Dividends Revisited: An In-Depth Look into the Relationship between Dividends and Earnings

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December 1, 2006

[1]

Abstract

We find that dividend changes are associated with changes in earnings, albeit not in the traditionally explored ways. A dividend increase is associated with a positive shift in *average* earnings, while a dividend decrease is associated with lower average earnings. When a firm has increased dividends, earnings will stay at a relatively high level over the medium term. When a firm decreases dividends, earnings decrease sharply and remain depressed over the medium term.

The pattern of earnings around dividend changes is consistent with the idea that managers are highly averse to cuts in dividends: they only decrease payout if they have to, and increase it when they are reasonably sure earnings have stabilized at a higher level. Interestingly, it appears that it is this particular behavior of the managers that gives informational content to dividend changes. When they see a dividend increase (decrease), investors can be reasonably sure there will be no significant decline (recovery) in earnings for the next few years. In a model where one expects mean reversion in profitability, the speed of reversion will be lower following dividend changes (especially following dividend *decreases*).

The broad connection between dividends and firm performance is confirmed whether one looks at accounting earnings of cash flows, and whether one considers firms that use just dividends or firms that also use repurchases. Dividend changes contain information beyond that previously summarized in market-to-book ratios and historical earnings performance.

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We discuss the implications of our findings in relation to the traditional signalling and agency models, as well as previous empirical findings. While dividend increases follow rather than announce higher earnings *growth* (as one would be tempted to think based on a simple interpretation of signalling models), they do have something to say about future earnings levels. Dividend decreases are associated with a slump in current earnings - and there is evidence of "big bath" behavior around it; the ensuing modest recovery usually does *not* bring the firm to the old level of earnings, or even the old level of dividends for a majority of firms.

The evidence in the paper supports the idea that dividends can be seen as a rough instrument that can be useful to investors. Perhaps at the cost of some inefficiency, dividends may well allow uninformed shareholders to obtain some information and some control over the firm at a low cost.

Keywords: Dividend Policy, Managerial Behavior, Average Earnings

JEL Classification: G35

1 Introduction

It is widely acknowledged that managers are reluctant to cut dividends. In his classical study, Lintner (1956) found that dividend policy was characterized by "inertia and conservatism" and that "most managements sought to avoid making changes in their dividends that might have to be reversed within a year or so". More recently, Brav, Graham, Harvey, Michaely (2005) find that 94% of the managers in their survey of US financial executives say they try to avoid reducing dividends; this is the strongest result in their study. At the same time, 88% agree there are negative consequences to reducing dividends and 90% say they smooth dividends.

The present paper looks directly at the implications of this pattern of managerial behavior. If managers are averse to dividend cuts, one can expect that dividend cut will be a rare occurrence - and indeed this and other studies find that dividend increases are much more frequent that dividend decreases. More importantly, dividend cuts will occur when the firm's earnings position deteriorates significantly and the past level of dividend becomes unsustainable. Dividend increases will be gradual and will only occur when managers estimate that the level of earnings over the following period will be high enough the sustain the additional dividend payments. This mechanism suggests a possible way in which dividends can become informative about future earnings and provides at least a partial explanation to the well-known share price reactions to dividend changes.

The actual data strongly support this pattern of dividends and earnings. Looking at average level of earnings before and after dividend changes reveals that the shifts in this level are closely connected with dividend changes. The average level of earnings is significantly *lower* following dividend decreases and significantly *higher* following dividend increases.

The result is quite robust. It holds whether the change in average earnings is normalized by total assets, the book or the market value of equity. It also holds when one controls for the perceived growth opportunities of each firm - as represented by market-to-book ratios - as well as past profitability and past changes in earnings. Results are similar for earnings excluding extraordinary items, net income, and cash flows.

Further inquiry into the differences between dividend-increasing and dividend-decreasing firms reveals more interesting features. In the case of dividend decreases, the level of earnings during the following years will be below the level of their historical dividends for most of the firms. In contrast, the vast majority of dividend increasers will have average earnings well above the level of past or current dividends. In other words, the firms that decrease dividends are those that cannot "afford" the current

level of payout any longer, while firms that increase them are reasonably sure that future earnings are sufficient to support the higher level of payout.

Fama and French (2000) and Grullon, Michaely, Benartzi and Thaler (2005) emphasize the nonlinear mean-reverting pattern in firm profitability and - to a lesser extent - in earnings levels. Firms that have experienced high profitability in the past will revert to lower levels in the future, while firms that have performed poorly will recover. This convergence will be faster following negative shocks and for larger shocks, both on the negative and positive side.

A look at the *interaction* between dividend changes and mean reversion, one can find an interesting pattern. Firms that increase dividends seem to converge to the "normal" level of profitability at a slightly slower pace. The result is stronger for dividend decreases - firms seem to recover at a very weak pace, if at all, over the short term. This feature is obviously consistent with the type of managerial behavior described above. Since managers will want to make sure that the shift to a higher performance level is sustainable before they proceed to a dividend increase, firms that increase dividends will be likely to have a slower rate of convergence to the average. At the same time, dividend cuts are associated with persistent difficulties for the firm - therefore dividend cuts will be associated with slower convergence from below.

Firms that increase dividends have higher growth rates for assets and sales both before and after the dividend changes. Moreover, while the growth rate of capital expenditures slows down, the average level of capital expenditures - as well as that of research and development expenditures - is higher after dividend increases. At the same time, the median changes in capital and R&D expenditures for dividend-decreasing firms are negative.

The paper therefore brings evidence in support of the idea that dividends have something to say about earnings. This finding is important since weak empirical findings seem to have undermined this once popular concept. Benartzi, Michaely and Thaler (1997) show that companies that increase dividends do not experience higher growth rates than firms that decrease them. When the dividend increase occurs, firms have already experienced higher growth - but this does not extend into the future.

The weakness of the relationship between dividend changes and future earnings *growth* is confirmed in the current sample. Dividend increases *follow* high earnings growth and dividend decrease follow growth disasters. At the same time, however, average earnings shift to a higher *level* around dividend increases and to a lower one for dividend decreases.

The two parts of the picture - the one concerning earnings growth and the one concerning earnings levels - do fit together if one thinks of the typical managerial

attitude towards dividend policy. Managers only increase dividends when they know that earnings will be persistently higher and only decrease them when companies are doing poorly. Therefore, while being of little help in terms of predicting future growth rates, dividends do provide information on future earnings levels. This feature can be useful to investors making short- and medium-term forecasts of a firm's prospects.

The findings in the paper confirm Lintner's statement about management "conservatism" in terms of dividend policy. The idea of a stable target in terms of the payout ratio - the other major component of the Lintner (1956) model for dividend payments - is perhaps less successful over recent periods. Brav, Graham, Campbell and Michaely (2005) find that the performance of the Lintner model has been gradually deteriorating over the last decades. They also find that only 28% of the managers in their sample say they target payout ratios. Fama and French (1988) had already documented a large decrease in the speed of adjustment based on the Lintner model (from 49% per year in 1927-1956 to 12% per year in 1941-1986 and 11% in 1957-1986). Moreover, the case of loss-making companies poses a serious problem in terms of estimating a model based on a fixed target payout ratio - earnings can be negative, while (gross) dividends are not (Lintner's study uses *aggregate* earnings and dividends). However, while the model itself may be less useful, the intuition behind it remains largely valid.

The remaining sections of the paper are organized as follows. Section 2 contains a brief overview of the main papers in the area of dividends and earnings. Section 3 presents the data used in the paper. Section 4 shows the results of the univariate analysis of earnings around dividend changes, as well as some important robustness checks and further evidence concerning the ability of firms in different groups to sustain their historical level of dividends. These are the "core" findings of the paper. Section 5 confirms the intuition of the main results in the previous section using regression analysis. It also presents preliminary results concerning the relationship between dividend changes and profitability. Section 6 discusses the findings of the paper, and Section 7 concludes.

2 The Literature on Dividends and Earnings

One of the most important stylized facts concerning dividend policy is the significant share price reaction to dividend changes (Aharony and Swary 1980, Denis, Denis and Sarin 1994, Nissim and Ziv 2001). The market seems to consider dividend increases as good news and dividend decreases as unfavorable information.

In the world of Modigliani and Miller (1961), with perfect capital markets, rational behavior and perfect certainty, dividends are irrelevant. Firms can always raise money at the appropriate cost, and investors faced with consumption shocks will always be

able to get their own "homemade" dividends by selling shares. The value of the firm is given just by its investment opportunities; there is no obvious reason to have large movements in share prices following dividend announcements.

The usual explanations for the share price reactions are based on departures from this ideal framework. One idea (found for instance in Easterbrook 1984 or DeAngelo, DeAngelo and Stulz 2005) is that higher dividends help reduce the free cash flow problems. Disbursing cash prevents managers from investing in negative NPV projects that provide them with private benefits. Another classical explanation is that provided by signalling models in the tradition of Bhattacharya (1979), Miller and Rock (1985) and John and Williams (1985): dividends could be costly signals of a firm's earnings potential. The cost may come from higher taxes compared to capital gains, or from forgone investment.

The connection between dividends and earnings has been explored in several important empirical papers. In one of the older studies, Watts (1973) finds that unexpected earnings and unexpected dividends are related, but the relationship is weak and investors are unlikely to make money from exploiting this relationship. Penman (1983) compares the informational value of dividend changes and managers' earnings forecasts and finds that there is information in large dividend changes.

More recently, Benartzi, Michaely and Thaler (1997) show that there is no clear relationship between dividend changes and future earnings growth. Dividends "predict" the past rather than the future: dividend increases *follow* high earnings growth rather than announce it. Indeed, their most robust finding is that of faster earnings growth after dividend cuts. Their conclusion is that "while there is a strong past and concurrent link between earnings and dividend changes, the predictive value of dividend changes seems minimal". Grullon, Michaely and Swaminathan (2002) start from this negative finding concerning the connection between dividends and earnings growth and show instead that dividend changes are associated with shifts in risk ("If the good news in a dividend increase is not about future cash flows, then it may be about systematic risk." - p.388). Firms that increase dividends become less risky, while firms that decrease them become riskier. They argue that firms that increase dividends become more "mature" - that is, they have more stable cash flows and fewer growth opportunities. The decrease in risk is the reason for the positive share price reaction (the *maturity hypothesis*).

Guay and Harford (2000) compare dividend increases and stock repurchases. They find that, while repurchases are associated with temporary positive cash flow shocks, the group of large dividend increases is associated with more permanent shocks. The association between dividend increases and persistent increases in cash flows is confirmed by the current paper. They do not however look at the dividend decreases and

the relationship between dividends and earnings.

Nissim and Ziv (2001) find that dividend changes do contain some useful information for predicting future earnings. The relationship is stronger for dividend increases, while the coefficient for dividend decreases is insignificant. Grullon, Michaely, Benartzi and Thaler (2005), however, dispute the relevance of Nissim and Ziv's finding. They argue that once one controls for the nonlinear pattern of mean reversion in earnings, the significance of the dividend indicator disappears. Their final conclusion is that investors are better off ignoring dividends.

To sum up, the idea that higher dividends are associated with higher future earnings is intuitively appealing. Nonetheless, the existing empirical evidence on this issue is rather mixed.

3 Data

3.1 Sample and Main Variables

The paper uses data from Compustat, from both the Active and the Research files. The data in the sample covers the years 1984 through 2003. Observations concerning regulated utilities (SIC codes 4900-4949) and financial companies (SIC codes 6000-6999) are excluded from the sample. This choice is justified by the special character of the cash inflows and outflows of these companies and is current practice in the literature. A description of dividend policy in the case of banks can be found in Bessler and Nohel (2000).

The main relationship examined in the paper is that between dividend changes and changes in average earnings. The dividend change is measured as the relative change in dividends per share (Compustat item 26) between years -1 and 0 (year 0 is the year of reference):

$$Change = \frac{DPS_0 - DPS_{-1}}{DPS_{-1}}$$

In every year, firms are classified according to the type of dividend change. There are five resulting main groups:

- firms that pay no dividends following a year with positive dividends ("omissions");
- firms that decrease dividends per share ("decreases");
- firms that keep dividend unchanged from year -1 ("no change");
- firms that increase dividends ("increases");

Table 1: The Frequency of Dividend Changes over the 1987-2000 period

Year	Type of dividend change				
	Omissions	Decreases	No change	Increases	Initiations/ resumed payments
1987	70	107	318	704	58
1988	65	76	282	773	79
1989	75	118	272	786	80
1990	86	137	325	740	71
1991	93	165	404	619	52
1992	64	182	391	578	61
1993	68	143	384	602	57
1994	52	107	378	617	49
1995	35	92	322	655	63
1996	42	86	320	626	42
1997	41	84	311	579	41
1998	31	92	317	540	34
1999	39	102	361	471	40
2000	56	103	348	382	27
Total	817	1594	4733	8672	754

- firms that pay positive dividends in year 0, but did not pay dividends in year -1 ("initiations/resumed payments").

Table 1 presents the frequency of the various types of dividend changes for each year between 1987 and 2000. The numbers presented in the table are those for companies that also have data on earnings and total assets for the years surrounding the dividend change. [2]

The first and the last groups are the least numerous - there usually are few dividend omissions and few firms that resume payments each year. Dividend increases are the largest group, and they outnumber by far the group of dividend decreases. This feature is well documented in the empirical literature on dividends (see for instance Benartzi, Michaely and Thaler 1997). It is also a finding which is obviously consistent with the managers' reluctance to reduce dividends.

Dividend changes will be compared with the changes in average earnings. For each

[2]This is the basic sample used in the paper. Requiring information on other series will lead to - usually quite small - reductions in the sample size. The cases where the decrease in sample size are significant will be discussed in the text below.

firm-year, the latter change is defined as the difference between average earnings (income before extraordinary items available for common - Compustat item 237) over the three years following the dividend change and the three years preceding it, normalized by firm size. The main proxy for firm size used in the paper will be total assets; however, the change in earnings normalized by the book and the market value of equity [3] will also be used.

The main proxy for earnings used in the paper will be income before extraordinary items, since it is usually a preferred measure for a firm's core earnings potential. However, the paper will also look at changes in terms of net income and cash flows. Further analysis will also make use of market-to-book ratios, returns on assets, returns on equity [4], capital expenditures (Compustat item 128), research and development expenditures (Compustat item no. 46), and net sales (Compustat item 12).

3.2 Discussion

As in previous studies (Benartzi, Michaely and Thaler 1997, Nissim and Ziv 2001, Grullon, Michaely, Benartzi and Thaler 2005), the paper focuses mainly on the relationship between the changes in dividends per share and the changes in total earnings. For reasons discussed below, this is the reasonable choice. Nonetheless, the association between a per share measure of dividends and a measure of overall earnings may be slightly noisier than one would want it to be.

One may think of using the more "symmetric" comparison between changes in total dividends with changes in total earnings. It is important to note, however, that the use of dividends *per share* is more consistent with the research question of this paper. Since the focus is on managers' reputation concerns and their influence on dividend payouts, one should choose the most "visible" indicator of dividend policy. For all intents and purposes, this indicator is the dividend per share. [5]

The fact that dividends per share rather than total dividends are the main variable

[3]The market value of equity is computed by multiplying the number of common shares outstanding by the closing price at the end of year -1.

[4]The market-to-book ratio is computed (as in Grullon and Michaely, for instance) as the market value of equity (the closing price for the year multiplied by the number of common shares outstanding) plus total assets less the book value of common equity, divided by total assets. Returns on assets are the ratio between income before extraordinary items - available for common and total assets. Returns on equity are the ratio between income before extraordinary items - available for common and common equity (Compustat item 60).

[5]Brav et al. (2005) find that 88% of the financial executives in their sample consider the level of dividends per share paid in previous periods when deciding on the current dividend payments.

is shown by the fact that a large number of firms keep dividends per share unchanged from one year to the next. Due to small variations in the number of shares, there will be small increases and decreases in total dividends even though dividends per share are kept constant. Since the group of firms holding dividend payouts constant is used as a control group in this study, this control group will be smaller if total dividends are used. For univariate comparisons - which include some of the crucial results of the paper - this may be a drawback. In terms of regression analysis, using total dividends and total earnings may actually be helpful.

One can also think of using both dividends per share and (basic or diluted) earnings per share. While intuitively appealing, this alternative also has its drawbacks. The number of shares used to compute dividends and basic and diluted earnings per share is not the same. Moreover, there is a shift in the definition of earnings per share presented in Compustat during the period covered in the sample due to the introduction of the Statement of Financial Accounting Standards 128, which became effective in December 1997.

The main body of the paper will present the results based on the usual practice of employing dividends per share and total earnings. Appendix B presents the results using both measures in total and per share forms. It should be emphasized that all three types of analysis produce similar results.

4 Univariate Results

This section of the paper examines the connection between dividend changes and changes in firm performance. The mean and median shift in earnings are computed for each type of dividend change. The resulting numbers are then compared across the various types of dividend changes. The earnings difference is also compared to zero, to check whether the average earnings of each group have increased, decreased or remained largely unchanged.

As mentioned above, there are five main groups of dividend changes: increases, decreases, constant dividends, omissions and initiations and resumed payments. The change in earnings is computed as the difference between the average for the three years preceding the dividend decision and the three years following it. This change is normalized by total assets or total equity.

The use of average earnings - and implicitly of a longer interval - is connected with the main focus of the paper: the connection between management behavior and the relationship between dividend changes and earnings.

In order to avoid having to reverse their decision - that is, having to cut dividends - managers will only increase payout when they are sure that the future level of earnings

will be high enough to support this decision. This may mean that they are likely to allow for some interval of earnings growth to pass before they increase dividends. In other words, managers will "look back" for several years before making the decision to increase dividends per share. It is interesting to see whether managers get their forecast right - that is, whether earnings will stay at a higher level over the following years.

In the case of dividend decreases, managers will most likely try to postpone as long as possible the unfavorable decision. This will be reflected in a protracted earnings decline prior to the cut in payout. The fact that the unpleasant decision to cut dividends is taken at last should also mean that there is no substantial recovery in sight - that earnings will stay depressed over the medium term. We have seen however that previous research suggests that dividend cuts are followed by relatively high earnings growth. Thus it is seems worthwhile to check whether dividend cuts are of any help in forecasting the future path of earnings over the medium term.

Average earnings are also a better indicator of a firm's true earnings generating potential, beyond the effect of accidental factors. Moreover, using average earnings makes it more likely that any short-term "shenanigans" used by managers to adjust earnings reports are smoothed out. There is a large literature showing that managers have both the incentives and the ability to manipulate earnings numbers (an example is Degeorge, Patel and Zeckhauser 1999).

Last but not least, one should keep in mind that there really are very few standardized indicators that can be used to predict earnings over the medium term. Existing papers in the area (Ou and Penman 1989a and 1989b, Fama and French 2000) generally focus on one year ahead forecasts. The mechanism described above has implications over a longer period : earnings will stay at a relatively higher level for at least a few years; there will be no impressive recovery over the medium term. This means that dividends may well be a unique source of information on firms' prospects outside an accurate in-depth analysis of their current and future activities. It may well be that many investors are unable or unwilling to embark upon this endeavor and that they rely on the information provided by dividend changes to a significant extent.

4.1 The Shift in Average Earnings

The first result of the paper presents the changes in average income before extraordinary items for each type of dividend changes. This measure of earnings is less affected by transitory components and therefore provides a better picture of a firm's income generating potential.

For each firm-year, the change in earnings is defined as the difference between average earnings over the three years following the dividend change and the three years preceding it, normalized by total assets:

$$DIFE = \frac{\frac{IBA_3+IBA_2+IBA_1}{3} - \frac{IBA_{-1}+IBA_{-2}+IBA_{-3}}{3}}{TA_{-1}},$$

where IBA is the income before extraordinary items available for common shares, and TA_{-1} represents total assets at the end of year -1, i.e. just before the dividend change. It can be seen that the earnings for year 0 (the base year) are excluded from this initial measure. Since they are the earnings *during* the year of the dividend change, it is difficult to classify them as either past or future earnings. Section 4.6 presents results for earnings indicators that include income in year 0.

Table 2 presents the mean and median changes in average income associated with each group. The mean and median are then compared to zero and to their counterparts for the "no change" group, which is the obvious control group. Given the problems posed by outliers and nonnormality for some of the series, median tests are more reliable than mean tests for the data used in the paper.

The results show clear differences between the types of dividend changes in terms of the shift in average earnings. The mean and median changes in average earnings are negative for dividend decreases and omissions. The changes are also significantly different from those experienced by firms in the "no change" group. Thus firms that cut dividends will have earnings that are on average *lower* than those in previous years.

Firms that increase dividends have significantly higher average earnings over the following years. The increase in average earnings is higher than that of firms in the control group. The positive shift in average earnings is significant for all quintiles of dividend increases. Moreover, one can note that the means and medians of earnings changes are increasing for the first four quintiles. The fifth quintile still has quite large mean and median increases, but they are slightly lower than those for the previous quintile. As noted in Benartzi, Michaely and Thaler (1997), the firms with the highest dividend changes are also the firms that have experienced the highest growth rates in earnings in the past (this finding also holds for the current sample). Therefore these firms are the most likely to experience a fast mean reversion along the lines of Fama and French (2000). They are also the firms that will have accumulated enough "slack" to support higher dividend payments even in the absence of high growth.

Firms that disburse cash after a year without payments also experience a significant positive shift in average earnings. Their performance is marginally better than that of

the overall group of dividend increasers, but firms with the highest dividend increases seem to perform better.

Firms that kept their dividends unchanged had flat - according to the mean test - or slightly increasing - according to the median test - average earnings. The increasing trend could be associated with the high economic growth over the period.

To sum up, dividend changes seem to be quite clearly aligned with the changes in average earnings. Both the mean and the median tests imply clear differences between the groups. The differences are also highly significant for each of the 14 years.

4.2 Alternative Proxies for Firm Size

The first comparison has used average earnings normalized by total assets. The use of assets as a way to account for differences in firm size is a standard practice - as for instance in Fama and French (2001) and Grullon, Michaely and Swaminathan (2002). [6] However, the choice of a base for normalization is to some extent arbitrary and can influence results. Table 3 presents the results when the change in average earnings are normalized by the book and the market value of equity, respectively. [7]

The results using alternative measures of firm size are quite similar. Companies that decrease dividend will have significantly lower earnings over the following years. Dividend increases are associated with a significant positive shift in average earnings. In the case of firms that keep dividends constant, normalizing by the book value of equity again suggests a slight increase, while normalizing by the market value of equity shows a decrease.

4.3 Net Income and Cash Flows

As mentioned before, income before extraordinary items or other indicators of "core" earnings are usually preferred since they provide a better measure of a firm's fundamental earning potential. However, our paper is concerned mainly with managerial aversion to dividend cuts as an explanation for the earnings pattern around dividend changes. If managers are concerned about having enough earnings to cover their future dividend outlays, net income rather than income excluding extraordinary items should be the relevant proxy for earnings.

Panel A of Table 4 shows the differences in terms of net income. Once again, the shift in the average income level is significant and positive for dividend increases and

[6] It is also natural to normalize other variables - such as capital expenditures, shown in Appendix B - by total assets rather than total equity.

[7] Nissim and Ziv (2001) and Jagannathan, Stephens and Weisbach (2000) use the value of the equity to normalize changes in earnings and dividends.

Table 2: Dividend changes and changes in average earnings

The table presents the relationship between changes in dividends per share between years 0 and 1 and changes in average income before extraordinary items available to common, normalized by total assets at the end of year -1. The change in average earnings is computed as the difference between the average earnings in years 1 to 3 and years -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change and the quintiles of dividend increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	817	-0.01990	-0.00993	0.0174	0.0041	0.0000	0.0000	0.0000
Decreases	1594	-0.01060	-0.00651	0.0016	0.0001	0.0003	0.0000	0.0000
No change	4733	0.00031	0.00186	0.9809	0.0418			
Increases:								
Q1	1778	0.00713	0.00762	0.0000	0.0000	0.0024	0.0000	0.0000
Q2	1798	0.01057	0.01023	0.0000	0.0000	0.0000	0.0000	0.0000
Q3	1822	0.02194	0.02021	0.0000	0.0000	0.0000	0.0000	0.0000
Q4	1781	0.03599	0.03319	0.0000	0.0000	0.0000	0.0000	0.0000
Q5	1493	0.03439	0.02518	0.0000	0.0000	0.0000	0.0000	0.0000
Above median	4335	0.01025	0.01034	0.0000	0.0000	0.0000	0.0000	0.0000
Below median	4337	0.03336	0.02756	0.0000	0.0000	0.0000	0.0000	0.0000
All increases	8672	0.02158	0.01754	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	754	0.02838	0.02700	0.0037	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.1368	0.0115	0.0227

Table 3: Dividend changes and changes in average earnings normalized by the book and market value of equity

The table presents the relationship between changes in dividends per share between years 0 and 1 and changes in net, normalized by the book (Panel A) and the market (Panel B) value of equity at the end of year -1. The change in average earnings is computed as the difference between income before extraordinary items in years 1 to 3 and years -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, decreases, no change, increases, and initiations/resumed dividend payments. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Panel A.The change in average earnings normalized by the book value of equity

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	809	-0.08337	-0.01814	0.2012	0.0138	0.0076	0.0010	0.0027
Decreases	1585	-0.04295	-0.01759	0.0744	0.0001	0.0000	0.0000	0.0000
No change	4730	0.00244	0.00410	0.7362	0.0607			
Increases:	8663	0.04390	0.03844	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	754	0.77186	0.05336	0.2984	0.0000	0.0009	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0001	0.1019	0.0942

Panel B.The change in average earnings normalized by the market value of equity

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	782	-3.6759	-0.01563	0.5532	0.0090	0.1476	0.0150	0.0020
Decreases	1487	-0.03380	-0.01535	0.0000	0.0000	0.0030	0.0000	0.0000
No change	4673	-0.00636	-0.00217	0.0021	0.0611			
Increases:	8472	0.01204	0.01532	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	706	0.05057	0.02769	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0001	0.0001

significant and negative for dividend decreases. Firms that keep dividends unchanged experience a very slight decrease in earnings. In the case of dividend omissions, the mean test suggests a more clear cut contrast than in the previous cases. To sum up, using net income suggests even sharper differences between the groups of dividend changes, which is consistent with the idea that managerial reputation concerns have a large influence on dividend policy.

The previous results are based on difference in average *earnings*. It is also important to consider differences in terms of *cash flows* as well, for at least two important reasons. First, as it is often emphasized in the literature (see for instance Degeorge, Patel and Zeckhauser 1999), managers have the possibility and the incentives to manipulate earnings numbers and cash flows may provide a more accurate picture of a firm's performance. Second, dividends are paid from cash flows, and, if the managerial explanation for dividend changes is right, managers will be interested in the availability of high future cash flows rather than in accounting earnings. As in Guay and Harford (2000), cash flow from operations is defined as

CFO = Operating income before depreciation - Interest - Taxes -ΔWorking Capital

Panel B of Table 4 presents the results in terms of cash flows. The contrasts between the various groups are as sharp as in the previous cases. The noticeable difference is that operating cash flows around dividend decreases are flat rather than decreasing. One should keep in mind however that results refer to operating cash flows. Dividend decreases are associated with a significant negative shift in nonoperating items [8] and the situation in terms of overall cash flows available for paying dividends is therefore worse. Indeed, it is quite interesting to note that prior to the dividend change the nonoperating income of dividend decreasers is much larger than that of dividend increasers - while after the dividend change the nonoperating income of dividend increasers is slightly higher (results not reported). This finding suggests that the managers of underperforming firms try to find alternative or unusual sources in order to boost their earnings and cash flows and avoid dividend cuts.

4.4 Earnings Ratios

It would be quite useful to be able to compare directly relative changes in dividends and relative changes in earnings - numbers would be easier to interpret and there

[8] This is shown in Table 5 in Appendix A.

Table 4: Dividend changes and changes in average net income and operating cash flows

The table presents the relationship between changes in dividends per share between years 0 and 1 and changes in net income (Panel A) and operating cash flow (Panel B), normalized by total assets at the end of year -1. The change in average earnings is computed as the difference between net income in years 1 to 3 and years -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, initiations and renewed payments, decreases, no change, increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Panel A. The change in average net income

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	812	-0.02248	-0.01237	0.0089	0.0000	0.0000	0.0000	0.0000
Decreases	1586	-0.01406	-0.011215	0.0001	0.0000	0.0003	0.0000	0.0000
No change	4723	-0.00285	-0.00061	0.0313	0.5803			
Increases:	8659	0.02101	0.01768	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	749	0.02788	0.02472	0.0200	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.1756	0.0755	0.1015

Panel B. The change in average operating cash flows

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	696	-0.035317	-0.018945	0.0026	0.0000	0.0000	0.0000	0.0000
Decreases	1363	0.000379	-0.001464	0.9172	0.5513	0.0000	0.0000	0.0000
No change	4156	0.017898	0.016965	0.0000	0.0000			
Increases:	7732	0.045328	0.039558	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	647	0.063883	0.50530	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0509	0.0156

would be no normalization problems. However, earnings can also be negative, and this obviously limits the comparison. This basic problem notwithstanding, it is interesting to have a look at relative changes for those companies that had positive earnings over the period preceding the dividend changes.

The earnings ratio is defined as

$$RATIO = \frac{IBA_1 + IBA_2 + IBA_3}{IBA_{-3} + IBA_{-2} + IBA_{-1}},$$

where the denominator has to be positive. The results for the earnings ratios around dividend changes are presented in Table 5.

Eliminating observations with negative past earnings obviously affects the five groups in an uneven manner - companies that omit or decrease dividends are more likely to have had a poor earnings performance in previous years. Nonetheless, results are quite telling. Companies that increase dividends experience on average a 25% increase in earnings. In the case of dividend decreases, earnings decrease by a third, while in the case of omissions earnings decrease by more than one half (the mean for omissions is obviously affected by outliers). Even in the case of companies that keep dividends constant there is a significant drop in earnings.

These numbers for the earnings ratios do indeed make up a striking picture. To some extent, one would expect strong results for companies that have had positive earnings prior to the dividend change, since the managers' "accumulated reputation capital" is higher and their sensitivity to decreases in dividends per share may also be more acute. DeAngelo, DeAngelo and Skinner (1996) bring evidence of the managers' aversion to dividend cuts in the case of firms with a long history of good performance.

4.5 The Problem of Repurchases

The samples used so far have also included firms that repurchase shares during year 0. It is quite possible, however, that managerial behavior and the informational content of dividend changes are different if companies also disburse cash by buying back shares.

One way to control for the impact of repurchases is to use dividends and earnings *per share*, which are not affected by the change in the number of shares. The results for this approach are shown in Appendix B1; they are quite close to the results presented so far using total earnings.

Another way to avoid the issue of additional disbursements is to use a sample of

Table 5: Dividend changes and the ratio of average income before extraordinary items available to common

The table presents the relationship between changes in dividends per share between years 0 and 1 and the ratio between average income for years 1 to 3 and and that for years -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 1		Compared to 'no change'		
				Mean	Median	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	296	0.04910	0.40663	0.0000	0.0000	0.0000	0.0000	0.0000
Decreases	1072	0.63519	0.70932	0.0000	0.0000	0.0161	0.0000	0.0000
No change	3526	0.86498	0.89989	0.0000	0.0000			
Increases:	7850	1.28557	1.26634	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	442	1.36037	1.25678	0.1074	0.0001	0.0015	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.4096	0.8993	0.9221

Table 6: Dividend changes and the change in average earnings for non-repurchasing firms
The table presents the relationship between changes in dividends per share between years 0 and 1 for companies that do not repurchase shares in year 0 and the change in average earnings normalized by total assets at the end of year -1. The change in average earnings is computed as the difference between average in years 1 to 3 and years -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change, increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 1		Compared to 'no change'		
				Mean	Median	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	442	-0.012374	-0.005660	0.2417	0.1403	0.0173	0.0503	0.0366
Decreases	740	-0.011059	-0.008062	0.0688	0.0111	0.0039	0.0010	0.0002
No change	2033	0.003655	0.004470	0.0882	0.0026			
Increases:	2927	0.028265	0.024322	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	355	0.036042	0.032384	0.0010	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.3130	0.2050	0.1600

firms that did not repurchase shares in year 0 [9]. Table 6 presents the comparison between the groups of dividend changes in the absence of repurchases. The sample is smaller, with the largest reduction in the case of dividend increases. (This means that many firms that increase dividends also repurchase shares.) In spite of this, the contrasts between the various groups are again quite strong.

The increase in earnings following dividend increases is higher than in the sample that also included firms that repurchase shares. The decrease in earnings is *larger* in the case of dividend decreases, and a higher proportion of firms that decrease dividends do not use repurchases during the year. This is consistent with the idea that managers tend to decrease dividends only when they are cash constrained. The remaining firms (i.e. firms that decrease dividends but repurchase shares in year 0) may be substitut-

[9]Repurchases are defined - following Grullon and Michaely (2002) - as the difference between the Compustat items "Purchase of common and preferred stock" (Compustat item 93) and "Preferred stock redemption value" (Compustat item 56). Using just purchases of stock - as in Dittmar (2000) - results are at least as strong.

Table 7: Earnings comparisons including earnings in the year of the dividend change
The table presents the mean and median changes in average earnings (normalized by total assets at the end of year -1) for the given years in the case of dividend increases and decreases. The last two columns present the results (p-values) of the tests for the equality of the mean and median earnings changes to 0.

Panel A. Years 1 to 3 compared to years -3 to 0				
Type	Mean	Median	Different from 0, mean	Different from 0, median
Dividend decreases	-0.00415	-0.00095	0.1809	0.3156
Dividend increases	0.016492	0.01439	0.0000	0.0000
Panel B. Years 1 to 3 compared to years -2 to 0				
Type	Mean	Median	Different from 0, mean	Different from 0, median
Dividend decreases	-0.000393	0.002043	0.9085	0.2485
Dividend increases	0.011266	0.010947	0.0000	0.0000

ing to some extent dividend payments with repurchases, as suggested in Grullon and Michaely (2002).[10]

4.6 Further Evidence

The comparisons between past and future average earnings have so far omitted current earnings - earnings in the year dividends are announced. It is instructive to have a brief look at comparisons that do make use of the earnings in year 0. Table 7 shows comparisons that contrast average earnings for years -3 to 0 (or -2 to 0) with average earnings over the three earnings following the dividend change. The picture that emerges from these comparisons is quite interesting. The earnings of firms that decrease dividends are basically flat; the means and medians are mostly negative. There is a clear increase in earnings for dividend increases. Thus the idea that companies that increase dividends are doing better than companies that decrease them finds solid support.

Table 8 presents another piece of the puzzle. Panel A starts from the comparison between earnings in years 1, 2 and 3 (i.e. the years following the dividend change) and the past average earnings (average earnings for years -3 through -1). It shows the proportion of firms in each year that have earnings higher than the past average. While more than one half of firms that increased dividends have higher earnings, only slightly

[10]The case of dividend omissions seems to be an exception to this rule - firms that use repurchases have a slightly steeper decline in earnings. It may be that these are disinvesting/declining firms, that use repurchases in order to return cash to shareholders without creating the expectation of similar future payments.

Table 8: Future earnings compared to past average earnings and past dividends

Panel A presents the proportion of firms that have in each particular year earnings above the average historical level (average earnings for years -3 to -1). Panel B presents the proportion of firms in each year having earnings above the level of total dividends in year -1, the year before the dividend change.

Panel A. The proportion of companies having earnings that are higher than the past average			
	Year 1	Year 2	Year 3
After dividend decreases	36.97%	37.31%	38.21%
After no changes in dividends	48.98%	47.76%	45.86%
After dividend increases	62.54%	57.50%	54.51%

Panel B. The proportion of companies that have net income higher than the total dividends announced in year -1				
	Year 0	Year 1	Year 2	Year 3
After dividend decreases	42.01%	43.49%	44.20%	41.70%
After no changes in dividends	72.55%	65.03%	60.03%	57.24%
After dividend increases	89.39%	81.60%	75.38%	70.66%

more than one third of the firms that decreased them will have higher earnings. The picture presented in Panel B is even more striking. The table shows the proportion of the firms in each group that has earnings above the level of total dividends paid in year -1 (the "historical" level of dividends). The vast majority of dividend increasing firms will have earnings in excess of this benchmark level of dividends. The percentage is lower for firms that keep dividends unchanged, and it is well below one half in the case of dividend decreases. In other words, most of companies that decreased dividends in year 0 would have been unable to sustain the past level of dividends. This finding supports the idea that managers generally cut dividends only if they "have to".

4.7 Earnings Levels and Growth Rates

The results presented in this section have shown that dividend changes are associated with a corresponding shift in earnings. We have already seen however that Benartzi, Michaely and Thaler (1997) find that dividend increases do not forecast faster growth and dividend decreases predict - if anything - higher earnings growth between year 0 and year 1. It is therefore useful to check whether the previous evidence concerning earnings growth is confirmed in the current sample.

Table 9 presents the difference between average earnings in years 1 to 3 and earnings in year 0, normalized again by total assets at the end of year -1. We can see that firms that have increased dividends will have higher earnings in the future, but the growth

Table 9: Dividend changes and future earnings

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average earnings in years 1 to 3 and earnings in year 0, normalized by total assets. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	814	0.010612	0.014319	0.0822	0.0000	0.0085	0.0000	0.0000
Decreases	1589	0.015195	0.012573	0.0007	0.0000	0.0000	0.0000	0.0000
No change	4725	0.000079	0.003239	0.9504	0.0000			
Increases:	8671	0.001213	0.004193	0.2321	0.0000	0.0000	0.4976	0.2257
Initiations/ resumed payments	752	-0.017252	-0.017252	0.0778	0.7985	0.0006	0.3308	0.1591

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.1747	0.0950

in earnings relative to year 0 is much lower than that experienced by companies that have cut dividends. The overall picture obviously confirms the findings of Benartzi, Michaely and Thaler (1987).

These two results may appear contradictory at first glance and it is therefore important to understand how they actually fit together. A more detailed description of the earnings pattern around dividend changes is quite helpful for this purpose. Dividend increases follow periods of high earnings growth. They are followed by continued earnings growth, but at a slower pace compared to the previous years. Dividend decreases follow declines in profitability. (The decline actually becomes much sharper in the year of the dividend cut.) The dividend change is followed by renewed earnings growth, but this growth is insufficient to bring earnings back to their previous average level. As a result, one can see both a shift to lower average earnings and faster earnings growth after dividend decreases.

To sum up, this section has shown that when dividends change, average earnings (and cash flows) will shift in the same direction. The earnings of firms that increase dividends continue to grow, although not at the impressive speed recorded in previous years. Companies that decrease dividends will recover after the dividend change; this rebound will however be not enough to bring them to the previous level of earnings. Indeed, more than half of the firms that decrease dividends will have average earnings below their "historical" level of dividends.

This typical pattern of firm performance around dividend changes is obviously consistent with the well-known managerial attitude to dividend decisions. Since dividend cuts will have important negative effects on their reputation, managers will try to avoid them and will only reduce payout when the current level of dividends is really unsustainable. Thus dividend cuts will follow significant declines in earnings and the average level of future earnings will be below the one reached in the past. Dividend increases will follow periods of high growth and will happen when the new, higher level of earnings is sustainable.

The sharp drop in earnings noted by Benartzi, Michaely and Thaler (1997) and Grullon, Michaely and Swaminathan (2002) in year 0 [11] for dividend decreases is an interesting feature. It may be that firms that are already performing rather poorly are faced with large negative earnings shocks that force them to reduce dividends. At the same time, there may be an element of "big bath" behavior, as mentioned in Nissim and Ziv (2001). Managers may have an incentive to report lower earnings in the years with dividend cuts. These years may follow periods of "negative [earnings] savings", in the terminology of Fudenberg and Tirole (1995) - previously reported earnings were artificially high, and the year with the dividend cut is used to bring long-term earnings numbers closer to reality. A lower earnings number in the "bad" year will also increase earnings *growth* numbers for future years - while the firm will still have earnings below the past average.

5 Multivariate Results

The univariate results are in a way the central findings of the paper. The central hypothesis of the paper is that managerial aversion to dividend cuts makes dividends informative about future earnings. This mechanism means that the groups of dividend increases, decreases and constant dividends are separated by "bright lines" that also help distinguish the future income patterns. Thus the clear-cut differences between these groups are the main testable result. One may also remember that the find-

[11] This finding is confirmed in the current sample (results are available on request).

ings concerning share price reactions are also usually focused on the contrast between dividend increases and decreases.

It is important nonetheless to examine the relationship between dividend changes and changes in earnings in a regression context. This will allow us to see whether the relationship between dividends and earnings is monotonic; it will also allow us to control for other factors that can potentially influence the shift in average earnings.

The relative change in dividends is infinite in the case of firms resuming/initiating dividend payments. Therefore this group is omitted in the regression analysis. The symmetric group of dividend omissions is also excluded. The previous section has shown that firms (re)starting dividend payments are largely similar to firms that increase them. Dividend omissions are also qualitatively similar to dividend decreases.

5.1 Main results

Table 10 presents the results for the regression of the change in average earnings (normalized by total assets at the end of year -1) on dividend changes, market-to-book ratios, past earnings shifts and past profitability. Past profitability is computed as the average returns on assets during the years preceding the dividend decision (year -3 to -1). The change in dividends is defined as the relative change in dividends per share [12]:

$$Change = \frac{DPS_0 - DPS_{-1}}{DPS_{-1}}$$

Panel A presents the results of the pooled regression. Panel B presents the results using the Fama-McBeth (1973) procedure. This method has the advantage of avoiding the heteroskedasticity problems generated by common shocks influencing the observations from individual years.

The regression results confirm the conclusions of the previous section. Changes in dividends are associated with shifts in average earnings, and this correspondence appears to be largely monotonic - larger dividend changes are associated overall with larger shifts in earnings. The fact that the constant term is significantly negative indicates the below-average performance of the firms that kept dividends unchanged.

[12] This way of defining the dividend change induces a rather peculiar shape of the distribution of dividend changes. The change is dividends will be bounded below by -1 - the change for dividend omissions. At the same time, relative increases may take very high values for a few firms. The sample used in Table 10 omits observations for which the growth in the dividend per share exceeds 1000% (Grullon, Michaely and Swaminathan 2002 use a threshold of 500%). This reduces the sample from 14622 to 14570, i.e. by less than 1%. Simply winsorizing at 1% and 99% produces virtually identical results, with the "loss" of more observations.

The market-to-book ratio has a positive and significant coefficient, as expected. The change in earnings between years -3 and -1 does not have a significant impact. At the same time, past profitability is negatively related to the change in earnings, a relationship which is consistent with the idea of mean reversion in profitability in Fama and French (2001). Moreover, introducing the profitability in year 0 (that is, information that is not known at the beginning of the year dividends are changed) does not change the results (the same holds if one uses just the returns on assets in year -1 or year 0).

One can also notice that the results are slightly better if one uses the Fama-McBeth procedure that reduces heteroskedasticity problems. (The results in the pooled regressions use White robust standard errors).

Table 11 presents the results using a definition for dividend changes that is more closely related to the measures of changes in average earnings. The difference in average earnings normalized by total assets, book and market equity is regressed on the difference in dividends per share divided by total assets per share, book and market equity per share respectively. The market-to-book ratio and past profitability are again used as control variables. As in the previous case, the coefficient of the market-to-book ratio is positive and significant, while the coefficient of past profitability is significant and negative. [13]

[13] Appendix B presents alternative multivariate results using earnings per share and total dividends. There are no significant differences from the findings shown in this section. Results using just the subsample of firms that did not repurchase shares in year 0 (for all three forms of dividends and earnings) are also qualitatively similar and if anything stronger. (This additional set of results is available from the author upon request).

Table 10: Dividend changes and changes in average earnings

The table presents the regression of the change in average earnings (average income before extraordinary items available to common for years 1 through 3 minus the equivalent measure for years -3 to -1), normalized by total assets and the book and market value of equity, on dividend changes. I_d is a dummy variable for dividend decreases, and I_i is a dummy variable for dividend increases. *Change* is defined as the relative change in dividends per share between years -1 and 0. ROA_i stands for returns on assets in year i. The numbers in brackets are the t-test values for each coefficient. ***, ** and * stand for significance at a 1, 5 and 10% confidence level respectively.

Panel A. Pooled regressions				
Dependent variable	Change in average earnings			
Constant	-0.021758***	-0.021243***	-0.015413***	-0.018512***
	(-13.659)	(-8.109)	(-6.242)	(-7.642)
I_d * Change	0.035838***	0.034021***	0.047846***	0.047034***
	(5.973)	(4.204)	(6.211)	(5.451)
I_i*Change	0.010044***	0.009502***	0.010236***	0.10962***
	(5.459)	(4.221)	(4.793)	(4.997)
Market-to-book ratio	0.019502***	0.018978***	0.033719***	0.028336***
	(25.186)	(11.254)	(11.627)	(9.499)
$\frac{IBA_{-1}-IBA_0}{2*TA_{-1}}$		0.073117		
		(0.676559)		
$\frac{ROA_{-3}+ROA_{-2}+ROA_{-1}}{3}$			-0.004616***	
			(-6.443)	
$\frac{ROA_{-3}+ROA_{-2}+ROA_{-1}+ROA_0}{4}$				-000208***
				(-3.821)
R^2	0.049	0.050	0.095	0.090
Panel B. Fama-McBeth results				
Dependent variable	Change in average earnings			
Constant	-0.02509***	-0.02603***	-0.021154 ***	-0.022919***
	(-6.095)	(-5.920)	(-4.633)	(-5.326)
I_d * Change	0.048335***	0.041893***	0.052196***	0.05323***
	(3.941)	(3.771)	(4.842)	(4.497)
I_i*Change	0.009864***	0.009141***	0.010178***	0.011027***
	(3.601)	(3.512)	(3.777)	(3.938)
Market-to-book ratio	0.02552***	0.019388***	0.063318***	0.032615***
	(7.537)	(6.324)	(2.491)	(7.787)
$\frac{IBA3-IBA1}{2*TA_{-1}}$		0.11682		
		(1.292)		
$\frac{ROA_{-3}+ROA_{-2}+ROA_{-1}}{3}$			-0.004875***	
			(-8.653)	
$\frac{ROA_{-3}+ROA_{-2}+ROA_{-1}+ROA_0}{4}$				-0.000208
				(-0.095)
Number of observations	14570	14570	14569	14555
R^2	0.061	0.078	0.128	0.090

Table 11: Regression results for different normalizing variables

The table presents the regression of the change in average earnings (average income before extraordinary items available to common for years 1 through 3 minus the equivalent measure for years -3 to -1), normalized by total assets and the book and market value of equity, on dividend changes. I_d is a dummy variable for dividend decreases, and I_i is a dummy variable for dividend increases. DPS_i are dividends per share in year i, $PCLOSE_i$ is the closing price for year i, BES_i and TAS_i represent the book value of equity and total assets per share at the end of year i. ROA_i stands for returns on assets in year i. The numbers in brackets are the t-test values for each coefficient. ***, ** and * stand for significance at a 1, 5 and 10% confidence level respectively.

Panel A. Pooled regressions			
Dependent variable	Change in average earnings normalized by		
	total assets	book value of equity	market value of equity
Constant	-0.012098***	-0.022228***	-0.002391***
	(-8.053)	(-7.381)	(-1.552)
$I_d * \frac{DPS_0-DPS_{-1}}{TAS_{-1}}$	0.730103***		
	(4.728)		
$I_i*\frac{DPS_0-DPS_{-1}}{TAS_{-1}}$	1.84315***		
	(9.185)		
$I_d * \frac{DPS_0-DPS_{-1}}{BES_{-1}}$		0.796416***	
		(4.128)	
$I_i*\frac{DPS_0-DPS_{-1}}{BES_{-1}}$		0.997410***	
		(5.749)	
$I_d * \frac{DPS_0-DPS_{-1}}{PCLOSE_{-1}}$			0.837145***
			(4.802)
$I_i*\frac{DPS_0-DPS_{-1}}{PCLOSE_{-1}}$			0.640868***
			(3.199)
Market-to-book ratio	0.033631***	0.028142***	0.005453***
	(19.647)	(15.575)	(10.061)
$\frac{ROA_{-3}+ROA_{-2}+ROA-1}{3}$	-0.003101***		
	(-14.351)		
$\frac{ROE_{-3}+ROE_{-2}+ROE-1}{3}$		-0.000260***	-0.0000787***
		(-4.212)	(-2.643)
Number of observations	14569	14459	14400
R^2	0.110	0.053	0.013

Table 11, continued: Panel B. Fama-McBeth results			
Dependent variable	Change in average earnings normalized by		
	total assets	book value of equity	market value of equity
Constant	-0.015508***	-0.020915	-0.001252
	(-4.253)	(-2.04954)	(-0.15965)
$I_d * \frac{DPS_0 - DPS_{-1}}{TAS_{-1}}$	0.881248***		
	(3.657)		
$I_i * \frac{DPS_0 - DPS_{-1}}{TAS_{-1}}$	1.525571***		
	(7.917)		
$I_d * \frac{DPS_0 - DPS_{-1}}{BES_{-1}}$		0.995733***	
		(3.773)	
$I_i * \frac{DPS_0 - DPS_{-1}}{BES_{-1}}$		1.315786***	
		(9.377)	
$I_d * \frac{DPS_0 - DPS_{-1}}{PCLOSE_{-1}}$			0.2629587***
			(4.147)
$I_i * \frac{DPS_0 - DPS_{-1}}{PCLOSE_{-1}}$			0.905545***
			(3.704)
Market-to-book ratio	0.027197***	0.036098***	0.0027539***
	(13.449)	(9.354)	(3.543)
$\frac{ROA_{-3} + ROA_{-2} + ROA_{-1}}{3}$	-0.003323***		
	(-12.257)		
$\frac{ROE_{-3} + ROE_{-2} + ROE_{-1}}{3}$		-0.002844***	0.0002207***
		(-1.914)	(-3.459)
Number of observations	14569	14459	14400
R^2	0.125	0.071	0.040

5.2 Dividend Changes and Mean Reversion in Earnings

The present paper is focused on the relationship between dividend changes and the average *level* of earnings. However, the main idea analyzed in the paper - that of the connection between managerial reputation concerns and dividend policy - also suggests new ways to approach the problem of dividends and firms profitability. This issue is briefly addressed in the final part of the section.

Grullon, Michaely, Benartzi and Thaler (2005) reject the idea that dividend changes are useful in predicting future profitability as suggested by Nissim and Ziv (2001). They argue that allowing for the nonlinear pattern of mean reversion in profitability emphasized by Fama and French (2001) eliminates the significance of the dividend indicator. Investors are unable to obtain better profitability forecasts by using dividend changes.

The model of Fama and French (2001) and Grullon, Michaely, Benartzi and Thaler (2005) is based on the idea that profitability is mean reverting. Firms that have been doing very well will not be unable to sustain this performance over the very long run. Firms that have been performing poorly will try to overcome their problems. The pattern of mean reversion will not be linear, however. Firms that have experienced larger shocks will revert at a higher speed. Moreover, negative shocks will be associated with a stronger mean reversion than positive ones.

The model used in Fama and French (2001) and Grullon, Michaely, Benartzi and Thaler (2005) is

$$
\begin{aligned}
&(E_\tau - E_{\tau-1})/B_{-1} = \beta_0 + \beta_1 R\Delta DIV_0 + (\gamma_1 + \gamma_2 NFED_0 + \\
&+ \gamma_3 NFED_0 * DFE_0 + \gamma_4 PFED_0 * DFE_0) * DFE_0 + \\
&+ (\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_0 + \lambda_4 * PCED_0 * CE_0) * CE_0 + \varepsilon_\tau,
\end{aligned}
$$

where ROE_i stands for returns on assets in year i, $DFE_0 = ROE_0 - E[ROE_0]$; $CE_0 = (E_0 - E_{-1})/B_{-1}$, where E_i are earnings in year i and B_i the book value of equity in year i. $N(P)DFED_0$ are dummy variables for a negative(positive) DFE_0, and $N(P)CED_0$ are dummy variables for a negative (positive) CE_0. $R\Delta DIV_t$ is the change in dividend returns: $R\Delta DIV_t = (1 + \Delta Div_{t,1})(1 + \Delta Div_{t,2})(1 + \Delta Div_{t,3})(1 + \Delta Div_{t,4}) - 1$, where $\Delta Div_{t,i}$ is the relative change in dividends in quarter i.

Grullon, Michaely, Benartzi and Thaler (2005) compute $E[ROE_0]$ as the fitted value from a cross-sectional regression of ROE_0 on the log of assets in year -1, the log of the market-to-book ratio of equity in year -1, and ROE_{-1}. They add a dividend indicator to the model of nonlinear mean reversion and find that the indicator does not bring any useful contribution to the model.

The framework used in the analysis of dividend policy in this paper suggests another possible approach to the role of dividends in predicting future profitability. Dividend decreases tend to happen after negative earnings shocks and the following rebound in earnings is not strong enough to allow the firm to reach the previous level of earnings. Dividend increases occur after high earnings growth and the high level of earnings will not be reversed in the short run. This suggests adding the indicators for dividend changes in a different way. Rather than having a single indicator of relative dividend changes, one could add interaction terms for the mean reversion. The expected result is that the mean reversion will be

weaker in the case of dividend changes. Firms that decrease dividends will have a slower rebound, while firms that increase them will be less likely to experience a fast decline.

The tables in Appendix C present an overview of profitability around dividend changes. It can be seen that firms that increase dividends have much higher returns on assets and on equity both before and after the dividend change. All groups of firms - except perhaps the group of companies that initiate or resume payments - show a decline in profitability after the dividend change. This decline is significantly smaller, however, after dividend increases than after dividend decreases and omissions. The overall picture implies that dividend increases follow periods of high growth rates and - as expected from previous findings - are followed by a slight decline in the pace of growth. Dividend decreases follow periods of slow growth and the pace of growth slows down considerably - rather than recover - after the dividend change.

Table 12 shows the results for the profitability model with additional indicators for dividend changes. The regressions are estimated using the Fama-McBeth procedure. In each equation, the coefficient for the term including the indicator for dividend decreases is significant at a 5% level. The coefficient is *negative*, showing that firms that cut dividends will indeed have difficulties in reverting to the "usual" level of profitability. The result is weaker for dividend increases. The coefficients for the interaction terms are positive but insignificant. One should remember however that dividend increases follow periods of very high growth. Therefore one would expect to see a *negative* and significant coefficient - that is, faster mean reversion.

The predictions for the connection between profitability and dividend changes are largely validated by actual data. A more in-depth analysis of the relationship between dividend changes and the mean reversion in profitability could indeed be an interesting subject for further research.

To sum up the findings of this section, the relationship between dividend changes and shifts in average earnings seems to be fairly robust and quantitatively significant. Moreover, the framework used in the paper leads to some interesting preliminary findings in terms of predicting future profitability.

Table 12: Dividend changes and profitability

The table presents the results based on the model in Grullon, Michaely, Benartzi and Thaler (2005). I_d is a dummy variable for dividend decreases, and I_i is a dummy variable for dividend increases. The other variables are defined in Section 5.2. The numbers in brackets are the t-test values for each coefficient. ***, ** and * stand for significance at a 1, 5 and 10% confidence level respectively.

Dependent variable	$\frac{IBA_1 - IBA_0}{BV_{-1}}$			
Constant	-0.00829	-0.00729	-0.009257	-0.00785571
	(-1.06902)	(-0.96098)	(-1.24612)	(-1.13437)
DFE	-0.000025	0.0000965	0.0005179	0.000376857
	(-0.02647)	(0.101151)	(0.580247)	(0.449013)
NDFED*DFE	-0.00385**	-0.00406**	-0.0038619**	-0.00367578*
	(-2.50224)	(-2.59217)	(-2.65143)	(-2.38083)
NDFED*DFE^2	-0.000029	-0.000015	0.00005896	0.0000081
	(-1.88623)	(2.0516)	(0.607994)	-0.7587
NDFED*DFE^2*I$_d$			-0.000205**	-0.00003174*
			(-2.27531)	(-1.9903)
PDFED*DFE^2	-0.0000076	-0.000034	-0.000037135*	-0.00003174*
	(-0.096568)	(-1.09788)	(-2.11531)	(-1.9903)
PDFED*DFE^2*I$_i$			0.00001598	0.000024427
			(0.787626)	(1.499198)
CEO	-0.14045	-0.07122	-0.1549695	-0.143662
	(-1.16651)	(-0.054303)	(-1.35363)	(-1.13388)
NCED*CEO	0.065469	0.184447	0.0760800	0.162498643
	(0.366039)	(0.971878)	(0.455722)	(0.79238)
NCED*CEO^2	0.175691	0.479454	0.1519966	0.3759725
	(0.845589)	(1.683239)	(0.714719)	(1.165502)
NCED*CEO^2*I$_d$		-0.44927*		-0.481638*
		(-1.9968)		(-1.95397)
PCED*CEO^2	-0.11199	-0.16406	-0.0703097	-0.16282
	(-1.61166)	(1.53793)	(-1.13112)	(-1.45772)
PCED*CEO^2*I$_i$		0.219958		0.1874311
		(0.824786)		(0.68799)
Number of observations				
R^2	0.352	0.368	0.369	0.379

6 Discussion

The analysis of earnings around dividend changes carried out in the previous sections has revealed several interesting features. Dividend increases are associated with significant increases in average earnings. Dividend decreases are connected with shifts to a lower level of earnings. On average, these earnings movements are larger the larger the change in dividends. This finding is in itself important. In a paper that generally supports the predictive power of dividend changes, Nissim and Ziv (2001) find that, while "dividend increases are positively related to earnings in each of the four subsequent years", "dividend decreases are not related to earnings." By looking at average income over the medium term rather than at the earnings compared to the "earnings disaster" in year 0, the current paper brings redeeming evidence for the predictive power of dividend decreases.

The vast majority of companies that increase dividends will have earnings in excess of the previous level of dividends. At the same time, more than half of the dividend-decreasing firms will have earnings below their past level of dividends. While, as emphasized in Benartzi, Michaely and Thaler (1997), exceptional growth is in the past for companies increasing dividends, earnings will stay at a higher level and will allow higher payouts. Dividend decreases are indeed followed by a rebound - but the recovery is insufficient to bring the firm to the previous level of earnings. The mean reversion in earnings and profitability is weaker following dividend changes.

This picture of the relationship between dividends and earnings is not surprising if one thinks of the managers' well-documented reluctance to cut dividends. It is to be expected that dividends will generally be increased when the firm will generate enough earnings (or cash flows) to cover them. Dividend decreases will happen when the firm has shifted to a lower level of earnings and the historical level of payouts is unsustainable.

Managerial aversion to dividend decreases can therefore explain why dividend changes are informative about a firm's prospects - and why share prices react to dividend announcements. A dividend increase will confirm that the high level of earnings will be repeated in the future and that there is little change of reverting to lower levels. A dividend decrease will indicate that the firm will be unable to reach higher levels of earnings in the near future.

This mechanism is to some extent related to the model of Fudenberg and

Tirole (1995) who show that when managers are risk-averse and more recent information is more important in assessing their performance, the result will be earnings smoothing. When dividends are introduced in the model, both earnings and dividends are smoothed and both contain information. In their model, the performance of the managers is assessed at a given point, when the principals eventually receive some (more recent) information on earnings. In the present case, it seems that it is managers that try to avoid damaging their reputation by reducing dividends will tend to smooth them and this will enhance the informational content of dividend changes.

The paper has dealt with changes in earnings *levels* rather than earnings growth rates or profitability. The border between the two is not as sharp as one may think, however, and this issue merits discussion.

The main indicator for earnings performance used in the paper has been

$$DIFE = \frac{\frac{IBA_3+IBA_2+IBA_1}{3} - \frac{IBA_{-1}+IBA_{-2}+IBA_{-3}}{3}}{TA_{-1}},$$

that is, the difference in average income before extraordinary items normalized by total assets at the end of year -1. This expression can also be interpreted as the difference between the "average" returns on assets before and after the dividend change, using the level of assets at a given point. This difference is positive for dividend increases and negative for dividend decreases.

Grullon, Michaely and Swaminathan (2002), however, compare returns on assets before and after dividend changes and find a small but significant *decline* after dividend increases. The decline in ROA following dividend increases is actually confirmed in the current sample.

This seeming contradiction can be explained. The first measure of the change in "average" earnings uses only one number for total assets. The second one uses the difference between returns on assets using the assets numbers for each year. One should remember however that firms that increase dividends are on average more profitable and that high profitability - as emphasized in DeAngelo, DeAngelo and Stulz (2004) - automatically leads to an increase in assets. Indeed, as shown in Table 1 and Table 2 in Appendix A, firms that increase dividends have higher asset growth rates both before and after the dividend change. The same argument holds in terms of (book) equity and returns on equity. [14]

[14] A (perhaps less accurate) measure of growth which is not affected by the automatic movements in total

The decrease in returns on assets following dividend increases is therefore the result of the denominator increasing faster than the numerator after year 0. The level of capital expenditures and research and development expenditures are also higher compared to the past, as shown in Tables 3 and 4 in Appendix A, although again the more impressive growth rates are to be found in the past. Therefore, while dividend-increasing firms may be more "mature" as argued in Grullon, Michaely and Swaminathan (2002), they are far from being all declining firms. Indeed, the distinction between "declining" and merely "mature" firms (that is, firms that continue to have high cash flows in spite of reduced growth opportunities) may be an interesting topic for further research. One should remember that one tenth of firms that increase dividends in year 0 actually pay dividends higher than their earnings for that year - there is a minority of firms that may actually be disinvesting and returning money to shareholders rather than continuing to grow at a slower pace.

The findings outlined in the previous sections also help us bring some light into traditional explanations for the share price reaction to dividend changes.

Agency theory suggests that dividends are a way to reduce the free cash flow/overinvestment problem and to keep firms in the capital markets where they are monitored by potential investors (Easterbrook 1984). We have seen that capital expenditures *increase* following dividend increases, and *decrease* following dividend decreases and omissions compared to the previous average (This is in line with the findings of Yoon and Starks 1995 and Denis, Denis and Sarin 1994). Therefore dividend increases do not seem to slow down investment to any impressive extent. However, it may be that dividend increases play a preventive role in the case of agency problems. Shareholders may well anticipate a period of high cash flows and relatively high investment and pressure management to increase cash disbursements. Dividend increases could be used to as a way to force managers to keep up the firm's performance in the future. Indeed, this pressure may explain why dividend increases happen at all if one accepts the idea of managers' reluctance to commit to higher payments.

Signalling models argue that dividends contain information about the future

assets is the growth rate of (net) sales (Compustat item 12). Firms that increase dividends have higher sales growth rates both before and after the dividend change (results are available upon request).

performance of the firm. Since these models only have two periods, it is difficult to distinguish between changes in earnings levels and changes in earnings growth. It is already known that dividend increases/decreases are not associated with an equivalent change in profitability. The findings in the previous sections have shown, however, that changes in dividends are associated with significant shifts in average earnings. Therefore, even if managers do not necessarily consider dividends to be costly signals (as Brav, Graham, Harvey and Michaely 2005 have found in their survey), their aversion to dividend cuts may lead them o behave "as if" they were signalling. It may also be important to keep in mind that signalling models assume that management acts in the shareholders' best interest. The behavior of managers that try to avoid payout cuts and smooth dividends may not always produce the best results from the shareholders' point of view. The practical differences between pure signalling and "involuntary" signalling may indeed be an interesting area to explore.

The paper has not dealt with tax issues that can affect dividend changes. To the extent that - as suggested by an important branch of the literature - firms' dividend policies lead to the formation of dividend clienteles, dividend changes will affect the "usual" investors in each firm and this will lead to significant share price reactions. Moreover, taxes may make dividends a costly signal of firm quality (as shown in John and Williams 1985 and Allen, Bernardo and Welch 2000). The findings presented in the previous sections imply that share price reactions can also be generated by the information about future earnings contained in dividend changes. The two explanations are most likely complementary. It is important however to understand the reasons for share price reactions even in the absence of tax factors. Amihud and Murgia (1997) show that dividend changes in Germany in the 1990s did lead to significant price reactions during a period when dividend income was treated at least as favorably as capital gains.

Summing up, it seems that the managerial aversion to dividend cuts - strongly supported by existing survey evidence - is an important driver of payout policy and it enhances the information content of dividend decisions. This may be valuable to small uninformed investors. At the same time, it may well be the strong negative reaction of uninformed shareholders to dividend cuts that helps make dividend changes informative. The self-enforcing mechanism could be a strong factor in the case of firms with dispersed ownership, that form a large proportion of dividend payers.

7 Conclusions

The paper has shown that dividend increases are associated with significant positive shifts in average earnings, while dividend decreases are associated with negative changes in average earnings. In the case of dividend increases, the years of very high growth are already in the past; however, this growth is not reversed and earnings stay at a high level. In the case of dividend decreases, the dividend change follows a decline in earnings and the subsequent rebound is not enough to bring the firm back to the previous level of earnings. Moreover, firms that increase dividends will have earnings in excess of their historical payouts. This is not true, however, for the majority of dividend-decreasing firms.

The results presented in the paper bring some redeeming evidence for the idea that dividends can be helpful in forecasting future earnings. This is important in light of the existing literature on dividends, particularly for the case of dividend decreases.

The patterns described above also point to the managers' aversion to dividend cuts, documented in Brav, Graham, Harvey and Michaely (2005), as an important determinant of the relationship between dividends and earnings. Managers will only increase dividends when they are sure that earnings have shifted to a higher level for the medium term. They will also only decrease dividends when they are forced to do so because of persistently low earnings.

This behavior of firm managers can therefore be helpful in explaining the share price reactions to dividend changes, since it ties shifts in cash disbursements to shifts in the earning potential of the firm. Investors actually get some information on future earnings from dividend changes, and this may help them save on monitoring costs. At the same time, however, the excessive attention paid by managers to dividend numbers may lead to the accumulation of unnecessary "slack" or, conversely, to the rejection of some positive NPV projects. The analysis of managers' discretion over payout policy from both an empirical and a theoretical point of view is certainly an interesting area for future research.

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APPENDIX

A Further Evidence on Firm Performance Around Dividend Changes

Table 1: The past growth rate of total assets

The table presents the average growth rates for total assets for years -3 to -1 for the various types of dividend changes. The numbers in the last three columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 'no change'		
				Mean	Median	
					Wilcoxon	χ^2 test
Omissions	816	0.0829	0.0241	0.2319	0.0000	0.0000
Decreases	1588	0.0890	0.0348	0.1013	0.0000	0.0001
No change	4717	0.0755	0.0435			
Increases:	8645	0.0975	0.0699	0.0000	0.0000	0.0000
Initiations/ resumed payments	740	0.1582	0.0670	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0778	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0050	0.5939

Table 2: The future growth rate of total assets

The table presents the average growth rates for total assets for years 1 to 3 for the various types of dividend changes. The numbers in the last three columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 'no change'		
				Mean	Median	
					Wilcoxon	χ^2 test
Omissions	813	0.0363	0.0107	0.0016	0.0000	0.0000
Decreases	1591	0.0513	0.0221	0.5516	0.0000	0.0003
No change	4728	0.0548	0.0320			
Increases:	8664	0.0787	0.0550	0.0000	0.0000	0.0000
Initiations/ resumed payments	754	0.1131	0.0711	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0000	0.0028

Table 3: Dividend changes and changes in average capital expenditures

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average capital expenditures in years -3 to -1 and 1 to 3, normalized by total assets at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	761	0.01024	-0.00832	0.0855	0.0000	0.0334	0.0000	0.0000
Decreases	1522	0.01411	-0.00232	0.0012	0.0181	0.1885	0.0000	0.0000
No change	4542	0.01843	0.00393	0.0000	0.0000			
Increases:	8383	0.03514	0.01821	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	718	0.06860	0.02446	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0003	0.0081

Table 4: Dividend changes and changes in research and development expenditures

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average R&D expenditures in years -3 to -1 and 1 to 3, normalized by total assets at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	333	0.00232	0.00000	0.4083	0.7094	0.0001	0.0000	0.0000
Decreases	634	0.00484	0.00000	0.0048	0.0053	0.0003	0.0000	0.0000
No change	2205	0.01038	0.00188	0.0000	0.0000			
Increases:	4259	0.01772	0.05261	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	340	0.02821	0.00487	0.0000	0.0000	0.0000	0.0002	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0001	0.5043	0.7384

Table 5: Dividend changes and changes in average nonoperating income

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average nonoperating income in years -3 to -1 and 1 to 3, normalized by total assets at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	804	-0.002025	-0.001459	0.0935	0.0000	0.0194	0.0025	0.0061
Decreases	1586	-0.000968	-0.001195	0.3710	0.0000	0.0951	0.0030	0.0018
No change	4709	0.000638	-0.000447	0.1316	0.0000			
Increases:	8659	0.002970	0.000390	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	749	0.008076	0.001624	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0070	0.0016

B Total Dividends and Dividends per Share

B.1 Dividends and Earnings per Share

Table 1: Changes in dividends per share and the changes in diluted earnings per share including extraordinary items

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average diluted earnings per share in years -3 to -1 and 1 to 3, normalized by total assets per share at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	738	-0.01669	-0.00610	0.2171	0.0770	0.0156	0.0203	0.0400
Decreases	1518	-0.00897	-0.00956	0.0187	0.0000	0.0059	0.0000	0.0000
No change	4533	-0.00123	0.000947	0.3626	0.4487			
Increases:	8425	0.027029	0.016866	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	694	0.03760	0.02492	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0057	0.0000	0.0000
Increases vs. initiations/resumed payments	0.5822	0.2568	0.1784

Table 2: Changes in dividends per share and the changes in diluted earnings per share excluding extraordinary items

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average diluted earnings per share in years -3 to -1 and 1 to 3, normalized by total assets per share at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	718	-0.01889	-0.00631	0.1432	0.0521	0.0024	0.0065	0.0100
Decreases	1492	-0.00679	-0.00629	0.0428	0.0000	0.0254	0.0000	0.0000
No change	4422	0.00017	0.001957	0.9018	0.0232			
Increases:	8169	0.02816	0.017255	0.0000	0.0000	0.0003	0.0000	0.0000
Initiations/ resumed payments	685	0.03483	0.02378	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0085	0.0000	0.0000
Increases vs. initiations/resumed payments	0.7331	0.0794	0.1029

Table 3: Changes in dividends per share and the changes in basic earnings per share including extraordinary items

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average basic earnings per share in years -3 to -1 and 1 to 3, normalized by total assets per share at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	767	-0.01692	-0.0064	0.1959	0.0465	0.2877	0.0704	0.0394
Decreases	1550	-0.00860	-0.00956	0.0216	0.0000	0.3100	0.0010	0.0000
No change	4652	0.0074	0.0004	0.4134	0.6599			
Increases:	8546	0.0363	0.0166	0.0010	0.0000	0.0783	0.0000	0.0000
Initiations/ resumed payments	715	0.0333	0.0224	0.0000	0.0000	0.2640	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0845	0.0000	0.0000
Increases vs. initiations/resumed payments	0.9382	0.2170	0.1282

Table 4: Changes in dividends per share and the changes in basic earnings per share including extraordinary items

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average basic earnings per share in years -3 to -1 and 1 to 3, normalized by total assets per share at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	767	-0.01876	-0.00533	0.1223	0.0330	0.0020	0.0064	0.0073
Decreases	1546	-0.00773	-0.00614	0.0230	0.0000	0.0156	0.0000	0.0000
No change	4652	-0.00018	0.00179	0.8982	0.0566			
Increases:	8546	0.0276	0.01701	0.0000	0.0000	0.0002	0.0000	0.0000
Initiations/ resumed payments	715	0.03231	0.02378	0.0000	0.0000	0.0000	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0056	0.0000	0.0000
Increases vs. initiations/resumed payments	0.8035	0.1076	0.0793

Table 5: Changes in dividends per share and the changes in diluted earnings per share excluding extraordinary items, normalized by the book value of equity per share

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average diluted earnings per share in years -3 to -1 and 1 to 3, normalized by the book value of equity per share at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	714	-0.12058	-0.01952	0.1596	0.0070	0.0025	0.0028	0.0013
Decreases	1484	-0.02701	-0.015455	0.2477	0.0000	0.2236	0.0000	0.0000
No change	4421	-0.005505	0.004871	0.4037	0.0222			
Increases:	8162	0.052247	0.036872	0.0000	0.0000	0.0001	0.0000	0.0000
Initiations/ resumed payments	685	0.06425	0.05063	0.0861	0.0000	0.0060	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0029	0.0000	0.0000
Increases vs. initiations/resumed payments	0.7545	0.0854	0.0730

Table 6: Changes in dividends per share and changes in average earnings per share

The table presents the regression of the change in average earnings per share (diluted EPS excluding extraordinary items for years 1 through 3 minus the equivalent measure for years -3 to -1), normalized by total assets and the book and market value of equity, on dividend changes. I_d is a dummy variable for dividend decreases, and I_i is a dummy variable for dividend increases. *Change* is defined as the relative change in dividends per share between years -1 and 0. ROA_i stands for returns on assets in year i. The numbers in brackets are the t-test values for each coefficient.

Dependent variable	Change in average earnings	
	Pooled	Fama-McBeth
Constant	-0.01169	-0.01564
	(-10.745)	(-4.676)
I_d * Change	0.00401	0.04288
	(9.862)	(7.025)
I_i*Change	0.00811	0.007743
	(7.115)	(3.536)
Market-to-book ratio	0.02440	0.02788
	(38.154)	(13.195)
$\frac{ROA_{-3}+ROA_{-2}+ROA_{-1}}{3}$	-0.00282	-0.00290
	(-23.365)	(-10.684)
Number of observations	13703	13703
R^2	0.108	0.125

B.2 Total Dividends and Total Earnings

Table 7: Changes in total dividends and changes in average earnings normalized by total assets

The table presents the relationship between changes in *total* common dividends between years 0 and 1 and the difference between income before extraordinary items available to common in years -3 to -1 and 1 to 3, normalized by total assets at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	714	-0.021554	-0.004677	0.0132	0.0785	0.0194	0.0523	0.0613
Decreases	3407	-0.011488	-0.008182	0.0000	0.0000	0.0003	0.0035	0.0028
No change	614	0.001710	0.001999	0.6358	0.3130			
Increases:	10976	0.018928	0.016426	0.0000	0.0000	0.0000	0.0000	0.0000
Initiations/ resumed payments	754	0.028381	0.027003	0.0037	0.0000	0.0181	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0316	0.0000	0.0105

Table 8: Changes in total dividends and changes in average earnings normalized by the book value of equity

The table presents the relationship between changes in *total* common dividends between years 0 and 1 and the difference between income before extraordinary items available to common in years -3 to -1 and 1 to 3, normalized by the book value of equity at the end of year -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	710	-0.080875	-0.010995	0.2545	0.1649	0.3083		0.0778
Decreases	3399	-0.02874	-0.017851	0.0323	0.0000	0.4046	0.0005	0.0002
No change	614	-0.001911	0.004593	0.8965	0.3533			
Increases:	10966	0.037946	0.036284	0.0000	0.0000	0.0022	0.0000	0.0000
Initiations/ resumed payments	754	0.771863	0.053357	0.2984	0.0000	0.3468	0.0000	0.0000

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0002	0.0608	0.0503

Table 9: Changes in total dividends and changes in average total earnings

The table presents the regression of the change in average earnings per share (diluted EPS excluding extraordinary items for years 1 through 3 minus the equivalent measure for years -3 to -1), normalized by total assets and the book and market value of equity, on dividend changes. I_d is a dummy variable for dividend decreases, and I_i is a dummy variable for dividend increases. *Change* is defined as the relative change in dividends per share between years -1 and 0. ROA_i stands for returns on assets in year i. The numbers in brackets are the t-test values for each coefficient.

Dependent variable	Change in average earnings per share	
	Pooled	Fama-McBeth
Constant	-0.01169	-0.01564
	(-10.745)	(-4.676)
I_d * Change	0.00401	0.04288
	(9.862)	(7.025)
I_i*Change	0.00811	0.007743
	(7.115)	(3.536)
Market-to-book ratio	0.02440	0.02788
	(38.154)	(13.195)
$\frac{ROA_{-3}+ROA_{-2}+ROA_{-1}}{3}$	-0.00282	-0.00290
	(-23.365)	(-10.684)
Number of observations	13703	13703
R^2	0.108	0.125

C Dividend Changes and Profitability

Table 1: Dividend changes and past returns on assets

The table presents the average returns on assets (computed as the ratio between income before extraordinary items available for common and total assets at the end of the year) for years -3 to -1 for the various types of dividend changes. The numbers in the last three columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 'no change'		
				Mean	Median	
					Wilcoxon	χ^2 test
Omissions	817	1.4310	1.4817	0.0000	0.0000	0.0000
Decreases	1594	4.8864	4.0850	0.9844	0.3079	0.2052
No change	4733		4.8831	4.2677		
Increases:	8671	7.6857	6.9927	0.0000	0.0000	0.0000
Initiations/ resumed payments	754	4.0143	3.8098	0.0001	0.0876	0.0620

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0000	0.0028

Table 2: Dividend changes and future returns on assets

The table presents the average returns on assets (computed as the ratio between income before extraordinary items available for common and total assets at the end of the year) for years 1 to 3 for the various types of dividend changes. The numbers in the last three columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 'no change'		
				Mean	Median	
					Wilcoxon	χ^2 test
Omissions	814	-3.8468	0.2570	0.0000	0.0000	0.0000
Decreases	1592	2.0923	2.6543	0.0001	0.0000	0.0020
No change	4731		2.9453	3.3553		
Increases:	8668	6.0673	5.8631	0.0000	0.0000	0.0000
Initiations/ resumed payments	754	2.1907	4.1115	0.0305	0.01030	0.0226

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0000	0.0000

Table 3: Dividend changes and past returns on equity

The table presents the average returns on equity (computed as the ratio between income before extraordinary items available for common and common equity at the end of the year) for years -3 to -1 for the various types of dividend changes. The numbers in the last three columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 'no change'		
				Mean	Median	
					Wilcoxon	χ^2 test
Omissions	740	-1.6059	2.7010	0.0000	0.0000	0.0000
Decreases	1544	9.6445	8.8562	0.1650	0.0000	0.0116
No change	4672		10.3486	9.4728		
Increases:	8591	15.732	14.3247	0.0000	0.0000	0.0000
Initiations/ resumed payments	711	6.4520	9.0893	0.0000	0.3078	0.4009

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0000	0.0000

Table 4: Dividend changes and future returns on equity

The table presents the average returns on equity (computed as the ratio between income before extraordinary items available for common and common equity at the end of the year) for years 1 to 3 for the various types of dividend changes. The numbers in the last three columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 'no change'		
				Mean	Median	
					Wilcoxon	χ^2 test
Omissions	675	-9.7119	1.4280	0.0000	0.0000	0.0000
Decreases	1476	3.1937	6.6495	0.0191	0.0000	0.0116
No change	4576		5.6559	8.2907		
Increases:	8488	12.5555	12.7125	0.0000	0.0000	0.0000
Initiations/ resumed payments	709	2.2554	9.1027	0.0232	0.0708	0.0390

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.0000	0.0000	0.0000

Table 5: Dividend changes and changes in average returns on assets

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average returns on assets in years 1 to 3 and -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	814	-5.3025	-1.8467	0.0000	0.0000	0.0000	0.0020	0.0189
Decreases	1592	-2.7812	-1.7043	0.0000	0.0000	0.0005	0.0081	0.0015
No change	4731	-1.9389	-1.1037	0.0000	0.0000			
Increases:	8667	-1.6167	-0.9533	0.0000	0.0000	0.0049	0.0099	0.0488
Initiations/ resumed payments	754	-1.8235	0.02867	0.0017	0.9130	0.7441	0.0000	0.0004

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0000	0.0000	0.0000
Increases vs. initiations/resumed payments	0.4421	0.0020	0.0018

Table 6: Dividend changes and changes in average returns on equity

The table presents the relationship between changes in dividends per share between years 0 and 1 and the difference between average returns on equity in years 1 to 3 and -3 to -1. Observations are grouped according to the sign and size of the change in dividends per share: omissions, renewed payments, decreases, no change increases. The mean and median earnings changes for each group are then compared to zero and to their counterparts from the 'no change' group. The numbers in the last five columns are the p-values for the means and medians tests.

Type of dividend changes	Number of observations	Mean	Median	Compared to 0		Compared to 'no change'		
				Mean	Sign test	Mean	Median	
							Wilcoxon	χ^2 test
Omissions	652	-10.3636	-2.8998	0.0000	0.0004	0.0003	0.1907	0.2090
Decreases	1457	-6.3536	-2.9907	0.0000	0.0000	0.1534	0.0084	0.0150
No change	4540	-4.8615	-1.8125	0.0000	0.0000			
Increases:	8437	-3.0410	-1.5777	0.0000	0.0000	0.0005	0.0237	0.1329
Initiations/ resumed payments	681	-5.0706	-0.6180	0.0362	0.2201	0.8907	0.0438	0.0637

	Mean	Median	
		Wilcoxon test	χ^2 test
Increases vs. decreases	0.0001	0.0009	0.0004
Increases vs. initiations/resumed payments	0.0971	0.2320	0.1203