Dividends, Share Repurchases and Stock Returns

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1. Introduction

The connection between dividends and stock returns is fundamental to finance. Not only do dividends contribute to the total return that an investor receives, but they can also be a characteristic which investors use to form portfolios. Moreover, dividend-based investment strategies have been successful; academic studies such as Conover et al. (2016) find that firms paying high dividends exhibit a lower standard deviation and a higher return compared to firms paying no dividends. However, several challenges to this historical relationship between dividends and returns have arisen in recent years. First, a small number of highly visible firms have recently outperformed the broad market while paying little or nothing in the way of dividends. Furthermore, some of these firms have shown strong earnings growth despite low levels of dividends. More broadly, stock buybacks have become an increasingly popular alternative for returning cash to shareholders, potentially weakening the longstanding relationship between dividends and returns. In this paper, we aim to investigate the extent to which these recent developments have changed the relationship between dividends and returns.

We use updated data to investigate the performance of income-based portfolios in the US equity market. By mechanically forming portfolios based on income characteristics of individual stocks, we explore the performance of several strategies. Our main finding is that, on a value-weighted basis, the high dividend yield portfolios outperform both low and zero dividend yield portfolios. Furthermore, the difference is statistically and economically significant. We find that the returns to the dividend portfolio exceed the low and zero dividend yield portfolios by 1.99% and 3.3% per annum, respectively, over the period from July 1928 through June 2019. This finding is consistent with that made by Conover et al. (2016) for the period 1962 to 2014. As such, it appears that the historical relationship between dividends and returns remains intact.

Recognizing that buybacks have become an increasingly important way to return cash to investors, we expand this analysis by considering total payouts that include distributions to shareholders from buybacks as well as dividends. Starting in July 1982 when stock repurchases were deregulated, we find that both value-weighted and equal-weighted portfolios of high total payout firms yield slightly higher cumulative returns than their dividend only counterparts. However, the differences, 1.40% and 1.19%, for value- and equal-weighted portfolios, respectively, are not significantly different from zero. This evidence suggests that a total income approach to forming portfolios may outperform a dividend-only approach.

However, including stock buybacks as a contributor to an investor's total income also leads to some important changes in these portfolios. First, we find that including stocks with high levels of buybacks leads to more portfolio turnover. Specifically, the value-weighted (equal-weighted) high total payout portfolio exhibits a statistically significant turnover rate that is 9.1% (17.9%) higher than high dividend yield portfolio counterparts.

Similarly, buybacks represent a less stable commitment to return cash to investors than dividends do. We demonstrate three ways in which distributions from total payout portfolios exhibit more variation than do portfolios based on dividends alone. First, graphical evidence suggests that buybacks are more cyclical than dividends. Second, we find that the volatility of buybacks, as a contribution to total payout, is 0.29% higher than the volatility of the contribution from dividends. Finally, when examining cash flow streams directly, we find that the volatility of buybacks is 0.31% higher than the volatility of dividends.

In addition, total-payout based portfolios rely substantially more on returns attributable to buybacks than do dividend-based portfolios. We show this by decomposing the total return of our portfolios into returns attributable to dividends, repurchases, and capital gains. While the high dividend yield portfolio experiences an increase in the share of returns from repurchases over the past four decades, dividends still play the dominant role. In contrast, the total return generated by the high total payout yield portfolio relies much more heavily on returns from repurchases than returns from dividends over the past two decades.

In summary, the increased portfolio turnover and the increased volatility of the contribution from repurchases may partially offset any possible return advantage that total-payout-based portfolios have over dividend-yield-based portfolios.

Finally, we investigate earnings growth. We find some evidence that high dividend yield portfolios tend to exhibit low *trailing* earnings growth compared to low dividend yield portfolios. This is, of course, looking backwards. Conversely, when we take a forward-looking view, the differences between high- and low-dividend yield portfolios are smaller in magnitude. Specifically, based on 5-year earnings, the trailing earnings growth is 9.64% lower for high dividend yield portfolios than for low dividend yield portfolios, but the forward earnings growth for high and low dividend portfolios is substantially smaller at 1.74%.

Overall, we find that higher dividend stocks experience higher future returns. Some evidence exists that portfolios based on total payout, as opposed to dividends alone, produce even

higher returns, but portfolios that include buybacks also appear to have more cyclicality, volatility, and turnover than portfolios based on dividends alone. Some evidence also exists that high dividend portfolios tend to exhibit lower earnings growth than low dividend yield portfolios, although this difference is relatively small when one considers forward earnings growth as opposed to trailing earnings growth. In summary, despite the increased popularity of share repurchases and the strong performance of the big tech stocks, we find that the historical relationship between dividends and returns remains intact.

In this study, our aim is to revisit the question of the relationship between dividends and total returns by expanding the length of the sample period back to July 1928 and forward to June 2019. Since we do not require book equity data from Compustat in our analysis, we are able to extend our sample period to the years before the early 1960s (when this data item was first reported) and back to 1928 when the CRSP data starts. Our updating of the sample to end in June 2019 is particularly important because most papers in the literature investigate the cyclicality of repurchases and the relative stability of dividends up until the mid-2000s, which excludes the recent global financial crisis. In so doing, we are able to explore the extent to which recent developments might have changed the relationship between dividends and total returns.

In addition, our paper is the first to examine dividend versus total payout portfolios from a practitioner's perspective. In particular, our results around portfolio turnover support the point that despite a nominally larger cumulative return, the total trading costs may well be higher with a strategy recognizing repurchases as part of payouts. Based on our understanding of the literature, we are the first to make this point. Furthermore, in contrast to previous studies, we investigate the relationship between dividends and forward earnings growth at the portfolio level rather than the aggregate market or firm level (e.g., Arnott & Asness (2003), Gwilym et al. (2006), Zhou and Ruland (2006), Bernatzi et. al (1997), and Ham et. al (2019)). This, combined with our turnover results, helps us to better understand the relationship between payouts, earnings, and returns from the investor perspective.

2. Literature Review

Although dividend-based investing has long been a popular topic among investors, the academic literature has tended to consider dividends together with repurchases. Following a rule change in 1982 by the Securities and Exchange Commission, share repurchases, also

called stock buybacks, have become increasingly popular as a means of distributing cash to investors. The prior literature has focussed largely on the characteristics of firms undertaking buybacks, the different motivations for firms distributing via repurchases, and the relationship between dividends and forward earnings growth. In what follows, we will describe how prior work touches on these aspects of the literature. First, we describe how the literature views differences between firms that pay a dividend and firms that repurchase shares. Second, we describe the literature on the stability of repurchases compared with that of dividends. Third, we summarize the literature on the relationship between (a) dividend payout and forward earnings growth and (b) repurchases and forward earnings growth.

Dividends Versus Repurchases

Grullon and Michaely (2002) find that firms that only repurchase shares are smaller, younger, and have higher earnings volatility as well as a higher book-to-market ratio, compared to firms that pay a dividend. Firms that use both dividends and repurchases are very similar to firms that only pay dividends. In addition, large, established firms show an increased propensity to pay out cash in the form of share repurchases. We find that although firms do not cut dividends, they do forgo dividend increases to fund these repurchases. Benltaifa (2011) finds similar behavior in a study of French firms.

Payout Stability

Baker, Mukherjee, and Powell (2005) find that the motivations for share repurchases and for dividends differ. Share repurchases are motivated primarily by management's perception of the undervaluation of their firm's stock, whereas dividends are determined by the strength of earnings and cash flows. Furthermore, while permanent, positive cash flow shocks are paid out as dividends, temporary positive cash flow shocks are distributed predominately via repurchases (Guay and Harford (2000); Jagannathan et al. (2000)). According to Jagannathan et al. (2000), while stock repurchases vary strongly with cash flows, dividends increase steadily over time. Skinner and Soltes (2011) similarly showed that dividend-paying firms are characterized by greater stability in their earnings than non-dividend-paying firms. Furthermore, dividend payers are less likely to report a loss, and any losses they do report tend to be transitory. The consensus within the literature, therefore, is that dividends are more stable over time, while repurchases tend to be more volatile.

Earnings and Payouts

Benartzi et al. (1997) finds that an increase (decrease) in dividends is associated with an increase (decrease) in earnings in both the prior and the concurrent year, but not in the subsequent year.[1] In contrast to earlier studies, Ham et al. (2019) examines quarterly rather than yearly data and report that firms increasing their dividend exhibit a higher level of permanent earnings following the dividend increase. When examining changes in dividend payout rather than dividend levels, Arnott and Asness (2003) conclude that the aggregate payout ratio for the S&P 500 predicts forward earnings growth. They attribute this finding to the fact that corporate managers use dividends to signal their private knowledge about the firms' future prospects to outside investors. Since firms generally wish to avoid dividend cuts, they have a tendency to set their dividend payout ratio at a level providing them with a margin of safety. This enables them to maintain the dividend level when they experience negative shocks to cash flows. Hence, firms set high dividend payout ratios only if they expect their earnings (and cash flows) to grow in the future. The result reported by Arnott and Asness (2003) receives empirical support by Gwilym et al. (2006) for a further 11 countries outside the US. The positive relationship between current dividend payout and forward earnings growth does not, however, extend to that between current dividend payout and future real dividend growth. Zhou and Ruland (2006) investigate the relationship between dividend payout and future earnings growth at the firm level and conclude that firms with a higher dividend payout experience stronger forward earnings growth after controlling for share repurchases and mean reversion in earnings.

Grullon and Michaely (2004) find that, in contrast to dividends, share repurchases are not followed by an increase in operating performance. In contrast, Lie (2005) finds that operating performance increases after share repurchase announcements. While Grullon and Michaely (2004) rely on yearly data, Lie (2005) use quarterly data permitting a more precise definition of the pre- and post-event window. The latter finds that firms manage their accruals downward in order to decrease their earnings prior to repurchase announcements. Downward-managed earnings prior to the announcement and more accurately reported earnings after repurchases lead to an increase in reported operating performance. Furthermore, this increase is related not only to the number of shares actually repurchased but also to the level of equity compensation of the Chief Executive Officer (CEO). This finding suggests that the more sensitive CEO pay is to equity, the greater the incentive to decrease the repurchase price. Chen and Huang (2013) confirm the findings relating to earnings management and operating

[1] The authors also find that a decrease in dividends leads to a positive earnings surprise in the following year.

performance for repurchase announcements for the period prior to the Sarbanes-Oxley Act, but find no supporting evidence following its introduction.

The consensus is therefore that firms paying high dividends exhibit higher earnings growth than firms paying no dividends. In addition, the dividend payout ratio is positively related to forward earnings growth at the aggregate market level as well as on the firm level after accounting for various firm characteristics. Furthermore, firms that repurchase their stock show no increase in forward earnings growth, except when earnings are managed prior to the repurchase announcement.

3. Data

Our main data sources are the Center for Research in Security Prices (CRSP) and Compustat. To ensure that portfolios are formed on publicly disclosed financial information, CRSP return data are merged with Compustat financial data using the approach of Fama and French (1992). All annual returns are calculated from July through June of the following year. Our sample includes the largest 3,000 firms whose common stock is listed on the Nasdaq, AMEX, and NYSE (CRSP exchange codes 1, 2, and 3) in any given year from 1926 to 2019. We exclude American depository receipts (ADRs), real estate investment trusts (REITs), companies incorporated outside the US, Americus Trust Components, and closed-end funds. In the early years of our analysis, fewer than 3,000 firms exist in the sample (Figure 1).

For the payout and return analyses in Section 4, we construct several variables. In accordance with Fama and French (1988), dividends are defined as the difference between total returns (CRSP item *ret*) and returns excluding dividends (CRSP item *retx*) multiplied by the market value at the start of the period. We follow Boudoukh et al. (2007) and estimate repurchases by subtracting any decrease in the value of preferred stock (Compustat item *pstkrv*) from the expenditure on purchases of common and preferred stock (Compustat item *prstkc*). Whenever this measure is negative, we set it to zero.[2] The cash flow items required to calculate repurchases are available only from 1971 onward. Repurchases became popular after a rule change by the Securities and Exchange Commission in November 1982. This rule change effectively removed any remaining legal liability inherent in a firm repurchasing its own stock. Therefore, we compare the performance of portfolios sorted on dividend yield and total payout yield starting in July 1982. Total payout is defined as the sum of the dollar amounts in

[2] In unreported results we dropped all observations where repurchases were negative. This did not change our results.

dividends paid and repurchases made in a given year. All yield measures are calculated by dividing by the market value of equity. The final sample size spans 162,017 firm-years. A firm stays in the sample for an average of 13 years. The annual time series of this measure is depicted in Figure 1. Figure 1 shows a substantial decline in the number of years a firm stays in sample around 1963. This drop corresponds to an increase in coverage of the CRSP database. In July 1962 CRSP added equities listed on the NYSE American stock exchange to its database.

The second part of the analysis in Section 5 focuses on the stability of dividends and repurchases. For this part of the analysis the sample contains 78,154 firm-years. We also construct a stable sample of 195 firms that survive from July 1982 through June 2019.

In Section 6, we investigate the relationship between high dividend yield portfolios and forward earnings growth. In this analysis, earnings growth is calculated over 2-, 3-, 5-, and 10-year periods. Trailing (forward) earnings growth is calculated as the annualized earnings growth of the Compustat item *ibcom* over the years preceding (succeeding) the formation date. Since earnings growth rates with an initial starting value smaller than or equal to zero have no meaningful interpretation, we follow Zhou and Ruland (2006) and require the initial earnings value to be strictly greater than zero. To minimize the impact of outliers, we remove the top and bottom 1% of observations. Our analysis starts in July 1950, the date from which earnings data become available through Compustat.

4. Dividends and Returns

We begin our analysis of the performance of value-weighted and equal-weighted portfolios formed on dividend yield (total payout yield) over 91 (36) years. We construct six portfolios – three partitioned on dividend yield and three partitioned on total payout yield. Payout yield is defined as the sum of dividend and repurchase amounts in a given year divided by market value. Each year, all firms paying a dividend are ranked according to the prior year's dividend yield (total payout yield) and then partitioned into terciles. Similarly, we rank all firms either paying a dividend or repurchasing shares, or both, on total payout yield and then form tercile portfolios. The top tercile (33%) constitutes the "high" dividend (total payout) portfolio. Following Conover et al. (2016), the top 5% of firms ranked by dividend yield are excluded from the high dividend yield portfolio because such abnormally high yields are typically not sustainable and are indicative of a firm in financial distress. We similarly remove the top 5% of firms ranked by total payout yield from the high total payout portfolio. The second and

bottom terciles form the “mid” dividend (total payout) and “low” dividend (total payout) portfolios respectively. We also form a portfolio of zero dividend (total payout) yield firms.

All portfolios are re-formed and rebalanced following the same portfolio construction rules each year. The cumulative performance of the value-weighted dividend yield portfolios are depicted in Figure 2a and return statistics are provided in Table 1a.[3] Figure 2b and Table 1b show the same statistics for equal-weighted portfolios.

Over the full sample period from July 1928 through June 2019, the annualized return of the value-weighted high dividend yield portfolio (11.15%) exceeded that of the low (9.16%) and zero dividend yield (7.85%) portfolios and the value-weighted benchmark consisting of all sample firms (9.88%) (see Figure 2a). This finding is consistent with Conover et al. (2016). Arithmetic returns depict a similar pattern. Although the zero dividend yield portfolio (15.05%) has a higher mean return than that of the high dividend yield portfolio (14.51%), the difference is not statistically significant since the standard deviation of the zero dividend portfolio (44.86%) is substantially greater than that of the high dividend yield portfolio (30.07%). Turning to equal-weighted annualized returns, the high dividend yield portfolio (12.60%) still outperforms the low (11.46%) and zero dividend yield (11.36%) portfolios as well as the equally weighted all-firm benchmark (11.93%). Differences in equal-weighted arithmetic mean returns between the high (16.09%) and zero dividend yield (20.28%) portfolios and the all-firm benchmark (16.64%) were not statistically significant. However, the standard deviation of returns to the high dividend yield portfolio (31.25%) was significantly lower than that of returns to the zero dividend yield portfolio (58.42%) and to all-firm benchmark (38.70%).

Table 2 shows the yearly arithmetic return and standard deviation of the high, low, and zero dividend portfolios split into two sub-periods. The first period spans 1928 to 1981 and covers the time before repurchases were formally legalised. The second period covers the more recent 1982 to 2019 period. The period prior to 1982 exhibits the same return pattern as the entire sample period: the high dividend yield portfolio’s point estimate for return is slightly below the zero dividend portfolio’s point estimate for return. After 1982, a slightly different pattern emerges. The high dividend yield portfolio now exhibits a higher point estimate for its return (13.96% on a value-weighted basis) as well as a lower point estimate for its standard deviation, than the corresponding zero dividend portfolio.

[3] In unreported results we use Compustat Item *dvc* as our dividend measure. This restricts us to forming portfolios after 1952. The results are qualitatively similar.

Table 3 summarizes firm characteristics for each portfolio. We report yields based on the trailing twelve months (TTM) and the next twelve months (NTM). Based on the latter, the average dividend yield of the high dividend yield portfolio (5.47%) exceeds that of the low dividend yield portfolio (2.10%) by more than 3 percentage points. Furthermore, the average firm in the high dividend yield portfolio exhibits a larger market value ($2898 million) and a higher book-to-market ratio (1.13) than the average firm in the low dividend yield portfolio ($2355 million and 0.70), the zero dividend portfolio ($891 million and 0.68), and the all-firm benchmark ($891 million and 0.78, respectively). Interestingly, the total payout yield is also higher for the high dividend yield portfolio (6.94%) compared to the low dividend yield portfolio, zero dividend yield portfolio and all-firm benchmark respectively (3.56%, 2.18%, and 4.25%).

In Figures 3a and 3b, we graph the value-weighted return differences between the three portfolios formed on dividend yield and the three formed on total payout yield, where the latter is defined as share repurchases plus dividends divided by market value. The annualized returns of the high dividend yield portfolio (value-weighted 12.14% and equal-weighted 13.20%) and the high total payout yield portfolio (value-weighted 13.54% and equal-weighted 14.39%) again exceed those of the respective low yield portfolios (dividend (total payout) value-weighted 10.79% (10.97%) and equal-weighted 12.77% (11.87%)) as well as the all-firm benchmark (value-weighted 11.87% and equal-weighted 12.07%). Furthermore, the high total payout yield portfolio exhibits a larger arithmetic mean return than the high dividend yield portfolio, whether equally- or value-weighted (Table 4). However, these differences are not statistically significant.

Next, we decompose total returns into the contributions from dividend yield, repurchase yield, and capital gains for the high dividend (total payout) yield portfolio and the low dividend (total payout) yield portfolio (Tables 5 and 6). We define the return corresponding to repurchase activity as the dollar amount of repurchases per share divided by the share price at the start of the year. As expected, the return attributed to dividends of 4.59% (4.64%) is substantially larger than the return from repurchases of 2.39% (2.13%) for the value-weighted (equal-weighted) high dividend yield portfolio. Interestingly, for the high total payout portfolio, dividends have become less important in comparison to repurchases over the past four decades. The dividend return contribution to the overall value-weighted (equal-weighted) high total payout portfolio returns exceeds the repurchase return contribution during the 1980s by 4.20% (2.29%) and in the 1990s by 1.84% (0.95%). Thereafter returns from repurchase activity have topped the returns from dividends, in the 2000s by 1.33% (1.58%) and in the 2010s by 1.09% (0.96%). Not surprisingly, repurchases have had an increasing impact on the

returns of the value-weighted (equal-weighted) low dividend yield portfolio, contributing 3.63% (2.98%) in the past decade compared to 1.36% (1.68%) in the 1980s.

Differences in firm characteristics across the portfolios are shown in Table 7. Naturally, there are differences in dividend yield and total payout yield as expected. In addition, the average high dividend yield firm is significantly smaller by about $706 million and has a slightly higher book-to-market ratio than the average high total payout portfolio firm. However, these differences are modest, which would suggest considerable overlap in the constituent firms of high dividend yield and high total payout yield portfolios. In Table 8, we report the average overlap for the past four decades and for the full sample period, July 1982 through June 2019. In the 1980s, 69% (57%) of all firms in the high dividend (total payout) yield portfolio were also in the high total payout (dividend) yield portfolio. This percentage then declines over the following decades and, at the end of the sample period, drops to 47% (30%).

Although we find that the high total payout yield portfolio produces better returns than the high dividend yield portfolio, we have not accounted for trading costs. Table 9 summarizes portfolio turnover as measured by the minimum of sales and purchases divided by the average portfolio value in a given year for the value-weighted as well as equal-weighted high dividend yield and high total payout yield portfolios. Turnover is consistently lower for the high dividend yield portfolio. Over the full sample period, the value-weighted (equal-weighted) high dividend yield portfolio exhibits a turnover that is lower by 9.07% (17.92%). Both differences are statistically significant.

5. Payout Stability

Shareholders generally view dividends as a firmer commitment to distribute cash, compared to stock repurchases (e.g., Jagannathan et al. (2000)). This section investigates the difference in the stability of dividends versus repurchases.

We measure the stability of dividends and share repurchases of a given firm in a given year in the form of dividends (repurchases) by dividing by the total amount paid out in the form of dividends (repurchases) over the life of a firm. This measure allows us to focus on the stability of payouts through time because it absorbs cross-firm variation as well as correcting for firm entry and exit. First, we calculate the total amount a firm has paid out over its entire life in the form of dividends and repurchases. We call this the lifetime payout. Each year we calculate the proportion of this lifetime payout distributed to shareholders in the form of dividends as

well as the proportion distributed as repurchases. We then average this ratio across all firms in a given year.

The time-series patterns of these ratios for dividends and for repurchases are graphed in Figure 4a. Clearly, the repurchase series is considerably more volatile than the dividend series. To some extent, these results may be influenced by firms entering and exiting the sample. To address this issue, we repeat our analysis using a stable sample of 195 firms that survived the full sample period. The results are plotted in Figure 4b. The greater stability of dividends versus repurchases now becomes more pronounced. While dividends exhibit a very smooth and stable pattern, repurchases tend to be highly cyclical. It is particularly noteworthy that, compared to dividends, repurchases were cut back sharply during the three periods of economic recession (gray bars).

In summary, dividends exhibit much more stability than stock repurchases.[4] This finding is also consistent with the higher turnover of the high total payout portfolios compared to the high dividend portfolio and with the findings by Jagannathan et al. (2000) that repurchases are more volatile and follow a cyclical pattern.

6. Earnings Growth

Firms with considerable growth opportunities tend to invest their cash rather than pay it out to shareholders. In this last section, we explore the extent to which high dividend yield portfolios necessitate foregoing earnings growth.

Table 10a reports the mean annualized trailing earnings growth for the high dividend yield portfolio firms in the first column. The next three columns report the differences in means compared to the low dividend yield firms, the zero dividend yield firms, and the mean of the all-firm benchmark. In all cases, trailing earnings growth of the high dividend yield portfolio is statistically significantly lower across the board. This result is not surprising and simply reflects the fact that firms paying higher dividends have fewer growth opportunities. However, what is arguably more important from the investor perspective is forward earnings growth.

Table 10b shows that the average forward earnings growth for the high dividend yield portfolio is still significantly lower than for the low dividend portfolio over 2-, 3-, 5- and 10-year horizons.

[4] In unreported results we measure dividends with Compustat item *dvc*. The conclusions are unchanged.

However, the magnitude of the differences in earnings growth is smaller compared to the trailing growth figures. For example, over a 2-year horizon, the difference between the high and low dividend yield portfolio shrinks from 12.45% to 2.93%. In the case of high versus zero dividend yield portfolios, the difference in average forward earnings growth over short horizons of two and three years turns positive.

Our finding that dividend-paying firms display higher forward earnings growth than non-dividend paying (zero dividend yield) firms over two to three years is consistent with the prior literature. On the other hand, we find no significant evidence of a positive relationship between forward earnings growth with dividend yields across firms. This contrasts somewhat with the Zhou and Ruland (2006) finding that growth does vary with dividend payout ratio, defined as dividends divided by earnings. Their study differs from ours in that they focus on dividend payout ratios, whereas we look at dividend yields.[5]

Finally, Figure 5 graphs the average dividend yield over 2-, 3-, 5-, and 10-year horizons across the high, low, and zero dividend yield portfolios and the all-firm benchmark. It clearly slows that the yield advantage of the high dividend over the low or zero dividend yield portfolios persists over all forward earnings growth horizons.

7. Conclusion

Investment strategies that form portfolios based on dividend yield have enjoyed substantial success over time. However, recent changes in the composition of firms in the market, as well as changes in how firms return cash to investors, have raised important questions for investors pursuing dividend-based strategies.

In this paper, we confirm that the historical relationship between dividends and returns is still intact. We find that, on a value-weighted basis, the high dividend yield portfolio outperforms

[5] In addition, their study suffers from larger survivorship bias. In order to compute earnings growth measures, we require that firms survive for the duration of the earnings growth measurement period and the starting value of earnings to be positive. Hence, when calculating earnings growth over a two-year horizon the firm needs to have positive earnings in year zero and must survive for the two subsequent years. Zhou and Ruland (2006) investigate only those firms where they can calculate trailing and future earnings growth measures of the same length. Therefore, they require a firm to survive for a total of 6 years, while we require only 3 years. Furthermore, in their investigation of future earnings growth they control for firm and other firm characteristics. They conclude that higher dividend payout ratios are positively related to future earnings growth only after controlling for all these characteristics. In this paper, we explore the univariate relationship between dividend yields and earnings growth and we do not control for other firm characteristics.

both the low dividend portfolio and the zero dividend portfolio over the period July 1928 through June 2019. This finding is consistent with the prior academic literature, suggesting that the positive connection between dividends and returns is robust.

We show that forming income portfolios based on total payout, defined as dividends plus repurchases, results in slightly higher returns and lower standard deviations when compared to strategies that define payouts with dividends alone. However, these high total payout portfolios exhibit significantly higher turnover when compared to portfolios based on dividends alone. This may result in higher trading costs and, possibly, a net return disadvantage.

Furthermore, dividend portfolios offer regular cash distributions, which may be preferred by some investors (see for example Miller and Modigliani (1961); Shefrin and Statman (1984); Shefrin and Thaler (1988); Thaler and Shefrin (1981); Dong et al. (2005); and Graham and Kumar (2006)). Share repurchases tend to be more volatile in comparison to dividends and follow a cyclical pattern. Our return decomposition further shows that within the high total payout yield portfolio, the proportion of total return attributable to share repurchases has topped the return from dividends by around 13% over the past two decades. If, therefore, regular cash distributions are important to the investor, a focus on dividend yields alone could provide a more stable cash distribution than a portfolio constructed on total payout yields.

Although we find that high dividend yield portfolios tend to exhibit lower trailing earnings growth than low dividend yield portfolios, on a forward basis the difference in earnings growth diminishes. In addition, high dividend yield firms exhibit positive forward earnings growth in the short-term (over two to three years) that is superior to firms that do not pay a dividend.

Overall, our study confirms the continued appeal of dividend-based investment strategies notwithstanding developments in the US stock market in the 21st century.

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Figure 1: Sample size and the average no. of years in the sample over time

An individual equity security enters our sample when data on prices, dividends and repurchase are available and it is one of the 3000 largest firms by market capitalization. The number of firms in sample are depicted by bars. The orange line shows the average number of years a firm stays in the sample.

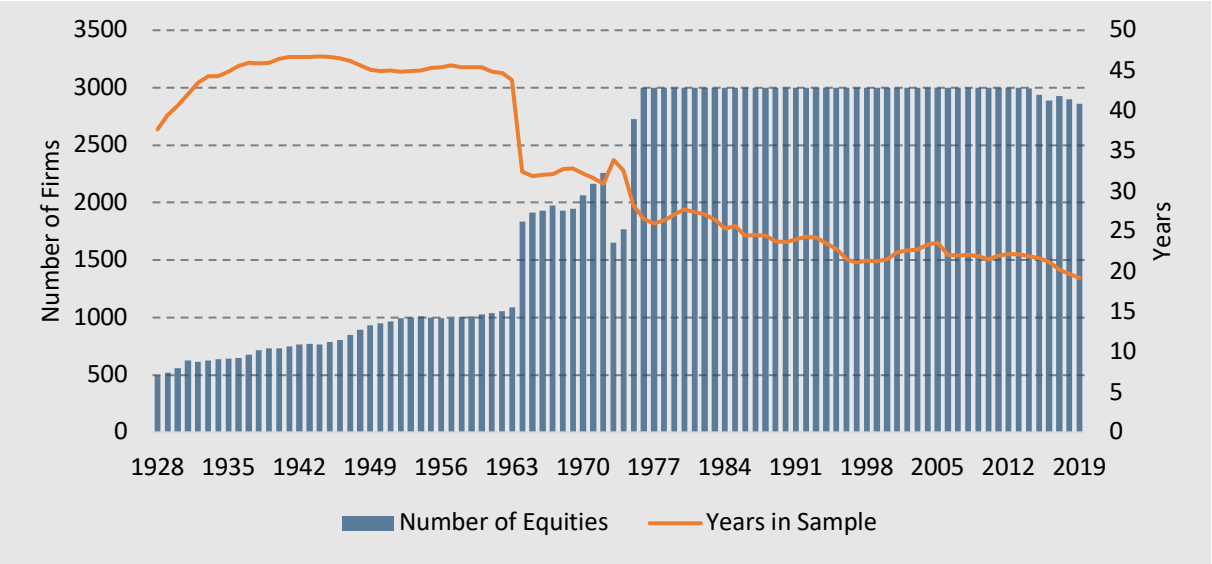


Table 1: High, Medium, Low, and Zero Dividend Yield Portfolio Performance

July 1928 - June 2019

High, Medium, Low, and Zero Dividend Yield portfolios and the All portfolio are as defined in Figure 2. We report arithmetic mean annual returns and standard deviations on a value-weighted (1(a)) and equal-weighted (1(b)) basis over the sample period July 1928 through June 2019. In addition, we report the differences in means between the 5 portfolios and their statistical significance. ** and *** indicate 5% and 1% statistical significance respectively.

(a) Value Weighted

%	High	Medium	Low	Zero	All
Arithmetic Mean	14.51	13.22	12.21	15.05	12.73
difference with Low	2.3	1.01		2.85	0.52
difference with Zero	-0.55	-1.83	-2.85		-2.33
difference with All	1.78	0.49	-0.52	2.33	
Standard Deviation	30.07	24.97	26.92	44.86	26.17
difference with Low	3.15	-1.95		17.94***	-0.75
difference with Zero	-14.79***	-19.89***	-17.94***		-18.69***
difference with All	3.89	-1.2	0.75	18.69***	

(b) Equal Weighted

%	High	Medium	Low	Zero	All
Arithmetic Mean	16.09	15.73	15.89	20.28	16.64
difference with Low	0.19	-0.17		4.39	0.75
difference with Zero	-4.2	-4.56	-4.39		-3.64
difference with All	-0.55	-0.92	-0.75	3.64	
Standard Deviation	31.25	29.36	36.01	58.42	38.70
difference with Low	-4.75	-6.65*		22.42***	2.7
difference with Zero	-27.17***	-29.06***	-22.42***		-19.72***
difference with All	-7.45**	-9.34***	-2.7	19.72***	

Table 2: High, Medium, Low, and Zero Dividend Yield Portfolio Performance

July 1928 – June 2019

High, Low, and Zero Dividend Yield portfolios and the All portfolio are as defined in Figure 2. We report arithmetic mean annual returns and standard deviations on a value-weighted (2(a)) and equal-weighted (2(b)) basis over the sample periods 1928 to 1981 and 1982 to 2019.

(a) Value Weighted

%	High	Medium	Low	Zero	All
			Arithmetic Average		
1928-81	15.65	13.03	12.70	16.91	12.91
1982-19	12.84	13.50	11.48	12.35	12.45
			Standard Deviation		
1928-81	36.58	29.33	30.88	54.32	30.84
1982-19	16.90	17.09	20.16	25.97	17.66

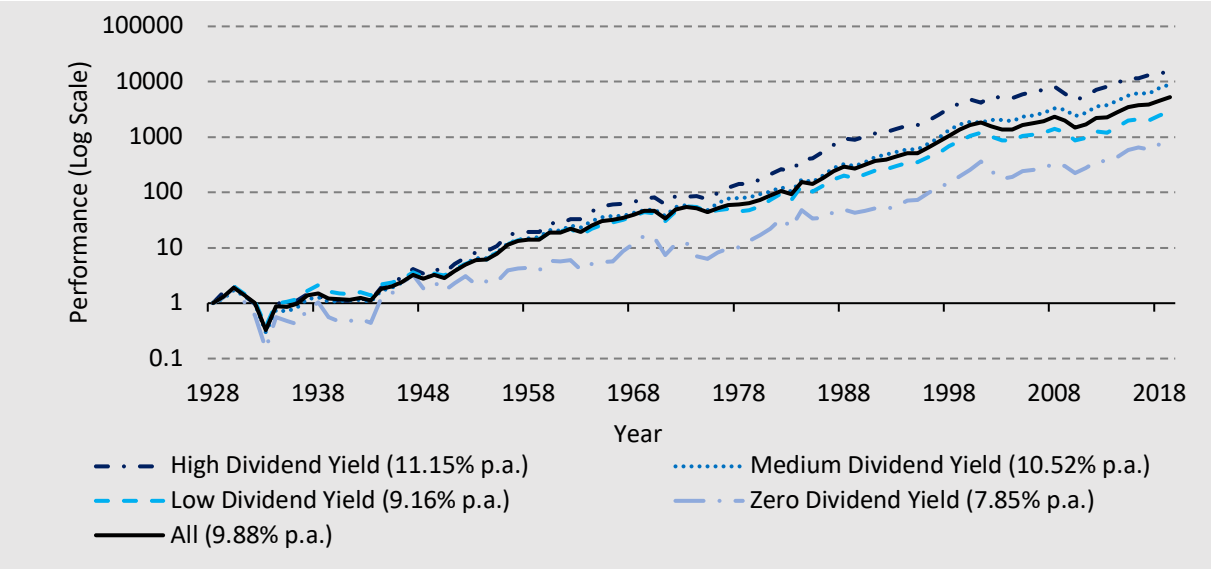
(b) Equal Weighted

%	High	Medium	Low	Zero	All
			Arithmetic Average		
1928-81	17.55	16.61	17.47	25.88	19.11
1982-19	13.96	14.43	13.59	12.12	13.04
			Standard Deviation		
1928-81	37.95	34.11	43.02	72.24	46.91
1982-19	17.73	20.95	22.52	27.13	21.96

Figure 2: High, Medium, Low, and Zero Dividend Yield Portfolios: Cumulative Wealth July 1928 – June 2019

At the start of each year, we rank by dividend yield the largest 3000 US stocks that paid a dividend over the trailing twelve months and partition the sample into terciles to form High, Medium, and Low Dividend Yield portfolios. Following Conover et al. (2016), the top 5% of dividend payers are excluded from the High Dividend Yield portfolio. The Zero Dividend Yield portfolio consists of all firms with a dividend yield of zero. The "All" portfolio is the all-firm benchmark. We graph on a logarithmic scale the value-weighted (2(a)) and equal-weighted (2(b)) for all portfolios the cumulative wealth of US$1 invested in July 1928. We report the annualized returns for each portfolio in the legend. All years end in June.

(a) Value Weighted



(b) Equal Weighted

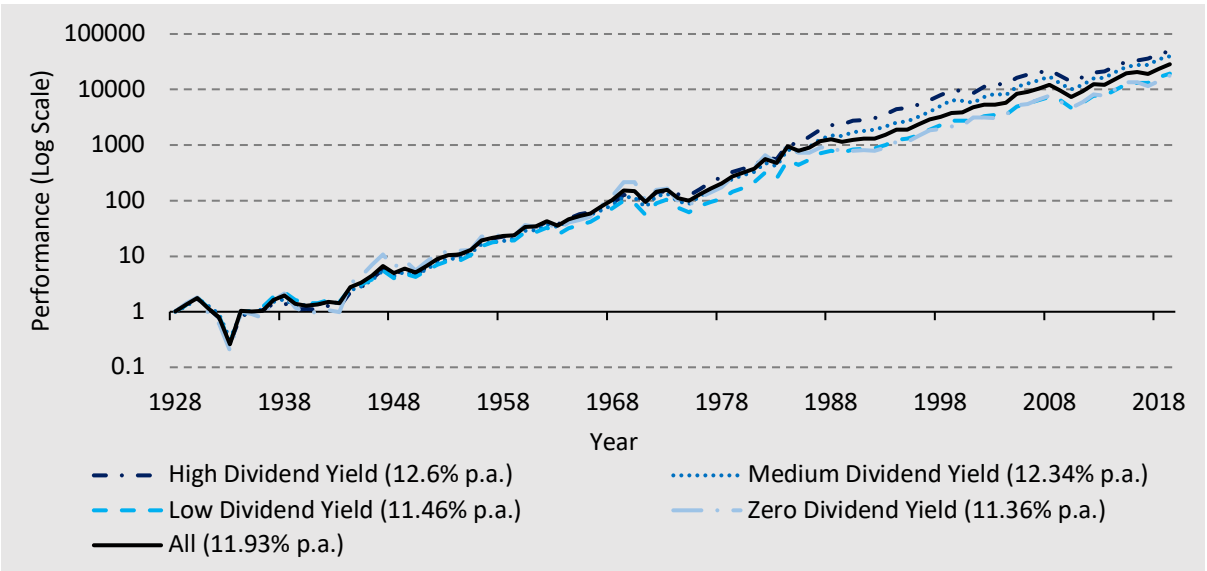


Table 3: Dividend Yield Portfolio Characteristics July 1928 - June 2019

High, Medium, Low, and Zero Dividend Yield portfolios and the All portfolio are as defined in Figure 2. We report for each portfolio the cross-sectional average Dividend Yield (%), Total Payout Yield (%), Market Value (US$mil), and Book-to-Market ratio (x) over the sample period July 1928 through June 2019. TTM and NTM mean trailing and next twelve-month dividends, respectively. In addition, we report the differences in means between the High Dividend Yield portfolio and each of the Low, Zero, and All portfolios and their statistical significance. **, *** and ns indicate 5% and 1% statistical significance and not statistically significant respectively.

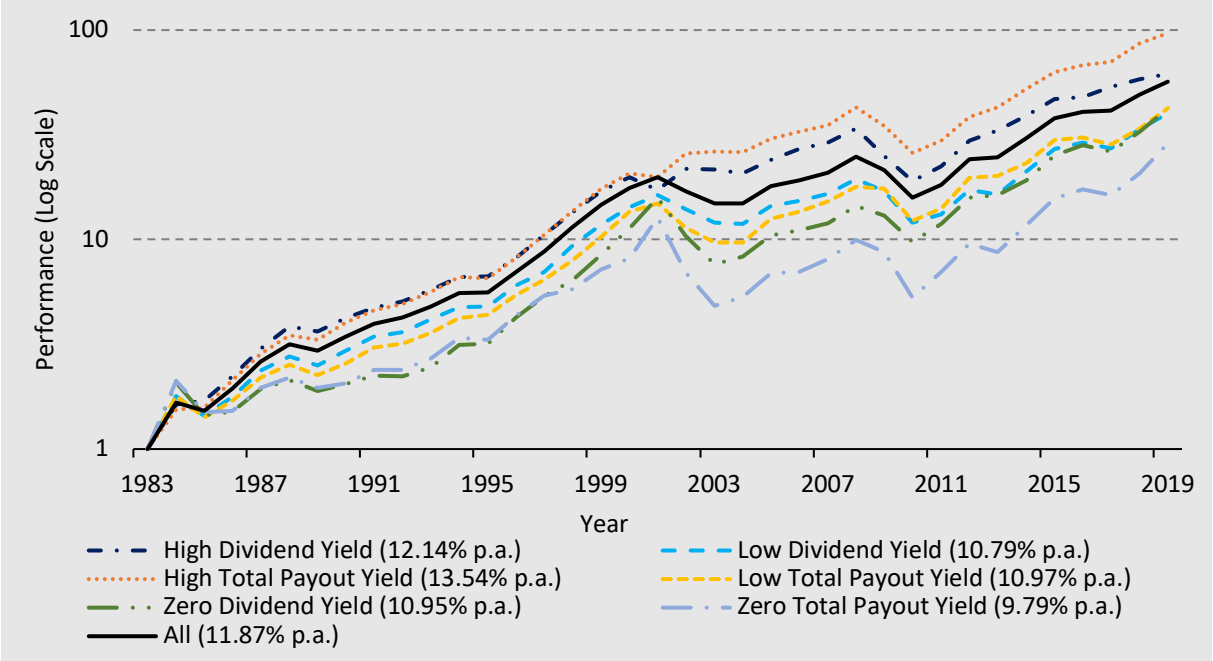
	High	Medium	Low	Zero	All
Dividend Yield (%, TTM)	5.78	3.60	1.80	0.00	2.51
difference with Low	***	***	ns	***	***
difference with Zero	***	***	***	ns	***
difference with All	***	***	***	***	ns
Dividend Yield (%, NTM)	5.47	3.66	2.10	0.26	2.48
difference with Low	***	***	ns	***	***
difference with Zero	***	***	***	ns	***
difference with All	***	***	***	***	ns
Total Payout Yield (%, TTM)	7.30	5.25	3.15	1.91	4.15
difference with Low	***	***	ns	***	***
difference with Zero	***	***	***	ns	***
difference with All	***	***	***	***	ns
Total Payout Yield (%, NTM)	6.94	5.38	3.56	2.18	4.25
difference with Low	***	***	ns	***	***
difference with Zero	***	***	***	ns	***
difference with All	***	***	***	***	ns
Book to Market Ratio (x)[a]	1.13	0.90	0.70	0.68	0.78
difference with Low	***	***	ns	***	***
difference with Zero	***	***	***	ns	***
difference with All	***	***	***	***	ns
Market Value (US$mil)	2898	3026	2355	891	2012
difference with Low	***	***	ns	***	***
difference with Zero	***	***	***	ns	***
difference with All	***	***	***	***	ns

Figure 3: Dividend Yield and Total Payout Yield Portfolios: Cumulative Wealth

July 1982 - June 2019

High, Low, and Zero Dividend Yield portfolios and the All portfolio are as defined in Figure 2. Total Payout Yield for a firm is the sum of dividends paid and share repurchases made in any given year divided by the market capitalization at the start of that year. High, Low, and Zero Total Payout Yield portfolios are formed in the same way as the Dividend Yield portfolios. We graph on a logarithmic scale the value-weighted (4(a)) and equal-weighted (4(b)) for all portfolios the cumulative wealth of US$1 invested in July 1982. We report the annualized returns for each portfolio in the legend. All years end in June.

(a) Value Weighted



(b) Equal Weighted

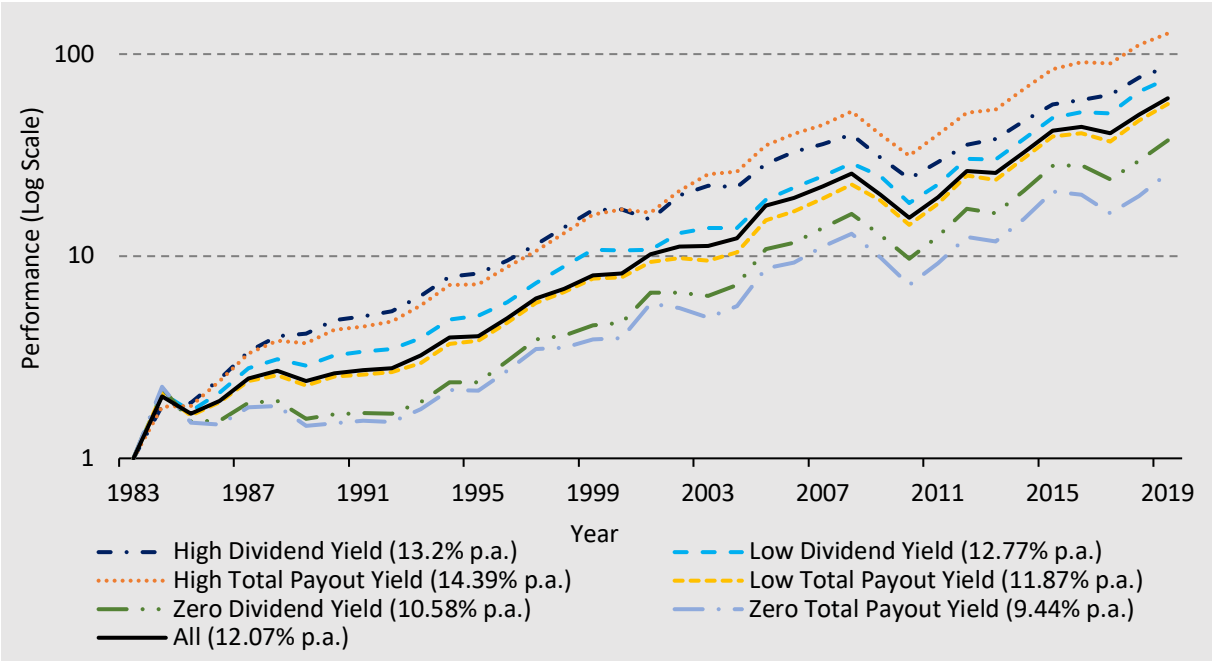


Table 4: Dividend Yield and Total Payout Yield Portfolio Performance

July 1982 - June 2019

High, Low, and Zero Dividend Yield (DY) portfolios are as defined in Figure 2. Total Payout Yield (TPY) portfolios are as defined in Figure 3. We report annualized arithmetic mean returns (Mean) for each portfolio, the difference in means (DY-TPY), standard deviations (SD), and Sharpe Ratios on a value-weighted and equal-weighted basis over the sample period July 1982 through June 2019. None of the differences in means between the DY and TPY portfolios are statistically significant.

	Value Weighted						Equally Weighted					
%	Mean	DY-TPY	SD	DY-TPY	Sharpe Ratio	DY - TPY	Mean	DY-TPY	SD	DY-TPY	Sharpe Ratio	DY - TPY
High DY	12.84	-1.26	16.90	1.23	0.54	-0.12	13.96	-1.26	17.73	-0.35	0.57	-0.06
High TPY	14.11		15.67		0.66		15.22		18.08		0.63	
Low DY	11.48	-0.21	20.16	-	0.38	0.00	13.59	0.78	22.52	-0.80	0.44	0.05
Low TPY	11.70		20.69	0.53	0.38		12.81		23.32		0.39	
Zero DY	12.35	0.13	25.97	-	0.33	0.04	12.12	0.77	27.13	-1.68	0.31	0.04
Zero TPY	12.22		28.88	2.91	0.29		11.36		28.81		0.26	
All	12.45		17.66		0.49		13.04		21.96		0.42	

Table 5: Return Contribution by Payout Type July 1982 - June 2019

High and Low Dividend Yield portfolios are as defined in Figure 2. Total returns of the value-weighted (5(a)) and equal-weighted (5(b)) High and Low Dividend Yield portfolios are decomposed into the returns from dividend payments, share repurchases, and capital gains. Returns from dividends are defined as total return minus total return excluding dividends. Returns from repurchase activity are calculated by dividing the dollar amount of repurchases per share by share price. We report arithmetic mean annual returns for each decade.

(a) Value Weighted

	High Dividend Yield				Low Dividend Yield			
	Dividend	Repurchase	Capital	Total	Dividend	Repurchase	Capital	Total
%	Return	Return	Gain	Return	Return	Return	Gain	Return
1983-89	6.54	2.75	11.95	21.24	1.83	1.36	11.17	14.36
1990-99	4.80	2.02	10.15	16.97	1.17	1.98	14.01	17.17
2000-09	3.53	2.17	-0.48	5.22	0.90	2.79	0.95	4.64
2010-19	4.09	2.73	3.63	10.45	1.33	3.63	5.67	10.64
1983-2019	4.59	2.39	5.85	12.84	1.26	2.53	7.69	11.48

(b) Equal Weighted

	High Dividend Yield				Low Dividend Yield			
	Dividend	Repurchase	Capital	Total	Dividend	Repurchase	Capital	Total
%	Return	Return	Gain	Return	Return	Return	Gain	Return
1983-89	6.43	3.36	14.63	24.42	1.59	1.68	15.22	18.50
1990-99	4.93	1.92	8.45	15.30	1.20	1.97	11.23	14.40
2000-09	3.61	1.96	1.92	7.50	0.94	2.73	5.94	9.61
2010-19	4.13	1.64	5.99	11.75	1.34	2.98	9.00	13.33
1983-2019	4.64	2.13	7.19	13.96	1.24	2.39	9.95	13.59

Table 6: Return Contribution by Payout Type for Total Payout Yield Portfolios

July 1982 - June 2019

High and Low Total Payout Yield portfolios are defined as in Figure 3. Total returns of the value-weighted (6(a)) and equal-weighted (6(b)) High and Low Total Payout Yield portfolios are decomposed into returns from dividend payments, share repurchases, and capital gains. Returns from dividends are defined as total return minus total return excluding dividends. Returns from repurchase activity are calculated by dividing the dollar amount of repurchases per share by share price. We report arithmetic mean annual returns for each decade.

(a) Value Weighted

	High Total Payout Yield				Low Total Payout Yield			
%	Dividend Return	Repurchase Return	Capital Gain	Total Return	Dividend Return	Repurchase Return	Capital Gain	Total Return
1983-89	6.91	2.71	10.18	19.80	1.58	0.96	9.92	12.46
1990-99	4.47	2.63	11.37	18.47	0.91	1.34	14.42	16.67
2000-09	2.52	3.85	1.65	8.01	0.56	1.35	4.94	6.86
2010-19	3.01	4.10	4.74	11.85	0.71	1.77	8.56	11.04
1983-2019	4.01	3.37	6.72	14.11	0.89	1.39	9.42	11.70

(b) Equally Weighted

	High Total Payout Yield				Low Total Payout Yield			
%	Dividend Return	Repurchase Return	Capital Gain	Total Return	Dividend Return	Repurchase Return	Capital Gain	Total Return
1983-89	6.00	3.71	13.26	22.96	1.10	1.51	12.18	14.79
1990-99	4.02	3.07	9.01	16.10	0.69	1.33	11.23	13.25
2000-09	2.31	3.89	4.59	10.79	0.53	1.72	8.09	10.34
2010-19	2.82	3.78	6.76	13.36	0.70	1.76	11.00	13.46
1983-2019	3.61	3.61	8.01	15.22	0.73	1.59	10.50	12.81

Table 7: Dividend Yield and Total Payout Yield Portfolio Characteristics

July 1982 - June 2019

High, Medium, Low, and Zero Dividend Yield (DY) are as defined in Figure 2. Total Payout Yield (TPY) portfolios are as defined in Figure 3. We report the difference in the cross-sectional average Dividend Yield (%), Total Payout Yield (%), Market Value (US$mil) and Book-to-Market ratio (x) over the sample period July 1982 through June 2019 of the High DY and the High TPY, Low DY and Low TPY, and Zero DY and Zero TPY portfolios. TTM and NTM mean trailing and next twelve-month dividends, respectively. ** and *** indicate 5% and 1% statistical significance respectively.

	High DY - High TPY	Low DY - Low TPY	Zero DY - Zero TPY
Dividend Yield (%, TTM)	1.16***	0.47***	0.00
Dividend Yield (%, NTM)	1.09***	0.53***	0.03
Total Payout Yield (%, TTM)	-0.98***	2.39***	2.17***
Total Payout Yield (%, NTM)	-0.55***	1.28***	0.92***
Book to Market Ratio (x)	0.08***	0.03***	0.03***
Market Value (US$mil)	-706***	2177***	388***

Table 8: High Dividend Yield and High Total Payout Yield Portfolio Overlap

July 1982 - June 2019

The High Dividend Yield (DY) portfolio and High Total Payout Yield (TPY) portfolio are defined in Figures 2 and 3, respectively. Portfolio overlap (%) is the percentage of firms in the High DY (TPY) portfolio that are also in the high TPY (DY) portfolio in a given year.

%	High DY Portfolio Overlap	High TPY Portfolio Overlap
1983-89	69	57
1990-99	63	47
2000-09	53	31
2010-19	47	30

Table 9: Portfolio Turnover Comparison July 1982 - June 2019

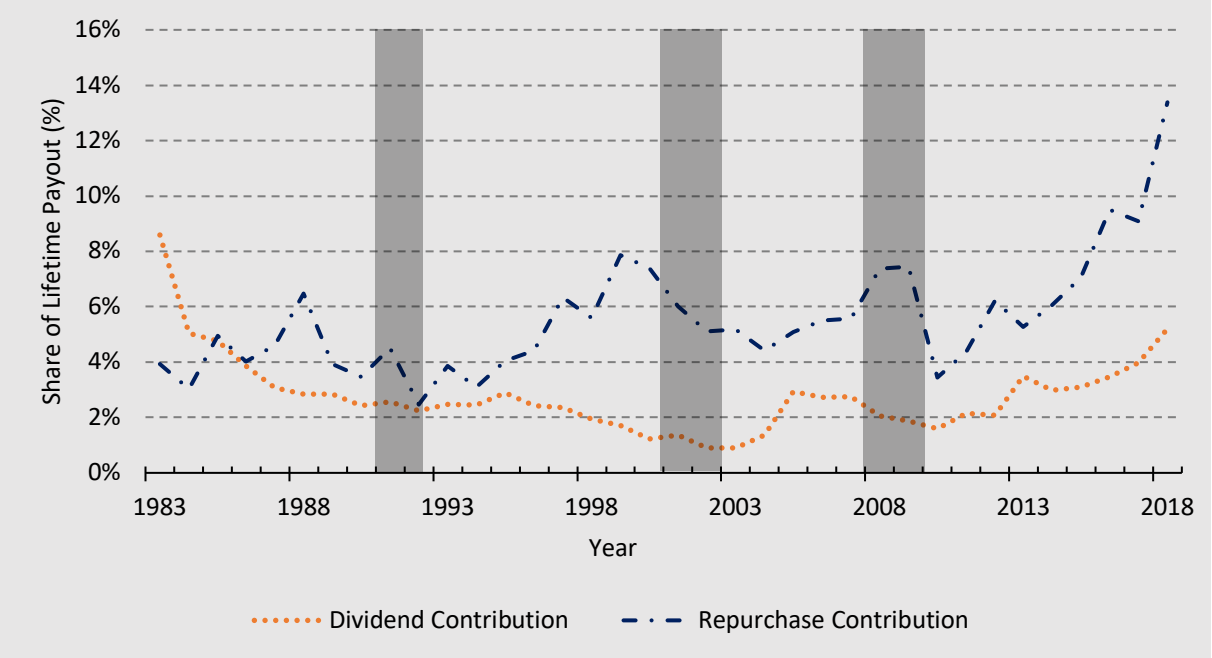
The High Dividend Yield (DY) portfolio and High Total Payout Yield (TPY) portfolio are defined in Figures 2 and 3, respectively. We construct the DY and TPY portfolios on both a value-weighted and equal-weighted basis. Portfolio Turnover is the minimum of sales and purchases in a given year divided by the average of the starting and ending portfolio values. We report average portfolio turnover across each decade and for the whole sample period.

	Value Weighted		Equal Weighted	
%	High DY Portfolio	High TPY Portfolio	High DY Portfolio	High TPY Portfolio
1983-89	28.5	33.4	35.2	47.1
1990-99	20.5	36.3	31.2	49.9
2000-09	42.0	48.4	37.9	58.3
2010-19	30.1	37.8	37.9	56.8
1983-2019	30.4	39.5	35.6	53.5

Figure 4: Stability of Dividends and Repurchases July 1982 - June 2018

Dividend (Repurchase) Contribution is defined as the amount paid out in dividends (repurchases) in a given year as a percentage of the total amount paid out in both dividends and repurchases over the life of a firm. For each year ended June, we estimate the average contribution across all firms and graph the two time-series. The grey bars depict recession periods. We include all firms in our sample in 4(a) and include only those firms surviving the whole period 1982-2018 in 4(b).

(a) Full sample



(b) Constant sample

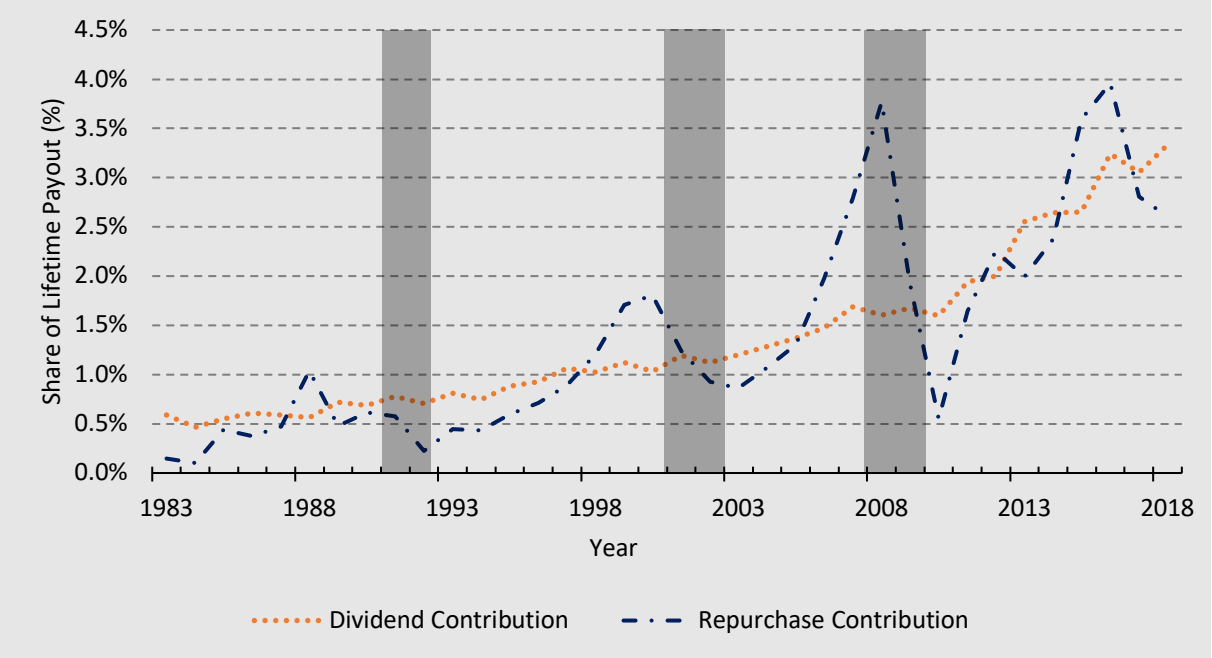


Table 10: Trailing Earnings Growth across Dividend Yield Portfolios

July 1950 - June 2019

The High, Low, and Zero Dividend Yield (DY) portfolios and High, Low, and Zero Total Payout Yield (TPY) portfolios are defined in Figures 2 and 3, respectively. We report trailing earnings growth in panel (a) and forward earnings growth in panel (b). The first column reports annualized pre- (post-) formation earnings growth for the High DY portfolio over 2, 3, 5, and 10 years before (after) portfolio formation. The following columns report differences in trailing earnings growth between the High and Low DY portfolios, the High and Zero DY portfolios, and the High DY portfolio and All firm. The sample period covers July 1950 through June 2019. ** and *** indicate 5% and 1% statistical significance respectively for the difference in mean tests.

(a) Trailing Earnings Growth

%	High DY	High minus Low	High minus Zero	High minus All
2 Years	6.4	-12.45***	-2.01***	-5.11***
3 Years	7.23	-12.04***	-4.99***	-5.65***
5 Years	8.09	-9.64***	-5.58***	-4.76***
10 Years	8.48	-6.1***	-4.95***	-3.13***

(b) Forward Earnings Growth

%	High DY	High minus Low	High minus Zero	High minus All
2 Years	6.57	-2.93***	7.16***	0.74**
3 Years	7.78	-2.41***	2.75***	-0.21
5 Years	8.75	-1.74	-0.25***	-0.58***
10 Years	9.05	-1.36***	-2.26***	-0.82***

Figure 5: Dividend Splits and Dividend Yield July 1950 - June 2019

The High, Low, and Zero Dividend Yield (DY) are defined in Figure 2. For each portfolio as well as all firms in the sample (All), we report the average annual dividend yield (%) over the next 2, 3, 5, and 10 years at each June year-end from July 1950 through June 2019.