

Przemysław Konieczka*PhD Student, Warsaw School of Economics***Adam Szyszka***Department of Capital Markets, Warsaw School of Economics*

Do investor preferences drive corporate dividend policy?

Abstract

This research paper aims at assessing whether managers adapt their dividend policies to the changing preferences of investors, as predicted by the catering theory of dividends. To answer this question, we used an modified approach based on the method proposed by Baker and Wurgler [2004a] in their studies on dividend catering.

We noted a systematic decline in percentage of companies that paid out dividends in a sample of American publicly-traded companies, excluding companies of low capitalization and low profitability. Next, we observed a parallel declining tendency in dividend premiums in our sample. The decrease in the readiness to pay out dividends among companies on the American market can be linked to the fact that investors have assigned less weight to dividends over the years, and so in turn they were less willing to reward dividend-paying companies with higher valuations. Periodic fluctuations in investor mood with regard to dividend-paying companies, and the resulting changes in their relative valuation, influence the propensity of managers to pay out dividends. We showed a statistically significant relationship between changes in dividend premiums in one year, and the proportion of companies that paid out dividends in the following year. Additionally, it looks like companies try to compensate shareholders by paying out dividends in years of worse performing market and are less likely to distribute their earnings when shareholders gain on rising stock price. We found a negative correlation between the change in proportion of companies paying out dividends and changes in the S&P500 index. However, this does not seem to reflect investor preferences and taste for dividends. We found no statistically significant correlations between the change of the dividend premium and changes in the S&P500 index and, surprisingly, we observed relatively worse valuation of dividend-paying firms in years of market downturn.

In terms of originality, our work contributes to the ongoing dividend puzzle discussion in a number of ways. First, we use a sample of American companies after excluding small capitalization stocks. Second, we assume a time lag between a shift in investor preferences and a change in corporate payout policy. Finally, our studies also account for the impact of general market conditions on dividend decisions.

Keywords: dividend policy, catering theory of dividends, behavioral corporate finance
JEL: G35, G02

Introduction

Fama and French [2001] observe that the number of companies paying out dividends from among publicly traded companies in the United States has been systematically decreasing since 1960. Baker and Wurgler [2004a, 2004b, 2012] suggest that managers decide about payments of dividends based on adaptations to periodic shifts in investor preferences. Their catering theory of dividends, inspired by Long [1978], posits that rational company managers adapt their dividend policy to the changing preferences of investors, who are not necessarily rational. Fluctuations in the preferences of market players are evidenced by periodic changes in the relative valuations of dividend-paying and non-dividend-paying companies. In other words, investors' moods, and the demand for dividend stocks in turn are changing over time, what causes differences in the relative valuation of companies that pay and do not pay dividends. Baker and Wurgler use a measure they term the dividend premium to determine the relative valuation of these companies. This measure is defined as the difference between the mean value of the market capitalization index and the book value of equity (MV/BV) for companies that do and do not pay out dividends. Baker and Wurgler concluded that managers initiate dividend payments when stocks of dividend-paying companies are valued at a high premium in comparison to stocks of non-dividend-paying companies. Baker and Wurgler suggest that the fact that this premium has been steadily decreasing over the last few decades is the reason for the systematically diminishing proportion of dividend-paying companies on the American market.

Ali and Urcan [2006], Hsieh and Wang [2006], Twu and Shen [2006], Kale, Kini, and Payne [2012], as well as Neves, Pindado and De La Torre [2006] have all confirmed that the diminishing tendency to pay out dividends by publicly-traded companies on the American market can be traced to triggers derived from catering theory that are observed among managers. However, on the other hand, Julio and Ikenberry [2004] and Hoberg and Prabhala [2009] did not find support for these triggers among managers.

Our work fits into this ongoing discussion and contributes original elements in a number of ways. First, based on Fama and French's [2001] argumentation that the

American market is made up of an increasing proportion of small companies and therefore the percentage of dividend payers in the total population of firms is decreasing, we exclude from our studies companies with market capitalization of less than 100 million dollars as well as those generating net profits of less than 10 million dollars. We are convinced that such small companies have a limited ability to conduct an active dividend policy that is directed at periodic shifts in investor preferences. At the same time, they are more susceptible to various other factors that affect their listings. Because small companies constitute an ever-larger proportion of listed companies, their inclusion in studies on the catering theory of dividends likely distorts the view we have of reality. We focus on the population of larger companies that hypothetically have the potential to conduct an active dividend policy.

Secondly, we assumed that managers of non-dividend-paying companies need time to observe and react to differences in the valuations of dividend-paying and non-paying companies and to initiate dividend payments in their companies. Thus, we assumed that the value of the premium for dividends in a given year would not influence dividend-payment decisions of other companies before the following year.

Third, our studies also account for the impact of general market conditions on dividend policy. We treat the dividend premium as defined by Baker and Wurgler as a kind of measure of investors' attitudes to risky non-dividend-paying companies when the speculative bubble is growing, and to safe dividend companies in times of crisis. We check whether the proportion of dividend payers and the dividend premium are correlated to market conditions as measured by the S&P500 index.

The rest of this article is organized into the following sections. First, we present the methodology of our study with a detailed description of our sample. Then, we offer the results and discuss them. Finally, we conclude with a summary of the main findings, identification of the limitations of our studies, and suggestions for future research.

Hypothesis and Methodology

Based on the postulates of the catering theory of dividends, our main research hypothesis was as follows:

H0: Managers of publicly-traded companies will adapt their decisions about paying dividends to the current preferences of investors and market conditions.

Furthermore, we formulated specific partial hypotheses that will allow a more precise analysis of the assumptions outlined in the main hypothesis. The first partial hypothesis is as follows:

H0A: When dividend-paying companies are valued relatively higher by the market than are non-dividend-paying companies, this will signal to non-dividend-paying companies that they should initiate dividend payments.

In this hypothesis, we included inferences directly derived from the catering theory of dividends. The second partial hypothesis was formulated as follows:

H0B: The dividend premium is dependent on market conditions.

The second partial hypothesis treats the dividend premium, as defined by Baker and Wurgler, as a kind of reflection of investor mood and investor attitudes toward risky non-dividend-paying companies when the speculative bubble is growing, and preferences for safe dividend companies in times of crisis. The third partial hypothesis is formulated as follows:

H0C: The proportion of dividend-paying companies is dependent on market conditions.

The last hypothesis results from the potential reaction of rational managers to market changes, particularly if the second partial hypothesis holds true.

In our study, we reviewed investment policies of companies publicly listed on the American markets between 1983 and 2011. We selected our sample from among the population of publicly-listed companies on the AMEX, NASDAQ or NYSE markets. We selected those publicly-traded companies with market capitalization of over 100 million dollars at the end of each year within our studied period, as well as a net profit of over 10 million dollars for the given year. The table below presents the sample size in each year of the analysis.

The sample was divided in each year of the studied time period into two portfolios:

1. a portfolio of companies that paid out dividends in the given year,
2. a portfolio of companies that did not pay out dividends in the given year.

Dividing companies based on dividend policy allows us to determine the proportion of dividend-paying vs. non-paying companies in a given time period.

Taking into consideration earlier studies on dividend catering (e.g. [Baker & Wurgler, 2004a]), we calculated the value of the MV/BV ratio for every company within each portfolio. In order to avoid the calendar effect, we used mid-year data to calculate the MV/BV ratio. Next, we calculated the arithmetic means of the MV/BV ratios for the two portfolios for each year of the studied period.

We tested the first partial hypothesis using the method initially developed by Baker and Wurgler [2004a]. To test the hypothesis, we set a time series of dividend premiums. We calculated the relative change in dividend premiums as the difference between a given year's premium and the premium of the previous year. We assumed that managers of non-dividend-paying companies needed a year's time to observe and react to the difference in valuation of dividend-paying and non-paying companies and to initiate dividend payout by their companies. We tested the statistical correlation between the change in dividend premiums in a given year and the relative change in the proportion of companies that paid out dividends in the following year.

We tested the second partial hypotheses by conducting a statistical test to verify the correlation between the change in the dividend premium and the rate of return from the

TABLE 1. The sample size of companies listed on the AMEX, NASDAQ, and NYSE stock exchanges with capitalization of over 100 million dollars and net profits of above 10 million dollars in 1983–2011.

Years	Number of companies	Years	Number of companies
1983	181	1998	1 108
1984	215	1999	1 214
1985	221	2000	1 256
1986	236	2001	1 167
1987	260	2002	1 223
1988	289	2003	1 440
1989	292	2004	1 485
1990	312	2005	1 821
1991	315	2006	1 998
1992	361	2007	2 060
1993	448	2008	1 652
1994	555	2009	1 691
1995	620	2010	2 140
1996	960	2011	2 226
1997	1 066		

Source: Own elaboration based on data from Compustat.

S&P500 index. Additionally, we looked if in years of market downturns (defined as years with negative change of S&P500) the average dividend premium was statistically different from the average in other years.

Similarly, we tested the third partial hypotheses seeking correlation between the change in the proportion of dividend-paying firms and the change of the S&P500 index. We also looked if in years of market downturns the proportion of dividend-payers was increasing comparing to the previous year.

Financial data from publicly-traded companies listed on the AMEX, NASDAQ and NYSE markets, and the value of the S&P500 stock market index came from the Compustat financial database.

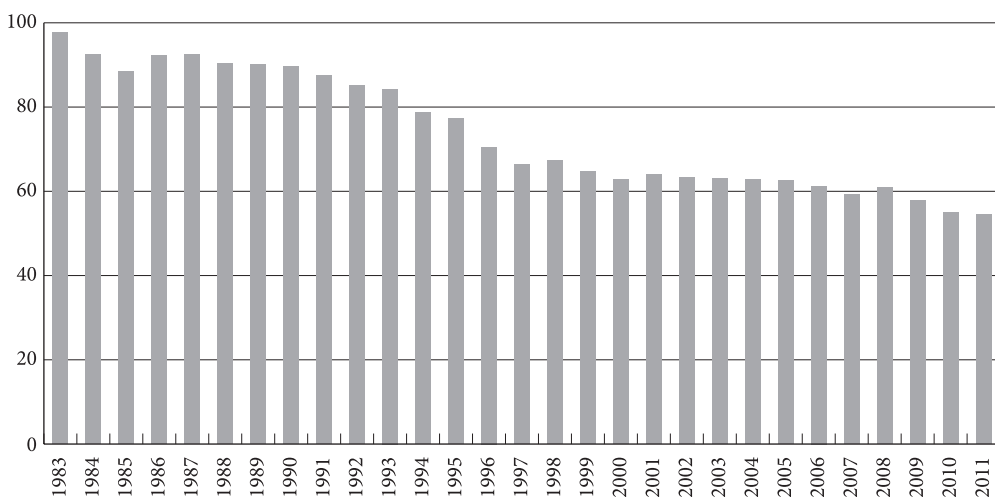
Results and discussion

Fama and French [2001] conducted research on dividend policy of publicly-traded companies and observed that the proportion of companies that paid out dividends has been decreasing in the United States since 1960. They partially explained this tendency through the changing nature of the population of publicly-traded companies in the United States. They concluded that the lower proportion of dividend-paying companies is driven by the increasing number of listings of small companies that have low profitability and large growth potential, which are not likely to pay out dividends to their shareholders.

After removing all publicly-traded companies of low capitalization and profitability, we also observed a decreasing proportion of companies paying out dividends between 1983 and 2011. Our results support studies run by Fama and French as well as other researchers. Nonetheless, removing the smallest and least profitable companies from our sample means that the proportion of dividend-paying companies is noticeably higher than in Fama and French's studies. The decreasing tendency over time is still visible, however. This might suggest that the declining proportion of dividend-paying companies is also the result of factors other than the structure of the population of publicly-traded companies, which is another argument for the catering hypothesis of dividends.

In Figure 1, we present the proportion of dividend-paying companies in the sample over time.

FIGURE 1. Percentage of companies paying dividends, from a sample of companies listed on the AMEX, NASDAQ, and NYSE stock exchanges with capitalization of over 100 million dollars and net profits of above 10 million dollars in 1983–2011.



Source: Own calculation based on data from Compustat.

Within our sample, the proportion of dividend-paying companies was 98% in 1983 and only 55% in 2011. Even so, dividend-paying companies accounted for 74% of the market capitalization of the entire sample in 2011.

Table 2 shows the proportion of dividend-paying companies in our sample from 2011, divided into sector. The greatest proportion of these companies constitute public utility companies (95% from this sector) and companies from the financial sector (83% from this sector). The sectors least represented among dividend-paying companies are the information technology and health care sectors.

TABLE 2. The proportion of dividend-paying companies in the sample of 2226 American stock companies according to sector in 2011

Sector	Percentage of payers	Average beta
Consumer Discretionary	42%	1.48
Consumer Staples	58%	0.82
Energy	60%	1.15
Financials	83%	1.11
Healthcare	28%	0.97
Industrials	55%	1.37
Information Technology	27%	1.34
Materials	65%	1.52
Telecommunication Services	50%	0.97
Utilities	95%	0.54

Source: Own calculation based on data from Compustat.

Table 2 also presents the average leveraged beta coefficients for the year 2011 for portfolios of dividend-paying companies by sector. The portfolio of dividend-paying companies in the public utility sector had the lowest average beta coefficient in the sample, with a value of 0.54. Companies in the information technology sector had one of the highest average beta coefficients amounting to 1.34. The mean value of the beta coefficient for the portfolio of dividend-paying companies during the entire studied period was 1.07. For the portfolio of non-dividend-paying companies, the coefficient was 1.33.

The portfolios dividend-paying companies in our sample had a mean logarithmic rate of return (accounting for dividend payouts) in 1983–2011 of 15.1%. The portfolio of non-dividend-paying companies had a mean logarithmic rate of return of 18.2%. The cumulative logarithmic rate of return for the portfolio of dividend-paying companies

TABLE 3. Proportion of dividend-paying companies and dividend premium in our sample of American stock companies and annualized returns of the S&P 500 in 1983–2011

Years	Annualized returns of the S&P 500	Proportion of payers	Dividend premium
1983	15.9%	98%	2.77
1984	1.4%	93%	1.69
1985	23.4%	89%	2.00
1986	13.6%	92%	2.58
1987	2.0%	93%	2.71
1988	11.7%	91%	2.20
1989	24.1%	90%	2.19
1990	-6.8%	90%	2.40
1991	23.4%	88%	2.13
1992	4.4%	85%	1.96
1993	6.8%	84%	2.60
1994	1.3%	79%	1.73
1995	37.6%	78%	1.40
1996	23.0%	71%	0.67
1997	33.4%	67%	1.00
1998	28.6%	67%	1.70
1999	21.0%	65%	0.86
2000	-9.1%	63%	0.41
2001	-11.9%	64%	0.93
2002	-22.1%	63%	0.94
2003	28.7%	63%	1.17
2004	10.9%	63%	0.88
2005	4.9%	62%	1.22
2006	15.8%	61%	0.70
2007	5.5%	59%	3.33
2008	-37.0%	61%	0.97
2009	26.5%	58%	0.85
2010	15.1%	55%	0.34
2011	2.1%	55%	-0.25

Note: The dividend premium means the difference between the mean value of the MV/BV ratios for dividend-paying and non-paying companies.

Source: Own calculation based on data from Compustat.

(accounting for dividend payouts) for 1983–2011 was 452%. For the non-dividend-paying companies, the portfolio's logarithmic rate of return for 1983–2011 was 547%. After accounting for the difference in the beta coefficient values, the portfolio of dividend-paying companies **fared slightly better than the portfolio of non-dividend-paying companies**, in terms of generated rates of return.

The capitalization of the portfolio of dividend-paying companies, its mean beta, and its rate of return confirms that the concept of “dividend-paying companies” typically includes large entities in good financial situations, operating in a low-risk industry, but at the same time achieving lower rates of return. Non-dividend-paying companies can be seen as companies that are small and medium-sized and that function in higher-risk environments with higher rates of return.

The value of the MV/BV ratio for dividend-paying companies over the studied period was 3.7. For non-dividend-paying companies, the mean value of the MV/BV ratio was 2.2. The mean value of the dividend premium for this time period was 1.5. In Table 3, we present the dividend premiums for our sample of companies over time. In the studied period, between 1983 and 2011, we observed substantial fluctuations in the level of these premiums, from -0.25 to 3.33. Nonetheless, over the past three decades we can observe a downward trend in dividend premiums. It is worth noting that we observed a negative dividend premium in our sample of companies for the first time in 2011. In this year, dividend-paying companies were on average valued relatively worse than were non-dividend-paying companies.

According to Baker and Wurgler [2004a, 2004b], a drop in dividend premiums is what leads to a consistently decreasing proportion of dividend-paying companies on the stock market in the United States. Fluctuations in the level of the premium dividends in turn reflect the changing moods of investors. In other words, although investors prefer dividend-paying companies to varying degrees in different years, over time they assign less and less weight to dividends, and so are less and less willing to assign a premium to dividend-paying companies in their valuations. In response to such changes in investor preferences, fewer and fewer companies decide to pay out dividends.

In verifying the partial hypotheses, we tested the following relationships:

- a) hypothesis H0A – the correlation between the relative change in dividend premium in a given year and the change in the proportion of dividend-paying companies in the following year;
- b) hypothesis H0B – the correlation between the relative change in dividend premium and the rate of return of the S&P500 index;
- c) hypothesis H0C – the correlation between the relative change in the proportion of dividend-paying companies and the rate of return of the S&P500 index.

In Table 4, for each partial hypothesis we present the correlation coefficient ρ , the value of the t statistic, and the p probability, indicating the statistical significance at the 0.10 and 0.05 levels.

TABLE 4. Verification of the established hypotheses

Hypothesis	Correlation coefficient	<i>t</i> -statistic	ρ -value
H0A*	0.44	2.44	0.02
H0B**	0.26	1.37	0.18
H0C***	-0.36	-1.96	0.06

* The hypothesis HOA concerns the correlation between the relative change in dividend premium in a given year and the relative change in the proportion of dividend-paying companies in the following year. We proved a statistical significance of the correlation at a significance level $\alpha = 0.05$;

** The hypothesis HOB concerns the correlation between the relative change in dividend premium and the rate of return of the S&P500 index. We proved a lack of statistical significance of the established correlation.

*** The hypothesis HOC concerns the correlation between the relative change in the proportion of dividend-paying companies and the rate of return of the S&P500 index. We proved a statistical significance of this correlation at significance level $\alpha = 0.1$.

Source: Own calculation.

As shown in Table 4, the correlation between the variables used to verify the first partial hypothesis is 0.44 and it is statistically significant at the 0.05 level. This confirms the hypothesis that managers adapt their dividend policies in accordance with the changing preferences of investors, as predicted by Baker and Wurgler's catering theory of dividends. Managers of non-paying companies, who observe that dividend-paying companies are temporarily more highly valued by the market, adapt their dividend policy to the current preferences of investors and initiate dividend payouts.

In the case of the hypothesis H0B, the correlation between the relative change in dividend premium and the rate of return of the S&P500 index is not statistically significant. Therefore, we are unable to confirm that the dividend premium, in other words investor taste for dividends, depends on market conditions. The positive sign of the correlation coefficient, although statistically insignificant, is quite surprising. Additionally, when we looked separately at years of market downturn (years with negative S&P500 change) we found that the average dividend premium for these years amounted to 1.13 and it was significantly smaller than the general average in other years, which amounted to 1.47. The average change of the dividend premium in years of market downturn relative to the previous year amounted to -0.40 and it was significantly higher in absolute terms than the average for the whole sample, which amounted to -0.11. This means that in years of market downturns dividend paying firms suffer more in terms of valuation than non-payers, what is rather a puzzling result. For example, it is inconsistent with suggestions made by Fuller and Goldstein [2011], who argued that dividend-paying companies have higher relative valuations particularly in bad times. It is also surprising in the context of the Kahneman and Tversky's [1979] prospect theory. According to this theory, one could expect that a dividend that allows a shareholder to diminish the perception of losses incurred in bad market conditions has a higher subjective value for him than would

a dividend of the same amount paid out in times when the share listings are profitable. In other words, according to prospect theory investors should value dividend-paying firms more in bad times than in good times. However, this is not confirmed in our study.

Despite surprising results indicating investors' lack of appetite for dividends in bad times, corporate managers seem to act as if investors actually preferred dividends when stock prices preformed relatively poorer. Our study confirmed (though at a relatively weak statistical significance level 0.1) the negative correlation between the relative change in the proportion of dividend-paying companies and the rate of return of the S&P500 index. The worse the results observed on the S&P500 index in a given year, the more companies decided to pay out dividends. Additionally, when we looked separately at years of market downturn, we found that on average the proportion of dividend-paying firms in a year of the market downturn is higher relatively to the previous year.

Conclusion

In this paper first we demonstrated a systematic decline in the proportion of dividend-paying companies in our sample of American market companies, which did not include companies of the lowest capitalization or profitability. Next, we showed a parallel declining tendency of dividend premiums in the studied sample. In accordance with the catering theory of dividends, as proposed by Baker and Wurgler, a decline in the tendency to pay out dividends can be linked to the fact that over time investors have assigned lower and lower weight to dividends, and, in turn, were less and less willing to reward dividend-paying companies with high valuations. Periodic fluctuations in the level of investor mood with regard to the perception of dividend-paying companies, which resulted in varying levels of dividend premiums, influenced managers to initiate dividend payouts. A statistically significant relationship was shown between the change in the dividend premiums in a given year and the proportion of companies paying out dividends in the following year.

However, in years of market downturn corporate managers seem cater to what they imagine the taste of investors is rather than to true preferences of investors. On one hand, we showed that the change in the proportion of companies paying out dividends is negatively correlated to S&P500 changes. This suggests that managers are likely to compensate shareholders poorer stock price performance with more dividend payments. On the other hand, we found some surprising indications that investors do not particularly like dividends in times of bad market conditions.

A basic limitation of our research is the fact that the tendency of managers to pay out dividends is equated with the proportion of companies that pay out dividends. Similarly, we calculate the dividend premium by comparing the parameters of portfolios of dividend-paying and non-paying companies. We do not examine whether investors as-

cribe a higher valuation to companies that pay a higher dividend. Finally, the measures of relative change in the valuation of companies, based on mean values of price to book value (MV/BV) might be imperfect due to the probability that they also include the influence of other factors and characteristics of companies than just the dividend policy. These limitations delineate possible avenues for future research.

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