Characteristics of Dividend Payers and Generous Dividend Payers

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August 1, 2007

This version: April 9, 2009

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Abstract

Based on a total sample largely uncontaminated by share repurchases we find that the characteristics of dividend payers are: Positive earnings, high ROE (net earnings to book equity), low volatility in ROE, high retained earnings, large firm size, and whether the firm paid out dividends in the previous year. MV/BV, leverage and owner structure play no role in whether a firm pays dividends or not.

Among the dividend payers the generosity of the payments (relative to market value of equity measured in fixed prices) is positively related to ROE and previous year's generosity with respect to dividend payments, and negatively related to concentrated owner structure and firm size. That is, the payer characteristics differ from the generous payer characteristics.

In Denmark share repurchasers are also dividend payers. Compared to pure dividend payers these firms are larger, have higher ROE, lower growth and a more concentrated owner structure. Finally, the share repurchasers are also among the most generous dividend payers.

The findings are in support of a signaling explanation in addition to an agency explanation for the dividend payouts.

1. Introduction

Following the influential paper by Fama and French (2001) we have seen an upsurge in dividend studies where the main object of study is the characteristics of dividend payers respectively non-dividend payers (see for example DeAngelo et al. (2006), Denis and Osobov (2006), and Ferris et al. (2005)). We have learned that the dividend characteristics of US firms are: high ROE (net earnings to book equity), high retained earnings, low MV/BV, large firm size, and whether the firm paid out dividends in the previous year. We have also learned that the dividend characteristics of non-US firms may differ from the dividend characteristics of US firms. See for example Denis and Osobov (2006), Eije and Megginson (2006), Ferris et al. (2005), and Renneboog and Trojanowski (2005). However, a caveat about the non-US studies is that they are not based on total country samples. For example, Eije and Megginson (2006) find that retained earnings are not significantly related to the propensity to pay out for European Union firms whereas Denis and Osobov (2006) find that retained earnings are also a significant dividend characteristic for non-US firms including UK, German, and French firms. We attribute this to partial samples. This study is based on a total Danish sample covering the period 1988-2004

All most no studies of the propensity to pay dividends control for simultaneous share repurchases, even when it is known that share repurchases are an important payout channel. An exception to this is the study by Renneboog and Trojanowski (2005).[1] In this study we are able to control for share repurchases. There have been no institutional or regulatory hindrances to share repurchases in Denmark, and from a tax point of view payouts by means of share repurchases is a better way to pay out than by means of dividends. Nevertheless, there were no share repurchases in Denmark until 1999, and during the period 1999-2004 the number of share repurchases was relatively low. This means that it is relatively easy to control for share repurchases in this study. However, the share repurchases in the last part of the sample period allow us to come up with some conclusions regarding the characteristics of the firms that pay out by means of share repurchases.

We find that the propensity to pay out dividends is influenced by earnings on three dimensions. The propensity to pay is positively correlated with the sign of earnings, high ROE, and low volatility in ROE. According to Danish Company Law a Danish firm cannot pay out to shareholders if retained earnings are negative, i.e. if book equity is below share capital. Like Bechmann and Raaballe (2007) we find that the propensity to pay out dividends is strongly positively correlated to retained

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[1] A further exception is Grullon and Michaely (2002). However, their focus is not on dividend characteristics.

earnings. The same holds in the US. However, in the US the explanation of the result is not linked to a hard payout constraint (see DeAngelo et al. (2006), and Bechmann and Raaballe (2007)). In Denmark it is the "old fashioned" firms that pay dividends: Firms with high and stable earnings and who have enough retained earnings are the dividends payers. Earnings can become negative for a year or two. However, if earnings continue to be negative, dividends will be omitted. Large firms are more likely to pay out dividends than small ones. Finally, the propensity to pay dividends correlates positively to whether the firm paid dividends in the preceding year or not.

A second objective of the study is to answer the question: What are the characteristics of the generous respectively not so generous dividend payers? We are aware of only one example where the amount of dividends paid out is the object of study. In their working paper Eije and Megginson (2006) use *total dividends* paid out by the firm as their dividend measure. Not surprisingly, large firms are more generous dividend payers than small ones. We want a dividend measure that is scaled with some sort size and that is suited to compare generosity over time as well as across firms. A candidate is the dividend yield of the firm. However, this is a problematic measure because it is also influenced by the development in a firm's share price over time. Fama and French (2002), among others, somewhat ad hoc normalize total dividends with book value of assets. Instead of this we (see also Bechmann and Raaballe (2008)) come up with a new measure: Dividend yield with equity measured in fixed market prices. We find that among the dividend payers the generosity of the payments (relative to market value of equity measured in fixed prices) is positively related to ROE and previous year's generosity with respect to dividend payments, and negatively related to concentrated owner structure and firm size. That is, the payer characteristics differ from the generous payer characteristics.

With respect to share repurchases we find that share repurchasing firms in Denmark are also dividend payers. Compared to pure dividend payers these firms are larger, have higher ROE, lower growth, and a more concentrated owner structure. Finally, the share repurchasing firms are also among the most generous dividend payers.

In addition to the actual findings concerning payer characteristics, generous payer characteristics and characteristics of firms making share repurchases we find support of a signaling explanation in addition to an agency explanation for the dividend payouts. First, if only agency problems were in play share repurchases is the effective way (from a tax point of view) of paying out. However, the majority of payouts are in the form of dividends. Second, firms having large owners should be less likely to signal by means of dividends. Indeed, they pay out less dividends and use share

repurchases more often. Third, we find that dividends provide information about future profitability, incremental to accounting data. Fourth, dividend payers can permanently afford to pay dividends out of earnings. They have high retained earnings, high and stable ROE in addition. Firms making share repurchases also pay out by means of dividends. It thus seems that dividend payout is a credible signal for traditional and healthy firms. But, firms not possessing these characteristics – for example firms that have permanent negative earnings – do not pay dividends. They may supply information more directly (and cheaper) when they visit the market for new financing.

As a service to the reader we summarize previous findings on dividends in Denmark in appendix A. The characteristics of dividend payers are the object of study in subsection 2, whereas the generous payer characteristics are the object of study in subsection 3. In subsection 4 we conclude and discuss our findings.

2 Characteristics of dividend payers and non-payers

This study is based on a total sample of firms listed on the Copenhagen Stock Exchange (CSE), the only stock exchange in Denmark. The sample period is 1988-2004. All data concerning dividends, accounting figures, and share prices are based on the *Dividenddatabase-Aar*.[2] Data concerning share repurchases are from *StockWise*, which contains all company announcements for firms listed on the CSE starting in 1995. We identified 4219 (firm-year) dividend observations collected from 356 firms. 75 observations were omitted due to lack of accounting data, 41 observations were omitted due to negative book equity. Finally we omitted all observations from and after the first time a firm made a share repurchase, in total 155 observations. Hence, the final sample contains 3948 observations collected from 356 firms. Some investigations are based on a lower number of observations. For example, an investigation conditioned on the firms' previous four years of dividend status implies a smaller sample, since the *Dividenddatabase-Aar* contains no information before 1988 and the years before a firm was listed on CSE.

Dividends in Denmark are decided and paid once a year, 1-3 months after fiscal year ends. When we say "dividends in year *t*" we actually mean "dividends decided and paid in year *t+1* associated with fiscal year *t*".

In the next subsection we identify dividend characteristics by means of a series of tables and figures that show the relation between a single characteristic and the propensity to pay dividends. Due to space constraints we only report significant relations. These findings are confirmed by means of logit-regressions in a succeeding subsection. All variables used in this paper are defined in table 1.

(Insert table 1)

2.1 Characteristics

Since Lintner (1956) it is well recognized that earnings are an important dividend determinant. Figure 1 depicts the relation between the firms' ROE and dividend status throughout the sample period.

(Insert figure 1)

The median dividend payer has an ROE around 10% whereas the median non-dividend payer only has an ROE around 0%. It is noteworthy that there exists a group of non-payers (the 90% percentile) with an ROE around 15%. However, firms in this group typical do not have permanent high earnings or are dividend-constrained by low retained earnings.

(Insert table 2)

From table 2 we observe that the groups of permanent and non-permanent payers have almost identical ROEs, whereas the group of permanent payers has more stable earnings. For the groups of non-payers we find that the previous payers have lower earnings and more stable earnings than permanent non-payers. The conclusion is that stable earnings are a dividend characteristic, and there are indications (which will be confirmed later) that dividend payers are likely to omit dividends when they realize negative earnings.

According to Danish Company Law a Danish firm cannot pay out to shareholders if retained earnings are negative, i.e. if book equity (BE) is below share capital (SC). Hence, a necessary condition for dividend payout is that the constraint $(SC/BE) \leq 1$ holds true.

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(Insert table 3)

Table 3 shows that whether a firm has positive or negative earnings, payers/non-payers are associated with a low/high *SC/BE-ratio*. We investigate this further in figure 2 where we for intervals of *SC/BE-ratios* depict the fraction of firms that pays dividends. This is done for firms that have positive as well as negative earnings.

(Insert figure 2)

The higher *SC/BE-ratio*, the lower fraction of firms pays dividends. For low *SC/BE-ratios* almost all firms with positive earnings pay dividends, whereas only 40-50% of the firms with negative earnings pay dividends. Independent of earnings, firms do not pay dividends for high *SC/BE-ratios*. DeAngelo et al. (2006) find a similar result for US firms. Crawford et al. (2005) argue that an *SC/BE-constraint* is almost irrelevant in the US, the argument being that it does not constrain payout possibilities due to soft constraints. Quite naturally then, DeAngelo et al.'s (2006) explanation for their findings differs from our explanation. In the words of DeAngelo et al. (2006): "Dividends tend to be paid by mature, established firms, plausibly reflecting a financial life cycle in which young firms face relative abundant investment opportunities with limited resources so that retention dominates distribution, whereas mature firms are better candidates to pay dividends because they have higher profitability and fewer attractive investment opportunities. … The earned/contributed capital mix is a logical proxy for the life-cycle stage at which the firm currently finds itself because it measures the extent to which the firm is self-financing or reliant on external capital."

(Insert table 4)

From table 4 we learn that Danish firms are rather conservative with respect to dividend policy. Among the dividend payers more than 90% will also pay out dividends next year, whereas more than 80% among the non-dividend payers will not pay out dividends next year either. If a firm paid out dividends in the previous year and realizes positive earnings this year, it will almost surely remain a dividend payer. However, if the firm realizes negative earnings this year, there is a 57% chance that it will omit dividends this year. Dividend status is highly dependent on the sign of

current earnings. If a firm did not pay out dividends the previous year and realizes negative earning this year, it will almost surely remain a non-dividend payer. However, if the firm realizes positive earnings this year, there is approximately 25% chance that it will initiate dividends and this is more likely the lower *SC/BE-ratio*.

Nissim and Ziv (2001) and Lee and Yan (2003) find that dividends provide information about future profitability, incremental to accounting data. Table 4 indicates that the same holds true for Danish firms. Were previous year's earnings positive, then simultaneous positive dividends/no dividends indicate that next year's earnings are positive with 90%/75% probability. Were previous year's earnings negative, then simultaneous positive dividends/no dividends indicate that next year's earnings are positive with 70%/45% probability. A more detailed analysis (with respect to previous year's earnings) confirms this.

Previous dividend payers that realize negative earnings this year omit dividends with a 57% chance. This is in contrast to US where according to DeAngelo et al. (1992) only 15% of the corresponding firms omit dividends.[3] For Germany, Goergen et al. (2005) find that 80% of the corresponding firms omit dividends. However, the findings by DeAngelo et al. (1992) are based on firms that have experienced positive earnings and paid dividends during the preceding 10 years. Goergen et al. (2005) use a 5-year period. Based on a 5-year period we find that 48% of the Danish firms omit dividends when they realize negative earnings. Danish firms are more flexible than US firms, but more conservative than German firms. In many other respects Danish firms are situated somewhere between the Anglo-Saxon and the Continental European tradition.

In general we find that non-dividend payers initiate dividends when they experience relatively stable and positive earnings and a sufficiently low *SC/BE-ratio*.

(Insert table 5)

Table 5 shows that payers on average are four to five times larger than non-payers. Among payers we do not observe a major difference between permanent respectively non-permanent payers. However, among non-payers we find that previous payers are far lager than permanent non-payers. We have investigated whether other dividend characteristics exist, for instance MV/BE, leverage,

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[3] Andres et al. (2009) confirm that German firms have flexible dividend policies. However, they also find that German firms base their dividend decisions on cash flows rather than published earnings.

net investments, owner structure, age of firm, and industry sector. Except for industry sector these characteristics play no role in whether a firm pays dividends or not.

In summary we have found that payers have positive, relatively stable earnings and a low *SC/BE-ratio*. If a payer realizes negative earnings for a year or two it may continue to pay dividends, especially if it has a low *SC/BE-ratio*. However, if the negative earnings are more permanent, the firm omits dividends. Two conditions have to be met in order to initiate dividends: a series of respectable earnings and a sufficiently low *SC/BE-ratio*.[4] On the other hand, very few non-payers meet these conditions. The overall conclusion is that payers can permanently afford to pay dividends out of their earnings.

2.2 Logit regressions

In this section we verify that the dividend characteristics identified in the previous section are significant and robust to changes. Furthermore we investigate whether other dividend characteristics may be identified. We have run a series of logit regressions. However, due to space constraints we only report the basic ones. Our basic regression is:

$$(1): \quad y_{it} = \beta_0 + \beta_1 ROE_{it} + \beta_2 Posearn_{it} + \beta_3 s.d.ROE_{it} + \beta_4 (SC/BE)_{it}$$
$$+ \beta_5 \ln MV_{it} + \beta_6 (MV/BV)_{it} + \beta_7 y_{it-1} + \varepsilon_{it},$$

where y_{it} is an indicator variable that is equal to 1 if firm *i* pays dividends for fiscal year *t*; otherwise it is equal to 0. $Posearn_{it}$ is an indicator variable that is equal to 1 if firm *i* has positive net earnings in fiscal year *t*; otherwise it is equal to 0. The remaining variables are defined in the previous section. The reader may also consult table 1. When we test for significance we apply the method developed by Fama and Machbeth (1973), see also Fama and French (2001) and Petersen (2005). The result of the regression is reported in table 6.

(Insert table 6)

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[4] In this respect it is very illustrative to consider a firm's time series of earnings, *SC/BE-ratios*, and dividend status.

We note that all variables (except MV/BV) are significant at the 1% level and confirm our previous findings. However, we find that higher MV/BV improves the propensity to pay dividends (significant at a 10% level). This is opposite to US where lower MV/BV improves the propensity to pay dividends – see e.g. Fama and French (2001). We were able to isolate this finding to a subset of small and persistent dividend payers. For other firms no effect is found.

When we omit previous year's dividend status from the regression we find qualitatively identical results, both with respect to the size and significance of the coefficients. The same holds true when we include variables for industry sector. However, some industry sectors are more inclined to pay out dividends than others. Banks are an example of this, but whether we include banks in the sample or not we get almost similar results. From the appendix we learn that dividends in Denmark have increased rather dramatically since 1995. When we divide the sample into a sample before 1995 and a sample after 1995 we get almost similar results for the two samples. We have included variables for liquidity, leverage, net investments, owner structure, and age of the firm in the regression and find no significance of these variables while the variables in regression (1) remain qualitatively unchanged and significant. Hence, the findings (except MV/BV) in table 6 are rather robust.

As mentioned, we have omitted all observation from and after the first time a firm made a share repurchase. Due to the relatively low number of share repurchases the results are virtually unchanged if we include these observations in the sample. It turns out that all Danish firms making share repurchases, except three, also pay dividends. We now consider the subsample of firms that pay dividends and investigate whether firms that also pay out by means of share repurchases have other characteristics than the pure dividend payers. In order to investigate this we run a regression similar to regression (1) with an indicator variable z_{it} on the left hand side of (1) that is equal to 1 if firm i pays dividends and repurchases shares in fiscal year t, and is equal to 0 if firm i only pays dividends in fiscal year t. Since there were no share repurchases in Denmark before 1999 the sample is now restricted to the period 1999-2004. When we test for significance we again use the method developed by Fama and Machbeth (1973). We omitted insignificant variables from the regression and the results are reported in table 7.

(Insert table 7)

Concentrated ownership (CO) is an indicator variable that is equal to 1 if firm i has concentrated ownership ultimo fiscal year t; otherwise equal to 0. In Denmark it is rather difficult to get ownership data for all firms. An often used proxy for concentrated ownership in Denmark is the existence of dual class shares (see e.g. Bechmann and Raaballe (2003)). The two types of shares only differ with respect to the number of votes attached to each share. The difference in votes means that the shares are divided into superior voting shares, A-shares, and ordinary voting shares. In all cases ordinary shares are the most common and most traded shares in Denmark. In this paper we use the existence of A-shares as a proxy for concentrated owner structure.

From the regression we learn that firms that pay out by means of dividends as well as share repurchases are larger, have higher ROE, exhibit less growth (measured by net investments to book value of assets primo fiscal year t), and have a more concentrated owner structure than the pure dividend payers. A more concentrated owner structure points to the idea that these firms have less need to signal than firms with a more dispersed owner structure. Hence these firms are more inclined to use less costly (from a tax point of view) share repurchases than more costly dividends.

The overall conclusion of this subsection is that payers can permanently afford to pay dividends out of their earnings. Payers have a low *SC/BE-ratio*, high and stable ROE. These characteristics are the key determinants of whether a firm continues to pay dividends or omits dividends when the firm realizes negative earnings. Danish firms are more inclined to omit dividends than US firms but less inclined to omit dividends than German firms. Danish firms are conservative in the sense that previous years' dividend status is an important characteristic of the current dividend status. We also found that dividends provide information about future profitability, incremental to accounting data. There is evidence that dividends serve as a signal. In this respect it is interesting that the propensity to pay dividends depends strongly on the sign of ROE.[5] Finally, larger firms are more likely to pay dividends than smaller ones. Interestingly we find that growth opportunities, leverage, owner structure, liquidity, and age of firm do not affect the propensity to pay dividends. Finally, we found that large firms with high ROE, low growth, and concentrated owner structure were the firms most inclined *also* to pay out by means of share repurchases. One indication is that these firms pay out by means of share repurchases in addition to dividends. Another indication is that firms with

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[5] Firms with permanent negative earnings do not pay dividends. Instead of supplying information by means of costly dividend-signaling, a conjecture is that these firms may find it cheaper to supply information more directly when they visit the market for new financing.

concentrated owner structure substitute dividends with share repurchases. This is confirmed in the next section.

3. Characteristics of the generous dividend payers

Our main objective in this subsection is to answer the question: What are the characteristics of the generous respectively not so generous dividend payers? A secondary objective is to investigate whether those that pay out by means of share repurchases are generous dividend payers or not? An answer to these questions requires a dividend measure that is suited to compare generosity over time as well as across firms. Below we argue that adjusted dividends per share (ADPS) scaled with the price of the share measured in fixed prices is a good measure.

We will first discuss the comparison of dividend generosity over time for a specific firm. A candidate for such a measure is dividends per share (DPS). Suppose a firm doubles its dividend payments. If the firm has also doubled its market value of equity by means of a share issue at market prices (and hence has also doubled the number of shares), the DPS is unchanged. In this case DPS is a good measure. However, in Denmark as in many other countries shares are most often issued below market price, a rights issue. In this case the DPS in the example will decrease since the rights issue more than doubles the number of shares. Hence, DPS is not a proper measure of dividends generosity in case shares are issued below market price. The solution is simply to correct the dividends per share such that we accommodate for issues at a price below the market price.[6] We define

$$(2): \quad ADPS_t \equiv \tilde{d}_t \equiv k_0^t DPS_t \equiv k_0^t d_t .$$

How should the correction factor, k_0^t, be defined? We simply ask the question: If hypothetically all share issues (share repurchases) had taken place at market prices instead of below (above) market prices, what would the number of shares, $\tilde{n}_t^0$, be? Based on this we calculate $k_0^t = n_t / \tilde{n}_t^0$, where n_t is the actual number of shares at time t. We note that these definitions are consistent with (2). In the following examples we assume that the number of shares before the share issue is equal to 100.

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[6] A similar correction applies for share repurchases at a price above market price. However, such a correction is not necessary in Denmark since all share repurchases have been executed at or close to market prices.

First, we take the trivial case where the shares are issued at market prices. Here we have $\tilde{n}_t^0 = n_t$ $\Rightarrow k_0^t = 1 \Rightarrow ADPS_t = DPS_t$. Second, suppose the firm makes a 1 to 1 share issue at price 0 (a stock dividend) or a 1 to 1 stock split. We assume that total dividends after the share issue are equal to total dividends before the share issue. In both cases we have $\tilde{n}_t^0 = 100$ (since the proceeds from the transaction is equal to 0), and the new number of shares is equal to 200. Hence, $k_0^t = 2$. In both cases the DPS after the issue is equal to 0.5 x DPS before the issue, whereas ADPS comes up with the correct result that ADPS is unchanged. Third, suppose the firm makes a 1 to 1 share issue at a price equal to 0.5 x market price. This corresponds to a 50% issue at market prices and hence $\tilde{n}_t^0 = 150$. We assume that total dividends also increase by 50%. Since the number of actual shares after the issue is 200, DPS after the share issue is only 75% of the DPS before the share issue. However, ADPS comes up with the correct result, unchanged dividend generosity. We have $k_0^t = 200/150 = 4/3$ and hence $ADPS_t^+ = (4/3)DPS_t^+ = (4/3) \times 0.75 DPS_t^- = DPS_t^- = ADPS_t^-$.

Hence, the series of ADPS: $d_0, k_0^1 d_1, k_0^2 d_2, k_0^3 d_3...$ is a measure of dividend generosity over time for a specific firm. We can give this time series a different interpretation since we also have: *For each share owned a time 0, k_0^t, is the number of shares an investor owns at time t, if the investor keeps the investment in the firm's equity unchanged at any share issue.* A proof of this can be found in Bechmann and Raaballe (2008). The intuition is as follows: When an investor keeps the investment in the firm's equity unchanged, the investor will not participate in any share issues/share repurchases that take place at market prices. However, when for example a share issue takes place at a price below market price, the investor will buy his share of the shares issued and exactly finance the transaction by selling some of his shares in the firm. In this way the investor owns – "free of charge" – k_0^t shares at time *t* per one unit of share owned at time 0. Hence, the investor receives the series of dividends: $d_0, k_0^1 d_1, k_0^2 d_2, k_0^3 d_3...$ per one share owned at time 0. This is exactly the series of adjusted dividends per share.

It is now straightforward to measure dividend generosity over time as well as across firms. We simply normalize the series of ADPS for a specific firm with this firm's share price at time 0, p_0. We denote this measure of dividend generosity as dividend yield with equity measured in fixed market prices.

$$(3): \quad y_t^0 = \frac{k_0^t d_t}{p_0}.$$

We note that when we use (3) to compare the dividend generosity of a specific firm over time, this comparison is independent of the base year's share price. However, when we use (3) to compare across firms, we note that the comparison depends on the relative share prices of the firms at time 0. If a different base year, τ, was chosen, the comparison would depend on the relative share prices of the firms at time τ. It is straightforward to show that the relative generosity to pay dividends is independent of the base year if and only if the relative market prices of the firms' shares adjusted for share issues below market prices are constant through time. This simply confirms our intuition: If the relative prices are unchanged, the relative generosity to pay dividends is independent of the base year chosen. This is a standard indexing result.

There are also more practical considerations in relation to the choice of base year. When we want to use the generosity to pay dividends, y_t^0, in panel-data regressions, we will find that not all firms are listed on a stock exchange during the entire period. If we want to include all firms listed on the stock exchange during the period in the sample, we must somehow come up with an estimate of p_0 for firms not listed on the stock exchange at time 0.

We have correction factors (k_0^t) for all years and firms back until 1994. Hence, we now use 1994-2004 as our sample period.[7] We choose 1993 as our base year (year 0).[8] For firms not listed on the CSE at this point of time we have two choices. First, we could omit them from the sample. This introduces a bias due to a relative lack of new listings. However, this is not a major disadvantage since there were relatively few new listings on CSE in the sample period, whereas there was relatively many delistings. Second, we could include the new listings in the sample. This requires a 1993 share price, i.e. a share price before the listing. We suggest deflating the share price at the time of the listing back to 1993 by means of the CSE price index. Fortunately, whether we omit or

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[7] We also investigated the period 1988-1993 and found very similar results, although not as significant as for the period 1994-2004.

[8] 1993 was a recession year with low stock prices (see also appendix A). This implies that the dividend yield with equity measured in 1993-prices (see expression (3)) is rather high. However, this is the case for all years and firms and is of no importance. We could multiply the denominator in (3) with any positive constant. See also our previous discussion of the choice of base year, τ.

include new listings in the sample we get very similar results, and we have chosen to present the results based on the stock of existing firms at the start of year 1994.

In this study (like most other studies of dividends) we omit extraordinary dividends from the sample. We consider dividends as extraordinary when the firm management declares these dividends extraordinary or they are unusually large compared to previous and future dividends of the firm. Finally, in this sample of dividend paying events we again omit all observations from and after the first time a firm made a share repurchase.

In the next subsection we identify the characteristics of the generous dividend payers by means of a series of tables and figures that show the relation between a single characteristic and the generosity to pay dividends measured by (3). Due to space constraints we only report significant relations. These findings are confirmed by means of regressions in a succeeding subsection. All variables used in this subsection are defined in table 1.

3.1 Characteristics

Figure 3 depicts for all dividend paying firms the relation between the firm's dividend yield with equity measured in fixed market prices (DYFP) and the firm's ROE.

(Insert figure 3)

We observe a positive, although not strong relation between DYFP and ROE. The high DYFP at negative ROE reflects our previous finding that firms may continue to pay dividends if they realize negative earnings for a year or two, especially if the firm has a low *SC/BE-ratio*.

(Insert table 8)

Table 8 shows that 84% of the firms either increase or hold DYFP unchanged compared to previous year. Even if earnings have decreased compared to previous year the corresponding number is 75%. This confirms that Danish firms are reluctant to cut dividends. However, when Danish firms experience negative earnings this year, 16% cut dividends to a still positive level and 61% omit dividends. When US firms experience negative earnings this year, 51% cut dividends to a still positive level and only 15% omit dividends (DeAngelo et al. (1992)). Again we find that Danish

firms are more flexible than US firms with respect to dividend payout. When German firms experience negative earnings this year, 11% cut dividends to a still positive level and 80% omit dividends (Goergen et al. (2005)). Again we find that Danish firms are less flexible than German firms with respect to dividend payout.

When Danish/US/German firms experience positive earnings this year 90%/99%/86% of the firms either increase or hold dividends unchanged compared to previous year. Again, Danish firms are more flexible than US firms and less flexible than German firms with respect to dividend payouts.

In the previous section we found that large firms are more likely than small firms to pay out dividends. In table 9 we investigate whether large firms are also more generous payers than small ones.

(Insert table 9)

For all payers we note that average DYFP based on an equal weighting is larger than DYFP based on a value weighting. The most liquid (and largest) Danish firms constitute the KFX-index. We note that these firms are less generous dividend payers than other Danish firms. Hence, among the dividend payers the evidence is that small firms are the most generous payers.

Firms characterized by concentrated ownership have less need to signal their quality than firms characterized by dispersed ownership. A hypothesis is that firms with concentrated ownership will pay out fewer dividends than firms with dispersed ownership. In table 10 we have calculated DYFP, ROE, and MV/BV for the two types of ownership.

(Insert table 10)

We observe a large difference in DYFP between the two groups. The difference does not seem to be due to differences in ROE between the two groups. However, we note that the group of firms with large owners has higher MV/BV than the group with dispersed ownership.

We investigated whether other generous dividend payer characteristics exist such as volatility in ROE, *SC/BC-ratio*, leverage, age of firm, industry sector, and growth. Except for industry sector these characteristics play no role in whether a firm is a generous dividend payer or not.

In summary we have found (until now) that the generosity of the dividend payments is positively related to ROE and negatively related to concentrated owner structure and firm size. Compared to

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US and German firms, Danish firms' flexibility with respect to dividend changes is somewhere in between.

3.2 Cross-section regressions

In this section we verify that the generous dividend payer characteristics identified in the previous section are significant and robust to changes. Furthermore we investigate whether other generous dividend payer characteristics may be identified. We have run a series of regressions, but due to space constraints we only report the basic ones. Our basic regression is:

$$(4): \quad y_{it}^0 = \beta_0 + \beta_1 Posearn_{it} + \beta_2 ROE_{it} + \beta_3 (MV/BV)_{it} + \beta_4 \ln MV_{it} + \beta_5 CO_{it} + \varepsilon_{it},$$

where y_{it}^0 is the dividend yield measured in fixed prices, DYFP (note that $y_{it}^0 > 0$, since only firms that pay dividends in year t is included in the sample). The remaining variables are defined in the previous section. The reader may also consult table 1. When we test for significance we apply the method developed by Fama and Machbeth (1973), see also Fama and French (2001) and Petersen (2005). We have included posearn in order to capture the effect that some firms may continue to pay dividends when they realize negative earnings for a year or two (see figure 3). The result of the regression is reported in table 11.

(Insert table 11)

The regression confirms our previous findings and in addition comes up with a new significant variable, MV/BV. However, this variable should not be emphasized too much since its significance is entirely due to banks in the sample.[9] If we exclude banks from the sample the variable is no longer significant in the regression while the other variables still have about the same size and significance. The reason for the significance of the variable MV/BV when banks are included in the sample is that banks in general exhibit low MV/BV and high DYFP. However, in the following we still include MV/BV in the regressions since we still include banks in our sample.

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[9] In general all results remain unaffected whether we include or exclude banks from the sample. Actually, this is the only example where we find different results.

We note from the regression that firms with a concentrated owner structure have a 2.0% lower DYPF than firms with a dispersed owner structure. This supports the hypothesis that firms with a concentrated owner structure have less need to signal than firms with a dispersed owner structure.

When we include industry sectors in the regression we find that DYFP differs across industry sectors. Besides banks, trading firms are generous payers whereas industrial firms are not so generous. However, the other variables in the regression still have about the same size and significance.

When we include previous year's DYFP in the regression we find that this variable is highly significant in the regression and the (numerical) size of the other variables are slightly reduced but maintain their significance.[10]

In summary we find that among the dividend payers the DYFP is positively related to ROE and previous year's DYFP, and negatively related to concentrated owner structure and firm size. That is, the payer characteristics differ from the generous payer characteristics. We find no other significant variables except industry sector.

As mentioned we have omitted all observations from and after the first time a firm made a share repurchase. In order to investigate whether firms that also make share repurchases are more or less generous dividend payers than the pure dividend payers, we now include observations from and after the first time a firm made a share repurchase in our sample. From the first time a firm makes a share repurchase it is assigned a share repurchase indicator variable of 1. Based on this, we run a regression similar to (4). The result of the regression is reported in table 12.

(Insert table 12)

The important thing to note is the large and highly significant coefficient to the share repurchase indicator variable. Firms that make share repurchases have a DYFP around 7.5% points higher than that of pure dividends payers. Firms making share repurchases are in general among the most generous dividend payers. Danish firms that make share repurchases typically do not pay out by means of share repurchases every year. Hence a hypothesis (that we can only confirm or reject when we get more data on share repurchases) is that the large payouts of firms making share repurchases are composed of binding dividends and on top of that not binding share repurchases.

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[10] When we include previous year's DYFP in the yearly regressions, the average R^2 in the yearly regressions doubles from around 12% to around 24%.

4 Conclusion and discussion

We find that the characteristics of dividend payers are: Positive earnings, high ROE, low volatility in ROE, high retained earnings, large firm size, and whether the firm paid out dividends the previous year. MV/BV, leverage, and owner structure play no role in whether a firm pays dividends or not.

Among the dividend payers the generosity of the payments (relative to market value of equity measured in fixed prices) is positively related to ROE and previous year's generosity with respect to dividend payments, and negatively related to concentrated owner structure and firm size. That is, the payer characteristics differ from the generous payer characteristics.

In Denmark firms making share repurchases are also dividend payers. Compared to pure dividend payers these firms are larger, have higher ROE, lower growth, and a more concentrated owner structure. Finally, firms making share repurchases are also among the most generous dividend payers.

From a tax point of view share repurchases are a better way to pay out to shareholders than by means of cash dividends in Denmark for the whole sample period. At the same time there has been no institutionally or regulatory hindrances to share repurchases in Denmark. Hence, payouts to shareholders in Denmark are also subject to what Black (1976) has termed the dividend puzzle. See also Brealey et al. (2006) for comments on the dividend puzzle.

Dividends give money to shareholders and drain the firm of cash and hence management of resources (see e.g. Jensen (1986)). However, the same objectives can be achieved by means of share repurchases at less tax costs to shareholders and unchanged costs to management. Hence, agency costs cannot be the sole explanation for the numerous and large dividend payouts. Signaling is an alternative/additional explanation. The hypothesis is that tax costly dividends signal high quality of the firm and hence high value of the shares. This is an advantage for shareholders when they are going to sell shares and a disadvantage for a potential acquirer.

We find support for a signaling explanation in addition to an agency explanation. First, firms with a concentrated owner structure should be less likely to signal since these owners have better access to information. In support of this we find that firms with a concentrated owner structure are less generous with respect to dividend payments and more likely to pay out by means of share repurchases. In line with this Laustrup and Raaballe (2006) find no dividend announcement effect on share prices for firms with a concentrated owner structure whereas they find a dividend

announcement effect in line with US/UK announcement effects for firms with a dispersed owner structure.[11] Second, we found that dividends provide information about future profitability, incremental to accounting data. Third, we found that the dividend payers could permanently afford to pay dividends out of their earnings. They have a low *SC/BE-ratio*, high and stable ROE. However, if earnings permanently deteriorated the firms did not hesitate to cut or omit dividends. In addition we found that firms making share repurchases have high earnings and were among the most generous dividend payers. It thus seems that dividend payout is a credible signal for traditional and healthy firms. On the other hand, firms without these characteristics, specifically those with permanent negative earnings, do not pay dividends. Instead of supplying information by means of costly dividend-signaling, a hypothesis is that these firms may find it cheaper to supply information more directly when they visit the market for new financing. Finally, the development in Danish dividends and share repurchases after the sample period show no evidence that share repurchases replace dividends.[12]

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[11] Laustrup and Raaballe (2006) investigate all Danish dividend announcements during the period 1995-2001.

[12] When data are also sampled for the period 2005-2007 there are enough share repurchase events that it is possible to make a payout study based on a total sample of Danish firms.

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Appendix A. Previous findings on dividends in Denmark

This appendix is based on a total sample of firms listed on Copenhagen Stock Exchange (CSE), the only stock exchange in Denmark. However, the sample period may differ in length with some years for the different findings.

Development in total dividends: During the period 1987-1994 total dividends were almost unchanged. In 2001 total dividends were around five times as large as in 1995. The same holds true when we adjust total dividends for new listings and delistings as well as changes in firms' equity capital. The rise was not due to a higher fraction of firms paying dividends but to increased payments from existing dividend payers. During the period 1987-2001 long term total net earnings more than tripled.

Fraction of firms paying dividends: From figure A we observe only a slight decrease (compared to US and other non-US countries) in the fraction of firms paying dividends during the period 1988-2006. 1992-1994 and 2002-2004 were recession years in Denmark. This is reflected in the figure as decreases in the fraction of payers these years.

(Insert Figure A)

Dividends and earnings concentration: Like in other countries (see e.g. DeAngelo et al. (2004) and Eije and Megginson (2006)) there has been some dividends and earnings concentration in Denmark. In 1989 the top 20% of the firms accounted for 88% of total dividends and 85% of total net

earnings. In 2004 these figures had both increased to 94%. However, we do not observe (compare to US) a growing fraction of firms having negative net earnings.

Patterns in Dividends: Like US firms Danish firms have stable and predictable dividends patterns. Previous years' dividend payouts are good indicators of current dividend payouts. However, during the mid nineties, it became more likely that a dividend payer would increase dividends compared to unchanged/decreased dividends.

Announcements Effects for the period 1995-2001: How were these higher dividends received? Controlling for simultaneous earnings announcements an unexpected dividend increase leads to a significant announcement effect of 2.6%, whereas an unexpected decrease leads to an insignificant announcement effect of -0.9%. There are indications that owner structure may explain the asymmetric announcement effect of unexpected increases/decreases in dividends. For dispersed ownership (including institutional investors) there is a symmetric announcement effect, whereas for firms with large owners there is almost no announcement effect. The last finding is in line with results from Continental Europe (see e.g. Lasfer and Zenonos (2004)).

Figure A. Fraction of firms paying dividends
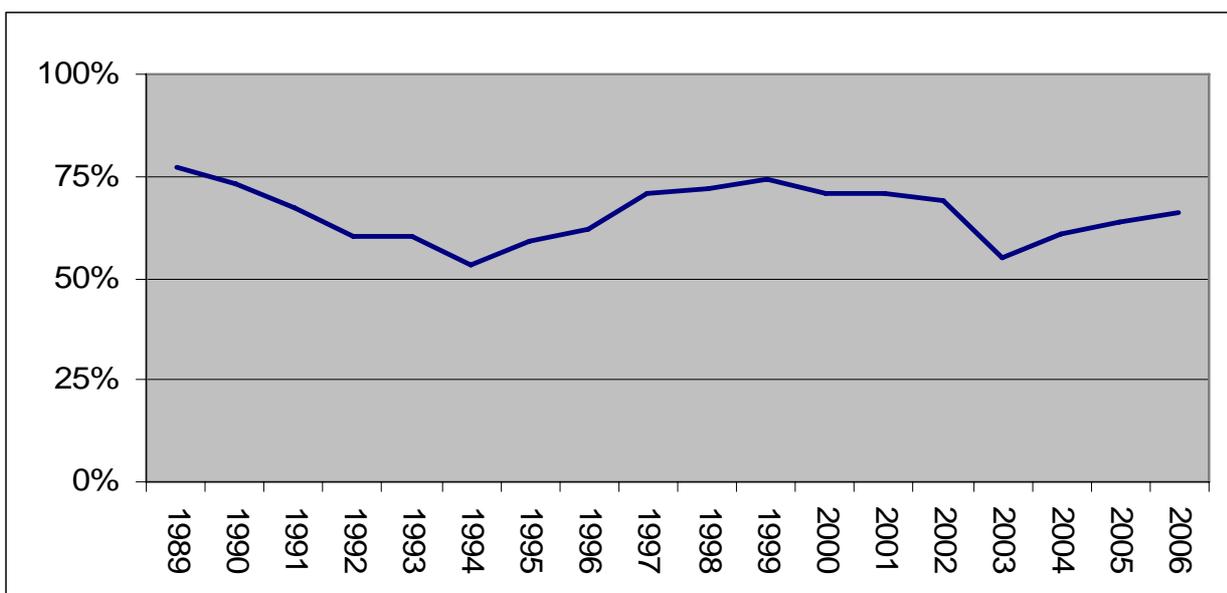
Population: The total sample of firms listed on Copenhagen Stock Exchange.

Table 1. Variables used

E_{it}:

Firm i's net earnings in fiscal year t

BE_{it}:

Firm i's book equity ultimo fiscal year t

ROE_{it}:

Firm i's return on book equity in fiscal year t. $2E_{it}/(BE_{it-1} + BE_{it})$

$s.d.\ ROE_{it}$:

Historical standard deviation on ROE_{it} based on the preceding 4 years (t-4, t-3, t-2, t-1)

SC_{it}:

Firm i's share capital ultimo fiscal year t

ME_{it}:

Firm i's market value of shares ultimo fiscal year t

$BV_{it} = A_{it}$:

Firm i's book value of assets ultimo fiscal year t

MV_{it}:

Firm i's market value of assets ultimo fiscal year t. Valuation of equity is based on market prices whereas valuation of other liabilities is based on book values

$dA_{it} = A_{it} - A_{it-1}$:

Firm i's net investments in ultimo fiscal year t

y_{it}:

Indicator variable that is equal to 1 if firm i pays dividends for (associated with) fiscal year t; otherwise it is equal to 0. (The dividend decision and payment is after fiscal year end in Denmark)

z_{it}:

Indicator variable which is only used for firms that pay dividends. Equal to 1 if firm i pays dividends and repurchases shares for (associated with) fiscal year t. Equal to 0 if firm i only pays dividends for fiscal year t

$Posearn_{it}$:

Indicator variable that is equal to 1 if firm i has positive net earnings in fiscal year t; otherwise it is equal to 0

CO_{it}

Indicator variable that is equal to 1 if firm i has concentrated ownership ultimo fiscal year t; otherwise it is equal to 0

$Paid_{it-1}$:

Indicator variable that is equal to 1 if firm i paid dividends for (associated with) fiscal year t-1; otherwise it is equal to 0

d_{it}:

Firm i's dividends per share for fiscal year t. It is defined as total dividends scaled with the number of shares at the time of payout

k_{it} :   Firm i's correction factor for fiscal year t. It adjusts the dividends per share

for new equity issues that have taken place at prices below market prices (i.e.

rights issues, stock dividends, and stock splits)

$\tilde{d}_{it}$:   Firm i's adjusted dividends per share for fiscal year t. $\tilde{d}_{it} = k_{it} d_{it}$

y_{it}^{0} :   Firm i's dividend yield with equity measured in fixed market prices (time 0)

for fiscal year t

Figure 1. Earnings percentiles for payers and non-payers
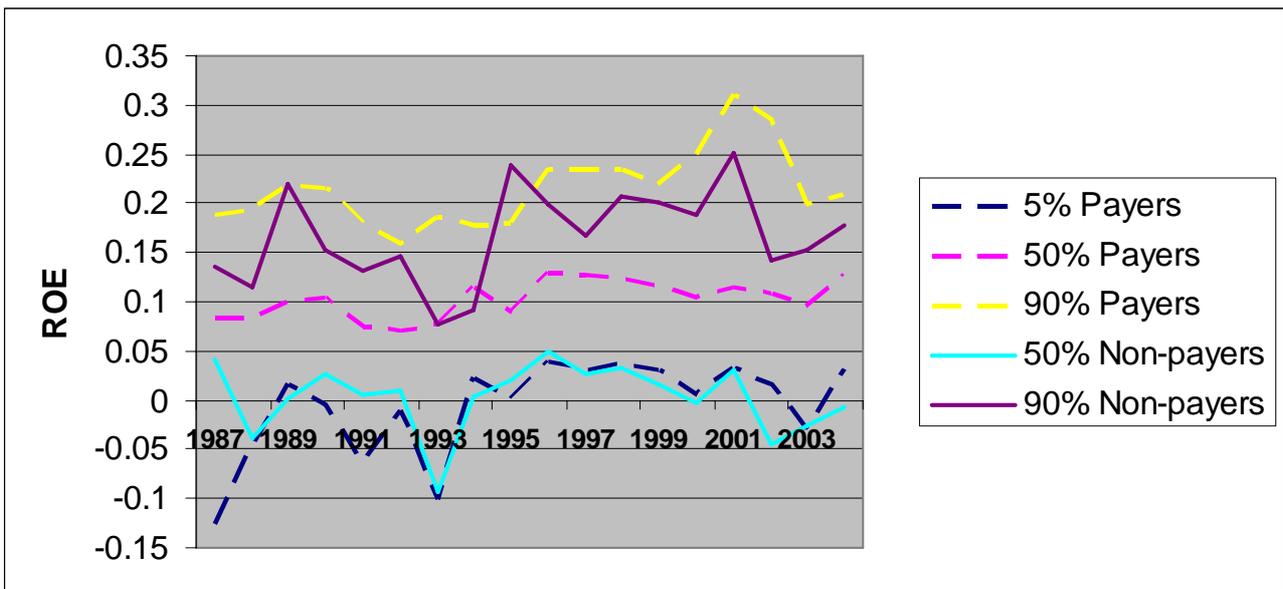
ROE: Return on book equity.

Table 2. Earnings ratios for different dividend groups

	Number of observations	Average ROE	Median ROE	Average s.d. ROE	Median s.d. ROE
All Firms	**2684**	**4.13%**	**8.28%**	**10.99%**	**5.53%**
Payers	**1811**	**11.31%**	**10.52%**	**6.73%**	**4.05%**
Permanent payers	1389	10.99%	10.41%	4.78%	3.40%
Non-permanent payers	422	12.34%	10.86%	13.16%	9.55%
Non-payers	**873**	**-10.75%**	**-0.27%**	**20.11%**	**11.93%**
Previous payers	436	-14.70%	-5.76%	15.92%	10.16%
Permanent non-payers	437	-6.81%	2.69%	24.61%	13.37%

Permanent payers have paid dividends in each of the preceding 4 years.
Permanent non-payers have not paid dividends in any of the preceding 4 years.
ROE: Return on book equity. s.d. ROE: Historical standard deviation of ROE based on the preceding 4 years.

Table 3. Earnings and SC/BE-ratios for earnings/dividends groups

	Number of observations	Number of firms	Average ROE	Median ROE	Average SC/BE-ratio	Median SC/BE-ratio
Positive earnings & positive dividends	2502	291	13.23%	10.78%	0.24	0.21
Positive earnings & no dividends	675	192	12.31%	6.74%	0.59	0.47
Negative earnings & positive dividends	153	104	-8.77%	-5.49%	0.24	0.22
Negative earnings & no dividends	618	201	-36.96%	-16.87%	1.03	0.50

ROE: Return on book equity.

Figure 2. Percentage paying dividends as a function of SC/BE-ratio
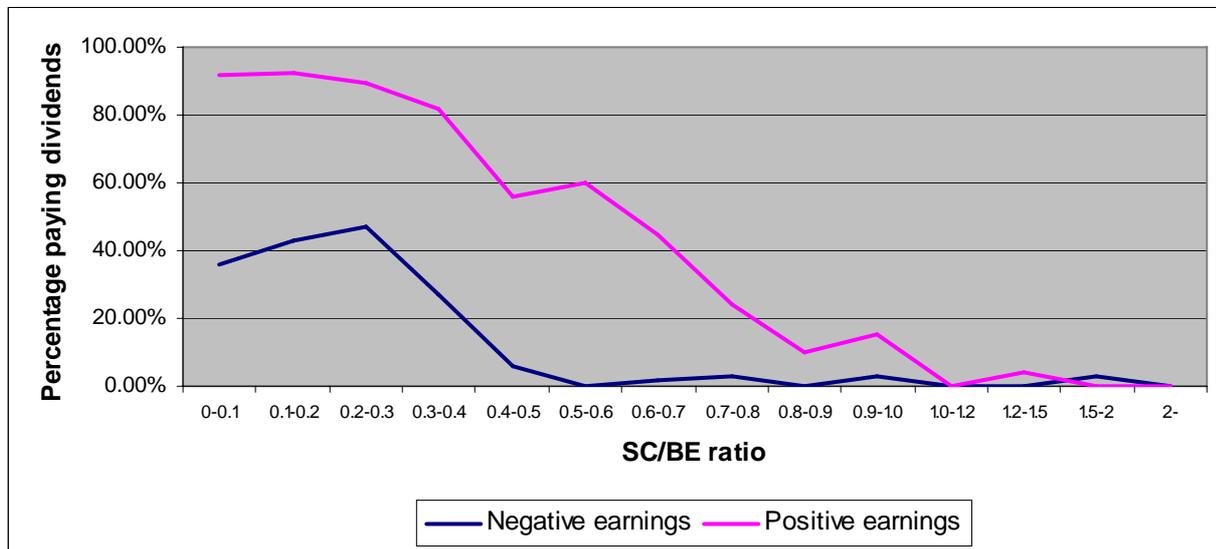
SC/BE-ratio: Share capital to book equity.

Table 4. Dividend flexibility for different dividend groups in year t-1 and t

	No. obs.	Positive earnings		Negative earnings	
		Positive earnings & positive dividends t	Positive earnings & no dividends t	Negative earnings & positive dividends t	Negative earnings & no dividends t
Positive dividends & positive earnings t-1	2330	87.8% (0.211)	2.4% (0.294)	4.2% (0.185)	5.6% (0.266)
Positive dividends & negative earnings t-1	147	64.6% (0.214)	4.1% (0.214)	13.6% (0.237)	17.7% (0.289)
No dividends & positive earnings t-1	619	18.4% (0.410)	57.8% (0.509)	0.3% (0.475)	23.4% (0.449)
No dividends & negative earnings t-1	528	13.6% (0.336)	32.6% (0.581)	0.8% (0.221)	53.0% (0.490)

Numbers in (..) state average SC/BE-ratio (share capital to book equity).

Table 5. Firm size for different dividend groups, mill. DKK.

	No. Obs.	Average BV	Median BV	Average MV	Median MV
All Firms	**2614**	**7,893.60**	**747.35**	**9,000.98**	**838.50**
Payers	**1781**	**10,537.01**	**1,213.65**	**12,109.97**	**1,309.31**
Permanent payers	1364	10,933.91	1,264.38	12,924.55	1,390.44
Non-permanent payers	417	9,238.74	907.47	9,445.49	959.64
Non-payers	**833**	**2,241.85**	**306.47**	**2,353.80**	**331.41**
Previous payers	417	3,963.86	517.20	4,166.64	560.66
Permanent non-payers	416	515.70	156.18	536.60	174.99

Permanent payers have paid dividends in each of the preceding 4 years.
Permanent non-payers have not paid dividends in any of the preceding 4 years.
BV: Book value of assets. MV: Market value of assets.

Table 6. Logit regression (1)

|	Coefficient	t-statistic	P-values
Constant	-11.29	-6.98	0.00%
ROE	8.24	4.90	0.00%
Posearn	2.59	5.61	0.00%
s.d.ROE	-5.31	-4.94	0.00%
SC/BE	-2.87	-5.88	0.00%
ln MV	0.39	5.51	0.00%
MV/BV	0.49	1.65	9.91%
y (t-1)	4.59	16.29	0.00%
Number of obs.	2814		

The independent variable is equal to 1 if the firm pays dividends (else equal to 0). *ROE*: Return on equity. *Posearn*: Equal to 1 if the firm has positive net earnings (else equal to 0). *s.d. ROE*: Historical standard deviation of *ROE* based on the preceding 4 years. *SC/BE*: Share capital to book equity. *MV*: Market value of assets. *BV*: Book value of assets. *y(t-1)*: Equal to 1 if the firm paid dividends in the preceding year (else equal to 0).

Table 7. Difference between pure dividend payers and firms also paying by means of share repurchases

	Coefficient	t-statistic	P-values
Constant	-12.67	-6.95	0.00%
ROE	2.40	2.74	0.63%
dA/A	-2.72	-4.29	0.00%
ln MV	0.48	5.51	0.00%
CO	0.52	3.10	0.20%
Number of obs.	769		

Sample period: 1999-2004. The independent variable is equal to 1 if the firm pays dividends and repurchases shares (else equal to 0). *ROE*: Return on equity. *dA/*A: Net investments to book value of assets. *MV*: Market value of assets. *CO*: Equal to 1 if the firm has concentrated ownership (else equal to 0).

Figure 3. DYFP as a function of ROE for the period 1994-2004
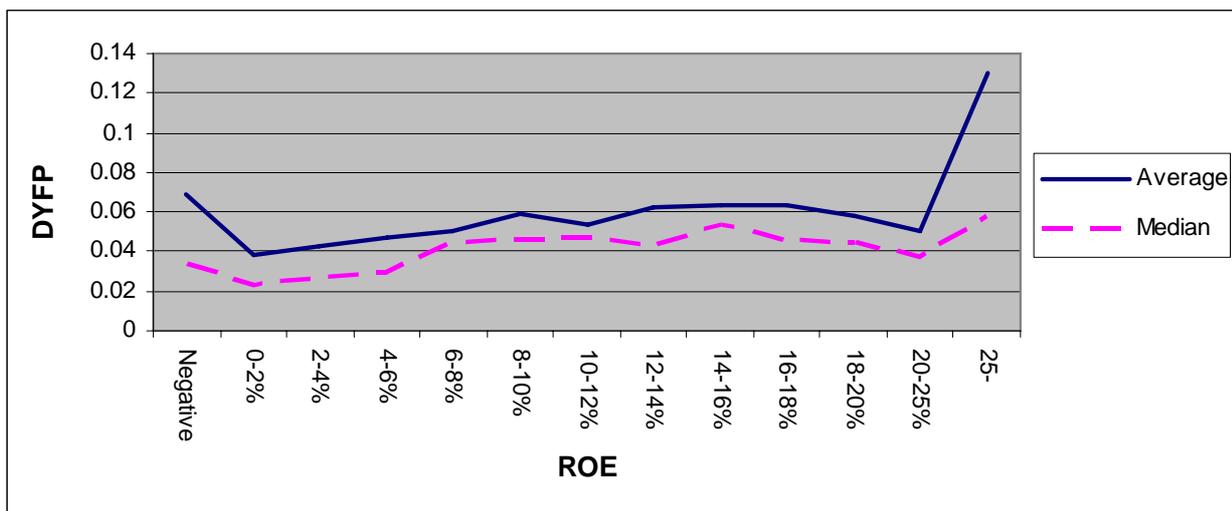
DYFP: Dividend yield with equity measured in fixed market prices.
ROE: Return on book equity.

Table 8. Dividend flexibility for firms that pay dividends in year t-1, for the period 1994-2004

	No. obs.	Omits dividends in year t	Reduces dividends in year t compared to year t-1, still positive dividends	Unchanged dividends in year t compared to year t-1	Increased dividends in year t compared to year t-1
All firms that pay in year t-1	1425	6.67%	8.84%	42.74%	41.75%
Increased earnings in year t compared to year t-1	659	1.06%	3.64%	38.39%	56.90%
Decreased earnings in year t compared to year t-1	766	11.49%	13.32%	46.48%	28.72%
Decreased earnings and negative earnings in year t	105	60.95%	16.19%	17.14%	5.71%
Decreased earnings and positive earnings in year t	661	3.63%	12.86%	51.13%	32.38%
Firms that have negative earnings in year t	119	61.11%	15.74%	16.67%	6.48%
Firms that have positive earnings in year t	1306	2.20%	8.28%	44.87%	44.65%

The dividend measure is DYFP: Dividend yield with equity measured in fixed market prices.

Table 9. Average DYFP, for the period 1994-2004

	No. Obs.	Average DYFP - equally weighted	Median DYFP	Average DYFP - value weighted
All payers	1303	5.97%	4.36%	3.13%
Payers in KFX	112	3.99%	3.01%	3.57%
Payers not in KFX	1191	6.16%	4.45%	2.14%

DYFP: Dividend yield with equity measured in fixed market prices.

The KFX-index is composed of the most liquid shares on Copenhagen Stock Exchange.

Table 10. DYFP for firms having concentrated ownership/dispersed ownership

	No. Obs.	Average DYFP	Median DYFP	Average ROE	Median ROE	Average MV/BV	Median MV/BV
All payers	1303	5.97%	4.36%	11.93%	10.93%	1.32	1.01
Payers – concentrated ownership	563	4.49%	3.33%	12.20%	11.34%	1.64	1.11
Payers – dispersed ownership	740	7.11%	5.40%	11.73%	10.75%	1.07	0.99

DYFP: Dividend yield with equity measured in fixed market prices.

ROE: Return on book equity.

MV: Market value of assets.

BV: Book value of assets.

Table 11. Cross-section regression (4)

	Coefficient	t-statistic	P-values
Constant	0.128	7.16	0.00%
Posearn	-0.029	-1.28	20.08%
ROE	0.152	3.56	0.04%
MV/BV	-0.006	-4.75	0.00%
ln MV	-0.002	-3.35	0.08%
CO	-0.020	-9.52	0.00%
Number of obs.	1286		

The independent variable is the dividend yield measured in fixed prices. *Posearn* is equal to 1 if the firm has positive net earnings (else equal to 0). *ROE*: Return on equity. *MV*: Market value of assets. *BV*: Book value of assets. *CO*: Equal to 1 if the firm has concentrated ownership (else equal to 0).

Table 12. Cross section regression (4) including firms making share repurchases

	Coefficient	t-statistic	P-values
Constant	0.2114	2.82	0.49%
Posearn	-0.0287	-1.45	14.73%
ROE	0.1592	3.71	0.02%
MV/BV	-0.0098	-2.10	3.59%
ln MV	-0.0060	-1.88	6.03%
CO	-0.0232	-8.87	0.00%
Share repurchase indicator	0.0759	2.62	0.89%
Number of obs.	1380		

The independent variable is the dividend yield measured in fixed prices. *Posearn* is equal to 1 if the firm has positive net earnings (else equal to 0). *ROE*: Return on equity. *MV*: Market value of assets. *BV*: Book value of assets. *CO*: Equal to 1 if the firm has concentrated ownership (else equal to 0). *Share repurchase indicator*: Equal to 1 if the firm uses share repurchases (else equal to 0).