payout model to "forecast" the proportion of firms that will pay dividends over the period 1979–2006. Indeed, by accounting for future changes in firm characteristics, our predictions capture the component of variation in propensity to pay that may be explained by changes in characteristics.

For each year during the 1979–2006 period, we compare the incidence of expected dividend payers (the forecast) to the incidence of actual dividend payers (the actual data). Since the expected fraction of payers incorporates changes in firm characteristics, any difference between the expected and the actual fraction of payers represents a surprise (i.e., variation in the fraction of payers that is unexplained by corresponding variation in firm characteristics). Our null hypothesis is that there is no time trend in the time series of "surprises" (expected payers less actual payers). Under the alternative, if there is a decreasing propensity to pay given firm characteristics, then the annual time series of expected proportions of payers would rise above the observed proportions of actual payers, generating an upward-trending time series of "propensity to pay deficits."

More formally, we first use data only from the formation period 1973–1978 to estimate the coefficients from a logit regression model:

$$\Pr(Y_{i,t} = 1) \quad = \quad F(\beta' X_{i,t}), \tag{1}$$

where Y is an indicator variable equal to 1 if the firm pays, X is a vector of covariates, and $F(\cdot)$ represents the logistic function. Using the estimated coefficients

[7]Following DeAngelo et al. (2006), we restrict attention to the years following 1972, when NASDAQ firms begin to be incorporated in CRSP.

from equation (1) along with future values of X, we form a series of "forecasts" for each firm in the sample over the period 1979–2006. We then aggregate both the forecasts and actual data over the N_t firms in each year to form the following annual series:

$$\text{Expected propensity}_t = \frac{1}{N_t}\sum_{i=1}^{N_t}\hat{Y}_{i,t},$$

$$\text{Actual propensity}_t = \frac{1}{N_t}\sum_{i=1}^{N_t}Y_{i,t}.$$

We next define the deficit in the propensity to pay as the difference between the expected propensity and the actual propensity.[8] If there is no change in the propensity to pay, conditional on firm characteristics, then the annual time series of the deficit in the propensity to pay should exhibit no trending behavior. Writing the deficit in the propensity to pay as

$$\text{Propensity to pay deficit}_t = \alpha + \gamma t + \varepsilon_t, \tag{2}$$

we test the null hypothesis that $\gamma = 0$. If there is a decreasing propensity to pay, then the ordinary least squares (OLS) estimate of γ (the trend coefficient) should be positive and significant.

In Panel A of Table 5 we report results from the logit estimation of equation (1) for the formation period (1973–1978). In the 1st column, the dependent variable is simply equal to 1 if a dividend is paid, and 0 otherwise. For this benchmark analysis we use the same control variables as in Fama and French (2001): namely, firm size, M/B ratio, ROA, and SGR. The results confirm that size, profitability, and measures of growth or investment opportunities are all significant determinants of the decision to pay dividends. Large and profitable firms with a high ROA are more likely to pay dividends, while firms with high growth rates and high M/B ratios are less likely to pay dividends. The coefficient estimates are all similar in magnitude to those reported in Fama and French.

Panel B of Table 5 presents our estimation of equation (2) over the period 1979–2006. The results in the 1st column show a positive and significant coefficient estimate for the time trend variable γ; that is, the gap between the expected fraction of payers and the actual fraction grows over time. The increasing deficit is economically significant as well: The deficit increases by about 82 basis points per year for a total increase of 23% (0.82×28 years). This is the declining propensity to pay dividends first documented by Fama and French (2001).

In the 2nd column of Panel A in Table 5, we augment the Fama and French (2001) logit estimation with 3 additional variables: the log of firm age, log of volatility (Hoberg and Prabhala (2009)), and ratio of retained earnings to total assets (DeAngelo et al. (2006)). All 3 variables are significant at the 1% level, and in Panel B we see that the trend in the propensity to pay deficit is roughly cut in half, with the coefficient now 0.43 versus 0.82 in the baseline estimation.

[8]Here, a negative deficit is naturally interpreted as a surplus in payers relative to expectations.

TABLE 5

The Propensity to Distribute Cash to Shareholders

Table 5 reports estimation results for firms' conditional propensity to pay out as a function of time. Panel A presents results for a pooled logistic regression model over the annual period 1973–1978. The column headings describe the dependent variable for the model. In columns labeled "Dividends," the dependent variable is an indicator that takes the value of 1 if the firm pays a dividend in year *t*, and 0 otherwise. In columns labeled "Net Payout," the dependent variable is an indicator that takes the value of 1 if the net payout for the firm is positive, where net payout is defined as dividends plus total repurchases less equity issues. Net payout is measured in 3 alternative ways, using: i) information from the flow of funds statement (labeled "Flow of Funds"); ii) the (adjusted) change in shares outstanding reported by CRSP, multiplied by the average share price (labeled "CRSP Shares"); and iii) the change in the dollar value of Treasury stock as a proxy for net share repurchases (labeled "Treasury Stock"). See Section III of the paper for detailed discussion of these 3 alternative net payout measures. NYE is equal to the percentile in which the firm falls on the distribution of equity market values for NYSE firms in year *t*. M/B is equal to the ratio of firm value to the book value of total assets, where firm value is measured as the market value of equity plus the difference between total assets and total common equity. ROA is equal to the operating income before depreciation scaled by the book value of assets. SGR is equal to the annual percentage change in total sales. AGE is defined as the number of years since the firms' founding, incorporation, or listing date, whichever is earliest. VOL is the standard deviation of the firms' daily stock returns. RE/TA is equal to the ratio of retained earnings to total assets. To mitigate the effect of outliers, all of the control variables are Winsorized at the 1% and 99% levels. We report standard errors based on 2-way clustering (firm and year) in parentheses below the corresponding coefficient estimate. * and ** indicate significance at the 5% and 1% levels, respectively. Panel B reports OLS coefficients from a regression of the aggregate propensity to pay deficit on a constant and an annual time trend over the period 1979–2006. As in Panel A, standard errors are presented in parentheses below the coefficient estimates.

			Net Payout		
	Dividends		Flow of Funds	CRSP Shares	Treasury Stock
Panel A. Formation Period Logit Regressions (1973–1978)					
NYE	5.29**	2.96**	1.04**	0.71**	1.04**
	(0.13)	(0.14)	(0.11)	(0.10)	(0.11)
M/B	–1.18**	–0.65**	–0.70**	–0.52**	–0.70**
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
ROA	7.83**	2.40**	2.45**	1.44**	2.45**
	(0.26)	(0.31)	(0.28)	(0.26)	(0.28)
SGR	–0.92**	–0.48**	–0.80**	–0.71**	–0.80**
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
ln(AGE)		0.25**	0.20**	0.21**	0.20**
		(0.02)	(0.02)	(0.02)	(0.02)
ln(VOL)		–87.91**	–45.93**	–52.28**	–45.93**
		(2.30)	(1.77)	(1.78)	(1.77)
RE/TA		3.85**	3.04**	2.75**	3.04**
		(0.15)	(0.12)	(0.12)	(0.12)
Constant	–0.02	1.55**	1.17**	1.18**	1.17**
	(0.05)	(0.12)	(0.11)	(0.10)	(0.11)
N	16,338	16,338	16,338	16,338	16,338
Panel B. Trend Models for Deficit in the Propensity to Pay (1979–2006)					
Trend	0.82**	0.43**	0.06	–0.21	–0.11
	(0.14)	(0.09)	(0.12)	(0.15)	(0.09)
Constant	0.00	0.04**	0.05**	0.07**	0.04**
	(0.02)	(0.01)	(0.02)	(0.02)	(0.01)
N	28	28	28	28	28
R^2	0.68	0.52	0.01	0.11	0.12

This means the deficit increases by about 12% over the 1979–2006 period. Thus, as in Hoberg and Prabhala, adding additional variables does help to explain the declining propensity to pay dividends, but there remains an economically significant decrease in the propensity to pay (at a rate of approximately 0.5% per year) even after accounting for changing firm characteristics.

Finally, in the last 3 columns of Table 5 we consider the positive net payout indicator (using alternative measures of net repurchases) rather than the dividend indicator as the dependent variable. In the logit estimations, all of the explanatory

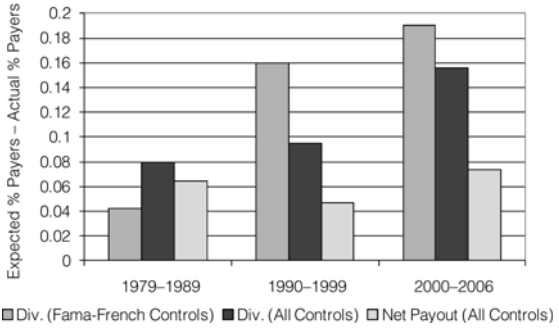
variables are highly significant, with coefficients of the expected sign, indicating that the same variables that explain the dividend decision also explain the net payout decision. But most importantly, the trend regression results for the deficit in propensity to pay out (Panel B) differ markedly from those for the dividend deficit. When we consider net payout, the coefficient on the trend variable is insignificant, suggesting there is no declining propensity to return cash to shareholders over the 1979–2006 period, conditional on changes in firm characteristics.

Figure 3 presents a graphical representation of our basic result and helps to demonstrate the economic magnitude of our findings. For each of 3 subperiods, we compute the average deficit based on the 3 models presented in Table 5. Comparing the 1st column in each of the 3 subperiods, there is a clear increase in the average dividend deficit over time. Even when a larger set of conditioning variables is considered (the 2nd bar in each subperiod), there is still a large qualitative increase in the average deficit over time. However, comparing the 3rd column in each subperiod reveals a very different picture. For the series of net payout deficits, there is no clear trend in the data over time.

FIGURE 3

Deficit in the Propensity to Pay

Figure 3 tracks the deficit in the propensity to pay over time for alternative models of firm payout. The deficit in the propensity to pay for each year is defined as the proportion of firms expected to pay less the actual proportion of paying firms. The deficit in the propensity to pay is presented for 3 pooled logit models: i) a model in which the dependent variable is a dummy that takes the value of 1 if the firm pays a dividend with the explanatory variables SIZE, M/B, ROA, and SGR (collectively labeled "Fama-French controls"); ii) a model in which the dependent variable is a dummy that takes the value of 1 if the firm pays a dividend with the explanatory variables SIZE, M/B, ROA, SGR, the natural logarithm of AGE, the natural logarithm of VOL, and RE/TA (collectively labeled "all controls"); and iii) a model in which the dependent variable is a dummy that takes the value of 1 if the net payout of the firm in a given year is positive, where net payout is defined as dividends plus repurchases less equity issuances, with all controls included. Table 5 presents coefficient estimates for these models and fits linear trends to the time series of deficits presented here. The figure includes deficits for the out-of-sample period of 1979–2006, during which the expected proportion of paying firms is computed using coefficient estimates from the 1973–1978 period.



Our use of a size proxy based on NYSE percentile breakpoints follows Fama and French (2001) and DeAngelo et al. (2006). As Fama and French put it, the percentile mapping is "meant to neutralize any effects of the growth in typical firm size through time" (p. 19). As a robustness check, Table 6 reports results using a more traditional measure of firm size: specifically, the natural logarithm of the firm's MVE.

The decline in the propensity to pay dividends (measured by the estimated coefficient on the trend variable reported in Panel B of Table 6) is even larger than that implied by the results reported in Table 5. The intuition behind this is

TABLE 6

The Propensity to Distribute Cash to Shareholders: Robustness to an Alternative Size Measure

Table 6 reports results similar to those presented in Table 5, except using the logarithm of a firm's market value as a measure of size. Panel A presents results for a pooled logistic regression model over the annual period 1973–1978. The column headings describe the dependent variable for the model. In columns labeled "Dividends," the dependent variable is an indicator that takes the value of 1 if the firm pays a dividend in year *t*, and 0 otherwise. In columns labeled "Net Payout," the dependent variable is an indicator that takes the value of 1 if the net payout for the firm is positive, where net payout is defined as dividends plus total repurchases less equity issues. Net payout is measured in 3 alternative ways, using: i) information from the flow of funds statement (labeled "Flow of Funds"); ii) the (adjusted) change in shares outstanding reported by CRSP, multiplied by the average share price (labeled "CRSP Shares"); and iii) the change in the dollar value of Treasury stock as a proxy for net share repurchases (labeled "Treasury Stock"). See Section III of the paper for detailed discussion of these 3 alternative net payout measures. MVE is equal to the market value of the firm's equity in year *t*. M/B is equal to the ratio of firm value to the book value of total assets, where firm value is measured as the market value of equity plus the difference between total assets and total common equity. ROA is equal to the operating income before depreciation scaled by the book value of assets. SGR is equal to the annual percentage change in total sales. AGE is defined as the number of years since the firms' founding, incorporation, or listing date, whichever is earliest. VOL is the standard deviation of the firms' daily stock returns. RE/TA is equal to the ratio of retained earnings to total assets. To mitigate the effect of outliers, all of the control variables are Winsorized at the 1% and 99% levels. We report standard errors based on 2-way clustering (firm and year) in parentheses below the corresponding coefficient estimate. * and ** indicate significance at the 5% and 1% levels, respectively. Panel B reports OLS coefficients from a regression of the aggregate propensity to pay deficit on a constant and an annual time trend over the period 1979–2006. As in Panel A, standard errors are presented in parentheses below the coefficient estimates.

			Net Payout		
	Dividends		Flow of Funds	CRSP Shares	Treasury Stock
Panel A. Formation Period Logit Regressions (1973–1978)					
ln(MVE)	0.94**	0.56**	0.16**	0.13**	0.16**
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
M/B	–1.31**	–0.75**	–0.69**	–0.54**	–0.69**
	(0.05)	(0.05)	(0.04)	(0.04)	(0.04)
ROA	7.06**	1.96**	2.35**	1.36**	2.35**
	(0.26)	(0.32)	(0.28)	(0.27)	(0.28)
SGR	–0.98**	–0.49**	–0.80**	–0.72**	–0.80**
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
ln(AGE)		0.21**	0.20**	0.20**	0.20**
		(0.02)	(0.02)	(0.02)	(0.02)
ln(VOL)		–83.44**	–44.87**	–50.92**	–44.87**
		(2.33)	(1.82)	(1.82)	(1.82)
RE/TA		4.00**	3.07**	2.77**	3.07**
		(0.15)	(0.12)	(0.12)	(0.12)
Constant	–1.61**	0.52**	0.85**	0.93**	0.85**
	(0.06)	(0.13)	(0.11)	(0.11)	(0.11)
N	16,338	16,338	16,338	16,338	16,338
Panel B. Trend Models for Deficit in the Propensity to Pay (1979–2006)					
Trend	1.62**	0.79**	–0.07	0.19	–0.04
	(0.08)	(0.10)	(0.12)	(0.13)	(0.10)
Constant	0.03*	0.05**	0.08**	0.06**	0.05**
	(0.01)	(0.02)	(0.02)	(0.02)	(0.01)
N	28	28	28	28	28
R^2	0.96	0.74	0.01	0.09	0.01

straightforward. The expected proportion of dividend payers is computed based on a model estimated using data from the 1970s, while average nominal firm size trends upward during our sample period. Consequently, the typical public firm in the 1980s, 1990s, and 2000s is larger than the typical firm in the 1970s, in part due to inflation, and is therefore (according to the formation period model) more likely to pay a dividend. Turning to results for net payout, we continue to find no evidence of a declining trend in the (conditional) propensity to pay out under this alternative size measure.

One potential drawback of our approach is that we break the data into estimation and forecast subsamples in an ad hoc way. Most of our analysis specifies 1973–1978 as the estimation period. While this facilitates comparison of our results to existing literature, the choice of 1978 as the "splitting point" is somewhat arbitrary. To check whether our results are robust to alternative splits, we repeat our analysis using 1973–1983 as the estimation period and 1984–2006 as the forecast period. As mentioned earlier, the early 1980s correspond to the passage of legislation (Securities and Exchange Commission (SEC) Rule 10b-18) that substantially changed the usage of repurchases as a means to return cash to shareholders and therefore seems like a natural alternative choice for the sample split point (see Grullon and Michaely (2002) for a detailed discussion of this regulatory change). Table 7 reports the results from this alternative analysis. Consistent with our previous findings, this table shows that, after conditioning for changes in firm characteristics, the propensity to distribute cash to shareholders has not declined over time.[9]

B. The Relationship between Payout Propensity and Retained Earnings

As DeAngelo et al. (2006) show, the declining dividend puzzle is most pronounced in firms with positive retained earnings. For firms with negative retained earnings, there is no decline in the propensity to pay dividends over the last several decades. For more profitable firms, however, the declining propensity is even greater than that documented in Fama and French (2001). Here we test whether similar patterns exist in the net payout series.

Our analysis begins by replicating the full sample results for various subsamples based on retained earnings. Table 8 presents results from regressing the deficit in the propensity to pay on a constant and a time trend variable for each of 10 portfolios based on the ratio of retained earnings to total equity (RE/TE). On the left-hand side of the table, we confirm the DeAngelo et al. (2006) results using the deficit in the propensity to pay dividends: Firms with negative retained earnings show no declining propensity to pay, while for profitable firms the declining propensity is magnified. These results are presented graphically in Figure 4. Graph A shows the deficit in propensity to pay dividends for each RE/TE portfolio for 2 subperiods: 1980–1988 and 1998–2006. For all but the negative RE/TE group, there is a large increase in the deficit from the first to the last subperiod.

In the last 3 columns of Table 8 we present the trend regression results where the dependent variable is the net payout deficit. There are 2 important themes in the results. First, when we examine portfolios with low retained earnings (RE/TE values less than 0.6 as well as negative RE/TE values), the coefficient on the trend variable is actually negative. Thus for these firms, we find evidence of an *increasing* propensity to return cash to shareholders, given firm characteristics, over the 1979–2006 period. For example, our estimates imply that for firms with negative retained earnings, the deficit in propensity to pay *shrinks* by 8.68% (-0.31×28 years) over the 1979–2006 period. These findings suggest that,

[9]We also repeat our analysis using 1973–1988 as the estimation period and 1989–2006 as the forecast period, and we find similar results.

TABLE 7

The Propensity to Distribute Cash to Shareholders: Robustness to Formation Period

Table 7 reports estimation results for firms' conditional propensity to pay out as a function of time. Panel A presents results for a pooled logistic regression model over the annual period 1973–1983. The column headings describe the dependent variable for the model. In columns labeled "Dividends," the dependent variable is an indicator that takes the value of 1 if the firm pays a dividend in year *t*, and 0 otherwise. In columns labeled "Net Payout," the dependent variable is an indicator that takes the value of 1 if the net payout for the firm is positive, where net payout is defined as dividends plus total repurchases less equity issues. Net payout is measured in 3 alternative ways, using: i) information from the flow of funds statement (labeled "Flow of Funds"); ii) the (adjusted) change in shares outstanding reported by CRSP, multiplied by the average share price (labeled "CRSP Shares"); and iii) the change in the dollar value of Treasury stock as a proxy for net share repurchases (labeled "Treasury Stock"). See Section III of the paper for detailed discussion of these 3 alternative net payout measures. NYE is equal to the percentile in which the firm falls on the distribution of equity market values for NYSE firms in year *t*. M/B is equal to the ratio of firm value to the book value of total assets, where firm value is measured as the market value of equity plus the difference between total assets and total common equity. ROA is equal to the operating income before depreciation scaled by the book value of assets. SGR is equal to the annual percentage change in total sales. AGE is defined as the number of years since the firms' founding, incorporation, or listing date, whichever is earliest. VOL is the standard deviation of the firms' daily stock returns. RE/TA is equal to the ratio of retained earnings to total assets. To mitigate the effect of outliers, all of the control variables are Winsorized at the 1% and 99% levels. We report standard errors based on 2-way clustering (firm and year) in parentheses below the corresponding coefficient estimate. * and ** indicate significance at the 5% and 1% levels, respectively. Panel B reports OLS coefficients from a regression of the aggregate propensity to pay deficit on a constant and an annual time trend over the period 1984–2006. As in Panel A, standard errors are presented in parentheses below the coefficient estimates.

			Net Payout		
	Dividends		Flow of Funds	CRSP Shares	Treasury Stock
Panel A. Formation Period Logit Regressions (1973–1983)					
NYE	5.15**	3.08**	0.94**	0.61**	0.94**
	(0.09)	(0.10)	(0.07)	(0.07)	(0.07)
M/B	–1.04**	–0.65**	–0.74**	–0.58**	–0.59**
	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
ROA	7.72**	3.36**	3.29**	2.07**	2.61**
	(0.17)	(0.21)	(0.18)	(0.17)	(0.18)
SGR	–0.94**	–0.37**	–0.73**	–0.57**	–0.63**
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
ln(AGE)		0.33**	0.25**	0.25**	0.27**
		(0.02)	(0.02)	(0.01)	(0.02)
ln(VOL)		–72.78**	–40.19**	–45.09**	–41.86**
		(1.64)	(1.31)	(1.31)	(1.30)
RE/TA		3.68**	2.65**	2.16**	2.38**
		(0.10)	(0.08)	(0.08)	(0.08)
Constant	–0.10**	0.55**	0.66**	0.76**	0.72**
	(0.03)	(0.08)	(0.08)	(0.07)	(0.07)
N	32,130	32,130	32,130	32,130	32,130
Panel B. Trend Models for Deficit in the Propensity to Pay (1984–2006)					
Trend	0.54**	0.37**	–0.25	0.13	–0.10
	(0.16)	(0.10)	(0.12)	(0.15)	(0.11)
Constant	0.07**	0.04*	0.05**	0.01	0.02
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
N	23	23	23	23	23
R^2	0.47	0.48	0.14	0.04	0.03

conditional on changes in firm characteristics, firms with relatively low retained earnings are paying out more often than expected, and that this "surplus" is increasing over time. We do not necessarily view these results as a puzzle, however. The safe harbor provisions for stock repurchases enacted in the 1980s provided another channel for firms to return cash to shareholders. This may have lowered the cost of paying out cash rather than retaining it, particularly for firms early in their life cycle (with negative or relatively low retained earnings). Given a downward shift in the cost of paying out cash for low RE/TE firms, one might expect

TABLE 8

Firm Retained Earnings and the Deficit in the Propensity to Pay

Table 8 reports OLS coefficients from a time trend regression of the propensity to pay deficit for equal-weighted portfolios of firms formed based on retained earnings levels. In all cases, the expected propensity to pay for each year from 1979–2006 is computed based on coefficient estimates from the pooled logistic regression model (across all firms) over the annual period 1973–1978 reported in Table 5. We then form 10 retained earnings portfolios based on the absolute level of the RE/TE, following DeAngelo et al. (2006). All portfolios are rebalanced annually. For each of these portfolios, we compute the actual fraction of firms with positive payouts, where positive payout is assessed based on whether a dividend is paid or, alternatively, whether the firm's net payout is positive. The actual fraction of firms with positive payout is then compared to the expected proportion of firms paying out. The table displays intercept and trend estimates for the regression of the deficit in the propensity to pay, defined as the expected proportion of paying firms less the actual proportion for each of the RE/TE-based portfolios of firms. * and ** indicate significance at the 5% and 1% levels, respectively. Net payout is computed using information from the flow of funds statement. Results for the alternative net payout measures are very similar and are omitted in order to conserve space.

	Dividend Deficit			Net Payout Deficit		
RE/TE	Constant	Trend	Adj. R^2	Constant	Trend	Adj. R^2
< 0.00	0.01	0.01	–0.03	0.01	–0.31**	0.36
0.00–0.10	0.04	0.44**	0.31	0.11	–0.35*	0.12
0.10–0.20	0.02	0.82**	0.67	0.13	–0.21	0.03
0.20–0.30	0.08	0.76**	0.58	0.17	–0.34*	0.10
0.30–0.40	0.10	0.90**	0.56	0.18	–0.25	0.03
0.40–0.50	0.08	1.06**	0.57	0.20	–0.39	0.09
0.50–0.60	0.05	1.17**	0.73	0.17	–0.18	–0.01
0.60–0.70	0.00	1.55**	0.81	0.11	0.14	–0.01
0.70–0.80	–0.04	1.43**	0.86	0.03	0.23	0.05
0.80–0.90	0.01	0.76**	0.46	–0.01	0.18	0.03
0.90+	0.01	0.51**	0.79	–0.03	–0.06	–0.02

that these firms would increase their propensity to pay out cash, consistent with our findings.

Our second main finding is that, among firms with relatively high retained earnings, the magnitude of the increase in the propensity to pay deficit (the puzzle documented by DeAngelo et al. (2006)) is substantially smaller using net payout relative to results using dividends. For example, for portfolio 8, comprised of firms having RE/TE values between 0.7 and 0.8, the estimated rate of increase in the propensity to pay deficit is 1.43% per year using dividends as a measure of payout but only 0.23% per year using net payout. Graph B of Figure 4 depicts our results graphically. Examining this figure, it appears that the lack of any trend in the full sample is the product of 2 components: i) firms with relatively high RE paying out less than expected given changes in firm characteristics (as in DeAngelo et al. (2006) although with smaller magnitude), and ii) firms with relatively low retained earnings paying out more than expected given changes in firm characteristics.

VI. Cash Distributions to Shareholders

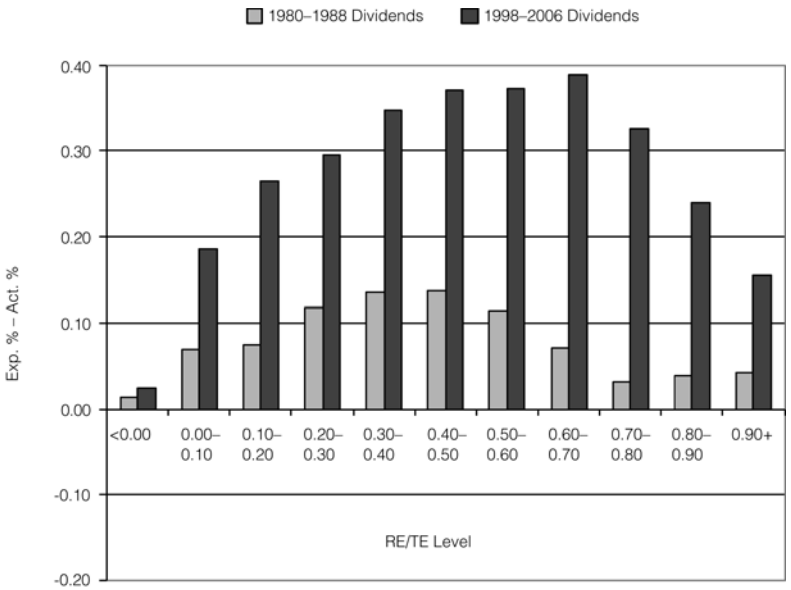
In Section V we presented evidence that there is little change in the propensity of firms to pay out on net over the last 30 years after accounting for changes in firm characteristics. This says nothing, however, about *how much* cash firms are paying to shareholders. As DeAngelo, DeAngelo, and Skinner (2004) show, total dollar dividends paid by industrial firms have actually increased since 1978, both in nominal and real terms. They also show that dividends have become increasingly concentrated among a small number of profitable firms. For example,

FIGURE 4

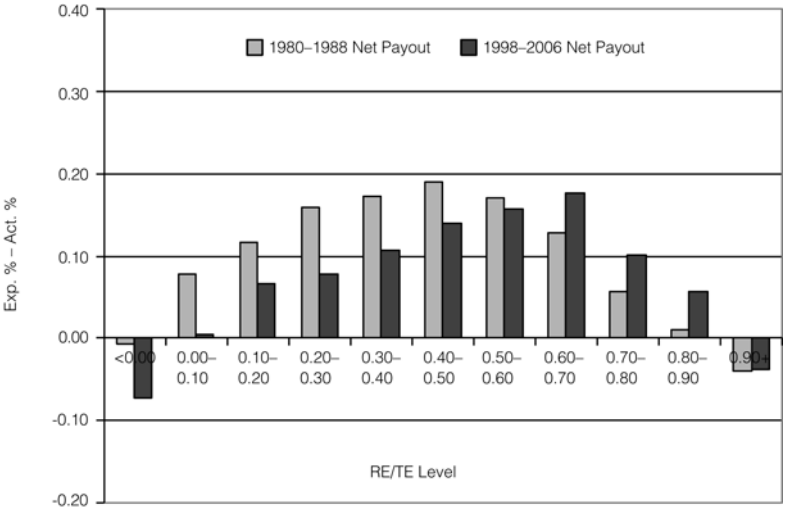
Deficit in the Propensity to Pay Dividends versus Deficit in the Propensity to Pay Cash for Firms Sorted by Retained Earnings

Figure 4 depicts the proportion of expected payers minus the proportion of actual dividend payers by groups of firms sorted on the ratio of retained earnings to total equity (RE/TE). This information is presented both for dividends as a measure of payout and for net payout, defined as dividends plus repurchases less equity issuances. Graph A depicts results for dividends, while Graph B depicts results for net payout. Net payout is computed using information from the flow of funds statement as described in detail in Section III.

Graph A. Dividends



Graph B. Net Payout Measured Using Flow of Funds Information



the top 25 dividend paying firms typically pay more than 50% of aggregate dividends.

It may be the case that a similar result holds for net payouts; that is, even though we show an increasing propensity to pay for firms in the lower end of the profitability spectrum, the actual amounts paid by such firms may be so small that they are of little economic consequence. To consider an extreme example, consider a firm that has a positive net payout of $100 in a given year. Our net payout dummy variable would equal 1 for this firm, but the real economic magnitude of this payout is very small. As a first step to resolving this question, we consider whether total payout has witnessed the same increase in concentration as dividends over the past few decades.

Table 9 gives the percent of total dividends and total payout attributable to firms in various categories based on the given payout variables.[10] The dividend concentration results are very similar to those presented by DeAngelo et al. (2004): Dividends have become increasingly concentrated in the largest 25 firms. For the 1980–1988 period, the top 25 firms (ranked by dividend payments) pay 47% of the total dividends in a typical year. In the 1998–2006 period, this has increased to 56.6%. For total payout (dividends plus share repurchases), 2 patterns are worth noting. First, the *level* of concentration is lower than for dividends. In the 1998–2006 period, the top 25 firms in terms of total payout only pay 46.6% of all dividends and repurchases. This is a full 10 percentage points less than in the case of dividends. Second, the *increase* in concentration over the sample period is less dramatic than for dividends. The percent of total payout from the top 25 firms only increases from 43.8% to 46.6% from the first to the last subperiod. In short, the results presented in Table 9 suggest that total payouts are less concentrated than dividends, and this gap has increased over the last several decades. Thus the total payouts made by firms outside of the top 25 are of real economic importance and have not diminished much in their role since the late 1970s.

To directly determine whether our main findings are sensitive to the use of a dichotomous indicator variable for payout, we repeat our analysis using payout yields rather than indicator variables. A first question of interest is whether, unconditionally, there is a disappearing payout puzzle for yields similar to that for the propensity to pay out. Figure 5 shows that this is indeed the case. Both the average dividend yield and the average net payout yield have fallen markedly since the 1970s. This suggests that, as with the propensity to pay, substitution from dividends to repurchases cannot, on its own, explain lower payout yields over time.

Can changing firm characteristics account for decreasing payout yields over the past few decades? In Table 10 we repeat the analyses reported in Tables 5 and 6, but now our dependent variables are payout *yields* rather than indicator variables. More explicitly, we first model the relationship between payout yield, defined alternatively as either dividend yield or net payout yield, and

[10]Note that we exclude concentration metrics for net payout. Given that net payout is often negative, the measures of concentration considered here would be difficult to interpret in considering the concentration of net payout.

TABLE 9

The Concentration of Dividends and Total Payout

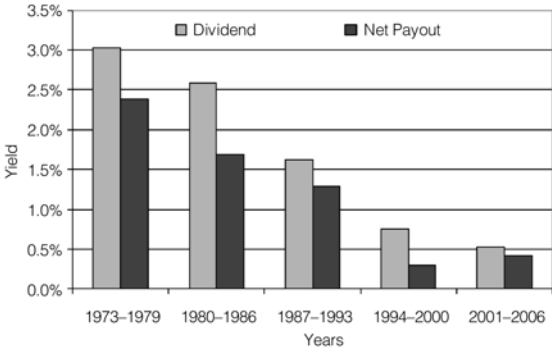
Table 9 reports the concentration of dividends and total payout among firms in our sample over different subperiods. We form portfolios of firms according to their rank in terms of payout, where payout is alternatively measured using dividends and total payout (dividends plus repurchases). For each portfolio of firms, we report the portfolio's payout as a percentage of total payout for all firms. The rows in the table are ordered according to increasingly large portfolios of "top payers," and we also present the cumulative percentage of total payout found by summing payout among firms with payout levels in the same or higher tiers. Results are presented over both the 1980–1988 and 1998–2006 subintervals.

	Percent of Total Dividends (%)		Cumulative % of Total Dividends (%)		Percent of Total Payout (%)		Cumulative % of Total Payout (%)	
Payout Ranking	1980–1988	1998–2006	1980–1988	1998–2006	1980–1988	1998–2006	1980–1988	1998–2006
Top 25	47.0	56.6	47.0	56.6	43.8	46.6	43.8	46.6
26–50	12.9	13.7	59.9	70.3	15.0	14.1	58.7	60.7
51–100	12.9	12.8	72.7	83.1	14.2	13.6	72.9	74.4
101–200	12.0	9.4	84.7	92.6	11.8	11.9	84.7	86.3
201–300	5.8	3.6	90.5	96.2	5.4	5.4	90.1	91.7
301–400	3.3	1.8	93.8	98.0	3.2	3.0	93.3	94.7
401–500	2.0	1.0	95.8	99.0	2.0	1.8	95.3	96.5
501–1,000	3.7	1.0	99.5	100.0	3.8	3.0	99.1	99.5
1,001–1,500	0.5	0.0	100.0	100.0	0.8	0.4	99.9	100.0
1,501–2,000	0.0	0.0	100.0	100.0	0.1	0.0	100.0	100.0

FIGURE 5

Payout Yield over Time

Figure 5 depicts the dividend yield and the net payout yield over 5 different subintervals spanning the period 1973–2006. The dividend yield for a given year is defined as the aggregate dividend paid across all firms in our sample in that year divided by the total market capitalization of firms in our sample in the corresponding year. The net payout yield is defined by the aggregate net payout, equal to the sum of dividends plus repurchases less equity issuances, divided by aggregate market capitalization.



the set of firm characteristics. We again use 1973–1978 as the estimation period. Using this model, we produce "forecasts" of the expected payout yield conditional on future values for firm characteristics.[11] These represent predicted variations in payout yield due to changes in firm characteristics. Then, we form a time series of the difference between the expected payout yield

[11]For the dividend yield regressions, we use a Tobit model rather than a linear model due to the clustering of values at 0.

TABLE 10

Payout Yield Regressions

Table 10 reports results for firms' payout normalized by the market value of equity. In the 1st column of the table, the dependent variable is the firm's annual dividend payment divided by its year-end market value. In the 2nd column of the table, the dependent variable is the firm's annual net payout (dividends plus repurchases less equity issuances), divided by year-end market capitalization. Net payout is measured in 3 alternative ways, using: i) information from the flow of funds statement (labeled "Flow of Funds"); ii) the (adjusted) change in shares outstanding reported by CRSP, multiplied by the average share price (labeled "CRSP Shares"); and iii) the change in the dollar value of Treasury stock as a proxy for net share repurchases (labeled "Treasury Stock"). See Section III of the paper for detailed discussion of these 3 alternative net payout measures. For each year during the 1979–2006 period, the expected payout yield, where payout is measured alternatively as dividends or net payout, is computed based on estimates from a pooled linear regression model over the 1973–1978 period. For the dividend yield regressions, we use a Tobit model rather than a linear model due to the clustering of values at 0. The firm-level characteristics included in the model are NYE, M/B, SGR, ROA, ln(AGE), ln(VOL), and RE/TA. All control variables are Winsorized at the 1% and 99% levels, and a constant term is also included in the model. We report standard errors based on 2-way clustering (firm and year) in parentheses below the corresponding coefficient estimate. We then compute the difference between the expected yield and the actual yield for each firm-year over 1979–2006. These are then averaged by year to produce an annual time series of deficits in the level of payout. Panel B reports OLS coefficients from a time trend regression of these deficits for 1979–2006. As in Panel A, standard errors are presented in parentheses below the coefficient estimates. * and ** indicate significance at the 5% and 1% levels, respectively.

		Net Payout Yield		
	Dividend Yield	Flow of Funds	CRSP Shares	Treasury Stock
Panel A. Formation Period Regression (1973–1978)				
NYE	1.16**	–1.34**	–1.14**	–1.11**
	(0.11)	(0.25)	(0.21)	(0.19)
M/B	–1.84**	–0.94**	–0.81**	–1.06**
	(0.05)	(0.09)	(0.08)	(0.07)
ROA	1.49**	2.71**	–1.18*	1.10*
	(0.35)	(0.63)	(0.53)	(0.48)
SGR	–1.05**	–2.45**	–1.81**	–2.05**
	(0.11)	(0.17)	(0.14)	(0.13)
ln(AGE)	0.40**	0.56**	0.42**	0.52**
	(0.03)	(0.06)	(0.05)	(0.04)
ln(VOL)	–12.96**	–8.12**	–8.64**	–7.47**
	(0.26)	(0.44)	(0.37)	(0.34)
RE/TA	4.79**	1.81**	1.58**	1.36**
	(0.15)	(0.17)	(0.15)	(0.13)
Constant	4.68**	4.19**	4.67**	4.71**
	(0.14)	(0.28)	(0.24)	(0.22)
N	16,337	16,337	16,337	16,337
Panel B. Trend Model for Deficit in the Propensity to Pay (1979–2006)				
Trend	4.65**	–8.72*	3.43	–9.40**
	(0.91)	(3.49)	(2.78)	(2.70)
Constant	–1.18**	3.16**	2.30**	0.55
	(0.17)	(0.66)	(0.43)	(0.37)
N	28	28	28	28
R^2	0.64	0.20	0.06	0.41

and the observed payout yield. These differences represent variations in payout yield that cannot be explained by changes in firm characteristics. Finally, we test for the existence of a time trend in this "payout deficit" series.

Panel A of Table 10 presents the formation period estimation results. All of the control variables are significant in the expected direction in explaining yields. Panel B presents results from regressing the deficit in the propensity to pay (i.e., expected yield less actual yield) on the time trend variable. In the 1st column we see that there is indeed a decreasing propensity to pay dividends. In the last 4 columns we find that for 2 out of 3 definitions of net payout yield the coefficients on the trend variable are actually *negative* and significant. Thus, once we account

for repurchases and equity issues as pieces of the payout pie, firms actually appear to be returning more cash to shareholders than we would expect given the changing characteristics of firms.

VII. Conclusion

In this paper we test the hypothesis that the net propensity for firms to return cash to shareholders has remained constant over time. Using various measures of the net cash flowing back to shareholders, we find that the propensity to pay out has been relatively constant over the past 30 years. Moreover, we find that among firms with low retained earnings, there is actually an increasing propensity to distribute cash to equity holders.

We show that using net payouts instead of dividends has a tremendous impact on the conclusions drawn concerning the changing nature of payout policy. Conditional on their characteristics, firms are just as likely to return cash to shareholders as they were in the 1970s. Thus, the puzzles posed by Fama and French (2001) and DeAngelo et al. (2006) do not materialize when one jointly considers firms' net cash disbursements to investors. Additionally, we find that firms with negative or relatively low retained earnings are actually *more* likely to return cash to shareholders than they were in the 1970s, a finding that may reflect the loosening of restrictions regarding repurchases that have facilitated the use of stock buybacks among smaller, less mature firms.

Our findings are an important step in understanding the payout behavior of U.S. public firms. For example, our findings bear interesting implications for tax policy. One argument in favor of the Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA) was that in the wake of the corporate scandals of 2001–2002, firms needed to be encouraged to return cash to shareholders to reduce agency problems. Bratton (2005) notes, "According to the JGTRRA's proponents, this adjustment will help jumpstart a staggering economy, jolt stock prices upward, *and release a cascade of corporate cash into the pockets of upscale consumers*" [emphasis added]. The presumption behind such arguments seems to be that firms were much less likely to distribute cash to investors than they had been in the past, and that altering the tax code could help alleviate such agency conflicts. Our results suggest that firms were actually just as likely to return cash in 2003 as they were in 1978. Moreover, by shifting cash distributions to repurchases instead of dividends, firms were actually moving toward an optimal policy of minimizing the tax burden of their investors.

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