Dividend payment behavior of European listed firms : Three essays

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Tendance, les déterminants et l'effet de signal des dividendes en Europe: trois études

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Résumé

La thèse se compose de trois études consacrées à la politique de dividendes des entreprises européennes cotées.

Le premier essai étudie : (i) les éléments déterminants entraînant le paiement de dividendes, (ii) le changement au fil du temps dans le comportement des entreprises, pour le paiement de dividendes et (iii) les facteurs à l'origine de la diminution de la proportion des entreprises européennes payant des dividendes. En utilisant des sociétés cotées de 21 pays européens entre 1991 et 2010, nous voulons déterminer si les entreprises européennes payant des dividendes suivent la même tendance à la baisse que celle constatée aux États-Unis. En outre, cette analyse nous fournit l'occasion d'étudier les facteurs qui sont importants dans la détermination de la politique de dividende en Europe.

Le deuxième essai étudie les facteurs qui sont responsables à long terme (permanents) des changements de la politique de dividendes par les entreprises européennes cotées. Dans cet essai, nous examinons les facteurs qui motivent les changements durables dans les politiques de dividendes , à savoir qui conduisent un payeur de dividende régulier à suspendre les paiements de façon permanente, ou au contraire, qui conduisent une entreprise n'ayant jamais payé de dividendes à adopter une politique de versements de dividendes réguliers .

Le troisième essai étudie la validité empirique de l'hypothèse de l'effet signal du dividende. Dans un premier temps, nous examinons l'association entre les changements de dividendes et les changements futurs de bénéfices pour l'échantillon complet. Dans une deuxième étape, nous ne considérons que les annonces de changement de dividendes qui sont suivies par des changements inattendus dans les cours des actions pendant la période de trois jours autour de l'annonce du changement de dividende. Les changements dans les prix des actions devraient être dans le sens de l'évolution des dividendes si nous supposons que les forces du marché ne réagissent qu'aux changements des annonces de dividendes, qui ont contenu de l'information sur les bénéfices futurs.

Mots-clés : Dividende, performance, L'asymétrie d'information, la théorie de signalisation, les rendements des actions, opportunités d'investissement.

Abstract

The dissertation consists of three studies devoted to the dividend policy of European listed firms.

The first essay investigates: (i) the determinants of dividend payments; (ii) the change in the dividend payment behavior of firms over time; and (iii) factors that are responsible for the decrease in the proportion of dividend payers in Europe. By using listed firms from 21 European countries between 1991 and 2010, we want to determine whether European dividend payers follow the same declining trend as US ones. Furthermore, this analysis provides us the opportunity to study the factors that are important in the determination of dividend policy in Europe.

The second essay investigates the factors that are responsible for long term (permanent) dividend policy changes by European listed firms. In this essay we examine the factors that motivate lasting changes in dividend policies, i.e. that lead a regular dividend payer to stop payments permanently, or conversely that lead a never paid firm to adopt a policy of regular dividend payments.

The third essay investigates the empirical validity of the dividend signaling hypothesis. In a first step we examine the association between dividend changes and future earnings changes for the full sample. In a second step we consider only those dividend change announcements that are followed by unexpected changes in stock prices during the three days period around dividend change announcements. The changes in stock prices should be in the direction of dividend changes if we assume that market forces react only to dividend change announcements, which have information content about future earnings.

Key words: Dividend, performance, information asymmetry, signaling theory, equity returns, investment opportunities.

Table of Contents

Introductory chapter

Dividends are commonly defined as "the distribution of earnings (past or present) in real assets among the shareholders of the firms in proportion to their ownership" (Frankfurter, and Wansley 2003). Dividend policy involves the decision about the form, size, frequency and timing of dividend payments. Management has to decide whether to pay or not to pay dividends. The amount of dividends is then a complex issue leading to decide whether to pay a stable dividend or adopt fluctuating dividend payments based on earnings or financing needs. Similarly, the frequency of dividend payments involves the decision to pay annually, semiannually or quarterly dividends. Finally, the selection of the best suitable time (with earnings announcement or at any other date) for the dividend announcement is important, because it may affect the market perception and therefore the value of the firm's share price. According to Allen and Michaely (2002), managers have to decide first whether to pay or not to pay dividends; then in case of payment how much to pay, and finally which channel should be used (dividends, or share repurchases, or both).

1. Importance of dividend policy

Despite the irrelevance proposition of dividends suggested by Miller and Modigliani (1961), dividend is the most commonly used payout tool in the corporate world. Given their pervasive presence and the magnitude of the amounts paid out to shareholders as dividends every year (see Table 1 below), and their impact on cash available to finance corporate growth opportunities, the dividend decision is one of the major financial decisions for most firms.

1. 1. Importance of dividend policy for managers

The primary goal of a firm's management should be to maximize wealth of shareholders (or value of the firm). To avoid negative impact of dividend policy on firm value under imperfect market conditions, managers have to carefully analyze: (i) the preference of stockholders, whether they prefer high dividends or low dividends, notably to minimize their taxes; (ii) the sustainability of dividends in future; (iii) the expected market reaction to the dividend announcement; (iv) the impact of the dividend policy on the future positive net present value (NPV) projects. In sum, managers have to search for an optimal dividend policy aimed at maximizing company's stock price and therefore shareholders wealth. This research is aimed to enlarge the knowledge base of corporate dividend policy. We investigate the factors that affect dividend policy of firms in Europe and the timing of changes in dividends as compare to changes in earnings. In addition, this research will help us know whether managers' incentives to pay dividends have changed over time and, if such is the case, what are the reasons of this change.

1. 2. Importance of dividends for shareholders and creditors

The literature on corporate dividend policy has produced a large body of theoretical and empirical research suggesting that shareholders and creditors should both consider dividends carefully.

Regarding shareholders, there are at least three benefits to investing in dividend-paying stocks. First, unlike expected capital gains, dividends are certain. Second, they signal favorable future prospects. Third, they help align the interests of managers and shareholders, notably by reducing the discretionary funds available to managers. In this vein, Gordon (1962) suggests that shareholders may prefer the “bird in the hand” of cash dividends rather than the “two in the bush” of future capital gains. Among others, Miller & Modigliani (1961) Bhattacharya (1979), and Miller and Rock (1985) advance that dividends convey information about future prospects of firms to outsiders. Thus, by providing additional information about business performance, dividend payment helps investors in making their investment decisions. Easterbrook (1984) states that dividend payments decrease the ability of insiders to misuse firms’ resources and force firm’s management to raise additional finance from capital market to finance the available investment opportunities. This induces monitoring by potential investors, thus reducing agency problems.

However, on the other hand, dividend income is more heavily taxed than capital gains for most investors. This should lead them to favor non-dividend paying stocks or stocks paying low dividends. Considering the largely documented tax disadvantage of dividend payments, Farrar and Selwyn (1967) and Brennan (1970) show that, for a given level of risk, investors should demand higher returns on stocks with higher dividend yield.

Regarding creditors, increases in dividend payments raise the leverage ratio systematically, resulting in an increase in firms’ risk. Furthermore, increases in dividends decrease the funds available for servicing and redeeming creditors’ claims. Thus creditors should restrict firms from increasing dividend payments. They commonly use bond covenants to put an upper bound on the amount of dividend over the life of their loan (Kalay, 1982). In line, John and Nachman (1985), and Long, Malitz, and Sefcik (1994) report that managers have an incentive to build reputation in the credit market by restricting dividends, if they expect to avail credit facilities in the future.

In the light of the above discussion we can assume that any decline in the propensity to pay dividends over time may result from a decline in the usefulness of dividends or from increased interference of lenders in the dividend policy decision. To investigate the change in lenders role, unlike previous studies, we will analyze the impact of firms' borrowing ratio on dividend payments and time series changes in the ratio. Similarly, since the signaling hypothesis is extensively used for explaining corporate dividend behavior, we will investigate whether managers use dividends to signal their inside information to outsiders, and whether a possible decline in dividend payments results from a decline in the signaling power of dividends.

2. Trend of dividend payments

Dividends are costly because firms incur cost to raise the funds that have been distributed and that are necessary to finance their future projects. Similarly, the difference in tax rates on dividend income and capital gains affects stockholders wealth negatively. Despite these costs, as suggested by the data in Table 1, dividends remain the most popular mechanism for distributing cash to shareholders, notably in Europe. Only in the year 2010, 60.5% of UK firms, 78.7% of French firms, and 58.7% of German firms have paid dividends.

We covered data from twenty-one European countries (see Appendix 1). Firm-level data are obtained from Datastream and Osiris databases. First, using the Osiris database we collected all listed firms headquartered in these 21 countries. There were a total of 11,524 firms in the initial list. Following previous studies, we eliminated firms classified as financials (codes that start from 40) by Global Industry Classification Standard (GICS). Firms with negative common stockholder's equity and delisted firms (with missing delisting dates) were also excluded.

Table 1 suggests that during the sample period, 77.6 % of firms with positive net earnings paid dividends in UK. They paid globally average annual dividends of 30824 million € per year. Average annual net earnings of these firms came to 74582 million € per year. Thus firms from UK distributed on average about 45% of their net earnings as dividends. Table 1 shows that in the early 90s more than 90% of UK firms paid dividends. However, in the later years the proportion of dividend payers declined systematically. Our further analysis will show that for the first years of our sample period, Datastream database covers only large, profitable and mature firms. Majority of these firms were dividend payers. Later on, however, Datastream extended its coverage to small and less profitable firms. These newly added firms were mostly non-dividend payers thus putting a downward pressure on the proportion of dividend payers.

The corporate governance system in the US is generally characterized as "market-based" system. The capital market in this country is relatively liquid and company ownership dispersed. Managers are supposedly monitored by an external market and by boards of directors that are usually dominated by outsiders (Franks and Mayer 2001). UK listed firms have relatively lower insider ownership. In contrast, the corporate governance system in France and Germany is generally characterized as "relationship oriented". Corporate governance in these countries is concentrated and firms are monitored by a combination of large corporate shareholders, banks, and other inter-corporate relationships (e.g., co-owner family members etc). In such conditions, firms face relatively few information asymmetry problems and thus the need to convey information to stock market is lower. Therefore, we expect that the dividend payment behavior of firms may differ between common law countries (e.g., UK, US etc) and civil law countries (e.g., France, Germany etc).

Table 1– General trend of dividend payments by European Firms

Firms are number of firms that announce positive net earnings for each year t, and for which all the data in the table are available. Market capitalization, net earnings, and dividends are reported in million of Euros. Local currencies are converted into Euros. The exchange rate used is the one in force on 31 December of each year *t*. Beside UK, France, and Germany, the sample includes firms from Austria, Belgium, Cyprus, Denmark, Finland, Greece, Iceland, Ireland, Italy, Luxembourg, Netherland, Gibraltar, Norway, Portugal, Spain, Sweden, Switzerland, and Turkey.

UK

Year	Firms	Market Capitalization	Net earnings	Dividends	Payout ratio	Payers (%)
1990	67	25797	2427	1 265	52.1	92.5
1991	79	51656	4701	2029	43.2	83.5
1992	267	194985	16231	7719	47.6	91.8
1993	360	421228	23135	10949	47.3	94.2
1994	400	412997	30106	13851	46.0	94.0
1995	416	449014	34248	15649	45.7	94.2
1996	459	476586	57704	18687	32.4	90.2
1997	449	707473	65649	26692	40.7	83.3
1998	528	875393	81475	32055	39.3	89.6
1999	563	1342904	54812	28434	51.9	86.5
2000	591	1572917	77922	33929	43.5	82.2
2001	566	1099723	63922	30604	47.9	81.3
2002	548	830797	52578	29784	56.6	81.8
2003	589	924600	58064	29581	50.9	77.8
2004	663	1094657	86009	36427	42.4	72.2
2005	724	1531706	149601	53936	36.1	69.1
2006	727	1574804	147539	56905	38.6	67.8
2007	751	1722802	162691	61102	37.6	66.7
2008	669	1037924	157963	54098	34.2	66.4
2009	573	1213905	104007	49591	47.7	62.8
2010	617	1625637	135448	54023	39.9	60.5
Mean	505	913691	74582	30824	44.9	77.6

France

Year	Firms	Market Capitalization	Net earnings	Dividends	Payout ratio	Payers (%)
1990	60	4613	731	137	18.8	85.0
1991	68	16166	1377	321	23.3	95.6
1992	144	138900	9319	3317	35.6	93.8
1993	147	179554	8704	3472	39.9	89.1
1994	177	170469	10416	3620	34.8	88.7
1995	180	180713	10400	4078	39.2	89.4
1996	193	272820	13449	5055	37.6	88.1
1997	205	378696	19377	7032	36.3	91.7
1998	211	534021	25451	8659	34.0	89.1
1999	209	901431	28421	10453	36.8	87.6
2000	320	988554	48046	13639	28.4	78.8
2001	317	736229	37494	11675	31.1	75.7
2002	302	586617	32325	11346	35.1	77.8
2003	295	656167	35427	12590	35.5	73.6
2004	314	699896	42464	15472	36.4	72.6
2005	313	873554	54305	21401	39.4	76.7
2006	322	1253037	81370	31832	39.1	73.6
2007	315	1392853	89298	34757	38.9	74.3
2008	260	795207	75629	36459	48.2	75.8
2009	244	995288	65846	37005	56.2	81.1
2010	267	918179	71968	31735	44.1	78.7
Mean	232	603474	36277	14479	36.6	83

Germany

Year	Firms	Market Capitalization	Net earnings	Dividends	Payout ratio	Payers (%)
1990	36	10761	288	135	46.8	83.3
1991	38	6686	433	218	50.4	86.8
1992	98	67284	3609	1861	51.6	88.8
1993	102	96556	3820	2120	55.5	89.2
1994	114	101670	8564	2511	29.3	81.6
1995	128	113316	6835	2958	43.3	81.3
1996	131	195730	9470	4449	47.0	83.2
1997	146	248020	12326	6159	50.0	87.0
1998	153	410283	25343	11194	44.2	87.6
1999	170	610282	24407	9089	37.2	83.5
2000	197	531770	28167	12409	44.1	70.6
2001	177	347573	22695	7298	32.2	74.0
2002	172	260462	22319	8489	38.0	66.9
2003	169	347917	15142	6458	42.7	67.5
2004	203	441085	28608	11985	41.9	62.1
2005	220	517376	32196	13847	43.0	62.3
2006	236	628203	49712	21173	42.6	58.5
2007	240	720817	38971	18855	48.4	65.0
2008	226	378727	28732	15976	55.6	63.3
2009	196	454015	23776	14083	59.2	69.4
2010	228	627886	30193	14344	47.5	58.3
Mean	161	338877	19791	8839	44.7	74.8

Others countries

Year	Firms	Market Capitalization	Net earnings	Dividends	Payout ratio	Payers (%)
1990	86	8381	782	370	47.3	90.7
1991	147	34347	2600	1169	45.0	87.8
1992	333	109045	10077	4249	42.2	87.4
1993	396	207414	13898	5473	39.4	87.1
1994	464	238250	19563	6933	35.4	89.9
1995	507	329253	29680	10509	35.4	88.6
1996	564	480073	30351	11822	39.0	87.8
1997	607	728410	46855	15887	33.9	87.6
1998	631	954544	66735	25292	37.9	88.1
1999	658	1609868	65927	22103	33.5	84.5
2000	833	1733352	101031	28271	28.0	79.0

------Table 1 continued------

Year	Firms	Market Capitalization	Net earnings	Dividends	Payout ratio	Payers (%)
2001	660	1256114	59431	24756	41.7	78.0
2002	688	901886	73121	27541	37.7	71.5
2003	800	1312865	77651	39245	50.5	70.3
2004	850	1607729	98443	46115	46.8	75.3
2005	941	2132778	138386	60144	43.5	74.4
2006	949	2781185	154503	68528	44.4	72.8
2007	1008	3003123	190712	75422	39.5	69.6
2008	835	1492640	167712	71755	42.8	69.0
2009	775	1972467	125715	56211	44.7	68.4
2010	866	2455685	165392	76297	46.1	70.0
Mean	648	1207115	78027	32290	41	80

Table 1 shows that during the 1990-2010 period, firms headquartered in France reported average net earnings of 36277 million €. They paid on average 14479 million € per year as ordinary dividends. Thus they distributed 36.6% of their net earnings to their stockholders. Furthermore, 83% of French firms with positive net earnings paid dividends. Similarly, firms headquartered in Germany reported 19791 million € of average net earnings during the same period. They paid out to their shareholders an average amount of 8839 million € per year or 44.7% of their net earnings. The proportion of German firms with positive net earnings that pay dividends is smaller than those headquartered in UK and France, but the average payout ratio of German firms is reasonably high.

Dividend payment is equally important in the rest of the eighteen European countries that are included in our sample[1]. Firms domiciled in these eighteen countries reported average net earnings of 78027 million € per year during the period 1990-2010. On average, they paid out as dividends 32290 million € or 41% of their net earnings. Similarly, 80% of the total firms that declared positive net earnings paid dividends.

[1] Table 2 of chapter 1 contains the list of the sample countries.

In sum consider dividend payment is an important payout tool for the sample firms. Despite the controversy over the impact of dividends on firm value or shareholders' wealth, and the availability of less costly payout tools (such as share repurchases) European firms pay a substantial chunk of their net earnings as dividends.

3. Dividend theories

Dividend policy has been one of the most thoroughly researched issues in modern finance. Over the last fifty years, it has been subject to intensive theoretical modeling and empirical tests. Until the 1960s dividend theoreticians were split into two schools of thought: Miller and Modigliani (1961) and their followers shared the view that dividend payment does not affect firm value in perfect market conditions. In contrast, Gordon (1959) and his supporters were of the opinion that firm market value depends upon the amount of dividends paid to shareholders. Later on several other theories and models like the signaling theory, the Lintner model, the life cycle theory, the catering theory were formulated to explain dividend payment behavior of firms.

As the dividend literature is large we present below only a brief review of some of the salient theories and evidence.

The Miller and Modigliani's (1961) proposition

Miller and Modigliani (1961) first posed the dividend puzzle in their classic paper by providing a widely accepted argument for dividend irrelevance. Dividend irrelevance implies that the value of a firm depends upon the profitability of its assets only, and not the amount of dividends paid to shareholders. In other words, under conditions of perfect capital markets, presence of rational investors, absence of tax discrimination between dividend income and capital gains, given the firm investment set, dividend policy does not affect firm value, i.e. the market price of its shares.

The Miller and Modigliani proposition assumes that

- Investors are rational;
- Information is available to all investors and free of cost;
- There are no transactions costs;
- Securities are infinitely divisible;
- No investor is large enough to influence the market price of securities;
- There are no differences in tax rates applicable to dividend income, capital gains and a firm's investment policy does not change with dividend payment or non-payment;
- The financing of new investments from sources other than retained earnings will not change the business risk of firms and thus the shareholders required rate of return should not change;
- Investors know for certain the future investments and profits of firms.

In this model, Miller and Modigliani (1961) show that the effect of dividend payment would be offset by the effect of raising additional funds from capital markets. Furthermore when dividends are paid, the stock price falls and thus whatever is gained by investors as a result of increased dividends will be neutralized by the reduction in the market value of the shares.

Among others, Black and Scholes, (1974), Miller (1986), and Miller and Scholes (1978, 1982) provided empirical evidence supporting the dividend irrelevance argument. Limitations of this proposition come principally from capital market imperfections: there are taxes, floatation costs, information asymmetries and transaction costs.

Clientele effects

Do firms with higher (lower) dividend yields have higher (lower) stock prices because of the different tax treatments between dividends and capital gains? Do these differences in tax treatments result in the existence of clienteles, some investors preferring high dividend yields, while others prefer low yields to minimize their tax burden?

Miller and Modigliani (1961) were the first who suggested the clientele effects of dividends. They stated that there are different classes of investors (clienteles). Each class (or clientele) differs from other classes because of specific preference for payout ratios. All classes of investors are equally good. If a firm changes its payout ratio, a change in its class of investors takes place, but the overall value of the firm remains unaffected. Studies examining clientele effects of dividends assume that these different classes of investors, who prefer different level of payout ratios, exist because of their different level of taxation. Investors with high (low) level of income prefer to buy shares of firms with low (high) payout ratio because of the difference in the tax rates.

Farrar and Selwyn (1967) report that investors want to maximize their after-tax income. They suggest that share repurchases should be used as a payout channel instead of dividends. In line with Farrar and Selwyn, Brennan's (1970) capital asset pricing model suggest that investors require higher pretax risk adjusted returns on stocks with higher dividend yields to compensate for the tax disadvantage of holding these stocks. Litzenberger and Ramaswamy (1979), Trueman and Masulis (1998), and Kalay and Michaely (2000) report evidence in support that pretax returns are related to dividend yield. Black and Scholes (1974) and Kalay (1982), however, did not find evidence of such a tax effect.

Perez and Gonzalez (2002) report that firms adjust their dividend policy according to the tax induced preferences of the largest stockholders. Furthermore, dividend policy of firms owned by large non-taxable owners are unaffected by changes in tax rates. The Jobs and Growth Tax Relief Reconciliation Act of 2003 reduced the taxation on dividends in the US. This tax cut provided an opportunity to test the tax based dividend clientele theory. Chetty and Saez (2005) report that the reaction to the tax cut was significant for firms with large taxable institutional owners, or firms with independent directors and large share holdings.

Korkeamaki et al. (2010) and Kaserer et al. (2011) analyzed the payout behavior of listed German firms around the German Tax Reduction Act of 2001 (GTRA). They report that GTRA has significantly changed the tax preference of shareholders and consequently affected firms' payout decisions. Renneboog and Trojanowski (2011) studied the payout behavior of UK firms and found results inconsistent with the tax-clientele explanation for payout choices.

In sum, even after conducting intensive empirical research during the last fifty years on the clientele effect of dividends, researchers are not agreed on a single answer of the question of the impact of taxes and dividend yields on stock prices.

Signaling theory of Dividends

Based on the assumption that insiders have more information on the future prospects of their firms than outsiders, the signaling theory states that insiders convey this information to outsiders through financial decisions, such as dividend payments. Insiders also use direct sources (e.g., annual reports, press releases, conference calls with financial analysts etc.) to communicate information on the firm's financial position and future prospects, but information provided through direct sources in not fully credible. This information is therefore meaningless for the end users (Brealey, Myers, and Allen 2008). In such circumstances, dividends are considered a reliable source of information on firms' performance for at least two reasons. First, dividends are costly[2]. Second, firms can use dividend increases as false signals in the short run; but in the long run, a firm cannot sustain increased dividends if operations are not profitable enough. Increases in dividend payments without an increase in firm performance will ultimately leave the firm with insufficient funds to maintain dividends.

The usefulness of any information is measured by its effect on market participants' beliefs about the future of the firm. "Announcements are said to contain information if they alter investors' beliefs about the value of an asset" (Beaver 1968). The change in market's participants' beliefs is commonly measured by changes in stock prices, trade volumes, analysts' forecasts, and bid-ask spreads.

Miller and Modigliani (1961) suggested that dividends can convey information about firm future prospects to outsiders. Later on, Bhattacharya (1979), Miller and Rock (1985), and John and Williams (1985) developed signaling theory classic models. They suggest that managers use costly dividends intentionally in order to change market perception about the value of their firms. Since then, a number of studies have been conducted to investigate the dividend signaling hypothesis.

Studies that test the relationship between current dividend changes and future changes in profitability do not support the traditional signaling hypothesis that dividend changes convey information about future profitability [e.g., DeAngelo et al. (1996), Benartzi et al. (1997), Grullon et al. (2002), Jensen et al. (2010)]. However, changes in market perception of firm value induced by dividend change announcements have been largely reported [e.g., Aharony and Swary (1980), Dhillon et al. (1994), Lee and Ryan (2000)]. The changes in market perception of firm value

[2] Dividend payers will incur additional cost to finance their projects through capital markets.

suggest that dividend announcements convey information to investors, but researchers do not agree on the type of information conveyed by these announcements (Jensen et al. 2010).[3] Lintner (1956) proposes that a change in dividends refers to the permanency of past earnings changes. Dyl and Weigand (1998) report that dividend initiation conveys information about the decrease in firm risk. They report that after dividend initiation the risk of the firm lowers immediately and significantly. Jensen, Lundstrum, and Miller (2010) suggest that a dividend change may convey information regarding a firm's future investments. In short, empirical evidence on the signaling role of dividends does not provide consistent conclusions.

Dividend stickiness and the Lintner model

Lintner (1956) was the first who examined how managers' decide dividend payments by conducting a series of interviews with corporate managers. He provided evidence that managers are reluctant to make unsustainable dividend changes. This implies that current dividend payers expect that they will be able to continue paying the same level of dividends in the future. In other words, managers change dividends only when they see a permanent change in their firms' earnings. Linter noted that the important decision variable is not the amount of dividend per se but the change in the level of dividends. Based on these observations, he proposed a model assuming that

i. Firms have long run target dividend payout ratios;
ii. Managers focus on dividend changes rather than on the level of dividends;
iii. Dividend changes take place only after permanent changes in earnings, transitory changes in earnings do not affect dividend payments;

iv. Managers hesitate to announce dividend changes that are not sustainable in future, specifically dividend increases;
v. Managers smooth dividends.

Thus in contrast to the traditional signaling theory, that predicts a change in future earnings in the direction of current dividend changes, Linter suggests that earnings changes precede dividend changes. Lintner model assumes that dividend changes are a signal of sustainability of future earnings; while the traditional signaling theory suggests a change in future earnings in the direction of current dividend changes.

Let us suppose a firm *i* sticks to its target payout ratio. This means it always pays a constant percentage of its earnings. The dividend payment for the next year will be:

$$DIV_{t+1} = \text{target payout ratio} \times EPS_{t+1}$$

and dividend change is equal to:

$$\Delta DIV_{(t,t+1)} = \text{target payout ratio} \times EPS_{t+1} - DIV_t$$

where DIV_{t+1} and EPS_{t+1} are the dividends per share and earnings per share in the year t+1. $\Delta DIV_{(t,t+1)}$ is the difference between the dividend paid in year t and t+1.

According to the above model managers must change dividends with every change in earnings. But Lintner reports that, because they are reluctant to cut dividends, managers avoid large changes in dividend payments and, therefore, smooth dividends. This means that dividend changes incorporate only partially changes in earnings. Thus dividend changes follow the following pattern:

$$\Delta DIV_{(t,t+1)} = \text{adjustment rate} \times (\text{target payout ratio} \times EPS_{t+1} - DIV_t)$$

In sum, Lintner proposes that changes in dividends depend upon three factors: the change in current year earnings; the dividend payout ratio of last year; and the level of conservatism of the firm. The more conservative the firm, lower its adjustment rate towards its target ratio.

Empirical studies by Pettit (1972), Watts (1973) and Fama (1974) support the Lintner behavioural model. Healy and Palepu (1988) examined the association between dividend initiation and omission and future earnings changes. They report evidence in support of the Lintner model. Twu (2010) finds results in support of managers' reluctance to changes dividend policies. He named this behavior as dividend stickiness. He reports that in the US dividend stickiness is relatively higher than in other countries. Brav et al. (2005) conducted a survey of 407 chief financial officers and found that managers seek to maintain the existing level of dividends and do not like to cut dividends except in extreme circumstances. Their analysis indicates that maintaining the dividend level is a priority on par with investment decisions.

Agency costs and dividends payments

Traditionally, dividend theories are formulated under the assumption that the primary goal of corporate managers is to maximize firm value. The agency theory, however, differs from this approach. It recognizes the firm as collection of different groups with conflicting interests. Among these groups, managers control the firm's resources. Due to information asymmetry they can use these resources to maximize their own utility. On the basis of this idea two questions are identified. First, how to align the conflicting interests of managers with those of outsiders (lenders/creditors and shareholders)? Second, how to monitor managers' performance? In corporate world, an agency relationship exists between stockholders vs. debt holders, and between managers (or controlling shareholders) vs. minority shareholders.

Dividends are a potential source of conflicts between managers (or shareholders) and creditors because they are paid to shareholders only. Because dividend payments reduce the total assets of firm, eventually increasing creditors' risk, creditors prefer to restrict firms from paying dividends. Regarding the agency relationship between stockholders and managers, managers prefer to retain earnings. A low dividend payout maximizes management flexibility to invest more funds in negative NPV projects and increase the size of total assets under their control. On the other hand, stockholders prefer dividend payments that leave managers with little free cash to invest in negative NPV projects. Such dividend payments force managers to raise funds from capital markets to finance investment projects, capital markets, providing thus monitoring service to the existing stockholders. The inefficient use of corporate resources in excess of profitable investment opportunities by management was first recognized by Berle and Means (1932). Jensen and Meckling (1976) state that dividends can be used to mitigate agency problems between managers (or major shareholders) and minority shareholders. Increases in dividends reduce the free cash flow conflict and signal that (majority) shareholders will not use free cash flow for their own sake. Jensen (1986) updated this free cash flow hypothesis, combining market information asymmetries with agency theory. The funds remaining after financing all positive NPV projects result in conflicts of interest between insiders and outsiders. Dividend and interest payments decrease management's/insider's ability to invest free cash flows in negative NPV projects. They also decrease managers' propensity to perquisite consumption.

Bathala (1990) states that optimal dividend payout ratio stems from a trade-off between a decrease in agency costs of external equity and an increase in transaction costs associated with external financing due to increase in dividend payments. Crutchley and Hansen (1989) suggest that agency cost in a corporation can be controlled with three financial variables: the proportion of insider equity, leverage and dividend payment. They argue that, when the cost of using dividends as a tool to control agency costs increases, managers rely more on personal common stock ownership and leverage, and less on dividends. On the other hand, when the cost of personal equity ownership is higher, managers prefer to pay higher dividends, and hold a smaller fraction of common equity. John and Kalay (1982) state that debt covenants can be used to minimize dividend payments for preventing bondholders' wealth transfer to shareholders resulting from immoderate dividend payments. Debt covenants help bondholders/creditors restrict managers' dividend payment authority by fixing maximum limit to dividend payments.

The firm life cycle theory

Mueller and Dennis (1972) propose a formal theory of dividends based on firm's life cycle. Their main focus is on the agency problem within the firm, mainly the question whether managers maximize firm value or pursue their own interest. Similarly DeAngelo, DeAngelo, and Stulz (2006) propose an agency cost-inclusive (based on free cash flow explanation) life-cycle theory of dividends and question all previous explanations of dividend payments such as the dividend signaling theory, the clientele hypothesis etc.

The firm life cycle theory of dividends is based on the notion that the optimal dividend policy of a firm depends on the stage of its life cycle. According to this theory mature firms (old, large, profitable firms with more retained earnings) are more likely to have free cash because of high profitability and few investment opportunities. Thus they are more likely to be dividend payers to disgorge the excess cash. In other words, the ability of mature firms to generate more free cash flows overtakes their ability to find positive NPV projects. Eventually, it becomes optimal for these firms to distribute their free cash flow to stockholders in the form of dividends. In contrast, young firms are relatively less profitable and face a large investment opportunity set. Thus, they may be unable to generate enough cash to finance all their investment opportunities and at the same time pay dividends. In addition, these firms face hurdles in raising capital from external sources due to relatively high information asymmetry and risk. As a result, they should prefer to conserve cash by forgoing dividend payments to shareholders. Over time, after successful business operations, these firms reach a stage of maturity. At this point, their investment opportunities decline, their profitability flattens, systematic risk declines, and they start to generate more cash internally than they required for further investment. They start then paying dividends to their shareholders.

Fama and French (2001) study the dividend payment behavior of US listed firms. They investigate the trends and determinants of payout policy over the 1926-1999 period. Their findings suggest that the life cycle factors play a major role in the decision to pay dividends. In particular, they show that large and profitable firms are more likely to be dividend payers. In contrast, firms that have never paid dividends are relatively small, young and less profitable, with more investment opportunities. Denis and Osobov (2008) extend the analysis to Canada, United Kingdom, Germany, France, and Japan and find similar results. They report a positive relationship between the propensity to pay dividends and the ratio of retained earnings-to-total equity. In the same vein, Eije and Megginson (2008) report that firm age, size, and past profitability are positively associated with the propensity to pay dividends as predicted by the life cycle theory.

Where do we stand on the dividend puzzle?

Dividend behavior of firms is one of the most puzzling areas in finance. It has been one of the most thoroughly researched issues in modern finance. A number of theories and models have been formulated to answer the following questions: (i) why do firms pay dividends? (ii) what should an optimal dividend payment policy be, i.e. when and how much should firms pay as dividends? The empirical findings provide little evidence for one theory over the other. Black (1976) describes the lack of consensus on the issue by stating “The harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don’t fit together”. Similarly, Blau and Fuller (2008) and Fargher, Weigand, and Baker (2009) suggest that existing theories do not help understand why some firms never pay dividends whereas others consistently pay dividends. Li and Zhao (2008) report this point in these words "… each theory typically takes a 'one-size-fits-all' approach by trying to generalize the findings". Grullon, Michaely, and Swaminathan (2002) state that"… there might not be a single theoretical model blanket covering firm dividend behavior."

In sum, to find the answers of the above mentioned questions regarding the size, timing, and frequency of dividend payments researchers have to do much more. Our research is, therefore, an attempt to enlarge the knowledge base of dividend policy to help achieve the above mentioned objective.

4. Summary of the dissertation

The dissertation consists of three studies devoted to the dividend policy of European listed firms.

The first essay investigates: (i) the determinants of dividend payments; (ii) the change in the dividend payment behavior of firms over time; and (iii) factors that are responsible for the decrease in the proportion of dividend payers in Europe.

Recently, a number of studies have reported that dividends are disappearing [e.g., Fama and French (2001); Ferris, Sen, and Yui (2006) and Fatemi and Bildik (2012)]. Fama and French (2001) examine the patterns and determinants of payout policy of US listed firms over the period 1926-1999. They report that from 66.5% in 1978, the proportion of dividend payers falls to 20.8% in 1999. There were 2,419 dividend payers in 1978 but only 1,182 US firms paid dividends in 1991 and 1,063 in 1999. One of the reasons for this decline is the change in the characteristics of firms under study (i.e., more firms exhibit characteristics similar to those of non-payers in 1999 than in 1978). However, even after controlling for these characteristics, the authors demonstrate a significant decline in the residual propensity to pay dividends. On the basis of these findings Fama and French suggest that the decrease in the number of dividend payers may be due to the decline in the perceived benefits of dividend payments. Ferris, Sen, and Yui (2006) investigate the UK market during the period 1998-2002. They report that the number of UK firms paying dividends declines from 75.9% to 54.5%. Utilizing data from 33 different countries, Fatemi and Bildik (2012) find results consistent with Fama and French (2001): propensity to pay dividends is declining over time.

Most of prior dividend literature uses US data. By using listed firms from 21 European countries between 1991 and 2010, we want to determine whether European dividend payers follow the same declining trend as the US ones. Furthermore, this analysis will provide us with the opportunity to study the factors that are important in the determination of dividend policy in Europe, whether the determinants of dividend payments are the same as in the US and whether they change over time. A relatively long sample period, from 1990-2010, will help us determine more accurately the changes in dividend paying trends in our sample firms. A univariate detailed analysis will enable us draw additional conclusions about the future dividend paying trends. The measurement and analysis of the role of newly incorporated firms in the overall decline in the propensity to pay dividends is an important contribution of the study. If the decline in dividends payers is due to the change in the behaviour of newly incorporated firms, this can be considered as a decline in firms' propensity to pay dividends and may have lasting impact on dividends trends. On the other hand, if the decline is due to the addition of existing old firms to the database, this will have a different impact. The proportion of dividend payers will be affected till the year of registration of all previously non-registered firms into the database. After this transitionary period of database expansion, we can expect stability and then a rise in the proportion of dividend payers over time.

Our findings suggest that dividends are not disappearing in Europe. Unlike Fama and French (2001) we observe an increase in the total number of dividend payers over time. The proportion of dividend payers however declines from 81.73% in 1990 to 47.95% in 2010. The primary reason for this decline is the influx of a large number of young and less profitable firms into the database. The database covered only large and profitable firms in the beginning of the sample period, but started to cover less profitable and smaller firms over time. Most of these newly added firms were dividend non-payers. This resulted in a sharp decline in the proportion of dividend payers over this transitionary period. During the second half of our sample period, when the heavy influx of firms into the database stops, we observe stability in the proportion of dividend payers. We conduct both univariate and multivariate analysis to examine the changes in dividend payment behavior of firms and the changes in the characteristics of various dividend groups over time. Our univariate analysis suggests that successful newly added firms start dividend payment overtime and unsuccessful non-payers get delisted. Similarly dividend payers are stickier in following their dividend policy than non-dividend payers. The contribution of newly incorporated firms, that are expected to be dividend payers but do not pay dividends, is negligible in the overall decline. On the basis of these findings we expect an increase in the number and proportion of dividend payers in future.

Consistent with previous studies we find that firm size, profitability, and maturity are important factors in determining its dividend policy. In other words old, large and profitable firms, and those with high ratios of retained earnings-to-total equity are more likely to pay dividends. The large number of small and less profitable firms, which were not covered by the database in the beginning of the period under study, results in a decline in the proportion of dividend payers, average profitability, and size of the sample firms.

The first essay examines the dividend paying trends and the factors that are responsible for the changes in the proportion of dividend payers. The second one investigates the factors that are responsible for long term (permanent) dividend policy changes by European listed firms.

Since publication of the original Miller and Modigliani (1961) irrelevance propositions, several theories and models have been developed to explain the motivation behind dividend policies. But the very basic questions (why firms pay dividends, when firms should pay dividends, and how much they should pay) are yet to be answered. Blau and Fuller (2008) state that existing theories do not help understand why some firms never pay dividends, while others consistently pay them. According to Bulan et al. (2007) within the context of firm's life cycle, durable dividend initiation (positive switch) is an important policy change. Among others, Twu (2010), DeAngelo and DeAngelo (1990), and Brav *et al.* (2005) report that firms prefer to stick to their existing dividend policies and hesitate to change them. This perceived inflexibility in managers' attitude towards dividend payments makes a dividend policy switch an important mile stone in a firm's life cycle.

Thus in the second essay we examine the factors that motivate lasting changes in dividend policies, i.e. that lead a regular dividend payer to stop payments permanently, or conversely that lead a never paid firm to adopt a policy of regular dividend payments? For this purpose we divide our sample firms into five exclusive dividend groups: regular payers, regular non-payers, irregular payers, positive switchers (or initiators) and negative switchers (or omitters) [4]. By using univariate and multivariate (matched sample and full sample cross-sectional logit regressions) tests, we compare and analyze the characteristics of these different dividend groups over

[4] We define dividend initiator (positive switchers) as firm that initiates dividend payment for the first time and never omits them during the rest of the sample period. On the other hand, dividend omitter (negative switcher) is a firm that regularly pays dividend before omission year and then never pays dividend during the rest of the sample period.

the period 1990-2010. Furthermore, we examine the changes in the characteristics of dividend switchers (initiators and omitters) during the seven year switch window centered on the dividend switch year.

This essay focuses on firms that change their dividend policy only once during the sample period, meaning that they stick to their dividend payment (non-payment) decisions before and after the dividend policy change year. Most prior dividend policy studies focus on annual dividend payments only. They investigate either changes in the amounts paid from one year to another and payment or non-payment decisions. By ignoring the long-term pattern of dividend payments, these studies do not consider dividend policy as such. To our knowledge, our study is the first to examine factors affecting firm long term dividend policy. Studies similar to this one are those that investigate the determinants of dividend initiations and omissions[5]. But, the definitions of initiators and omitters used in previous studies allow a firm to be included in the sample as an initiator at one time and as an omitter at another time during the same sample period. For example Baker and Wurgler (2004) and Goergen et al. (2005) consider a firm as an initiator even if it resumes dividend payments after a single year omission**.** They do not consider the long term pre- and post-event dividend payment behavior of firms. In contrast our definitions of switchers restrict our sample to those firms that change their dividend policy only once during the sample period. Furthermore, most of previous studies focus either on dividend initiation or on dividend omission. By analyzing both positive and negative switchers, we will be able to determine whether the same factors are responsible for dividend abandonments and initiations.

Our findings suggest that: (i) Around the dividend switch year, positive (negative) switchers experience a significant increase (decrease) in their profitability; (ii) Asset

[5]We have not identified any studies of dividend initiations and omissions conducted on European firms.

growth ratio improves for positive switchers and declines for negative switchers during the seven year switch window; (iii) Earnings changes precede dividend changes; (iv) Negative switchers stop dividend payments due to poor operating performance and increased financial risk; while large investment opportunities and low level of profitability do not permit regular non-payers to pay dividends. These results do not support the signaling hypothesis. They suggest that the life cycle theory of dividends and the Lintner (1956) proposition better explain the relation between earnings changes and dividend changes. Contrary to the life cycle theory and Lintner proposition, the signaling theory predicts that a change in dividends conveys information about future changes in earnings. Inconsistent with this theory of dividends our findings do not provide any evidence that dividend changes convey information about future changes in earnings. We do not observe an increase (decrease) in the future earnings of dividend initiators (omitters).

In sum, a permanent change in current and/or previous year's profitability is the primary factor that motivates a firm to change its dividend policy. Consistent dividend payers and non-payers are more sensitive to their earnings level rather than to their available investment opportunities. Consistent dividend payers stop paying dividends only when their poor performance does not allow them to pay dividends anymore. Non-payers start paying dividends when their profitability rises up permanently. Interestingly, they experience a reasonable rise in their asset growth at the same time. Logically asset growth should be negatively associated with dividend increases.

The third essay investigates the empirical validity of the dividend signaling hypothesis. Bhattacharya (1979), Miller and Rock (1985), and John and Williams (1985) were the first who developed the classic models of signaling theory. They suggest that managers use costly dividends as a tool to convey inside information about the future prospects of their firms. The most common interpretation of the signaling hypothesis is that dividend changes are positively associated with future earnings changes. Healy and

Palepu (1988) report a rising trend in earnings for dividend initiators, which starts in the pre-initiation years and lasts till two years following the initiation year. For dividend omitters, however, they find results opposite to the signaling hypothesis. DeAngelo et al. (1996) suggest that dividend changes contain virtually no information about future changes in earnings. Nissim and Ziv (2001) find results contrary to the past studies. They demonstrate a positive association of dividend changes with earnings changes of each of the two years following the dividend change.

A large number of empirical studies report a positive association between dividend change announcements and the subsequent market reaction. The supporters of the signaling theory argue that one of the evidences in favor of the dividend signaling hypothesis is the largely reported market reaction to dividend change announcements.

In a first step we examine the association between dividend changes and future earnings changes for the full sample. In a second step we consider only those dividend change announcements that are followed by unexpected changes in stock prices during the three days period around dividend change announcements. The changes in stock prices should be in the direction of dividend changes if we assume that market forces react only to dividend change announcements, which have information content about future earnings.

We do not find evidence in support that market forces react to dividend change announcements in anticipation for a change in future earnings in the direction of dividend changes. In other words our findings do not support the signaling theory of dividends which states that managers pay dividends to convey inside information to outsiders about the future changes in profitability of their firms.

Overall, our findings validate the life cycle theory, the Lintner proposition, and the free cash flow theory, but they are inconsistent with the signaling theory. As suggested by the life cycle theory, we find that large, old, profitable firms and those with high ratios of retained earnings-to-total equity are more likely to pay dividends. In contrast with the signaling theory, we do not provide evidence showing that dividend changes are positively associated with future profitability. Furthermore, our results support the Lintner's (1956) proposition that earnings changes drive dividend changes. Past profitability is the primary factor that motivates a firm to change its long term dividend policy. Finally, we do not find evidence in support of the Fama and French's (2001) proposition that dividends are disappearing.

Chapter I: Appearance and disappearance of dividends: Evidence from Europe

1. Introduction

Miller and Modigliani (1961) demonstrate in their seminal paper that dividend payment is irrelevant under perfect market conditions. Since then, researchers have proposed and tested several theories to explain why firms pay dividends. Among these theories, the signaling theory, the agency theory, and the firm's life cycle theory are those that have received the greatest attention from researchers.

Miller and Modigliani (1961) suggest that dividends can convey information about future cash flows when markets are imperfect. Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985) developed signaling models showing that, in a world of asymmetric information, insiders use dividends as a tool to convey information to outsiders about their firm's future prospects. Many empirical studies have been conducted to investigate the signaling theory of dividends. Aharony and Swary (1980), among many others, report evidence in support of a positive relationship between dividend change announcements and changes in firm value.

Agency theory claims that the payment of dividends may mitigate opportunistic behavior that arises from managers' incentives to consume private benefits. Easterbrook (1984) suggests that dividend payments force firms to go to capital markets to raise additional finances to tap available investment opportunities. This induces monitoring by investors, thus reducing agency problems. Jensen (1986) suggests that agency problems may also arise from large free cash flows available to managers likely to be invested in negative net present value projects or spent on perquisites. Dividend payments alleviate this problem by reducing free cash flows available to managers.

Recently, DeAngelo et al. (2006) proposed the life cycle theory of dividends that combines Jensen's (1986) free cash flows theory with the evolution of a firm's investment opportunity set. The life cycle theory states that firms make adjustments in their dividend policy according to the investment opportunities available to them. These opportunities depend upon their life cycle stage. The theory predicts that new and young firms are expected to have more investment opportunities and their internally generated funds are not significant enough to finance these opportunities. Thus, these firms pay few dividends. In later years, after successful business operations, internal funds exceed investment opportunities so firms start paying dividends to mitigate the possibility of wasting free cash flows. Therefore, the life cycle theory of dividends predicts that dividend initiation conveys information about a firms' transition to slower growth or to a "mature" phase (Denis and Osobov, 2008; DeAngelo et al. 2006)[6]. This theory is in sharp contrast with the signaling theory of dividends that predicts an increase in profitability after dividend initiation. In contrast the life cycle theory of dividends predicts that dividend initiation indicates a decline in both profitability and investment opportunities.

The literature provides empirical evidence both in support of and contrary to these different theories of dividends (Baker, Powell, and Veit 2002). In sum, the dividend literature in search of an optimal dividend policy is inconclusive. Black (1976) describes the issue as a dividend puzzle.

[6] Older, larger, and more profitable firms, with few investment opportunities are considered mature firms.

1. 1. Statement of the problem

Recently, Fama and French (2001) gave a new twist to the dividend puzzle by reporting a substantial decline in the number, as well as the proportion of firms that pay dividends in the US. Over the last decade, several financial economists have studied this phenomenon of dividend disappearance. They report conflicting results and try to explain their findings in the light of various dividend theories. This chapter investigates whether European firms follow a similar dividend trend as reported by Fama and French (2001) for US firms. If this is indeed the case, we want to assess the reasons behind the trend.

1.2. Literature on the appearance and disappearance of divided payments

Fama and French (2001) report that the proportion of dividend payers among NYSE, AMEX, and NASDAQ non-financial and non-utility firms fell from 66.5% in 1978 to 20.8% in 1999.There were 2,419 dividend payers in 1978, but only 1,182 in 1991 and 1,063 in 1999. This decline is due in part to changes in the characteristics of firms (i.e., more firms exhibit characteristics similar to those of non-payers). However, even after controlling for these characteristics, the authors find a significant decline in the residual propensity to pay dividends, suggesting a perceived decline in the usefulness of dividend payments over time. Among the reasons that may have led to the decline in the dividend payments the authors mention: (i) lower transaction costs for selling stocks to satisfy investors' liquidity needs, in part due to an increased tendency to hold stocks via open-end mutual funds; (ii) larger holdings of stock options by managers who prefer capital gains to dividends; and (iii) better corporate governance technologies (e.g., use of stock options) that lower the benefits of dividends in controlling agency problems between stockholders and managers. The authors further report that large, profitable firms with few investment opportunities have higher payout ratios.

DeAngelo et al. (2004) provide evidence that does not confirm the dividend disappearance suggested by Fama and French (2001). They find that industrial firms paying dividends are highly concentrated, and that dividend concentration has increased over the past two decades. While fewer firms paid dividends in 2000 than in 1978, aggregate real dividends increased over that period. DeAngelo et al. (2004) state that the increased number of mergers (that result in the delisting of dividend payers), the increased number of firms incurring losses, and earnings concentration in a few large firms are the factors responsible for the decline in the number of dividend paying firms. Furthermore, the decline in dividend payers over 1978–2000 is not attributable to factors that put across-the-board downward pressure on dividends or on payout ratios. For example, if income tax law changes are responsible for bringing changes to a firms' dividend payment behavior, they should affect all firms identically. DeAngelo et al. do not observe such a reduction. Dividends are highly concentrated among a small number of large firms with substantial earnings that face less information asymmetry problems than small firms. This raises doubts that signaling is a first-order determinant of corporate dividend policy. If managers use dividends to communicate with stockholders, dividend signaling should occur primarily in small, relatively unknown firms with limited means to communicate inside information to outsiders.

Denis and Osobov (2008) extend this literature by examining cross-sectional and time-series evidence on the propensity to pay dividends in the United States, Canada, the United Kingdom, Germany, France, and Japan. They report a decline in the propensity to pay dividends over the period 1994–2002. The primary reason for this decline is the failure of newly listed firms to initiate dividends when they have the characteristics of dividend payers. Denis and Osobov also examine whether the characteristics of dividend payers and non-payers are common across countries, whether these characteristics have changed over time, and whether firms in these countries have exhibited a declining propensity to pay dividends in recent years. They report common determinants of dividends across countries. Like Fama and French (2001), they find that the likelihood of paying dividends is associated with firm size, growth opportunities, and profitability; and firms in each country become more likely overtime to exhibit the characteristics of firms that do not pay dividends. In addition, they report that in the six countries under study, the likelihood of paying dividends is strongly associated with the ratio of retained earnings-to-total equity in the six countries under study.

UK evidence provided by Benito and Young (2003) sheds additional light on the US studies. They find that the proportion of listed (non-financial) non-payers increases significantly during periods of recession. In 1979 over 95% of firms paid a dividend but this proportion fell to 84% in 1982, 83% in 1993 and 75% in 1999. Based on parameters prior to 1994, the expected percentage of dividend payers for 1999 was 83%. This shows a decline in the propensity to pay dividends in the UK just like in the US, even though the proportion of dividend payers is higher in the UK than in the US.

Ferris, Sen, and Yui (2006) study a sample of UK firms excluding financials, utilities and partially government-owned firms between 1988 through 2002. They report a decline in dividend payers from 75.9% to 54.5%, with the proportion of new lists[7] paying dividends having fallen from 50% to just 7%. They find that firms that pay dividends are larger and more profitable than non-dividend payers but, conversely to the US evidence, they also exhibit greater investment opportunities.

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[7]Ferris, Sen, and Yui (2006) define a "new list" as a firm that first appears on Company Analysis database in year t. Fama and French (2001) define it as a firm that is added to the CRSP database between June of year t-1 and May of t. A firm in the Compustat sample is defined as a new list in calendar year t if it is added to the CRSP database between January and December of year t. Compustat firms must be in the CRSP database to be new lists. Moreover, NYSE firms added to the CRSP database in December 1925, AMEX firms added in July 1962, and NASDAQ firms added between December 1972 and February 1973 are not defined as new lists in either the CRSP or Compustat samples.

In contrast to the findings of Fama and French (2001), Julio and Ikenberry (2004) document a sharp reversal in dividend payments in the US starting in 2000. They investigate possible reasons for this dividend reappearance. First, firms that were new lists in the 1990s became mature and thus started paying dividends. Further, they document that some firms may have chosen to use dividends as a signal of "confidence" in the wake of investors' concerns over corporate governance. Finally, firms may have responded to the Bush dividend tax cut. They do not find support for the catering theory of dividends, nor for a decrease in the availability of good investment projects.

Eije and Megginson (2008) examine the evolution of payout policies in the European Union over the 1989–2005 period using firms headquartered in the fifteen nations that were members of the European Union before May 2004. They report that, as in the United States, the fraction of European listed firms paying dividends declines dramatically over this period, from 91 to 62 %, while total real dividends paid and dividend payments as a fraction of total corporate profits increase significantly. They suggest that firm characteristics like size, firm age and being headquartered in a common law country significantly increase both the propensity to pay and the amounts paid. On the other hand, rapidly growing companies are less likely to begin paying dividends or to make large payments.

Kirkulak and Kurt (2010) analyze dividend behavior of firms listed on the Istanbul Stock Exchange (ISE) from 1991 to 2006. They report a decline both in the number of dividend payers and in the amount of dividends paid. The percentage of net dividend payers decreases from 51.28 % in 1991 to 35.64 % in 2006. Contemporaneous earnings are the primary determinant of dividend payment decisions and financial crises significantly explain both the dividend payment and dividend reduction decisions; whereas the debt level has no significant effect on these decisions. Consistent with the signaling hypothesis, dividend payers with high investment opportunities increase dividends to convey a positive signal to outsiders.

By considering both dividend payments and stock repurchases Grullon et al. (2011) show that the propensity of firms to return cash to shareholders has remained constant over time. Using various measures of the net cash flowing back to shareholders, they suggest that the propensity to pay out was relatively constant over the period 1978-2003. Moreover, by shifting cash distributions to repurchases instead of dividends, firms were actually moving toward an optimal policy aimed at minimizing the tax burden of their investors. Among firms with low retained earnings, there is, in fact, an increasing propensity to distribute cash to equity holders. In contrast, Fatemi and Bildik (2012) find results consistent with Fama and French (2001). They report that the number and proportion of dividend payers is declining throughout the world.

1.3. Scope and motivation of the study

In this study, we examine the evolution of payout policies in Europe over the period 1990–2010 using firms headquartered in the 21 European nations[8]. The relatively large sample period enables us to use larger benchmark and forecast period windows to measure the changes in dividend payment propensity of firms over time[9]. It also enables us to use various benchmark periods to observe their impact on the results. As many firms were added to the database in the first half of our sample period, it is furthermore important to know the impact of these insertions on the findings. In sum, a large sample period, from 1990 to 2010 is expected to shed new light on dividend policies, and notably on the dividend disappearance phenomenon.

8 Despite Europe's global importance, very little published research has examined dividend policy on a continent-wide basis (Eije and Megginson, 2006).
9 Denis and Osobov (2008), for instance, use 1989 to 1993 as their benchmark period and 1994 to 2002 as their forecast period.

Similarly, in drawing conclusions, prior studies give too much importance either to multivariate (logit) tests (e.g., Fama and French (2001); Denis and Osobov (2008)) or to univariate tests (e.g., Fatemi and Bildik (2012)). This study focuses on both univariate and multivariate analyses to draw additional conclusions.

We categorize firms both on the basis of their short term as well as their long term dividend payment decisions. Regular payers, regular non-payers and irregular payers are the three dividend groups that classify firms on the basis of their long term dividend payment policy. To our knowledge, this is the first study that analyzes in detail the dividend behavior of firms over the long run and reports the rates at which dividend non-payers start to pay dividends and payers stop paying dividends.

Another contribution of the study is to measure the impact of newly incorporated firms on the overall decline in number of dividend payers. For this purpose we separate newly incorporated firms (firms incorporated in year t)[10] from those that were incorporated in previous years (in the years before year t) but were added to the database in year t. We name the former as "*newly incorporated firms*" and the latter as "*newly added firms*". Previous studies put them under the same group named as "*newlists*". We discuss the importance of this differentiation between newly incorporated firms and newly added firms in section 4.

Our study is organized as follows. First, we determine whether European companies show the same declining trend in dividend payments as reported in the US by Fama and French (2001). In case of such a decline in the proportion and/or the number of dividend payers, we want to assess the causes of this decline. More precisely, we want to determine whether it may be explained by a change in the characteristics of the sample firms or whether firms with the characteristics typical of dividend payers have

[10] For further verification of the impact of new firms on dividend paying trends, we use initial public offering (IPO) date as an additional proxy.

become less likely to pay dividends. Second, we analyze the relative roles of: (i) newly incorporated firms; (ii) newly added firms (old firms but not previously covered by the database); and (iii) dividend omitters in the change in the proportion of dividend payers. Third, based on the dividend payment trend, we predict the expected future of dividend payments in Europe. Forth, we analyze the evolution of the characteristics of various dividend groups over our sample period. Finally, we discuss these findings in light of the various dividend theories.

1.4. An overview of our main findings

Our univariate findings suggest that the proportion of dividend payers has declined in Europe between 1990 and 2010. But the contribution of firms that abandoned dividend payments (former payers), even if they were capable of paying, is limited. The primary reason behind this decline is the large influx of newly added firms to the database. These firms are relatively small, young and have higher investment opportunities. Thus, they are less prone to pay dividends. But those that are successful are inclined towards dividend payments. In case of poor performance they get delisted. In both cases the proportion of dividend payers improves. On the other hand, the rate at which dividend payers become non-payers is low as compared to the rate at which dividend non-payers become payers, meaning that dividend payers are more "sticky"[11] in following their dividend policy than are non-payers. Furthermore, once the large influx of new firms (firms that were not previously covered by Datastream) slows down, the decline in the ratio of dividend payers stops. All these factors lead to a stop in the decline of dividend payers after 2005. Thus we do not observe a fall in the proportion of dividend payers in the last years of our sample period.

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[11] Dividend stickiness means firms propensity to stick to their previous dividend behavior.

Our multivariate findings provide evidence to support the decline in propensity to pay dividends. Both lower propensity to pay and changing firm characteristics are observed. A shift in the characteristics of firms due to the large influx of young and less profitable firms accounts for a large proportion of the decline in dividend payers. Propensity declines are low and driven primarily by failure of newly added firms to initiate dividends when expected to do so. These findings support our univariate findings that the decline in the dividend payers is not due to dividend abandonment, but rather to the presence of newly added firms. In sum, our findings are inconsistent with the prior research that suggests that dividends are disappearing.

These studies led us to analyze the determinants of dividend payments. By showing that old, large and profitable firms with high earned-to-total equity ratios are more likely to pay dividends, our findings support the life cycle explanation of firm dividend policies. Life cycle theory suggests that young firms rely more on new equity (or contributed equity) for early growth while mature firms rely more on self-financing.

The remainder of the study is organized as follows. Section 2 describes our sample selection procedure and provides a description of the sample firms. The rest of the study is divided into two major parts, part A and part B. Part A is based on the univariate analysis of dividend paying trends. Sections 3 to 8 are included in part A. Part B primarily deals with the multivariate analysis of firms' dividend policies. It includes sections 9 to 12.

Section 3 reports time-series trends in the propensity to pay dividends in our sample firms. Section 4 analyzes the level of contribution of new firms in the overall decline in the proportion of dividend payers. Section 5 provides information about the evolution of dividend policies of various dividend groups. Section 6 examines composition of the sample of each primary sub-period and their evolution over time. Section 7 examines and compares the level of dividend stickiness for payers and non-payers. Section 8 reports descriptive statistics on dividend change directions in various years. Section 9 reports evidence on the determinants of dividends. Section 10 verifies the findings of section 9 through logit regressions. Sections 11 and 12 quantify the relative contribution of changes in the characteristics of the sample firms over time, and changes in firms' management behavior towards dividend payments (changes in propensity to pay) in the decline of the proportion of dividend payers. Section 13 analyzes and compares the decline in dividend payments in the UK, France, and Germany. Section 14 concludes.

2. Data and methodology

Firm-level data are obtained from Datastream and Osiris databases. We covered data from 21 European countries (see Appendix 1).We selected European firms because: (i) despite Europe's global importance, very little published research has examined dividend policy in Europe (Eije and Megginson 2006); (ii) our research design requires a sufficiently large number of observations for a large sample period; (iii) the sample countries are sovereign and developed nations, and due to economic and political treaties they are heavily dependent on each other; (iv) these countries have strong institutions for the enforcement of state laws.

First, using the Osiris database we collected all listed firms headquartered in these 21 countries. There were a total of 11,524 firms[12] in the initial list. Following previous studies, we eliminated firms classified as financials (codes that start from 40) by Global Industry Classification Standard (GICS)[13]. Firms with negative common stockholder

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[12] We used Datastream's lists of all live and dead companies for this purpose. Dead companies include those that subsequently failed, merged or de-listed.

[13] Dividend laws are different for financials.

equity and delisted firms with missing delisting dates were also excluded. We also required total assets to be available both in the current and in the preceding year. The data set was winsorized[14].

Table 1

Proportion of firms from various sectors[15] using the GICS classification

Sector of firms	Firms (%)
Energy	5.0
Materials	10.5
Industrials	23.8
Consumer Discretionary	24.2
Consumer Staples	7.0
Health care	8.0
Information Technology	17.5
Telecommunication Services	1.7
Utilities	2.3

[14] All data falling more than three standard deviations away from the mean were considered as outliers.

[15] Sub-classification of the sectors is given in appendix VI.

Table 2

Number of sample firms for each country

Country	Firms
AUSTRIA	72
BELGIUM	66
CYPRUS	5
DENMARK	77
FINLAND	110
FRANCE	555
GERMANY	445
GIBRALTAR	3
GREECE	154
ICELAND	6
IRELAND	79
ITALY	188
LUXEMBOURG	20
NETHERLANDS	153
NORWAY	105
PORTUGAL	37
SPAIN	105
SWEDEN	163
SWITZERLAND	204
TURKEY	158
UK	1941
Total	4646

The final sample consists of 4,646 firms that have ordinary dividend data available on DataStream for at least one year during our sample period 1990-2010. The study starts in 1990 because Datastream coverage prior to 1990 is limited. Table 1 reports the proportion of firms belonging to each sector. Table 2 shows the number of sample firms belonging to each country.

Our experimental design requires a sufficiently large number of dividend payers and non-payers for each sample year over a long period. This is why we examine data from 21 countries over a 21 year sample period.

To examine firm characteristics and their evolution on the basis of their annual dividend payment decisions we classify them into two groups: (1) payers, and (2) non-payers. Payers are firms that pay dividends in a given year *t* and non-payers do not. Similarly to capture long term dividend behaviour, we classify firms into three mutually exclusive dividend groups thus making a distinction between: (a) regular payers, (b) regular non-payers, and (c) irregular payers. Regular payers never omit dividend payment over the sample period (subject to dividend data availability on Datastream). Regular non-payers never pay dividends over the same period. The remaining firms, that are neither regular payers nor regular non-payers, are irregular payers. They alternatively pay and stop paying dividends over the period under study.

The number of firm year observations for dividend payers, dividend non-payers, and irregular payers are 28388, 21614, and 13465 respectively.

The first part of the study examines dividend paying trends without considering the characteristics of the firms under study. It deals with the number and proportion of dividend payers over the sample period.

The second part analyzes dividend payment behaviour taking into account the firms' characteristics. To reach a conclusion, we address three basic questions: (i) what are the characteristics of dividend payers? (ii) is the decline in the proportion of payers due to a decline in the prevalence of these characteristics among listed European firms, or (iii) are firms with the characteristics typical of dividend payers less inclined to pay dividends over time?

Part A: Is there a decline in the number of dividend payers in Europe?

In this part we conduct a detailed analysis of dividend paying trends without considering firm characteristics. We classify firms into various dividend groups on the basis of their short term, annual, and long term dividend paying decisions. The indepth analysis of a firms' tendency to stick to their dividend policy will help predict the future of their dividend payments. Furthermore, we differenciate between newly incorporated and newly added firms (old firms recently added to the database) and examine their impact on the overall dividend paying trends. This will help us determine whether the change in the dividend paying trend is transitional or permanent in nature.

These analyses aim to shed light on the causes of the decline in the proporion of dividend payers and their expected future trends in the sample countries.

3. Time trends in ordinary dividends

Table 3 reports the number of firms in various dividend groups during the 1990-10 period. Columns of payers and non-payers classify firms on the basis of annual dividend paying decisions; while the columns of regular payers, regular non-payers and irregular payers classify firms on the basis of their long term dividend payment policy.

During the first half of the sample period, the number of total sample firms grows sharply from 323 firms in 1990 to 2,783 in 2000. The reason behind this sharp rise in the number of sample firms comes from an increase in the database coverage over these years. In the early 90s the database covers profitable and mature firms. Then it adds relatively young and less profitable firms over time. After the year 2005, the process of new additions to the sample (firms that were not previously covered by Datastream) slows down and almost stops after the year 2005 (see Fig. 1). During the initial years of our sample period, the majority of firms covered by the database are dividend payers. But, with the passage of time, the database improves by covering firms that have the usual characteristics of non-payers: they are younger and less profitable. This increased influx of non-payers decreases the overall proportion of dividend payers in the sample firms. But once the influx of new additions to the sample firms decreases, the proportion of payers and non-payers in the total sample firms becomes quite stable.

Table 4 reports the proportion of firms in various dividend groups during each year of the sample period. Consistent with prior studies, we find a substantial decline in the percentage of dividend payers and a substantial increase in the proportion of non-payers over the sample period. Three quarters of the sample firms were dividend payers in the early 90s. From 2002 onwards, less than 50% of the sample firms paid dividends. From the non-payers' perspective, the proportion of dividend non-payers that was less than 20 % in 1990 rose to more than 50 % in 2002 and onwards. Over the same period, from 1990 to 2010, the proportion of regular payers declined steadily from 35 % in the early 90s to 20 % in the late 2000s.

Table 3

Number of firms in each dividend group

The annual payment group covers firms on the basis of annual ordinary dividend payments. Payers pay dividends in year t; non-payers do not. The long term policy group classifies firms on the basis of their long term ordinary dividend policy. Regular payers are firms that have never omitted dividend payment during the sample period (subject to the data availability on Datastream). Regular non-payers have never paid dividends. Irregular payers are firms other than regular payers and regular non-payers.

Year	Firms	Annual payment group		Long term policy group		
		Payers	Non-payers	Reg. Non-payers	Reg. Payers	Irreg. Payers
1990	323	264	59	11	102	210
1991	474	362	112	21	148	305
1992	1205	912	293	48	438	719
1993	1423	1073	350	54	512	857
1994	1489	1179	310	68	532	889
1995	1563	1231	332	76	549	938
1996	1673	1290	383	98	565	1010
1997	1780	1393	387	136	587	1057
1998	2065	1525	540	245	639	1181
1999	2243	1549	694	324	658	1261
2000	2783	1714	1069	547	758	1478
2001	2949	1569	1380	680	763	1506
2002	3208	1565	1643	799	784	1625
2003	3366	1587	1779	862	786	1718
2004	3466	1659	1807	952	768	1746
2005	3584	1742	1842	1070	753	1761
2006	3541	1683	1858	1128	711	1702
2007	3476	1711	1765	1131	692	1653
2008	3263	1531	1732	1050	664	1549
2009	3127	1410	1717	972	660	1495
2010	3001	1439	1562	903	650	1448

The percentage of payers that pay dividends regularly averages 45%. Similarly, 42% of non-payers are regular non-payers. This shows that a large number of payers and non-payers stick to their prior dividend payment decisions.

During the sub-periods 1990-1998 and 2002-2010 the proportion of dividend payers remains quite stable (Fig. 2). Seventy-five percent of the sample firms were payers during 1990 to 1998. This rate falls over the second sub-period, i.e. from 2002 to 2010.

Denis and Osobov (2008) report similar results for the European countries they study. The economic recession of the early 2000s seems to be an important factor for the decline in the number of dividend payers during the sub-period 1999-2002, as shown in Table 7. But, the decline in the number of payers should be a temporary one if it is due only to the economic recession. However, the decrease in the number of payers persists, suggesting that the influx of new added firms is the primary driver of this decline.

Fig.1. Number of firms in different dividend groups

This figure is based on listed firms from 21 European countries covered by Datastream. Payers pay dividends in year t; non-payers do not. The second classification of firms is on the basis of their long term dividend path. Regular payers are firms that never omit dividends in their Datastream history; regular non-payers are firms that never pay dividends and irregular payers are firms other than regular payers and regular non-payers.

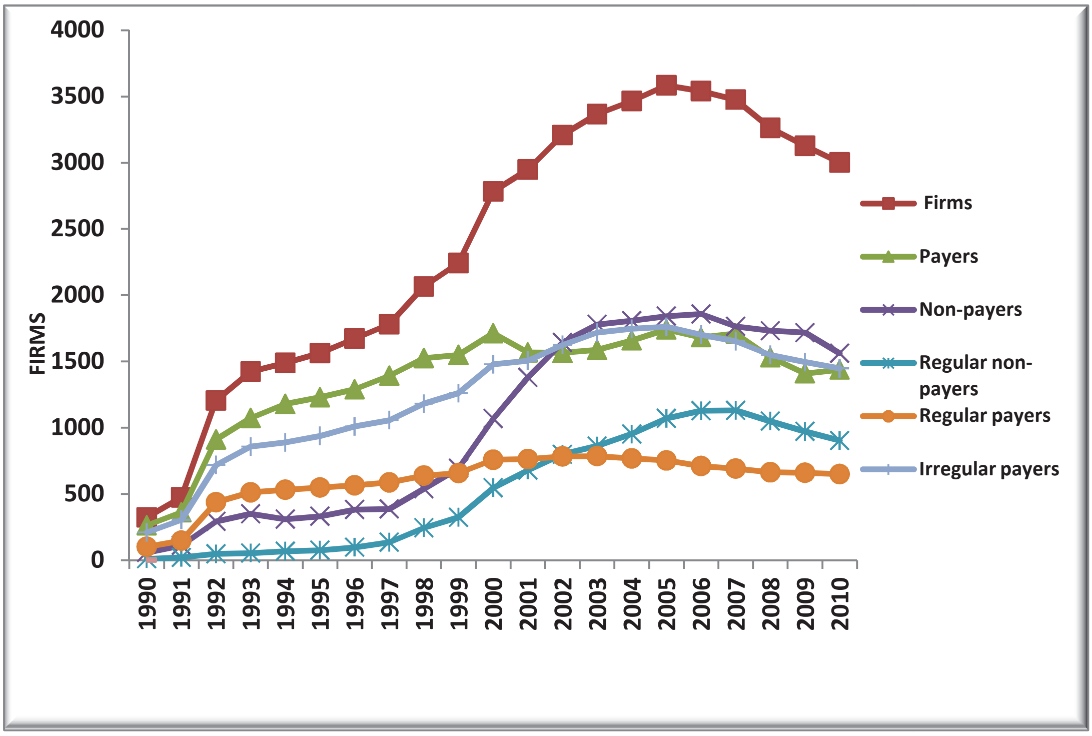


Table 4

Percentage of firms in various dividend groups

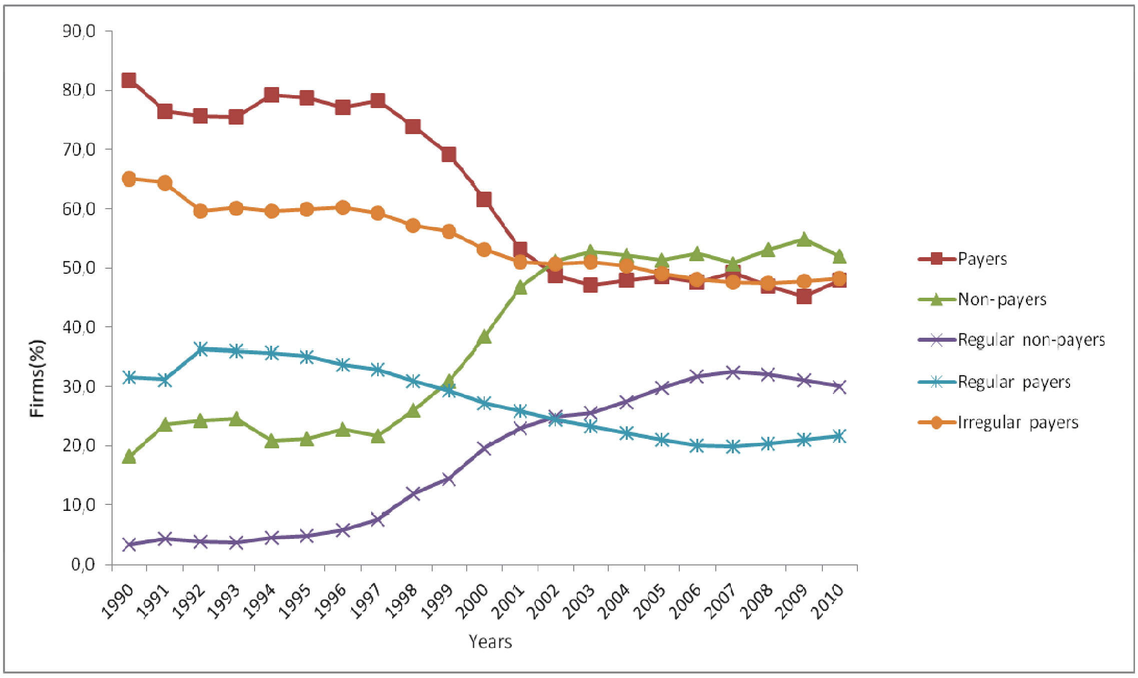
We compute the ratio of firms in each dividend group to the total sample firms for each year and then multiply it by 100. Payers are firms that pay dividends in year t, non-payers do not. Regular payers never omit dividend payments and regular non-payers never pay them. Irregular payers are firms other than regular payers and regular non-payers.

Year	Payers	Non-payers	Regular non-payers	Regular payers	Irregular payers
1990	81.73	18.27	3.41	31.58	65.02
1991	76.37	23.63	4.43	31.22	64.35
1992	75.68	24.32	3.98	36.35	59.67
1993	75.40	24.60	3.79	35.98	60.22
1994	79.18	20.82	4.57	35.73	59.70
1995	78.76	21.24	4.86	35.12	60.01
1996	77.11	22.89	5.86	33.77	60.37
1997	78.26	21.74	7.64	32.98	59.38
1998	73.85	26.15	11.86	30.94	57.19
1999	69.06	30.94	14.44	29.34	56.22
2000	61.59	38.41	19.66	27.24	53.11
2001	53.20	46.80	23.06	25.87	51.07
2002	48.78	51.22	24.91	24.44	50.65
2003	47.15	52.85	25.61	23.35	51.04
2004	47.86	52.14	27.47	22.16	50.38
2005	48.60	51.40	29.85	21.01	49.14
2006	47.53	52.47	31.86	20.08	48.07
2007	49.22	50.78	32.54	19.91	47.55
2008	46.92	53.08	32.18	20.35	47.47
2009	45.09	54.91	31.08	21.11	47.81
2010	47.95	52.05	30.09	21.66	48.25
Mean	62.35	37.65	17.77	27.63	54.60

Further analysis reveals that during the second sub-period i.e., from 2002 to 2010, the relatively large influx of non-payers to the sample and the economic recession of the early 2000s result in a decline of the proportion of dividend payers (see Tables 3 and 4).

During the periods 1990-97, 1998-01, and 2002-10 the number of sample firms grew at an average of 208, 285 and -26 firms per year. This large influx of firms into the sample during the first two sub-periods comes from: i) newly incorporated firms; and ii) newly added firms (old firms previously not covered by DataStream). Further analysis in section 4, however, shows that newly incorporated firms do not affect the overall decline in the proportion of dividend payers.

Fig.2. Proportion of firms in various dividend groups



In sum, we observe a decline in the proportion of dividend payers until 2002, but later, the ratio of payers remains stable[16].

[16]Benito and Young (2003), Denis and Osobov (2008), Ferris et al. (2003) and Von Eije and Megginson (2006) also report a decline in the proportion of dividend payers in various European economies.

4. Newly incorporated firms and the declining ratio of dividend payers

In this study we classify new firms in two distinct groups. The first group includes firms that are newly incorporated in year *t.* We call them "*newly incorporated firms*". The second group consists of firms that are added to Datastream in year *t*, but they are existing (old) firms that were not covered by Datastream in the prior years due to limited database coverage. We name the second group "*newly added firms*". These analyses will help us understand to what extent the decline in the proportion of dividend payers comes from newly added firms, newly incorporated firms, and previous dividend payers.

Studies conducted on European firms usually use Wordscope and DataStream databases for data collection. Before 1990 their coverage is limited. They cover only large and mature firms. From 1990 onwards, they start covering small and less mature firms. Therefore, the ten year period from 1990 to 2000 experiences a huge influx of new additions to the database. Denis and Osobov (2008) report that most newly added firms are small and less profitable firms with high investment opportunities. These are the characteristics typical of non-dividend payers. This may put a downward pressure on the proportion of dividend payers during this transitional period of the database. Therefore, we think that conclusions drawn by previous studies on the basis of relatively short sample periods from the transitional period of the database may lead to results that misrepresent the change in firms propensity to pay dividends. We observe that during the second half of our sample period, the influx of numerous new additions to the database slows significanlty. At the same time, the total number and proportion of dividend payers becomes significantly stable from the year 2005 onwards.

Fama and French (2001) and Baker and Wurgler (2004) define a "new list" as a firm that first appears in a database in year *t*[17]. This definition does not differentiate between firms that are registered as corporations in year *t*, and *newly added firms*. The non-differentiation between newly incorporated firms and old but recently added ones makes it difficult to know the relative impact of newly incorporated firms and the change in their dividend policy (if such is the case) in the overall decline in the proportion of dividend payments over time.

Any substantial change in the dividend policy of newly incorporated firms will be a better proxy for the change in the attitude of managements' behavior towards dividend payment.

Separation of newly incorporated firms from existing but recently added ones (newly added firms) is important because if we do not measure the impact of these two types of firms separately, we cannot follow the dividend paying trends of firms. For instance, if we assume that all new firms are newly incorporated ones, then, as incorporation of firms is a continuous and routine process, the change in the dividend payers will represent a market tendency towards dividend payment which can be sustained over the long run. But, if the proportion of dividend payers has changed due to *newly added firms*, and these firms differ in terms of their dividend policy from the old sample firms, then the newly added firms may affect the dividend paying trend twice: first when they enter the database, and then when the huge influx stops at some point in future. The large influx of newly added non-payer firms between 1997 and 2002 results in the decline of dividend payers from 78% (1997) to 48% (2002) (Tables 3 and 4). Similarly, we observe that when the heavy influx of firms declines, the proportion of dividend payers becomes stable. If we ignore the fact that the decline is due to the expansion of the database we may draw a false conclusion that firms interest in dividend payment

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[17]Ferris, Sen, and Yui (2006) define a new list as a firm that first appears on Company Analysis in year "*t*".

declines during 1997-2002; and that from 2003 onwards, this falling interest in dividend payment stops.

If a firm, newly incorporated in year t_{-1}, pays dividends in year *"t"* we call it newly incorporated payer in year *t*. In our sample we have 968 new incorporations. They cover the period 1990-2010. Table 4 reports that during 1990-2010, an average of 62.35% of all firms paid dividends. On the other hand, only 34.49% of newly incorporated firms paid dividends (see Table 5). This suggests that the majority of newly incorporated firms do not pay dividends. But, the role of newly incorporated firms in the overall decline in dividend payers is limited because newly incorporated firms are only 3% per year of the total annual observations[18] on average; and the proportion of newly incorporated payers falls from 35.08% in 1990-00 to 33% in 2000-10. This decline of only 2.08% in the proportion of newly incorporated payers contributes very little to the overall decline of dividend payers.

Similarly, Table 6 reports that newly incorporated non-payers are delisted, or change their dividend policies at a much higher rate than the newly incorporated payers (see Table 8). This also minimizes the accumulated impact of newly incorporated non-payers on the overall decline in the proportion of dividend payers over time.

These findings suggest that the contribution of newly incorporated firms to the overall decline in the proportion of dividend payers is limited. On the other hand 1620 previously non-covered firms are added to the database between 1998 and 2003. The proportion of dividend payers among these newly added firms was significantly lower than that of the rest of the sample firms, thus putting a downward pressure on the overall proportion of dividend payers (see Fig. 2 and Table 5).

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[18] To compute the value, we sum ratios of newly incorporated firms to total firms for each year of the period 1990 to 2010, then divide it by the number of years in the sample and multiply by 100.

Table 5

Distribution of newly incorporated and newly listed firms

This table shows the trend of dividend payment in newly incorporated firms and newly added firms. Newly incorporated firms are those that are registered as public limited company in year *t*. Newly added firms are old (existing) firm that were not previously covered by Datastream, and are added to the database in year *t*. Column "Dividend (%)" reports the proportion of firms that pay dividends.

	All Firms		Newly Incorporated Firms		Newly Added Firms	
Year	Total firms	Dividend payers (%)	Firms	Dividend payers (%)	Firms	Dividend payers (%)
1990	323	81.73	54	40.70	36	55.58
1991	474	76.37	43	23.30	66	57.78
1992	1205	75.68	30	23.30	558	78.57
1993	1423	75.40	40	22.50	163	77.34
1994	1489	79.18	47	25.50	27	47.32
1995	1563	78.76	54	44.40	19	19.21
1996	1673	77.11	43	34.90	63	31.13
1997	1780	78.26	75	50.70	45	14.15
1998	2065	73.85	66	48.50	228	34.69
1999	2243	69.06	71	35.20	153	22.77
2000	2783	61.59	49	44.90	542	36.04
2001	2949	53.20	49	24.50	259	22.73
2002	3208	48.78	38	39.50	241	11.82
2003	3366	47.15	30	30.00	197	6.17
2004	3466	47.86	46	17.40	167	10.33
2005	3584	48.60	50	18.00	159	8.13
2006	3541	47.53	42	35.70	102	2.09
2007	3476	49.22	57	29.80	67	11.30
2008	3263	46.92	65	35.40	0	0.00
2009	3127	45.09	16	0.00	15	35.48
2010	3001	47.95	3	100.00	13	6.25

5. Evolution of dividend policies of various dividend groups

In this section we examine the dividend payment behavior of various dividend groups and the time series changes in their dividend policies[19] over the long run. For this purpose we divide our sample period into 5 sub-periods of four years each (except the first one): 1990-94, 1995-98, 1999-02, 2003-06, and 2007-10. Our goal is to analyze firms' tendency towards dividend payments, and assess whether there is any substantial change in their dividend payment behavior over time. This classification also enables us to analyze the behavior of pre-existing firms i.e., those that were already covered by the database over the preceding periods. For instance, what happened to the firms of the sub-period 1990-94 in each of the next sub-periods? How many of the firms from 1990-94 still exist in the period 2007-10, and do the payers remain payers or have they switched to other dividend groups? The classification also helps us determine how many new firms are added to the sample in each sub-period.

We classify firms into three dividend groups: (i) payers, ii) non-payers, and iii) irregular payers. A payer (non-payer) is a firm that has always (never) paid dividends during the sub-period under consideration. A firm whose data is missing for all of the years of a sub-period is deleted from the sub-period. To be an irregular payer in a sub-period, a firm should pay dividends inconsistently.

The following analyses are based on the data of Table 6.

[19] Time series changes in the dividend policies of these groups means that, for example, payers of sub-period 2003-06 switch to non-payers or irregular payers at the same rate at which payers of 1990-94 are switched.

5.1. What happened to the dividend payers of various sub-periods?

- **Payers in 1990-94**

There are 1,016 firms that fall into the category of payers during sub-period 1990-94. Table 6 reports that the majority of these firms remain payers during the coming four sub-periods. About 90.3% of the net listed payers of 1990-94 remain dividend[20] payers during 1995-98, 76.3% in 1999-02, 74.9% in 2003-06, and 64.6% in 2007-10. If we average these percentages we find that about 75.5% of firms remain payers. Averages of firms that become non-payers, irregular payers and are delisted are 7.6%, 15.9%, and 7.2% respectively.

- **Payers in 1995-98**

Table 6 shows 1,325 dividend payers in 1995-98. The average number of firms that remain payers during the next three sub-periods is 70.4%. Averages of payers in 1995-98 that became non-payers, irregular payers or were delisted are 8.9%, 20.7%, and 10.5% respectively.

- **Payers in 1999-02**

There are 1,348 firms that paid dividends during the 1999-02 period. 76.2% of the firms (on average) stuck to their dividend policy and paid dividends during the next two sub-periods. During the next sub-periods, an average of 5.1%, 18.8%, and 14.6% of firms became non-payers, irregular payers, and delisted respectively.

- **Payers in 2003-06**

The total number of dividend payers during 2003-06 is 1,257. During the next sub-period 74.7% of net listed payers from 2003-06 remain dividend payers, 1.8% stop dividend payments, 23.5% pay irregularly and 12.5% are delisted.

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[20] From net listed dividend payers we mean net of delisted and missing data firms. If dividend data is missing for all years of a sub-period, it is considered as missing data firm.

In short, if we average all mean values mentioned above, we find that 74.4% of firms that pay dividends in their initial sub-periods[21] also pay dividends in their following sub-periods. Similarly, the proportion of payers in 1990-94 that stop dividend payments, become irregular payers, and are delisted from the database represents 5.8%, 19.7% and 11.2% respectively. These results show that dividend payers do not tend to abandon dividend payments. They stick to their initial dividend policy.

5.2. What happened to dividend non-payers?

A non-payer of a sub-period is a firm that does not pay dividends at all during the sub-period. If dividend data are missing for all of the years of the sub-period, the firm is deleted from that sub-period. It is included if data is available for at least one year of the sub-period. If the database mentions that a firm has paid zero dividends during a year of the sub-period but dividend data is missing for the other three years, the firm is considered as a non-payer during the sub-period.

- **Non-payers in 1990-94**

Unlike payers, during the first two sub-periods we have very few dividend non-payers. During 1990-94 only 189 firms out of 1,454 firms do not pay dividends[22]. About 13.2% of the net listed non-payers of 1990-94 became dividend payers during 1995-98, 23.9% in 1999-02, 30.1% in 2003-06, and 34.7% in 2007-10. If we average these percentages, we find that about 49.5% of the firms remained non-payers. Averages of firms that became payers, irregular payers and delisted were 25.5%, 25%, and 8% respectively.

- **Non-payers of 1995-98**

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[21] By initial sub-period, we mean the sub-period in which a firm appears for the first time in the DataStream database.
[22] One reason for the small number of non-payers may be the limited coverage of the DataStream database during the initial years of the 90s. The database covers large and mature firms during these years (see Denis and Osobov 2008).

We have 383 firms that did not pay dividends during 1995-98. The average proportion of the three subsequent sub-periods of non-payers that did not change their dividend policy and remained non-payers is 71.8%. This percentage is higher than that of non-payers in 1990-94, indicating that the majority of non-payers added during 1995-98 did not initiate dividends during the subsequent sub-periods. The average proportion of firms that subsequently initiated dividend payments is 12.3%. Similarly, the mean proportion of non-payers that initiated dividend payments irregularly, or were delisted from the database comes to 15.9%, and 15.1% respectively.

- **Non-payers in 1999-02**

The total number of non-payers jumps from 383 (1995-98) to 1,109 (1999-02). This huge increase in the number of non-payers, as compared to the rise in number of payers and irregular payers, indicates that majority of new additions to the database are firms that do not pay dividends[23]. Table 6 reports there are only 43 payer firms in 1995-98 that stop dividend payments. Similarly, there are only 64 firms that are irregular payers in 1995-98 that become non-payers. During 1999-02 there are only 64 newly incorporated firms. Therefore, 938 firms were new additions to the sample and were non-payers that were not covered by DataStream in the past. These results show that firms newly added to the database (firms that were not covered by DataStream in the previous years) are the primary reason for the increase in the proportion of non-payers during the subsequent sub-periods. In the next section we analyze whether these firms are more similar to payers or to non-payers.

[23] These results are consistent with Fama and French (2001) and Denis and Osobov (2008), who report that firms recently added to their samples are those that never become dividend payers.

- **Non-payers in 2003-06**

The total number of non-payers in this period is 1,473. About 78.3% of these firms remain non-payers, 4.4% become payers and 17.3% become irregular payers during the subsequent sub-period. It is significant that 26.3% of the non-payers in the group2003-06 were delisted during the next sub-period. On the other hand, only 12.5% of the 2003-06 payers were delisted in 2007-10. This high rate of delisting during the last sub-period under study likely results from the global economic recession. This suggests that dividend payers resist crises better than non-payers probably because they are financially stronger.

5.3. What happened to irregular Payers?

Table 6 reports that irregular payers tend to become dividend payers more often than they become non-payers. We see that the proportion of irregular payers that switch to being dividend payers is higher than the proportion of irregular payers that remain irregular payers, or that stop dividend payments during the subsequent sub-periods. Irregular payers switch to being dividend payers at an average rate of 43.6% per sub-period[24]. In contrast, on average only 26.1% of irregular payers stopped dividend payments. About thirty percent of irregular payers remained irregular payers, and 14.9% were delisted from the database.

[24] Here average is computed by averaging mean proportions of all periods.

Table 6

Evolution of dividend policies of firms of various dividend groups

This table reports the evolution of dividend policies of firms of various dividend groups over time. Column "Entering period" reports the period under consideration. A payer is a firm that pays dividends at least once during the sub-period, and pays no zero dividends during the sub-period. Non-payers are firms that do not pay dividends at all during the concerned sub-period. To be an irregular payer during a sub-period, a firm should have paid a zero dividend at least once and a positive dividend at least once during that sub-period. Delisted and missing data firms are excluded. Column 8 reports the total number of firms that are covered by the database during the sub-period. Column (8) is computed by subtracting delisted column (6) and missing data firms column (7) from column (1). The % columns are the ratios of non-payers (col 3), payers (col 4), irregular payers (col 5) and delisted firms (6) to net firms (8) multiplied by 100.

NON-PAYERS

Entering Period	All non-payers (1)	Following Period (2)	Do not pay (3)	Start paying (4)	Pay irregularly (5)	Delisted (6)	Missing data (7)	Net firms (8)	non-payers% (9)	payers% (10)	irregular payers% (11)	Delisted% (12)
1990-94	189											
		1995-98	100	25	64	0	0	189	52,9	13,2	33,9	0,0
		1999-02	95	42	39	5	8	176	54,0	23,9	22,2	2,6
		2003-06	72	44	30	24	19	146	49,3	30,1	20,5	13,6
		2007-10	52	43	29	23	42	124	41,9	34,7	23,4	15,8
1995-98	383											
		1999-02	290	17	62	11	3	369	78,6	4,6	16,8	2,9
		2003-06	216	40	42	58	27	298	72,5	13,4	14,1	15,7
		2007-10	143	42	37	80	81	222	64,4	18,9	16,7	26,8
1999-02	1109											
		2003-06	702	37	187	162	21	926	75,8	4,0	20,2	14,6
		2007-10	459	119	134	228	169	712	64,5	16,7	18,8	24,6
2003-06	1473											
		2007-10	849	48	187	387	2	1084	78,3	4,4	17,3	26,3

PAYERS

Entering Period	All payers	Following Period	Continue to pay	Stop paying	Pay irregularly	Delisted	Missing data	Net firms	non-payers%	payers%	irregular payers%	Delisted%
1990-94	1016											
		1995-98	915	18	80	0	3	1013	1,8	90,3	7,9	0,0
		1999-02	752	60	173	16	15	985	6,1	76,3	17,6	1,6
		2003-06	643	99	117	141	16	859	11,5	74,9	13,6	14,3
		2007-10	464	78	176	110	188	718	10,9	64,6	24,5	12,8
1995-98	1325											
		1999-02	999	43	247	25	11	1289	3,3	77,5	19,2	1,9
		2003-06	765	122	182	188	68	1069	11,4	71,6	17,0	14,6
		2007-10	576	112	239	160	238	927	12,1	62,1	25,8	15,0
1999-02	1348											
		2003-06	949	35	155	206	3	1139	3,1	83,3	13,6	15,3
		2007-10	675	69	234	159	211	978	7,1	69,0	23,9	14,0
2003-06	1257											
		2007-10	817	20	257	157	6	1094	1,8	74,7	23,5	12,5

IRREGULAR PAYERS

Entering Period	All irregular payers	Following Period	Pay irregularly	Start paying	Stop paying	Delisted	Missing data	Net firms	non-payers%	irregular payers%	payers%	Delisted%
1990-94	249											
		1995-98	70	141	37	0	1	248	14,9	28,2	56,9	0,0
		1999-02	64	123	49	8	5	236	20,8	27,1	52,1	3,2
		2003-06	44	93	50	30	32	187	26,7	23,5	49,7	12,7
		2007-10	49	70	46	30	54	165	27,9	29,7	42,4	16,0
1995-98	270											
		1999-02	79	111	64	10	6	254	25,2	31,1	43,7	3,7
		2003-06	45	89	62	40	34	196	31,6	23,0	45,4	15,7
		2007-10	45	73	56	28	68	174	32,2	25,9	42,0	14,3
1999-02	558											
		2003-06	158	151	153	96	0	462	33,1	34,2	32,7	17,2
		2007-10	111	141	116	92	98	368	31,5	30,2	38,3	19,9
2003-06	628											
		2007-10	167	213	95	137	16	475	20,0	35,2	44,8	21,8

6. Composition of the sample of each primary sub-period and their evolution

In the previous section we analyzed the evolution of various dividend groups i.e., payers, non-payers and irregular payers in each sub-period. We showed that dividend non-payers and irregular payers switch to being dividend payers at a higher rate than the rate at which dividend payers switch to being non-payers and irregular payers. This section aims to will cross check these findings. We analyze the composition of firms in each sub-period and the change in their composition over time. This will help us determine whether the relative weight of dividend payers in each sub-sample (set of firms of the primary sub-period) grows or diminishes over time. Firms in each primary sub-period are considered a constant set of firms and their dividend payment behavior is examined during the rest of the sample sub-periods (see Table 7).

Table 7 reports that there are 1,454 firms in the sub-period 1990-94. Seventy percent of these firms are dividend payers, 13% non-payers and 17% irregular payers. If we look at the composition of the same set of firms in the following sub-periods, we observe a substantial increase in the proportion of dividend payers and a decline in the proportion of non-payers and irregular payers. This shows a switch of non-payers and irregular payers to being dividend payers. At the same time, the total number of firms in the sub-sample under consideration falls from 1,454 in 1990-94 to 565 in 2007-10. This decline in the number of firms results from delisting and/or mergers of firms, or from non-availability of dividend data.

The following primary sub-samples 1995-98, 1999-02, and 2003-06 also show an increase in the proportion of dividend payers over time. Thus 67% of the total firms in the 1995-98 sub-period are dividend payers. This proportion rises to 75.4% during 2007-10 for the same set of firms (net of delisted and missing data firms). Similarly, despite the economic recession of 2008-09, we observe an increase in the proportion of dividend payers for the sub-period 2003-06 in the following sub-period. During the period 2003-06, 37.4% of the firms are dividend payers but in 2007-10, 44.6% of these firms pay dividends.

Table 7 also reports a huge influx of new firms into the sample during first half of the sub-period samples. There is a total of 1,454 firms in 1990-94. In the second, third and fourth primary sub-periods number of firms grow by 36%, 52%, and 11% respectively. The same table shows that in the set of firms for each primary sub-period, the proportion of dividend payers increases in the subsequent sub-periods. In contrast, they decline to 67% for the primary sub-period of 1995-98, 44.7% for the 1999-02 sub-period, and only 37% of covered firms are dividend payers in the primary sub-period 2003-06. We observe that the greater the proportion of new firms added to the sample, the larger the decline in the proportion of dividend payers during the period. These findings suggest that additions to the sample play a significant role in the overall decline in the proportion of dividend payers. Furthermore, the proportion of sample firms that start dividend payments is greater than the proportion of firms that abandon dividend payments.

Table 7

Evolution of dividend policy of firms of various sub-periods

This table reports the change in the proportion of various dividend groups. The column "Primary sub-period" reports the period for those firms under consideration. A payer is a firm that pays a dividend at least once during the sub-period, and pays no zero dividends during the sub-period. Non-payers are firms that do not pay dividends at all during the concerned sub-period. To be an irregular payer during a sub-period, a firm should have "paid" a zero dividend at least once and a positive dividend during that sub-period at least once. The column "Total firms" reports net firms of the primary sub period, excluding delisted and missing data firms.

Primary sub-period	Following period	Non-payers	Payers	Irregular payers	Total firms	% payers	% non-payers	% irregular payers
1990-94		**189**	**1016**	**249**	**1454**	**69.9**	**13.0**	**17.1**
	1995-98	100	915	70	1085	84.3	9.2	6.5
	1999-02	95	752	64	911	82.5	10.4	7.0
	2003-06	72	643	44	759	84.7	9.5	5.8
	2007-10	52	464	49	565	82.1	9.2	8.7
1995-98		**383**	**1325**	**270**	**1978**	**67.0**	**19.4**	**13.7**
	1999-02	290	999	79	1368	73.0	21.2	5.8
	2003-06	216	765	45	1026	74.6	21.1	4.4
	2007-10	143	576	45	764	75.4	18.7	5.9
1999-02		**1109**	**1348**	**558**	**3015**	**44.7**	**36.8**	**18.5**
	2003-06	702	949	158	1809	52.5	38.8	8.7
	2007-10	459	675	111	1245	54.2	36.9	8.9
2003-06		**1473**	**1257**	**628**	**3358**	**37.4**	**43.9**	**18.7**
	2007-10	849	817	167	1833	44.6	46.3	9.1

7. Stickiness of dividend payers and non-payers

Dividend stickiness means that firms that currently pay dividends will continue paying dividends in the future. It also means that firms that do not currently pay dividends will not pay them in future. The concept of dividend stickiness has obtained recognition since the publication of Lintner's (1956) paper, which states that managers do not like to make dividend changes that might have to be reversed.

Twu (2010) examines the impact of the key characteristics of a firm (such as its profitability, growth, ownership structure, risk, size, and quality of legal protection) on changes in its propensity to pay dividends. He considers both firms that pay dividends currently and firms that do not currently pay dividends. After controlling for the above mentioned characteristics, he finds that dividend payers and non-payers do not respond in the same way to all these factors; in other words dividend payers and non-payers have different determinants for dividend policies. He reports that high asset growth rates, low insider holdings, and strong legal protection make payers more likely to pay, but non-payers less likely to pay. He also reports that dividend paying firms are more sensitive to earnings and earned-to-contributed equity mix than are non-payers, while dividend non-payers are more sensitive to risk and dividend premiums than are dividend payers. Since dividend policy determinants may differ between payers and non-payers, an investigation of the propensity to change dividend policy without considering these differences will cause aggregation bias. These findings highlight the importance of the first part of our study that focuses on the descriptive statistics of dividend payers and non-payers rather than on the characteristics of firms.

Furthermore, Twu (2010) finds strong evidence in support of dividend stickiness. He reports a reduction of 84% in the overall decline of the propensity to pay after taking into account dividend stickiness. Our evidence supports these findings and we further add that dividend payers are stickier than non-payers.

Table 8 demonstrates the level of dividend policy stickiness of payers and non-payers by considering the number of dividend payers (non-payers) for each year *t* that remain dividend payers (non-payers) in each of the following years.

Panel A of Table 8 reports that 43% of the firms that paid dividends in 1990 continued to pay dividends in 2010. On the other hand, panel B reports that only 33% of the non-payers in 1990 remained non-payers in 2010. The rest of the payers (non-payers) either stopped (started) dividend payments or they were delisted. The reasons for the difference between the stickiness rates of payers and non-payers may be that dividend non-payers are small, young and less profitable firms. These factors contribute to their fragility and increase their risk of insolvency after a few successive years of poor performance. Similarly, non-payers can easily be acquired by large firms and thus be delisted from the database. Furthermore, over time, non-payers acquire the characteristics of payers after prolonged successful operations, and thus start paying dividends. These findings support our prior evidence that the proportion of dividend non-payers that start dividend payments (or get delisted) is higher than the proportion of payers that abandon dividends (or get delisted).

Table 8
The duration of dividend stickiness
The number in each cell of panel A is the proportion of firms which pay dividends in the entering year and continue to pay them in the following years. The number in each cell of panel B is the proportion of firms which do not pay dividends in the entering year and continue not to pay in the following years.

Panel A: Enter as a payer

	Entering year																			
Following	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1991	0.93																			
1992	0.86	0.89																		
1993	0.82	0.85	0.93																	
1994	0.85	0.87	0.93	0.96																
1995	0.82	0.84	0.91	0.93	0.95															
1996	0.82	0.84	0.90	0.92	0.93	0.96														
1997	0.92	0.85	0.91	0.92	0.93	0.94	0.96													
1998	0.84	0.83	0.89	0.90	0.91	0.92	0.94	0.96												
1999	0.80	0.80	0.87	0.87	0.87	0.88	0.88	0.90	0.92											
2000	0.75	0.77	0.84	0.83	0.82	0.83	0.84	0.84	0.86	0.89										
2001	0.67	0.66	0.76	0.74	0.74	0.74	0.74	0.75	0.76	0.78	0.81									
2002	0.65	0.65	0.74	0.73	0.72	0.73	0.72	0.72	0.73	0.74	0.76	0.87								
2003	0.62	0.62	0.72	0.73	0.71	0.71	0.71	0.71	0.72	0.73	0.75	0.82	0.89							
2004	0.60	0.62	0.71	0.71	0.70	0.70	0.70	0.70	0.71	0.71	0.73	0.79	0.83	0.90						
2005	0.61	0.64	0.70	0.69	0.69	0.68	0.68	0.67	0.68	0.69	0.70	0.75	0.78	0.83	0.89					
2006	0.56	0.58	0.64	0.64	0.63	0.63	0.64	0.63	0.63	0.64	0.65	0.68	0.71	0.75	0.81	0.87				
2007	0.57	0.60	0.63	0.61	0.61	0.61	0.61	0.59	0.60	0.60	0.61	0.64	0.66	0.70	0.75	0.80	0.88			
2008	0.48	0.50	0.56	0.55	0.54	0.54	0.54	0.53	0.53	0.53	0.54	0.56	0.58	0.61	0.65	0.68	0.74	0.82		
2009	0.41	0.46	0.51	0.49	0.49	0.48	0.48	0.46	0.45	0.46	0.47	0.50	0.51	0.54	0.56	0.59	0.64	0.69	0.79	
2010	0.43	0.47	0.52	0.51	0.50	0.50	0.49	0.48	0.47	0.48	0.48	0.51	0.52	0.55	0.58	0.59	0.64	0.68	0.77	0.90

Panel B: Enter as a non-payer

	Entering year																			
Following	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
1991	0.88																			
1992	0.78	0.81																		
1993	0.73	0.71	0.85																	
1994	0.58	0.57	0.63	0.70																
1995	0.55	0.55	0.57	0.60	0.78															
1996	0.60	0.61	0.56	0.58	0.73	0.82														
1997	0.45	0.48	0.44	0.47	0.60	0.65	0.74													
1998	0.53	0.45	0.43	0.44	0.54	0.60	0.65	0.84												
1999	0.63	0.51	0.43	0.43	0.53	0.55	0.58	0.74	0.85											
2000	0.53	0.48	0.43	0.42	0.53	0.54	0.57	0.72	0.78	0.85										
2001	0.63	0.52	0.52	0.48	0.56	0.59	0.59	0.70	0.77	0.82	0.88									
2002	0.63	0.53	0.54	0.51	0.61	0.63	0.62	0.71	0.76	0.78	0.83	0.89								
2003	0.55	0.49	0.53	0.52	0.59	0.60	0.61	0.70	0.75	0.78	0.81	0.84	0.90							
2004	0.50	0.44	0.46	0.44	0.51	0.51	0.52	0.62	0.68	0.71	0.72	0.74	0.79	0.86						
2005	0.50	0.42	0.44	0.42	0.48	0.45	0.48	0.57	0.64	0.65	0.67	0.67	0.69	0.76	0.86					
2006	0.40	0.40	0.41	0.39	0.44	0.43	0.46	0.55	0.61	0.61	0.62	0.62	0.64	0.68	0.77	0.88				
2007	0.35	0.32	0.32	0.35	0.40	0.39	0.41	0.48	0.56	0.55	0.56	0.56	0.58	0.61	0.69	0.78	0.87			
2008	0.40	0.32	0.34	0.33	0.36	0.36	0.38	0.45	0.52	0.51	0.53	0.52	0.54	0.57	0.63	0.71	0.77	0.87		
2009	0.38	0.34	0.34	0.33	0.36	0.35	0.37	0.41	0.48	0.47	0.49	0.48	0.50	0.53	0.58	0.64	0.69	0.76	0.84	
2010	0.33	0.27	0.30	0.28	0.32	0.32	0.32	0.37	0.42	0.42	0.43	0.42	0.44	0.45	0.50	0.55	0.60	0.66	0.72	0.83

8. Additional evidence using dividend change directions

If we assume that a firms' propensity to pay dividends declines over time, the importance of dividends as a payout tool should also decline over time. Consequently, dividend payers should tend to omit dividends, decrease the amount of dividend payment, or at least keep the dividend amount constant. Increases in dividend payments should be very unlikely. Therefore, we should expect a downward trend in the proportion of firms that increase dividend amounts. Similarly, the proportion of firms that decrease dividends should tend to rise over time.

This section examines the direction of dividend changes (dividend increases and decreases) to see whether over time the number of dividend increasing firms changes significantly or not. A firm that pays higher/lower adjusted[25] dividends to its common stockholders in year *"t"* than it has paid in year *"t-₁"* is defined as a positive/negative dividend change firm (zero change firms are excluded). Any special dividends paid are excluded. Positive (negative) change firms are the proportion of total firms that change their dividend payments. The initial sample includes 4,223 (net of financials) firms from 21 European countries. We cover dividend events from 1990 to 2010.

There is a total of 16,585 dividend change events (increases and decreases). The majority of these events (12,089) are firms that increase their dividends and the rest (4,496) are firms that decrease their dividends. The preponderance of dividend increases is consistent with the premise that firms are reluctant to cut dividends. Fig. 3 and Table 9 suggest that over the sample period, the proportion of positive changes temporarily moves up and down but follows neither a systematic upward nor

[25] Net adjusted dividends means dividends adjusted for capital changes if there are any.

downward trend. Furthermore, we observe that the proportion of positive changes is significantly higher than the proportion of negative ones throughout the sample period except during the two years of economic slump, namely 2008 and 2009 (see Fig. 3).

Table 9

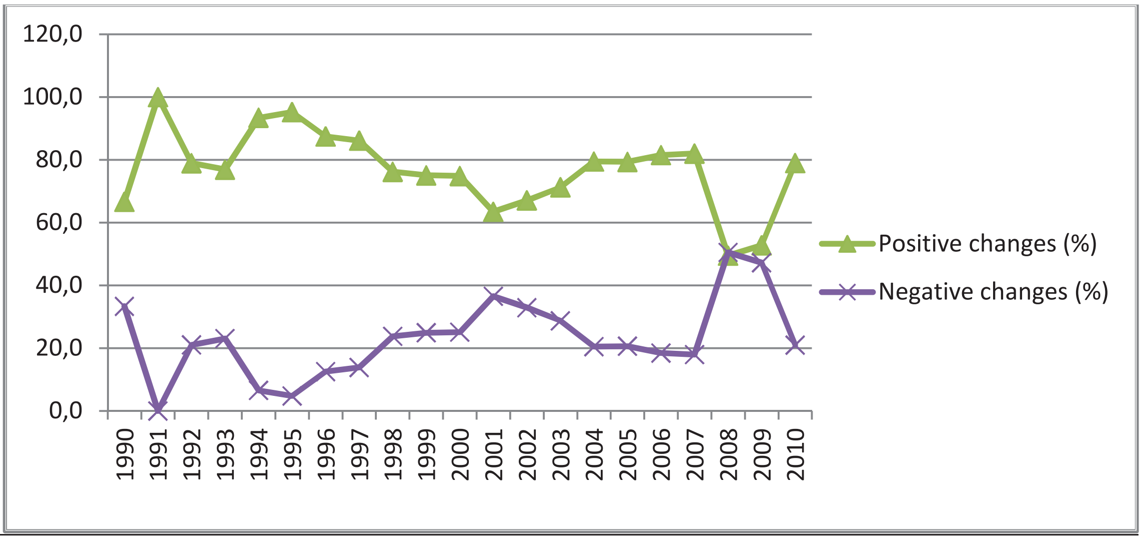
Frequency of dividend changes by year during the period 1990-2010

A firm that pays higher (lower) net adjusted dividends to its common stockholders in the year "t" than it has paid in the year "t_{-1}" is defined as a positive/negative dividend change firm. The column *"Total Firms"* reports the number of firms that change their dividends. Any special dividends paid are excluded. Positive (negative) change firms are the proportion of total firms that change their dividend payments (zero change firms are excluded). The initial sample includes 4,223 firms from 21 European countries.

Year	Total firms	Positive changes (%)	Negative changes (%)
1990	18	66.7	33.3
1991	15	100.0	0.0
1992	19	78.9	21.1
1993	39	76.9	23.1
1994	167	93.4	6.6
1995	188	95.2	4.8
1996	279	87.5	12.5
1997	433	86.1	13.9
1998	618	76.2	23.8
1999	1175	75.1	24.9
2000	1222	74.9	25.1
2001	1229	63.5	36.5
2002	1185	67.1	32.9
2003	1159	71.3	28.7
2004	1258	79.5	20.5
2005	1331	79.3	20.7
2006	1359	81.5	18.5
2007	1351	82.0	18.0
2008	1267	49.5	50.5
2009	1139	52.8	47.2
2010	1134	79.0	21.0

Fig. 3

Trend of dividend changes during the period 1990-2010 (represents Table 9)



Since they show that firms are more inclined towards dividends increases than decreases and there is no systematic change in this tendency over time, these findings are inconsistent with the prior studies that report that firm propensity to pay dividends declines over time due to a decline in the utility of dividends as a payout tool.

9. Summary

The objective of this first study was to conduct a detailed analysis of dividend paying trends of European firms from 1990 to 2010. Without controlling for firm characteristics, we examined firm dividend paying behavior by classifying them into various dividend groups on the basis of their short term /annual and long term dividend payment decisions. Our findings suggest that the decline in the percentage of dividend payers, largely documented in the literature, does not mean that dividends are disappearing. The primary reason for the decline in the proportion of dividend payers is the introduction of large numbers of dividend non-payers in databases. Once the huge influx of new firms (not previously covered by databases) slows down, the decline in the proportion of dividend payers stops. Furthermore, we observe that when the newly added non-payers reach maturity, they start paying dividends. Their rate of dividend initiation is greater than the rate of dividend abandonment by payers. Similarly, non-payers get delisted at a higher rate than do payers. On the basis of these findings we predict that over time, the proportion of dividend payers will show an upward trend.

We also find that in each year *t* of our sample period, the majority of dividend change firms tend to increase their dividend per share. This suggests that, over our sample period, the importance of dividends does not decline for firms. Furthermore, our findings suggest that the primary reason of the decline in the proportion of dividend payers is the insertion of a large number of previously non-covered firms into the database. Once the addition of such firms slows down, the decline in the dividend payers stops. Thus, in Europe, dividends are not disappearing. We expect an increasing trend in the proportion of dividend paying firms after the recovery of firms from the 2008's economic recession.

Part B: Does the decline in dividend payments of European listed firms result from a change in firms' characteristics?

The first part of our study did not take into account the characteristics of firms. This part examines the impact of various characteristics (such as profitablitily, investment opportunities, leverage, size, earned to contributed capital mix, and age) on dividend payment policy. It also investigates whether changes, that may explain changes in dividend policies, have taken place in these characteristics over time. A logit analysis will help determine how much of the decline in the proportion of dividend payers is defined by these changes, and how much of the decline comes from the propensity to pay dividends.

10. Characteristics of various dividend groups

The dividend literature has suggested that factors such as profitability, maturity, leverage, growth, investment opportunities, and size affect firms' ability to pay dividends [DeAngelo et al. (2006), Fama and French (2001), Grullon, Michaely, and Swaminathan (2002), Denis and Osobov (2008), DeAngelo and DeAngelo (1990)]. Profitability, maturity, and size are found to be positively related to the likelihood of dividend payments while leverage and growth opportunities are negatively related to the probability of dividend payments. Following these studies, we include factors such as profitability, maturity, size, growth opportunities, and leverage as determinants of dividend payments.

Our initial discussion of the characteristics of various dividend groups focuses on the evidence from descriptive statistics. Here we examine, first how various dividend groups differ from each other in terms of profitability, investment opportunities, size, earned-to-contributed capital mix, leverage and age. Next we examine the time series fluctuations in these characteristics over time. Finally, with the help of logit regressions, we estimate the relative contribution of changes in firms' characteristics, and firms' propensity to pay dividends in the overall decline in the proportion of dividend payers.

10.1. Profitability

We use the ratio of earnings before interest and taxes to total assets ($EBIT_t/A_t$) and the ratio of net earnings per share to stock price at the year-end (EPS_t/P_t) as proxies for profitability. Table 10 reports the characteristics of various dividend groups. Reported values are averages of annual median values for the full sample period 1990-2010.

$EBIT_t/A_t$ averages 9.59% per year (the highest among all dividend groups) for regular payers, versus -3.92% per year (the lowest among all divided groups) for regular non-payers. The ratio remains 9.12%, 7.02%, and 0.79% for payers and non-payers and irregular payers respectively.

Table 10 shows that the gap between the profitability of dividend payers and non-payers increased when we used EPS_t/P_t as a proxy for profitability. EPS_t/P_t averages 6.47% for payers, versus -3.28% for non-payers.

Regular non-payers have the lowest EPS_t/P_t ratio (-6.31% per year) and the highest asset growth ratio (8.75% per year). Fama and French (2001) report similar results. They state that the profitability of never paid firms is probably understated, for three reasons. (i) If investments take time to reach full profitability, earnings ratios understates profitability for growing firms; (ii) relatively large expenses on research and development affect profitability ratios negatively; and (iii) rapid investment of regular non-payers leads to relatively younger assets that result in higher depreciation expenses due to inflation and thus ultimately leads to lower profitability.

During the first decade of our sample period, profitability of "All firms" is higher than that of the rest of the sample period. The average EPS_t/P_t ratio for the first 10 years (1990-1999) is 8.6% and for the period 2000-2010 it declines to 5.7%. There are two primary reasons for this decline in the profitability of the sample firms. First, the global economic conditions during the first half of the sample period are business friendly, while the second half experiences economic recessions in 2001-02 and then in 2008-

09. Second there is a continuous addition of less profitable and younger firms to the sample. Even new firms (IPOs) of the first half of the sample period are more profitable than those of the firms incorporated in the second half of the sample period (see Table 11). The annual median EPS_t/P_t ratio for dividend payers is 8.8% in the year 1990 and 7.0% in 1991. In the rest of the sample years it remains at 6.0%, except in the year 2008 when it rises to 9.9%. This rise in the profitability ratio probably comes from dividend omission by low profitability dividend payers firms. Similarly, many firms are delisted and disappear from the dividend paying group. This exclusion of firms from the group of payers increased the average profitability and size of dividend payers in the recessionary year of 2008.

Table 11 reports that the profitability of non-payers declines from -2.10% in 1990-00 to -4.5% in 2001-2010. Poor global economic conditions and the addition of large number of small and less profitable firms to the sample are the primary reasons for this decline in the profitability of non-payers. Fig.5 shows that during recessionary years the profitability of non-payers declines substantially. Annual medians of non-payers are negative throughout the sample period.

Fig.4 shows a sharp decline in the number of positive net earning firms in the year 2001 for "*All firms*". The primary reason of the decline is the recession of early 2000. In the years after 2002 firms profitability improves. In the years 2008-09 another recession hits firms' profitability. In 2010 again we observe some improvement. Fig. 4 also shows a strong correlation between the number of firms with positive EPS and the number of dividend payers over the period 1990-2010. During the years of recession, spread between the number of positive EPS firms and positive growth firms increases but soon after the recessionary years it declines. Thus, we do not see a substantial change in the proportion of dividend payers, which report positive net earnings. Appendix 4 shows that 92.70% of all dividend payers during the period 1990-2010 exhibit positive EPS. This confirms that profitability plays an important role in dividend payment policy.

Fig. 4. Number of Positive net EPS and Positive growth firms

Positive net EPS firms are firms that declare positive after tax earnings for year *t*. Positive growth firms are firms with higher book value of assets at the end of year "*t*" than that of year "*t-1*". The sample includes companies from 21 European countries over the period 1990–2010 that satisfy the data availability requirements. Any observation with missing data for dividend payment, EPS or change in total assets for the year t is excluded.

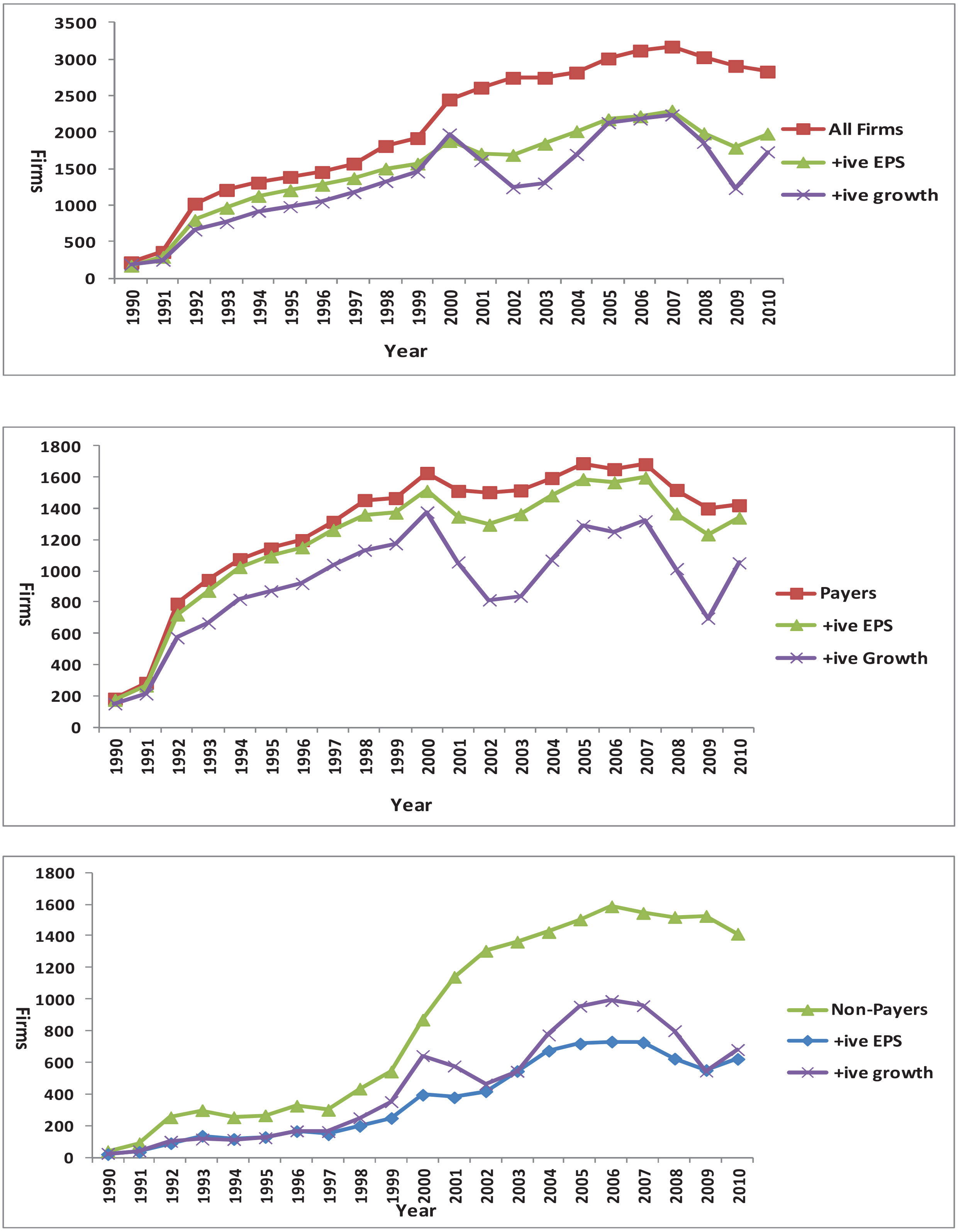
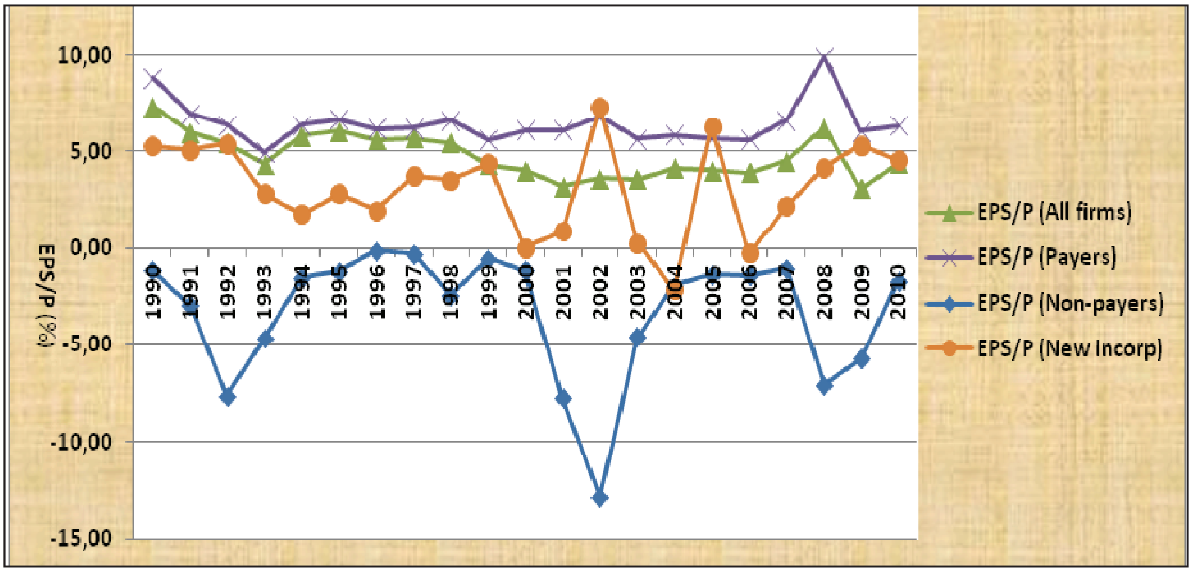


Fig. 5. Profitability of various dividend groups

EPS is the net annual earnings scaled by the number of issued common stocks for the year *t*. P is the stock price at the year end of year *t*.



10.2. Size

For descriptive analysis we define firm size as total assets of a firm *i* at the end of year *t* in Euros. However, for the estimation of logit regressions, the proxy for firm size requires a special design to maintain comparability of the measure across countries. Therefore, for logit regressions we measure size as total assets of firm *i* of country *c* at the end of year *t* scaled by average total assets of all firms of country *"c"* at the end of the year 2010. Country *c* is the country where firm *"i"* is headquartered.

Consistent with prior literature, we find that payers are much larger than non-payers. During 1990-10, the average of annual median size of dividend payers is 261.7 million € versus 48.8 million for non-payers. Similarly, regular payers are the largest among all dividend groups with an average size of 413 million € and regular non-payers/never paid are the smallest with an average size of 26.9 million € per year. Being larger than non-payers and smaller than payers, the size of irregular payers averages 141 million € (see Table 10)[26].

Size of dividend payers continuously and substantially grows during the sample period[27]. Furthermore, over time, the difference between the sizes of dividend payers and non-payers rises. In 1990, payers were 2.5 times larger than non-payers. They are, however, 6 times larger than non-payers in 2010 (Fig.6). These findings support those of DeAngelo, DeAngelo, and Skinner (2004) that, over time, dividends are concentrated among the largest firms.

Fig.4 reports a significant decline in the average size of "*All firms*" during the period 1997 to 2004. The average size of the sample firms fell from 160 million to 102 million €. Fig. 1 shows a sharp increase in the number of non-payers from 1997 to 2004. Table 3 reports that the number of non-payers grew from 387 in 1997 to 1807 in 2004. During the same time period, payers record a relatively small increase. They rose from 1393 to 1659. Similarly payers experienced a sizeable increase in their annual median size from the year 1997 to 2004. At the same time the annual median age of our sample firms fell from 51 years in 1997 to 27 years in 2004 (see Table 3).

These findings suggest that the increase in the firms' annual median size was the result of the large addition of relatively small and young non-payers to the sample. During these years 424 newly incorporated firms were added to the sample/database.

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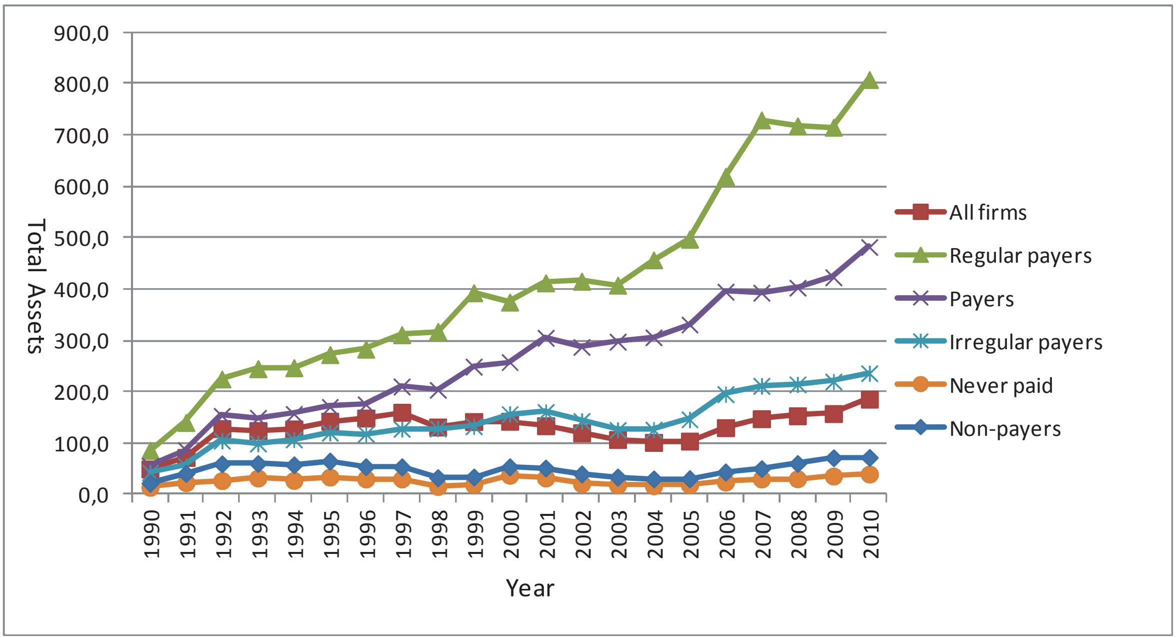
[26] Our second proxy for firms' size (that we use for multivariate analysis) also gives similar results.

[27] One reason could be, as prior literature suggests, that dividends are concentrated among larger and more profitable firms over time (DeAngelo, DeAngelo, and Skinner (2004); Denis and Osbov (2008)).

Fig. 6. Size of firms

Firm size is measured as median value of the book value of total assets (reported in millions of Euros). Local currencies are converted to Euro at the exchange rates in effect at the end of year *t*.



From 2004 onwards the annual median size of "*All firms*" continuously rose from 102 million € in 2004 to 186 million € in 2010. There are two primary reasons for this increasing trend in size. First, the heavy influx of new and small firms into the sample ended in the year 2005; and second, a large number of small size and less profitable firms delisted. Majority of these delisted firms were non-payers (Table 6 and Table 3).

10.3. Growth opportunities

We use two proxies for growth opportunities; i) Asset growth (dA_t/A_t) and, ii) Market/Book (M_{it}/B_{it}) ratio. Asset growth is equal to dA_{it}/A_{it}., where $dA_{it} = A_{it} - A_{it-1}$ and A_{it} stands for total assets of firm i the end of year *t*. M_{it} and B_{it} are market value and book value of firm *i* at the end of year *t* respectively.

Table 10 reports that new firms (IPOs) have the highest investment opportunities among all dividend groups. They have the highest average M/B ratio of 2.19 and the largest average asset growth of 9.66%. Asset growth ratio of regular non-payers (8.75%) was higher than that of dividend payers (6.50%), regular payers (6.37%) and irregular payers (4.75%). Payers have higher investment opportunities than non-payers throughout the sample period, except for the year 2000 when assets growth ratio of non-payers exceeds that of payers. Non-payers have higher M/B ratios than payers only in 2000 and 2001. During the first half of the sample period the spread between the curves of payers and non-payers is large relative to the spread of the second half of the sample period. During the economic recessions, payers' growth opportunities declined and got closer to those of non-payers (Fig 7).

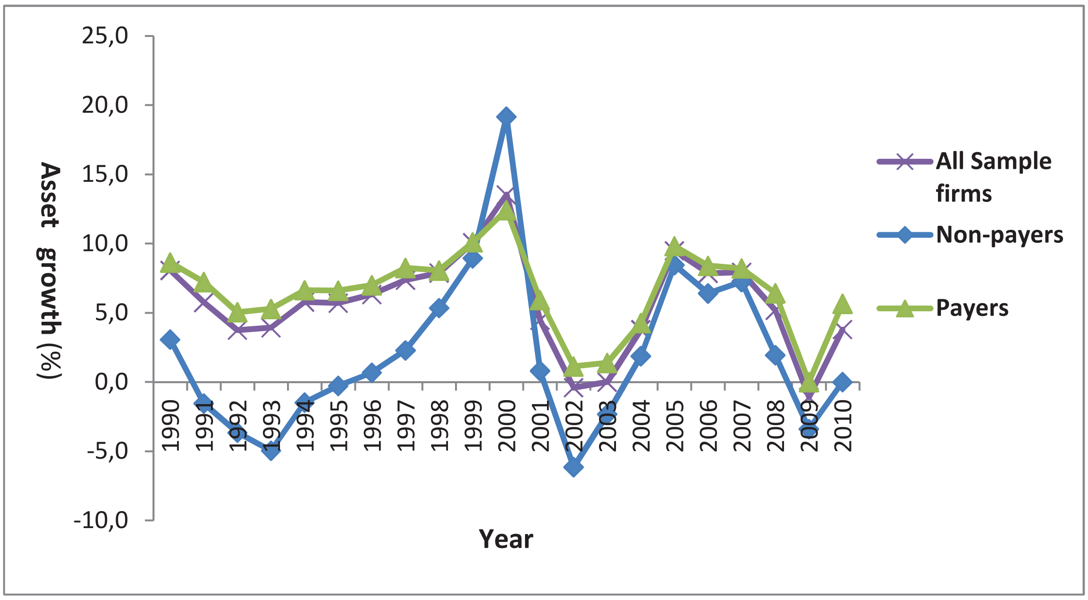
Fama and French (2001) report that US firms that never paid dividends have the highest growth opportunities. New lists follow them as second in having the highest growth opportunities[28].

[28] It should be noted that newlists defined by Fama and French (2001) differs from our definition of newly incorporated firms.

Fig. 7. Time series changes in firms investment opportunities

Asset growth is equal to $dA_t / A_{t.}$ where dA_t is the proxy for investment which is equal to $A_t - A_{t-1}$. Payers are firms that pay dividends in the year t, and non-payers do not.

A.



B.

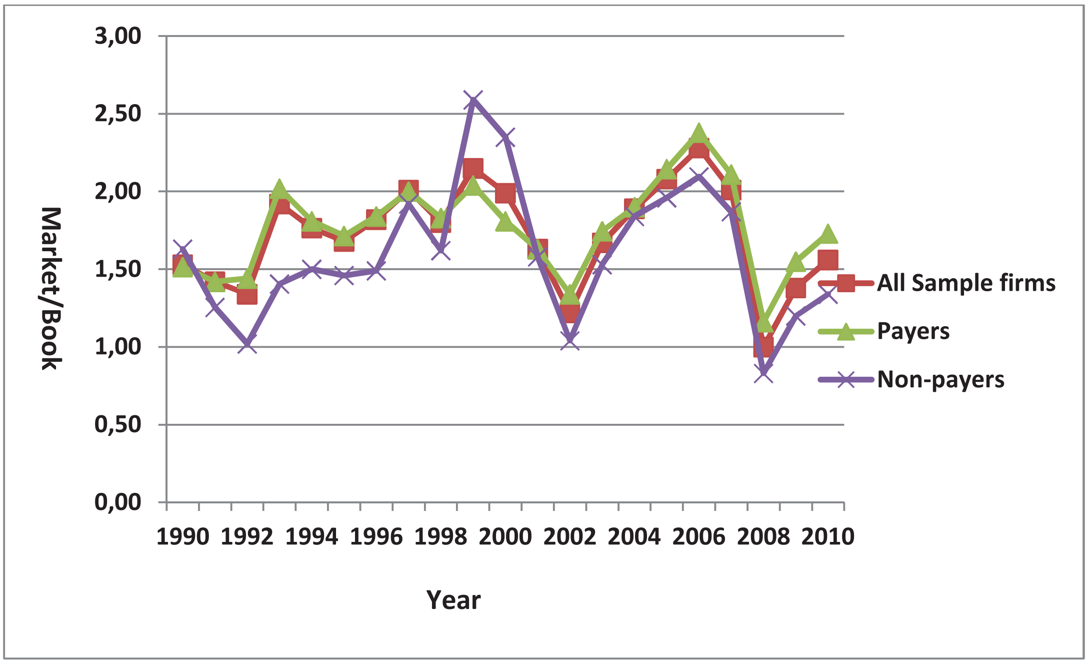


Table 10

Characteristics of various dividend groups

Payers pay dividends in year *t*; non-payers do not. Regular payers never omit dividends while regular non-payers never pay dividends during the sample period. Firms that are neither regular payers nor regular non-payers are defined as irregular payers. New firms (IPO) are firms that make their initial public offering in the year *"t"*. We define age as "the number of years since a firm's incorporation". Reported values are averages of annual median values for measures of profitability, growth opportunities, firm size, earned-to-contributed capital mix, financial risk and age. The sample period is 1990-2010. For New Firms (IPOs) the sample period is 1990-2009 as the small number of IPOs in 2010 results in abnormally large mean value of total assets for the year 2010.

A_t, $EBIT_t$, RE_t, TE_t, EPS_t, and P_t stand for total assets, earnings before interest and taxes, retained earnings, book value of shareholders' equity, net earnings per share and stock price at the end of fiscal year t. Assets growth is equal to dA_t/A_t where dA_t is the proxy for investment which is equal to $A_t - A_{t-1}$. Size is measured as total assets of a firm *"i"* at the end of year *"t"* reported in millions of Euros. We exclude the observations having negative common stock holders equity (TE).

	Profitability		Growth opportunities		Size	Earned equity	Financial risk		Age
	$EBIT_t/A_t$	EPS_t/P_t	dA_t/A_t	M/B	TA	RE_t/TE_t	Gearing ratio	Borrowing ratio	# of years
All firms	7.06	4.82	5.68	1.72	129.4	81.76	29.33	44.26	31
Payers	9.12	6.47	6.50	1.77	261.7	85.39	30.46	45.25	40
Non-payers	0.79	-3.28	2.02	1.60	48.8	66.88	31.24	52.10	21
Regular payers	9.59	6.37	6.37	1.89	413.2	87.17	28.84	42.25	46
Regular non-payers	-3.92	-6.31	8.75	1.99	26.9	62.36	18.05	26.17	11
Irregular payers	7.02	5.15	4.75	1.55	141.8	79.34	34.82	57.58	37
New Firms (IPO)	6.53	3.34	9.66	2.19	65.9	83.54	21.84	28.42	24

Table 11

Time series fluctuations in the firm characteristics

In panel "A" reported values are annual median values for all sample firms while panel "B" reports period averages of annual median values. A_t, $EBIT_t$, RE_t, TE_t, EPS_t, and P_t stand for total assets, earnings before interest and taxes, retained earnings, common stockholders' equity, net earnings per share and stock price at the end of fiscal year t. Asset growth is equal to dA_t/A_t; where $dA_t = A_t - A_{t-1}$. Size is measured as total assets of firm i of country *c* at the end of year t divided by the average total assets of country c at the end of for year 2010. Gearing and borrowing ratios are proxies for financial risk. We exclude the observations having negative stock holders equity (TE). We compute age from the date of a firm's incorporation.

Panel A (All Firms)

	Profitability		Growth opportunities			Earned equity	Financial risk		
year	$EBIT_t/A_t$	EPS_t/P	dA_t/A_t	M/B	Size	RE_t/TE_t	Gearing ratio	Borrowing ratio	Age
1990	9.7	7.37	8.1	1.53	50.2	76.3	32.6	52.3	37
1991	8.7	6.00	5.7	1.42	72.5	76.2	32.5	53.4	44
1992	7.6	5.48	3.8	1.34	128.6	77.8	34.1	58.6	47
1993	7.7	4.37	3.9	1.92	124.6	78.1	32.2	51.4	45
1994	8.4	5.83	5.8	1.77	127.7	78.7	30.2	46.5	45
1995	9.0	6.09	5.7	1.68	142.8	79.0	30.0	46.0	43
1996	9.1	5.64	6.3	1.82	149.3	79.7	29.3	44.9	40
1997	9.1	5.69	7.4	2.01	160.0	80.1	29.1	44.4	39
1998	8.7	5.46	7.9	1.80	131.9	80.0	30.4	45.3	33
1999	8.0	4.33	10.1	2.15	142.3	81.5	30.3	46.5	31
2000	7.1	4.04	13.5	1.99	142.7	83.8	28.9	42.8	27
2001	5.5	3.24	4.5	1.63	134.4	83.2	30.4	45.0	24
2002	4.7	3.65	-0.4	1.22	120.5	81.7	30.4	45.9	24
2003	5.1	3.60	0.0	1.67	107.3	82.0	29.2	42.9	24
2004	5.9	4.17	3.8	1.89	101.9	83.0	26.4	37.9	22
2005	6.2	4.03	9.5	2.08	104.4	84.2	25.2	35.4	20
2006	6.4	3.91	7.9	2.28	130.5	85.3	25.3	34.8	19
2007	6.7	4.52	7.9	2.01	147.7	86.7	25.8	35.6	20
2008	5.5	6.23	5.2	1.00	153.7	86.6	29.1	42.8	21
2009	4.0	3.10	-1.1	1.38	158.0	86.0	28.2	40.3	23
2010	5.1	4.41	3.8	1.56	186.1	87.0	26.3	36.7	24

Panel B

Period	Profitability		Growth opportunities		Size	Earned equity	Financial risk	
	$EBIT_t/A_t$	EPS_t/P	dA_t/A_{t-}	M/B	TA	RE_t/TE_t	Gearing ratio	Borrowing ratio
All firms								
1990-10	7.06	4.82	5.68	1.72	129.39	81.76	29.33	44.26
1990-94	8.42	5.81	5.46	1.60	100.73	77.42	32.30	52.43
1995-98	8.95	5.72	6.82	1.83	146.04	79.69	29.70	45.17
1999-02	6.34	3.81	6.92	1.75	134.97	82.58	29.99	45.06
2003-06	5.89	3.92	5.28	1.98	111.03	83.62	26.52	37.77
2007-10	5.34	4.56	3.96	1.49	161.38	86.56	27.38	38.83
Payers								
1990-10	9.12	6.47	6.50	1.77	261.68	85.39	30.46	45.25
1990-94	9.68	6.72	6.57	1.64	120.61	80.19	29.89	46.17
1995-98	10.13	6.44	7.48	1.85	190.29	82.64	28.66	41.69
1999-02	8.66	6.16	7.40	1.71	274.96	86.08	33.17	50.60
2003-06	8.60	5.72	5.98	2.04	332.50	88.36	31.12	45.00
2007-10	8.36	7.24	5.08	1.64	425.31	90.95	29.59	42.56
Non-payers								
1990-10	0.79	-3.28	2.02	1.60	48.77	66.88	31.24	52.10
1990-94	2.15	-3.58	-1.71	1.36	48.43	54.33	46.03	94.44
1995-98	2.28	-1.00	2.02	1.62	51.59	58.52	38.28	62.39
1999-02	-1.00	-5.56	5.70	1.89	45.20	72.56	23.33	32.06
2003-06	0.49	-2.31	3.61	1.86	34.87	73.64	20.78	27.76
2007-10	-0.31	-3.86	1.45	1.31	63.83	78.52	24.07	33.28
Reg. payers								
1990-10	9.59	6.37	6.37	1.89	413.19	87.17	28.84	42.25
1990-94	10.44	6.56	6.57	1.71	188.88	82.38	25.55	38.08
1995-98	10.51	6.20	6.99	2.02	296.23	85.23	25.46	35.76
1999-02	9.28	6.28	7.33	1.81	398.90	88.04	31.36	46.17
2003-06	8.93	5.74	5.88	2.18	495.43	89.66	31.31	46.03
2007-10	8.58	7.03	5.05	1.78	742.60	91.73	31.34	46.24
Reg.non-payers								
1990-10	-3.92	-6.31	8.75	1.99	26.89	62.36	18.05	26.17
1990-94	-1.66	-5.27	2.36	1.83	25.02	47.28	31.43	52.67
1995-98	-0.93	-2.94	10.74	2.38	27.82	45.55	21.19	30.63
1999-02	-8.10	-11.17	19.31	2.19	27.78	71.35	10.70	12.77
2003-06	-5.24	-5.33	8.11	2.11	19.92	72.52	9.98	11.77
2007-10	-4.25	-7.09	4.82	1.47	34.40	78.90	13.63	16.37
Irreg. payers								
1990-10	7.02	5.15	4.75	1.55	141.79	79.34	34.82	57.58
1990-94	7.35	5.21	4.54	1.47	82.16	72.98	38.47	69.74
1995-98	8.57	5.88	6.15	1.69	123.89	76.19	34.73	57.58
1999-02	6.70	4.53	6.03	1.55	148.44	81.20	35.27	58.33
2003-06	6.55	4.61	4.43	1.74	148.66	82.27	31.89	49.14
2007-10	5.85	5.50	2.67	1.33	220.74	85.65	32.82	50.05
Newlists								
1990-10	6.53	3.34	9.66	2.19	65.93	83.54	21.84	28.42

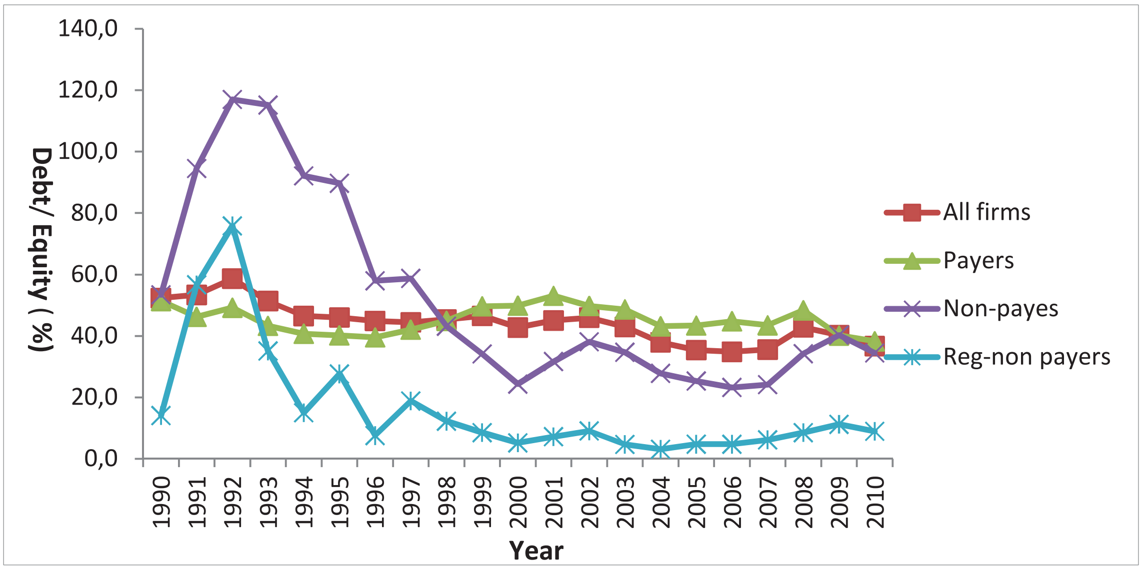
10.4. Earned equity/ contributed capital mix (RE/TE)

Panel B of Table 11 shows that regular dividend payers (87.17%) have the highest average RE_t/TE_t ratio, followed by payers (85.39%). Regular non-payers (62.36%) have the lowest RE_t/TE_t ratio, followed by non-payers (66.88%). These findings support the life-cycle explanation of dividend payments proposed by DeAngelo et al. (2006). According to this theory, firms change their dividends in response to changes in their investment opportunity set. The theory predicts that new or young firms pay low dividends because their investment opportunities exceed their internally generated capital. But with the passage of time, investment opportunities decline and internal funds exceed investment opportunities so firms start to pay out funds in excess to mitigate the agency problems which may arise due to the presence of high free cash flows.

Fig.8 reports a sharp decline in the borrowing ratio of non-payers over the sample period. During the sub-period 1990-00, annual median borrowing ratio of non-payers averages 70.9% versus, 31.4% during 2001-2010. These findings suggest that, over time, non-payers rely more and more on their internally generated resources rather than on borrowing.

Fig. 8. Evolution of borrowing ratios

Borrowing ratio means, total loans divided by equity capital and reserves minus total intangibles.



Similarly, during the second half of our sample period, firms face recessions that lead to low profitability, low growth and thus less need for debt financing. Before 1998, non-payers are more indebted than payers but afterwards the median annual borrowing ratios of payers exceed those of non-payers.

10.5. Age

Consistent with prior literature and with the life cycle theory of dividends, we find that, for the full sample period 1990-2010, dividend payers (40 years) are much older than non-payers (21 years). Irregular payers (37 years) are older than non-payers, but younger than payers. Regular dividend payers (46 years) are the oldest and regular non-payers (11 years) are the youngest among all dividend groups (see Table 10).

Fig. 9. Annual median age of various dividend groups

We define age of a firm as "the number of years since the firm's incorporation". Payers pay dividends in year t, non-payers do not. Regular payers do not omit dividend payment and regular non-payers never pay dividends during the sample. Irregular payers are firms that are neither regular payers nor regular non-payers.

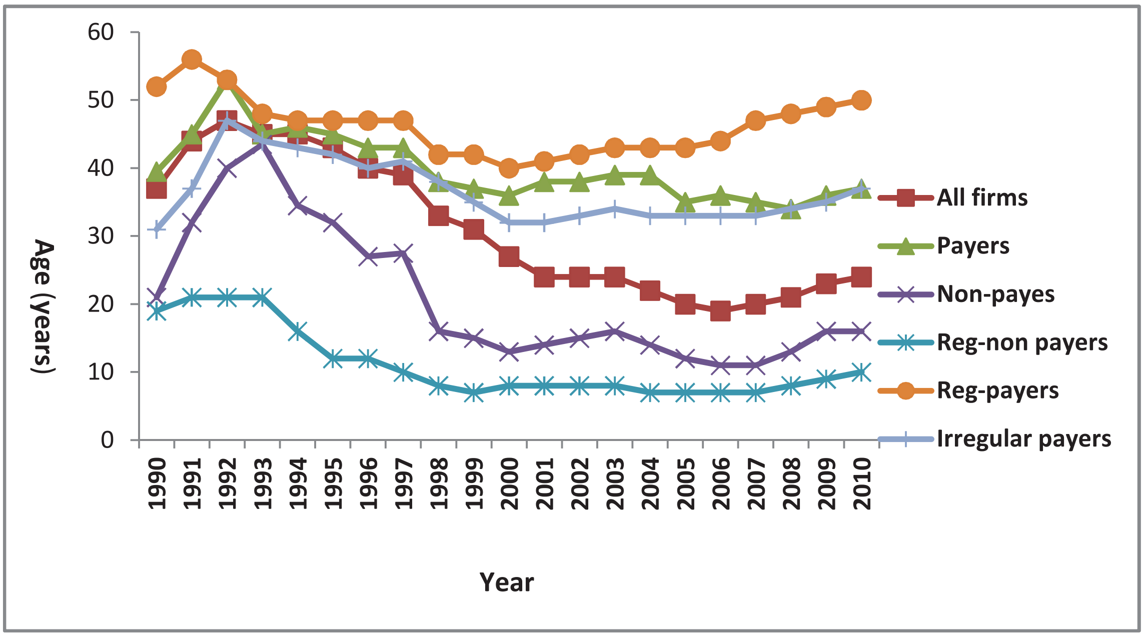


Fig. 9 reports a decline in the annual median age of all dividend groups over time. Dividend payers are always older than other dividend groups and non-payers have the lowest annual median age throughout the sample period.

This decline in age is due to the addition of large number of relatively young firms in each dividend group during the sample period. The delistment of old firms also contributes to the decline in the annual median age of firms. Non-payers show large decline as compared to payers. These findings suggest that most of the firms added during the sample period were relatively young and were non- payers. After the year 2005 the large influx of firms into the sample almost stops. This leads to a rising trend in the age of sample firms in the later years of our sample period.

10.6. Summary of the univariate statistics

Dividend non-payers tend to be small, young, and less profitable firms. They exhibit the highest borrowing ratios, the lowest investment opportunities and the lowest RE/TE ratios among all dividend groups, except regular non-payers.

Dividend payers are, in turn, the largest, oldest, and most profitable firms. They show the highest RE/TE ratios among all dividend groups except regular payers. They have more investment opportunities than non-payers and irregular payers, but less than new firms (IPOs) and regular non-payers.

Average EPS/P ratio of the sample firms fall from 5.48% in 1990-00 to 4.08% in 2001-10. For new IPOs, the mean ratio is 5.06% in the first half of the sample period (1990-00) and falls to 0.8% during the second half (2001-10). EPS/P ratio for dividend payers does not show a substantial change. It grows from 6.46% in 1990-00 to 6.48% in 2001-10. But dividend non-payers show a substantial decline in the EPS/P ratio that falls from -2.14% to -4.53%. It comes from the influx of less profitable dividend non-payers, and from the switch of less profitable payers to non-payer.

The investment opportunities also decline substantially for all types of groups during the second half of the sample period. Instead of borrowing, non-payers rely more on retained earnings in the second half of the sample period. Their average borrowing ratio falls from 70.9% in 1990-00 to 31.4% in 2001-10. Their RE/TE ratio grows from 59% to 75.5%.

The fall in the average age of non-payers from 27.4 years in the first half to 13.8 years in the second half shows that majority of the newly added young firms into the sample are non-payers.

In sum, the decline in the proportion of dividend paying firms may be partially due to specific characteristics of firms that do not pay dividends: low earnings, low investment opportunities, low borrowing ratios, and small age.

The next section describes the methodology and results of a multivariate analysis aimed at determining the extent to which the declining trend in dividend distributions comes from a change in firms' characteristics.

11. Confirmation from logit regressions

Fama and French (2001) report that the likelihood of paying dividends is associated with firm size, growth opportunities, and profitability. DeAngelo, DeAngelo, and Stulz (2006) and Denis and Osobov (2008) suggest that dividend policy is less affected by the level of a firm's retained earnings, the earned equity-to-total equity being a proxy for firm's maturity. In addition to all these factors, we include Age and Leverage in our logit regression. Leverage controls for financial risk while Age proxies for a firm's maturity.

$$P(X_{i,t}) = \beta_0 + \beta_1 EBIT_{i,t}/A_{i,t} + \beta_2\ EPS_{i,t} + \beta_3\ GROWTH_{i,t} + \beta_4 M_{i,t}/B_{i,t} + \beta_5 Size_{i,t} + \beta_6 BORROWING_{i,t} + \beta_7\ R.EARNINGS_{i,t}/EQUITY_{i,t} + \beta_8\ \mathrm{AGE}_{i,t} + \boldsymbol{\varepsilon}_{\mathbf{i,t}}$$

Where

Subscripts *i* and stands for firm *i* and time *t*

$P(X_{i,t})$ = 1 if firm *i* pays dividends in year *t*, 0 otherwise

$EBIT_{i,t}$ = Earnings before interest and taxes for firm i at year *t*

$A_{i,t}$ = Total Assets at of firm *i* the end of year *t*

$EPS_{i,t}$ = 1 if net earnings per share of firm *i* for year *t* is positive, 0 otherwise

$GROWTH_{i,t}$ = $dA_{i,t}/A_{i,t}$

$M_{i,t}/B_{i,t}$ = Market price scaled by book price of common stocks for firm *i* at year *t*

$Size_{i,t}$ = Size is measured as total assets of firm *i* of country *c* in year *t* scaled by the average total assets of all firms of country *c* in the year 2010

R. $EARNINGS_{i,t}$ = Earned equity or retained earnings for firm *i* at year *t*

$BORROWING_{i,t}$ = Total loans divided by common equity capital and reserves

$Age_{i,t}$ = Number of years since incorporation of firm *i* at year *t*

Table 12 reports the marginal effects of size, profitability, and investment opportunities, proportion of retained earnings, and age on the likelihood that a firm pays dividends. We estimate annual logit regressions for each year of our sample period. The dependent variable equals one if a firm pays dividends in the year *t* and zero if it does not pay. We use asset growth (dA_{it}/A_{it}) and market-to-book ratio (M_{it}/B_{it}) as proxies for investment opportunities[29]. A_t stands for total assets at the end of year *t*. Similarly, we use $EBIT_{it}/A_{it}$ as a proxy for profitability, and borrowing ratio as a proxy for measuring financial risk of a firm. In addition we use a firm's earned-to-contributed equity mix as a proxy for firm maturity. The proxy for firm size is designed to maintain the comparability of the measure across countries.

Table 12 confirms that dividend payers are more profitable, older, larger, and have higher RE_{it}/TE_{it} ratios than non-payers. The coefficients of profitability ($EBIT_{it}/A_t$) are highly significant and positive for all 21 years of the sample period. Similarly,

[29] Denis and Osobov (2008) state that the two proxies used for investment opportunities have drawbacks. The asset growth measure is affected by earnings and by dividend payouts. Similarly, in the market-to-book ratio, market price of the security of a firm depends upon investors' sentiment. Therefore it may deviate from its fundamental value.

coefficients for age and size variables are significant and positive for 19 out of the 21 years under consideration. These findings support our univariate findings that large, old and profitable firms are more likely to pay dividends.

Regarding the borrowing ratio, Table 12 reports that during the second half of our sample period dividend payers are significantly more indebted than non-payers. Panel B of Table 11 reports that, during the first half of our sample period, non-payers were significantly more profitable and older than the non-payers of the second half. These findings suggest that old and profitable firms have higher borrowing ratios than small, young and relatively less profitable firms. The large influx of young and less profitable non-payers into the sample, during the period 1997 to 2002, results in a decline in the average age and profitability of the non-payers. This decline in the mean profitability and age results in an increase in the cost of borrowing for non-payers that is likely to explain the significant decline in the mean borrowing ratio of non-payers during the second half of our sample period. On the other hand, dividend payers show a small increase in their borrowing ratio in the second half. Thus, during the second half of the period under study, the fall in the mean borrowing ratio for non-payers and the rise for payers is captured by our logit model showing that the coefficient is significantly positive for 7 years during the 11 years period (1999-2010).

Consistent with our univariate findings Table 12 reports that dividend payers have significantly higher earned equity/total capital mix rations than non-dividend payers. The coefficients of RE/TE are positive and significant for 19 out of the 21 years of our sample period.

The effect of investment opportunities on the likelihood to pay dividends is less homogeneous during various years of the sample period. The asset growth ratio is positive (negative) and significant for 5 (2) years out of 21 years under consideration. Similarly, market to book ratio remains positive (negative) and significant only for 3 (4) years.

Our results on the characteristics of dividend payers and non-payers are consistent with prior literature [e.g., Fama and French (2001), Denis and Osobov (2008), Twu (2010)]: larger and more profitable firms are more likely to pay dividends. The payment of dividends by more profitable and aged firms with high RE/TE ratios is consistent with the proposition of Jensen (1986) regarding the role of dividends in controlling the agency costs of free cash flow. Similarly, these findings are consistent with the life cycle theory of dividends that predicts that new and young firms have greater investment opportunities and therefore need to retain earnings for tapping these opportunities. On the other hand, large and profitable firms have few investment opportunities and thus are capable to pay dividends. However, these findings are inconsistent with signaling theory of dividends that suggests that dividends are used as a tool to convey inside information to outsiders. In as much as they face greater information asymmetry, young, less profitable and small firms should be dividend payers. On the other hand because they are followed by relatively large number of analysts and are much exposed to the outside world; large, profitable and old firms should not pay dividends. Our results report the opposite.

Summary

Our evidence reveals that the likelihood of paying dividends is associated with firm size, growth opportunities and profitability[30]. Like Denis and Osobov (2008), we find that the likelihood of paying dividends is strongly and positively associated with the ratio of retained earnings to equity. In addition, we find that dividend payers are significantly older than dividend non-payers.

[30] Denis and Osobov (2008), Benito and Young (2003), Ferris, Sen, and Yui (2006), and Eije and Megginson (2008) also report similar findings.

The impact of age, size and earned-to-contributed capital mix (retained earnings) on dividend payment policies casts doubt on the importance of signaling as a first-order determinant of dividend policy. Small size firms are ideal candidates for dividend signaling because large firms are, usually, extensively covered by financial analysts and, therefore, small firms are in greater need to use dividend payment as a signal to convey their inside information to outsiders. Yet, dividend payers are the largest and most profitable firms and smaller firms are precisely non-payers.

Table 12: Characteristics of dividend payers

Annual logit regressions, using all firms present in the sample, aim to explain which firms pay dividends. Dependent variable equals 1 if a firm pays dividends and 0 if it does not pay. Size is measured as total assets of firm *i* of country *C* in year *t* divided by average total assets of all firms of country *C* in the year 2010. Asset growth is the proxy for investment opportunities. It is equal to dA_t/A_t where $dA_t = A_t - A_{t-1}$. A_t stands for total assets at the end of the year t. M/B, RE, TE and EBIT stand for market to book ratio, retained earnings, total owners' equity, earnings before interest and taxes. Age of a firm is equal to the number of year since its incorporation. Borrowing ratio equals total debt divided by common equity.

Variables	1990	1991	1992	199	1994	1995	199	1997	1998	1999	2000	2001	2002	2003	2004	2005	200	2007	2008	200	2010
Size	-	0.20	0.33***	0.37**	0.93***	0.97***	0.80**	1.17***	0.81***	0.92**	0.56***	0.35***	0.25***	0.38**	0.41***	0.47***	0.46**	0.30***	0.34***	0.14**	0.21***
	(0.64	(0.58)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)
Asset Growth	0.30	0.91	1.26**	1.00*	2.28***	1.22**	0.2	-0.30	-0.20	-0.39	-1.01***	-0.27	0.22	0.10	-0.24	-0.17	-	0.41***	-0.26*	0.1	0.07
	(0.80	(0.27)	(0.01)	(0.02	(0.00)	(0.01)	(0.47	(0.49)	(0.48)	(0.11)	(0.00)	(0.12)	(0.21)	(0.36	(0.18)	(0.37)	(0.89	(0.00)	(0.05)	(0.23	(0.79)
M/B	-	0.02	-0.02	0.0	0.06**	0.02	-	0.00	-0.03**	-	-0.02**	-0.01	0.01**	0.00	0.00	-0.01	-	-0.00	0.02	0.03*	0.00
	(0.14	(0.55)	(0.50)	(0.56	(0.03)	(0.19)	(0.25	(0.90)	(0.04)	(0.00)	(0.01)	(0.47)	(0.04)	(0.32	(0.21)	(0.20)	(0.00	(0.30)	(0.212)	(0.01	(0.43)
RE_t/TE_t	2.08*	-0.03	0.14	0.2	0.08	0.34***	0.0	0.40***	0.24**	0.23**	0.63***	0.23***	0.35***	0.06**	0.07***	0.22***	0.17**	0.01	0.50***	0.23**	0.28***
	(0.03	(0.74)	(0.33)	(0.27	(0.44)	(0.00)	(0.82	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.39)	(0.00)	(0.00	(0.00)
$EBIT_t/A_t$	22.11**	17.60***	14.31***	16.63**	13.85***	13.13***	11.73**	14.01***	10.34***	9.34***	10.33***	9.65***	5.40***	8.48**	7.90***	11.48***	10.77**	6.65***	8.39***	8.75**	10.49***
	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)
Borrowing	0.0	-0.00**	-0.00	-	-0.00	-0.00**	-	-0.00	-0.00	0.00*	0.00***	0.00***	0.00***	(0.00	(0.00)	0.00***	0.00**	0.00	0.00***	(0.00	0.00
ratio	(0.18	(0.04)	(0.14)	(0.00	(0.16)	(0.02)	(0.02	(0.57)	(0.53)	(0.09)	(0.00)	(0.00)	(0.00)	(0.56	(0.13)	(0.00)	(0.00	(0.11)	(0.00)	(0.56	(0.21)
Age	-	0.06	0.31**	0.33*	0.47***	0.43***	0.35**	0.50***	0.51***	0.52***	0.62***	0.67***	0.81***	0.76**	0.85***	0.81***	0.87**	1.25***	0.94***	0.99**	1.07***
	(0.70	(0.83)	(0.03)	(0.01	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)
Constant	-	0.34	-0.11	-	-0.48*	-0.36	0.0	-0.61**	-0.18	-0.33*	-1.08***	-1.06***	-1.27***	-	-1.42***	-1.74***	-	-2.11***	-2.21***	-	-2.31***
	(0.48	(0.55)	(0.68)	(0.31	(0.07)	(0.17)	(0.79	(0.04)	(0.31)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)	(0.00)	(0.00	(0.00)
Observations	167	284	882	107	1171	1234	131	1325	1167	1776	2253	2462	2652	267	2763	2927	304	2689	2987	285	2763
Pseudo R^2	0.33	0.310	0.255	0.301	0.268	0.278	0.22	0.303	0.283	0.265	0.301	0.301	0.242	0.25	0.240	0.310	0.30	0.267	0.285	0.267	0.279
LR chi^2	48.65	93.22	244.1	350.9	301.3	326.9	289.	372.4	496.0	537.7	876.9	1017	888.5	954.	915.7	1254	130	993.4	1178	1050	1066

Table 12 (without Age and borrowing ratio)

Annual logit regressions to explain which firms pay dividends from 1990 to 2010 using all firms present in the sample. Dependent variable is 1 if a firm is a dividend payer in the year *t* and 0 if it is a non-payer. Size is measured as total assets of firm *i* of country *c* in year t divided by average total assets of all firms of country *c* in the year 2010. Asset growth is a proxy for investment opportunities. It is equal to dA_t/A_t where dA_t is equal to A_t - A_{t-1}. A_t stands for total assets at the end of the year t. M/B, RE, TE and EBIT stand for market to book ratio, retained earnings, total equity, earnings before interest and taxes.

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Size	-0.09	0.18	0.29***	0.32***	0.52***	0.49***	0.49***	0.81***	0.62***	0.69***	0.72***	0.33***	0.24***	0.39***	0.40***	0.52***	0.56***	0.39***	0.39***	0.15***	0.21***
	(0.85)	(0.57)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Growth	0.28	0.76	1.23**	1.35***	1.69***	1.38***	0.41	-0.59	-0.20	-0.58**	-1.48***	-0.71***	-0.01	-0.06	-0.74***	-0.76***	-0.42***	0.07	0.50***	0.09	-0.29
	(0.79)	(0.32)	(0.01)	(0.00)	(0.00)	(0.00)	(0.24)	(0.11)	(0.45)	(0.01)	(0.00)	(0.00)	(0.93)	(0.64)	(0.00)	(0.00)	(0.00)	(0.61)	(0.00)	(0.46)	(0.26)
M/B	-0.03	0.01	-0.05	0.00	0.04	0.00	-0.01	-0.00	-0.03***	-0.03***	-0.03***	-0.00	0.02**	0.00	0.00	-0.00	-0.00	-0.00	0.02	0.03**	0.01
	(0.55)	(0.48)	(0.15)	(0.77)	(0.16)	(0.64)	(0.40)	(0.98)	(0.00)	(0.00)	(0.00)	(0.49)	(0.03)	(0.92)	(0.19)	(0.48)	(0.13)	(0.28)	(0.16)	(0.01)	(0.31)
RE_t/TE_t	2.65***	0.07	0.44***	0.41***	0.25**	0.32***	0.16**	0.40***	0.26***	0.16***	0.45***	0.47***	0.33***	0.06**	0.13***	0.09**	0.07***	0.01	0.48***	0.30***	0.34***
	(0.00)	(0.35)	(0.00)	(0.00)	(0.01)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.04)	(0.00)	(0.01)	(0.00)	(0.51)	(0.00)	(0.00)	(0.00)
$EBIT_t/A_t$	19.47***	19.74***	15.86***	17.18***	14.83***	13.89***	12.24***	14.44***	10.90***	9.83***	10.99***	10.34***	5.89***	9.07***	8.62***	11.46***	10.52***	8.03***	8.51***	9.17***	10.77***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Constant	-1.36*	-0.03	0.00	-0.16	0.02	0.11	0.34***	0.11	0.45***	0.49***	-0.04	-0.35***	0.21***	0.26***	-0.35***	-0.49***	-0.67***	0.50***	0.88***	0.69***	-0.80***
	(0.06)	(0.87)	(0.97)	(0.33)	(0.89)	(0.39)	(0.00)	(0.40)	(0.00)	(0.00)	(0.67)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	195	334	988	1180	1279	1347	1429	1536	1788	1873	2360	2530	2679	2688	2783	2962	3069	3107	2970	2856	2647
Pseudo R^2	0.31	0.28	0.25	0.289	0.24	0.24	0.21	0.28	0.26	0.24	0.28	0.27	0.21	0.23	0.21	0.27	0.27	0.23	0.25	0.24	0.24
LR chi^2	54.18	100.2	284.1	376.6	296.4	318.8	298.2	405.4	489.3	516.2	879.4	980.8	759.4	867.0	800.8	1106	1142	1008	1025	953.9	847.7

*** p<0.01, ** p<0.05, * p<0.1

12. Changing characteristics and propensity to pay dividends

In this section we quantify the role of changing firm characteristics in explaining the reduction in the proportion of dividend payers over the sample period. Following Denis and Osobov (2008), we first estimate logit models similar to those in Table 12 that relate the probability of paying dividends to firm age, borrowing ratio, firm size, growth opportunities, profitability, and the proportion of retained earnings for each year of the base period starting from 1990 and ending in 1997. Then, using the average annual coefficients from the base period, we estimate dividend payment probabilities[31] for each year of the forecast period (1998-2010) by applying the average coefficients to the values of the explanatory variables for each firm and each year. The expected proportion of dividend payers is obtained by averaging the individual probabilities across firms in each year of the forecast period and multiplying the results by one hundred.

Fig. 10 suggests that the expected proportion of dividend payers declines from 77.76% in 1998 to 66.9% in 2010. During the recessionary periods of 2001-02 and 2008-09, the proportion of expected payers falls sharply but, and soon after these years, they move upward. Evidence of the overall decline in the expected proportion of dividend payers is consistent with our previous findings that the shift in the characteristics of publicly traded companies accounts for a large proportion of the decline in the dividend payers. In Fig. 10, the curve "Difference (%)" measures the changes in the propensity to pay dividends. The curve is measured as the spread between the curves of expected

[31] We changed the base periods and forecast periods and found the declining propensity each time. The results are not reported here.

(%) and actual (%) payers. That is, controlling for changes in the characteristics of firms, changes in the unexpected proportion of payers reflect changes in the propensity to pay dividends. As in Table 13, these differences are smaller in the initial years but grow later on.

Table 13

Estimates of the effect of changing characteristics and propensity to pay on the percent of frms paying dividends (Full sample)

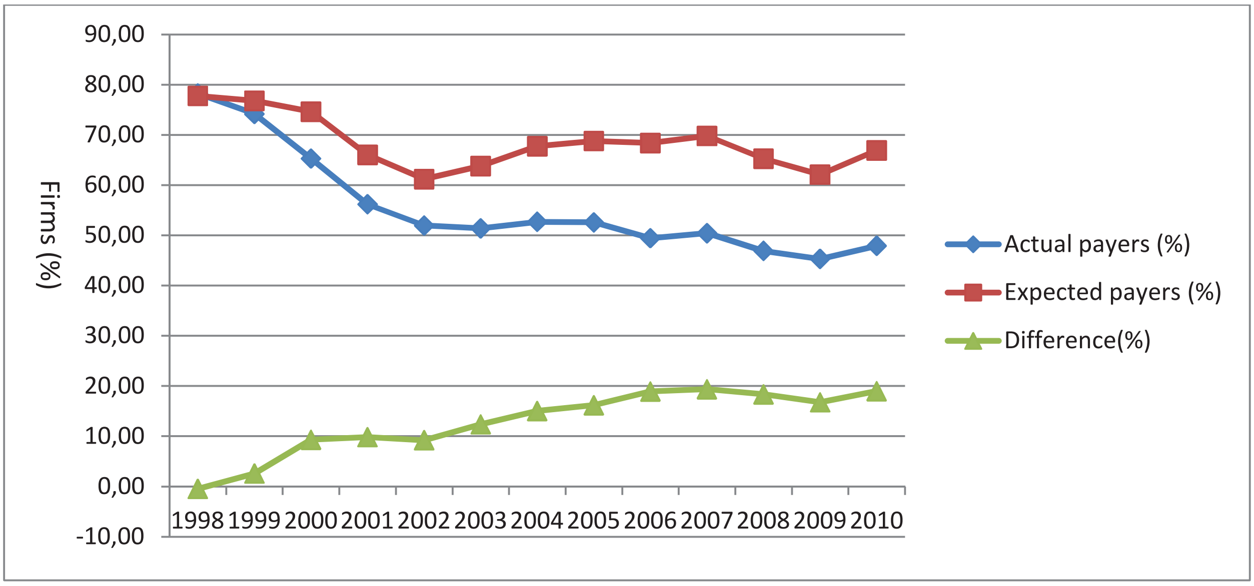
From logit regressions we estimate the probability of dividend payment of each firm using the period 1990-97 as base period. The forecast period is 1998-2010. The explanatory variables are asset growth (dA_t/A_t), size, market to book ratio (V_t/A_t), earned equity to book value of shareholders' equity (RE_t/TE_t), age, borrowing (Debt/Equity) ratio and earnings before interest and taxes to total assets ($EBIT_t/TA_t$). Size is measured as total assets of a firm i of country c at the end of year t dividend by average total assets of all firms of country c during the year 2010. "Firms" stands for the number of total sample firms in a year or the average for a period. "Actual Payers%" refers to the proportion of firms that pay dividends. "Expected payers %" for each year *t* is estimated by applying the average logit regression coefficients for the base period 1990-97 to the values of the explanatory variables for each firm for year *t* to estimate probability that each firm would pay dividends in subsequent years, summing over firms, dividing by the number of firms, and then multiplying by 100. Column "Difference (%)" stands for Expected payers (%) – Actual payers(%).

Year	Firms	Actual payers (%)	Expected payers (%)	Difference(%)
1990-97	1241	77.80		
1998	1671	78.22	77.76	-0.46
1999	1777	74.17	76.77	2.60
2000	2253	65.29	74.60	9.31
2001	2463	56.19	66.03	9.84
2002	2656	51.96	61.19	9.23
2003	2677	51.40	63.79	12.39
2004	2767	52.69	67.74	15.05
2005	2928	52.60	68.78	16.18
2006	3052	49.44	68.38	18.94
2007	2689	50.43	69.79	19.36
2008	2987	46.90	65.26	18.36
2009	2856	45.31	62.09	16.78
2010	2763	47.92	66.90	18.98

The *Difference (%)* between Actual payers (Mean = 55.57, S.Deviation 10.42) and *Expected payers* (Mean = 68.39, S.Deviation 5.23) is statistically significant at 1%.

Fig. 10.

Changing characteristics and propensity to pay (Full sample)



13. Constant composition sample

Unlike the full sample, the constant composition sample consists of only those firms that are present in both the bench-mark and forecast periods. Here we investigate whether these are only the newly added firms that have the characteristics of dividend payers but omit dividend payments, or whether the firms that are present in the initial years of our sample have also opted for non-payment although they should be dividend payers in the latter years of the sample period. For this purpose we estimate changes in the characteristics of firms and the propensity to pay dividends when the sample is limited to those firms in the forecast period (1998–2010) that are also present in the benchmark period (1993–1997). We take the base period from 1993 instead of 1990 because there are very few firms that are available in the year 1992 or before and exist till 2010.

Fig. 11 shows that the proportion of expected dividend payers follows a declining trend only in the periods of economic recessions. During the other years they follow a rising trend. This means that the characteristics of constant composition sample do not experience a noticeable change. At the same time, the “Difference (%)” curve follows a rising trend, suggesting a decline in the propensity to pay dividends by the firms over time. However, the slope of the curve is less steep than that of the Fig. 10 (based on full sample firms). These findings suggest a decline in the propensity to the pay dividends exists for the old listed payers, but its intensity is much smaller than that of the firms newly added to the sample during the sample period. These findings suggest that a relatively small proportion of dividend payers of the constant composition sample abandon dividend payments, when they have the characteristics typical of dividend payers.

Table 14

Estimates of the effect of changing characteristics and propensity to pay on the proportion of firms paying dividends (Constant composition sample)

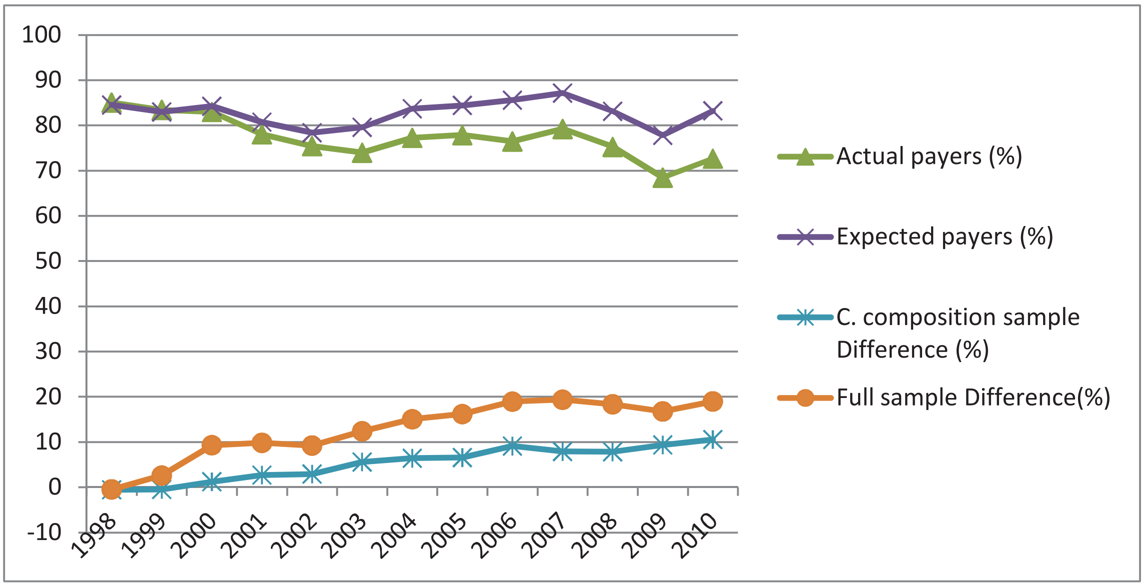
From Logit regressions we estimate the probability of dividend payment of each firm using the period 1993-97 as base period. The forecast period is 1998-2010. The explanatory variables are asset growth (dA_t/A_t), size, market to book ratio (V_t/A_t), earned equity to book value of shareholders' equity (RE_t/TE_t), age, borrowing (Debt/Equity) ratio and earnings before interest and taxes to total assets ($EBIT_t/TA_t$). Size is measured as total assets of a firm i of country c at the end of year t dividend by average total assets of all firms of country c during the year 2010. "Firms" stands for the number of total firms that exist in the datastream during the benchmark as well as forecast period. "Actual Payers%" refers to the proportion of the "Firms" that pay dividends. "Expected payers %" for each year *t* is estimated by applying the average logit regression coefficients for the base period 1993-97 to the values of the explanatory variables for each firm for year *t* to estimate probability that each firm would pay dividends in subsequent years, summing over firms, dividing by the number of firms, and then multiplying by 100. Column "Difference (%)" stands for Expected payers(%) – Actual payers(%).

Year	Firms	Actual payers	Actual payers (%)	Expected payers (%)	Difference (%)
1993-97	741	615	82.99		
1998	629	535	85.06	84.51	-0.55
1999	628	524	83.44	82.97	-0.47
2000	635	527	82.99	84.23	1.24
2001	642	501	78.04	80.74	2.70
2002	639	482	75.43	78.37	2.94
2003	642	475	73.99	79.58	5.59
2004	642	496	77.26	83.68	6.42
2005	646	503	77.86	84.43	6.57
2006	650	497	76.46	85.58	9.12
2007	626	496	79.23	87.14	7.91
2008	651	490	75.27	83.11	7.84
2009	653	447	68.45	77.82	9.37
2010	651	473	72.66	83.22	10.56

The *Difference (%)* between Actual payers (Mean = 55.57, S.Deviation 10.42) and *Expected payers* (Mean = 68.39, S.Deviation 5.23) is statistically significant at 1%.

Fig. 11.

Changing characteristics and propensity to pay (Constant composition sample)



The difference between *c. composition sample Difference %* (Mean = 5.32, S.Deviation 3.77) and *Full sample Difference%* (Mean = 12.81, S.Deviation 6.42) is statistically significant at 1%.

Summary

Both lower propensity to pay dividends and changing firms' characteristics are important in explaining the decline in the proportion of dividend payers. Using a constant composition sample for the period 1993-2010 and the full sample for the period 1990-2010, and controlling for size, growth opportunities, profitability, age, proportion of retained earnings in the equity, and debt to equity ratio, we find evidence in support of a decline in the propensity to pay dividends. Shifts in the characteristics of publicly traded companies, due to a large influx of new, young and less profitable firms in the database, account for a large proportion of the decline in dividend payers. Declines in the propensity to pay dividends are driven primarily by the failure of newly added firms to initiate dividends when expected to do so. Dividend abandonments of old firms also contribute. In short, the declining propensity to pay dividends is tied to the addition of small, less profitable firms with more investment opportunities (never paid firms have the highest investment opportunities) than the typical listed firm at the beginning of the sample.

14. Dividend policies in UK, France and Germany

In this section we analyze the characteristics of dividend payers and non-payers, and changes in the propensity to pay dividends of firms headquartered in UK, France and Germany. This will help us determine whether determinants of dividend policies are the same in all countries and whether firms in these countries exhibit the same declining propensity to pay dividends as the one demonstrated for the full sample. We selected these three countries, first because they cover more than 63% of our sample firms. Second, because France and Germany are civil law countries and UK is a common law country. These analyses will help us know whether being headquartered in a common law country affects dividend policy of firms or not. Eije and Megginson (2006) report that companies headquartered in a common law country are more likely to pay dividends.

Table 15 reports average characteristics of dividend payers and non-payers for UK, France and Germany. For US firms, Fama and French (2001) report that dividend payers are larger, more profitable, and have less growth opportunities than dividend non-payers. Denis and Osobov (2008), however, report that in Germany and France dividend payers tend to have more growth opportunities than dividend non-payers. They show that in the UK non-payers have greater investment opportunities than dividend payers.

Consistent with Fama and French (2001) and Denis and Osobov (2008), we find that dividend payers tend to be larger and more profitable than non-payers. Similarly, consistent with Denis and Osobov (2008), we show that in Germany and France dividend payers tend to have more investment opportunities than non-payers; while in UK payers have less growth opportunities than non-payers.

DeAngelo, DeAngelo, and Stulz (2006) and Denis and Osobov (2008) find that the propensity to pay dividends is strongly associated with the earned-to-contributed equity mix: the higher the proportion of a firm's equity that is internally generated, the higher the likelihood to be dividend payer. Consistent with these authors we find that dividend payers tend to have higher ratios of retained earnings-to-total equity than non-payers. Furthermore, Table 15 reports that dividend non-payers in France and Germany tend to have higher borrowing ratios than payers. Dividend payers are much older than non-payers.

Table 15

Characteristics of dividend payers and non-payers (UK, France, and Germany)

"Payers" pay dividends in year *t*; "Non-payers" do not. Reported values are averages of annual median values for the measures of profitability, growth opportunities, firm size, earned-to-contributed capital mix, financial risk and age. The sample period is 1990-2010. $EBIT_t$, RE_t, TE_t, EPS_t, and P stand for earnings before interest and taxes, retained earnings, book value of shareholders' equity, net earnings per share, and stock price at the end of fiscal year *t*. Assets growth is equal to $dA_t/A_{t.}$, where dA_t is a proxy for investment which is equal to $A_t - A_{t-1}$. Size is measured as total assets in million Euros. We exclude firms having –ive common stock holders equity (TE).

Country	Assets (€million)	Asset Growth	M/B	RE/TE	EBIT/TA	Borrowing Ratio	Age	EPS/P
France								
Payers	329.09	6.3	1.66	80.74	8.20	55.0	45.6	6.40
Non-payers	76.33	1.21	1.42	72.37	2.46	74.3	31.4	-1.22
Germany								
Payers	308.66	5.82	2.04	75.49	8.37	52.63	76	5.35
Non-payers	84.80	-0.12	1.72	47.19	1.19	77.80	53	-3.23
UK								
Payers	141.61	6.74	1.80	88.71	9.87	33.11	28	6.59
Non-payers	17.35	2.82	1.88	65.13	-4.23	23.40	10	-7.30

To measure the marginal effects of profitability, growth opportunities, earned-to-contributed equity mix, and the size on the probability of dividend payments in each country, we estimate annual logit regressions. The dependent variable equals one if a firm pays dividends in year *t* and zero otherwise. Appendix 6, 7, and 8 report intercept and slope coefficients from annual regressions for UK, France and Germany respectively. Consistent with our univariate findings, the likelihood of paying dividends is positively associated with firm size, earnings, and the earned-to-contributed equity mix in all three countries. Similarly, consistent with Table 15, UK dividend payers tend to have lower investment opportunities than non-payers. However, the relationship between dividend payment and investment opportunities is not very clear in France and Germany.

Denis and Osobov (2008) focus on the dividend paying trends in six countries: US, UK, France, Canada, and Germany, and Japan over the period 1989 to 2002. After controlling for the empirical determinants of dividends and the evolution of these characteristics over time, they find some hints in support of the phenomenon of declining propensity to pay dividends. These declines are primarily driven by the failure of new lists to initiate dividends when expected to do so. Here we quantify the relative roles of changing firm characteristics, and the declining propensity to pay dividends in explaining the reduction in the proportion of dividend payers in UK, France, and Germany over our sample period. Following Denis and Osobov (2008), we first estimate logit models similar to those in appendix 6 for each of the three countries under study for a base period of 1990–1997. Then we take average annual coefficients from the base period, and compute the expected number of payers for each year of the forecast period by applying the average logit regression coefficients of the base period 1990-97 to the values of the explanatory variables for each firm in each year of the forecast period. The expected proportion of dividend payers is obtained by averaging the individual probabilities across firms in each year and multiplying the result by one hundred.

The changes in the column “Expected %” in Table 16 indicate changes in firm characteristics over time and thus the expected changes in the proportion of dividend payers based on these characteristics. Similarly, the column “Expected – Actual” measures report the proportion decline in dividend payers due to changes in propensity to pay dividends.

Table 16 reports that, for all the three countries, the decline in the expected dividend payers is relatively lower than the change in the “expected-actual” column. These findings suggest that keeping firm characteristics constant, interest in dividend payments decline over time. There could be two possible reasons for this increase in the proportion of unexpected non-payers. Either existing old payers capable of paying dividends abandon dividend payments, or firms newly added to the database fail to initiate dividends. Our previous detailed analyses suggest that the primary reason of the increase in the proportion of unexpected non-payers is the newly added firms to the sample. Denis and Osobov (2008) also suggest similar results.

Table 16
Estimates of the effect of changing characteristics and propensity to pay on the percent of firms paying dividends

From Logit regressions we estimate the probability of dividend payment of each firm using the 1990-97 period as base period. The forecast period is 1998-2010. The explanatory variables are growth rate of assets (dA_t/A_t), firm size, market to book ratio (V_t/A_t), earned equity to book value of shareholders' equity (RE_t/TE_t), age, borrowing (Debt/Equity) ratio and earnings before interest and taxes to total assets ($EBIT_t/TA_t$). Size is measured as total assets of a firm i of country c at the end of year t dividend by average total assets of all firms of country c during the year 2010.

"Firms" stands for the number of total firms in a year or the average for a period. "Actual Payers%" refers to the proportion of firms that pay dividends. "Expected payers %" for each year *t* is estimated by applying the average logit regression coefficients for the base period 1990-97 to the values of the explanatory variables for each firm for year *t* to estimate probability that each firm would pay dividends in subsequent years, summing over firms, dividing by the number of firms, and then multiplying by 100. Column "Difference (%)" stands for Expected payers(%) – Actual payers(%).

Panel A: UK

Year	Firms	Payers	Acutal Percent	Expected Percent	Expected -Actual
1990-97	382.12	318.75	82.79		
1998	685	523	76.35	85.7	9.3
1999	727	532	73.18	86.5	13.3
2000	823	541	65.74	82.5	16.8
2001	941	546	58.02	75.3	17.3
2002	1021	554	54.26	71.5	17.2
2003	991	529	53.38	75.7	22.3
2004	1074	547	50.93	79.2	28.3
2005	1148	552	48.08	76.6	28.5
2006	1220	536	43.93	75.2	31.2
2007	1237	535	43.25	74.1	30.8
2008	1155	501	43.38	73.5	30.1
2009	1045	429	41.05	75.0	34.0
2010	997	411	41.22	77.5	36.3

Panel B: France

Year	Firms	Payers	Acutal Percent	Expected Percent	Expected -Actual
1991-97	206.4	164.7	79.8.		
1998	224	186	83.0	95.5	12.5
1999	232	181	78.0	91.8	13.8
2000	383	257	67.1	88.8	21.7
2001	406	248	61.1	85.5	24.4
2002	406	247	60.8	81.3	20.4
2003	382	228	59.7	83.2	23.6
2004	367	229	62.4	87.7	25.3
2005	372	245	65.9	86.6	20.7
2006	372	233	62.6	89.8	27.2
2007	362	235	64.9	88.4	23.5
2008	353	213	60.3	85.3	24.9
2009	343	213	62.1	83.7	21.6
2010	337	218	64.7	86.6	22.0

Panel C: Germany

Year	Firms	Payers	Acutal Percent	Expected Percent	Expected -Actual
1990-97	142	95.5	68.9		
1998	184	138	75.0	94.6	19.6
1999	207	147	71.0	91.3	20.3
2000	252	141	56.0	91.7	35.7
2001	273	134	49.1	83.5	34.4
2002	290	120	41.4	76.6	35.2
2003	290	121	41.7	80.7	39.0
2004	288	129	44.8	83.3	38.5
2005	298	137	46.0	87.9	41.9
2006	305	141	46.2	89.2	43.0
2007	315	163	51.7	88.6	36.8
2008	311	150	48.2	85.5	37.3
2009	305	152	49.8	83.0	33.1
2010	298	160	53.7	87.9	34.2

15. Conclusion

The goal of the study was to (i) determine whether dividends are disappearing, and (ii) analyze the causes for decline in the proportion of dividend payers. To answer the second question we needed to know the determinants of dividends payments.

First, unlike the results reported by Fama and French (2001) for the US, in Europe the number of dividend payers does not decrease over our sample period, but the proportion of dividend payers declines.

The primary reason for the decline in the proportion of dividend payers is the influx into the database of a large number of new firms not previously covered by the database. Once the huge influx of new firms slows, the decline in the proportion of dividend payers stops. These newly added firms will mature and will adopt the characteristics of dividend payers so that we will observe a rise in the proportion of dividend payers. The proportion of dividend initiation by former non-payers is greater than the proportion of dividend abandonments by former payers. More precisely, dividend payers are more likely to stick to their dividend payment policies than are non-payers. Non-payers get delisted at a higher rate than do payers. These factors lead to an increase in the proportion of dividend payers.

In each year *t* of our sample period, the number of firms that increase dividends always exceeds the number of firms that decrease dividend payments. This suggests that the importance of dividends does not decline over time. On the basis of these findings we conclude that the decline in the proportion of payers is temporary. We expect an increasing trend in the proportion of dividend payers after the recovery of firms from the effects of 2008's economic recession.

After controlling for size, investment opportunities, profitability, leverage, and age we find that dividend non-payers tend to be distressed. They are small, young, and less profitable, having high borrowing ratio and low investment opportunities. They have the lowest earned -to- contributed capital (RE/TE) ratio among all dividend groups, except regular non-payers. Dividend payers are, in turn, the largest, oldest, most profitable, having the highest RE/TE ratios among all dividend groups, except regular payers.

After controlling for the characteristics of firms and the evolution of these characteristics over time, we find that a very small number of former payers abandon dividend payments when they have the attributes of payers. That is, the actual number of dividend payers is smaller than the actual number of dividend payers in forecast years of our sample period. The majority of propensity declines are driven by the failure of newly added firms to initiate dividends when expected to do so. Thus, we conclude that there has been no meaningful change in firm dividend policies over our sample period.

Furthermore, our results show that financial crises have a very clear effect on dividend payment decisions[32]. During crises, earnings decline and firms start to omit dividends. Following crisis, both the number of positive earning firms and positive dividend payers starts to grow.

By showing that old, large and profitable firms with high earned/ total equity ratios are more likely to pay dividends, our findings support the life cycle explanation of firms' dividend policies. Life cycle theory suggests that young firms rely more on new equity (or contributed equity) for early growth while mature firms rely more on self-financing.

In sum, our findings are inconsistent with prior studies that report that dividends are disappearing.

[32] Global financial crises in 2001-02 and in 2008-09 have a significant and negative effect on dividend payment decisions.

Chapter II: Why do firms change their dividend policy? Evidence from Europe

1. Introduction

What are the factors that motivate lasting changes in dividend policies, i.e. changes that lead a regular dividend payer to stop payments permanently, or conversely those that lead a never paid firm to adopt a policy of regular dividend payments?

Since publication of the original Miller and Modigliani (1961) irrelevance proposition, several theories have been developed to explain the motivation behind dividend policies. Signaling models [Bhattacharya (1979), John and Williams (1985), Miller and Rock (1985)] state that dividends aim to convey information about the future prospects of firms, suggesting a positive relationship between dividend changes and changes in future earnings. In sharp contrast to the signaling theory, the life cycle theory of dividends [DeAngelo et al. (2006)] predicts that firms start paying dividends when they stop growing, i.e. when their future growth is expected to decline and their profitability to remain steady or decline, therefore suggesting lack of association or a negative relationship between dividend changes and changes in future earnings. Agency explanations [Easterbrook, (1984), Jensen (1986)] posit that firms use dividends to mitigate agency problems between insiders and outsiders. Venkatesh (1989), Dyl and Weigand (1998), Grullon et al. (2002) hypothesize that changes in dividend policy convey information about changes in firms' risk.

Empirical research finds evidence both in support of and contrary to these different theories of dividends. Blau and Fuller (2008) state that existing theories do not help understand why some firms never pay dividends, while others consistently pay them. According to Black (1976) “the harder we look at the dividend picture, the more it seems like a puzzle with pieces that just don’t fit together”.

We extend the empirical dividend literature by examining firms from 21 European countries over the period 1990-2010. Unlike previous research[33], rather than analyzing annual firm dividend decisions, we focus on dividend policy switches. A positive switcher is a firm that initiates dividend payments, after having not paid dividends before over the sample period, and never omits them afterwards. Similarly, a negative switcher permanently stops paying dividends from the switch year after having paid dividends regularly in the pre-switch years.

According to Bulan et al. (2007) within the context of firm’s life cycle, durable dividend initiation (positive switches) is an important policy change. This is the same for lasting dividend omissions (negative switches) since firms display strong reluctance to dividend omissions and dividend cuts. Twu (2010) suggests that managers are reluctant to make changes in their dividend policy. He named this behavior as dividend stickiness. DeAngelo and DeAngelo (1990) report that managers with long histories of dividend payments avoid dividend omissions, perhaps because such omissions would tag them as unsuccessful managers whose policies could not produce sufficient cash to pay dividends. Brav *et al.* (2005) conduct survey and field interviews of 407 chief financial officers and find that managers like to maintain the existing level of dividends and do not like to cut dividends except in extreme circumstances. Their analysis indicates that maintaining the dividend level is a priority on par with investment decisions. This perceived inflexibility of managers makes a dividend policy switch an important milestone in a firm’s life. Therefore, at the time of a dividend policy switch

[33] See, for instance, Fama and French (2001), DeAngelo, DeAngelo, and Stulz (2006), Denis and Osobov (2008) ect.

we expect some important changes in the characteristics of firms that dictate dividend policy.

The goal of the study is to investigate the determinants that may explain significant changes in firm dividend policies. To this end, using dividend policy theories, we compare the characteristics of positive switchers to those of negative switchers. We also compare the characteristics of switchers to those of non-switchers.

Regular dividend payers and regular non-payers are labeled as non-switchers. Regular payers and regular non-payers are firms that have never omitted or have never paid dividends during our sample period. A negative switcher is a firm that has never omitted dividend payments during its Datastream history before the year of switch, and never paid dividends after the switch. In contrast, a positive switcher is a firm that has never paid dividends during its Datastream history before the year of switch, and never omitted dividends after the year of switch. We use regular dividend payers as control firms against negative switchers. Both regular payers and negative switchers were consistently paying dividends till the year of switch. In the switch year negative switchers, however, change their dividend policy but regular payers do not. Thus we compare the characteristics of both regular payers and negative switchers around the switch year to track any extraordinary change in the characteristics of negative switchers that did not take place in their peer firms. Similarly, positive switchers and regular non-payers were sharing the same dividend group before the year of the switch. Therefore, we use regular dividend payers as control firms against positive switchers.

This analysis will help us assess how the characteristics of switchers evolve during a seven year window (T-3 to T+3) around the switch in order to highlight the factors that motivate firms to change their dividend policy. In addition, this analysis will help us determine the timing of dividend changes in relation to changes in earnings, to see whether earnings changes precede dividend changes as suggested by Lintner (1956), or whether changes in dividends precede changes in earnings as suggested by the signaling theory.

Most previous dividend policy literature focuses on annual dividend payments only. It investigates either changes in the amounts paid from one year to another or payment or non-payment decisions. By ignoring the long-term pattern of dividend payments, these studies do not consider dividend policy as such. To our knowledge, by investigating the characteristics of dividend switchers such as they are defined here, this study is the first to examine factors affecting firm long term dividend policy.

Studies similar to this one are those that investigate the determinants of dividend initiations and omissions[34]. But, the definitions of initiators and omitters used in these studies allow a firm to be included in the sample as an initiator at one time and as an omitter at another time during the same sample period. For example according to Baker and Wurgler (2004) and Goergen et al. (2005) a firm is an initiator even if it resumes dividend payments after a single year omission**.** Similarly, Goergen et al. (2005) define a dividend omitter as a firm that omits dividends after a single year dividend payment. They do not consider the long term pre- and post-event dividend payment behavior of firms. In contrast, our definition of switchers restricts our sample to those firms that change their dividend policy only once during the sample period. Furthermore, previous studies focus either on dividend initiation or dividend omission. By analyzing both positive and negative switchers, we will be able to determine whether the same factors are responsible for dividend abandonments and initiations.

Dyl and Weigand (1998) observe an increasing pattern of earnings during the pre-dividend period, followed by more stable level of earnings during the post-dividend period. Healy and Palepu (1988) find that firms that initiate dividend payments have positive earnings changes both before and after dividend initiation, while those

[34]We have not identified any studies of dividend initiations and omissions conducted on European firms.

omitting dividend payments exhibit negative earnings changes. Focusing on newly listed firms, Lipson *et al.* (1998) compare firms that initiate dividends to those that do not. They report that dividend initiations precede earnings increases. Earnings surprises in initiating firms are larger than those in non-initiating firms. In contrast, Bulan *et al*. (2007) find no significant changes in the profitability of initiators compared to non-initiators in the six years surrounding initiation. They find no significant improvement in the growth of initiators around the year of initiation.

DeAngelo *et al.* (1992) report that firms tend to cut dividends after a period of poor operating performance. This action signals low levels of current and future earnings. Eije and Megginson (2006) show that rapidly growing companies are less likely to initiate dividend payments. Benito and Young (2003) suggest that larger companies are less likely to stop dividend payments than smaller ones. Payne (2011) and Eije and Megginson (2006) find that the likelihood of initiating dividend payments decreases with the firms' financial risk.

In this study, both univariate and multivariate results suggest that changes in past and current operating performance are the primary determinants in a firm's decision to change its dividend policy. Consistent with the findings of Benartzi *et al.* (1997) and Healy and Palepu (1988), our univariate tests show that profitability, investment opportunities, and retained earnings increase around positive switches. On the other hand, negative switchers experience a decline in profitability and asset growth, and an increase in financial risk around the switch year. During the pre-switch years we observe a substantial increase in profitability and asset growth of positive switchers, but profitability remains stable at a high level and asset growth follows a declining trend during the post-switch years. This behavior of positive switchers supports the life cycle theory of dividends that predicts that a firm will begin paying dividends when its ability to generate cash overtakes its growth opportunities. These findings are also consistent with the Lintner proposition (1956) that asserts that managers are reluctant to make dividend changes that might have to be reversed. In other words, managers change dividends when they expect a permanent change in earnings of their firms. According to the Lintner model: (i) earnings changes should lead to dividend changes; (ii) managers should consider expected future earnings before making any change in dividends; (iii) current dividends are predicated upon past dividends and current earnings. The dividend payment behavior of switchers and non-switchers, however, does not support the signaling theory of dividends that predicts a change in the future profitability in response to current change in dividends. Moreover, we find that the decision not to pay dividends by negative switchers and regular non-payers arises from significantly different circumstances.

Section 2 describes our sample selection procedure and methodology. Section 3 analyzes the characteristics of switchers and non-switchers. Section 4 provides information about firm age and the relation between earnings and firm growth for various dividend groups. Section 5 discusses the results in light of the main dividend theories. Section 6 concludes.

2. Data and methodology

2.1. Sample

Our initial sample consists of listed firms from 21 European countries[35]. Data was collected from 1990 to 2010. The firm-level data was obtained from Thomson Financial Worldscope, Datastream and Osiris databases. There were 11,524 firms in our initial

[35] Appendix I shows number of firms from each country for each dividend group

list. We excluded firms that were not covered by Datastream. We also eliminated firms classified as financials (codes that start with “40”) by Global Industry Classification Standard (GICS). To soften the impact of outliers, we winsorized the dataset[36]. **Table 1**

Number of Switchers and Non-switchers by Year

A positive switcher is a firm that has never paid dividends during its Datastream history before the year of switch, and never omitted dividends after the year of switch. A negative switcher is a firm that has never omitted dividend payments during its Datastream history before the year of switch, and never paid dividends after the switch. Regular payers/regular non-payers are firms that have never omitted/paid dividends during their Datastream history till 2010.

	Dividend non-switchers		Dividend Switchers	
Year	Regular non-payers	Regular payers	Positive switchers	Negative switchers
1990	11	102	--	--
1991	21	148	--	--
1992	48	438	--	--
1993	54	512	--	--
1994	68	532	--	--
1995	76	549	15	9
1996	98	565	12	8
1997	136	587	18	8
1998	245	639	5	9
1999	324	658	12	17
2000	547	758	9	30
2001	680	763	21	42
2002	799	784	25	41
2003	862	786	26	21
2004	952	768	38	22
2005	1070	753	63	19
2006	1128	711	50	34
2007	1131	692	47	8
2008	1050	664	--	--
2009	972	660	--	--
2010	903	650	--	--
Total	11175	12719	341	268

[36] Any observation that falls more than three standard deviations away from the mean of the data under consideration was considered an outlier.

Our final sample includes 4,645 firms with ordinary dividend data available on Datastream. Table 1 reports the number of observations per year in each dividend group.

From our primary samples of switchers, we construct matched samples of dividend non-switchers. Each dividend switcher is paired with a non-switcher from the same year and industry that is the closest in terms of total assets in the year of switch. This results in 340 year, size and industry matched non-switchers for 341 positive switchers, and 268 negative switchers along with 268 control firms for negative switchers[37]. For further verification, we use the full sample of control firms against switchers to estimate logit regressions. The full sample of control firms for positive switchers include all regular non-payers, while for negative switchers all firms defined as regular dividend payers are considered as control firms. Our sample contains 949 regular payers and 1488 regular non-payers.

2.2. Determinants of dividend policy switches

We retain size, growth opportunities, profitability, earned-to-contributed capital mix, and financial risk as potential determinants of dividend policy.

2.2.1. Size

The idea that firm size and dividend payout are positively correlated is generally accepted by financial economists. Large firms are more likely to be mature, less risky, more profitable, having a high retained earnings-to-total capital ratio. Thus they have easier access to capital markets for financing their business activities with lower transaction costs. This suggests that larger firms have greater flexibility in paying dividends. The life cycle theory of dividends predicts a positive relationship between

[37] For one positive switcher we do not find a size and industry matched non-switcher.

firm size and dividend payments. In contrast, being relatively more exposed to outsiders (getting more coverage from analysts, newspaper, and magazines, etc), large firms experience low information asymmetry. Therefore, from the signaling hypothesis point of view, dividend payments and company size might be negatively associated.

Sawicki (2005) reports that dividend payments can help monitor the performance of managers in large firms. That is, in a large firm, ownership is dispersed leading to high information asymmetry, thus decreasing shareholders' ability to monitor the firm's management. This results in inefficient control of management. Large payments of dividends force these firms to raise additional capital from markets to tap available investment opportunities. This leads to increased monitoring by new investors.

Smith and Watts (1992) suggest that the theoretical basis for the impact of size on dividend policy is weak. They consider that size should be regarded as a simple control variable, with no particular expected sign. However, empirical evidence largely supports the use of the size variable as a relevant characteristic of the firm's life cycle . Most of prior studies report a positive relationship between size and dividend payments. Fama and French (2001) find that dividend payers are twelve times larger than non-payers[38]. We measure a firm's size using its total assets (in Euros) at the end of year under consideration. Eije and Megginson (2006) demonstrate that an increase in the relative size percentile increases the propensity to pay dividends. DeAngelo, DeAngelo, and Skinner (2004) report that 100% of the firms with at least $1 billion in real earnings paid dividends in 1978, whereas 85.7% paid dividends in 2000.

2.2.2. Investment/Growth opportunities

The life cycle theory of dividends suggests that a firm will start paying dividends when its growth rate is expected to decline in the future. In other words, dividend initiation

[38]DeAngelo et al. (2004) and Benito and Young, (2003) also report that large firms pay more dividends.

conveys information about a firm transition to a "mature" phase characterized by slower growth. A firm with high investment opportunities will attempt to retain earnings for financing these opportunities. Firms with few investment opportunities will have greater cash flow and can thus pay higher dividends.

Rozeff (1982) reports a negative association between dividend payments and future or past growth opportunities. In a questionnaire survey of companies, Baker (1989) observes that 76% of the respondents list growth and expansion through investment as a reason for not paying dividends. Eije and Megginson (2006) find that rapidly growing companies are less likely to begin paying dividends. Payne (2011) reports that the greater the market-to-book ratio, the less likely the firm to be a dividend initiator.

In contrast Fama and French (2001) report a positive association between growth opportunities and dividend payments. Denis and Osobov (2008) find that the association between growth opportunities and dividend payments differs across countries. Bulan, Subramanian and Tanlu (2007) find no significant change in firm size around dividend initiation. Following Denis and Osobov (2008) and Fama and French (2001), we use the market-to-book (M/B) ratio and the percent change in a firm's total assets (dA_t/A_t, $dAt = A_{t} - A_{t-1}$) as proxies for growth opportunities[39]. We measure the M/B ratio as the market value of the common equity divided by the book value of the common equity of the company. Regarding our second proxy for investment opportunities, A_t is measured as the book value of total assets at the end of year t.

2.2.3. Profitability

Profitability is an important determinant of dividend policy. The life cycle theory of dividends suggests that mature firms are more profitable and are inclined to dividend

[39]Denis and Osobov (2008) state that these growth opportunity measures are both potentially problematic. Market stock price may be affected by investor sentiment and thus it may differ from its fundamental value. Similarly asset growth measurement is affected directly by earnings and by dividend payouts.

payments. This theory predicts stable and consistent future earnings after dividend initiation. In sharp contrast with the life cycle theory, the signaling theory of dividends predicts a change in future earnings (in the same direction) after dividend changes. Lintner (1956) proposes a positive association of dividend change and past performance/earnings.

Healy and Palepu (1988) report a rising trend in earnings for dividend initiators, which starts in the pre initiation years and lasts till two years following the initiation year. In contrast to the signaling theory, they report an increase in the earnings of omitters in the year following the omission year.

Brickley (1983) shows that firms that increase dividends experience an increase in earnings the year of the dividend change and the year following the change. Aharony and Dotan (1994) report similar findings. Grullon et al. (2002) report a decline in profitability of dividend-increasing firms in the years after the dividend change. Leftwich and Zmijewski (1994) suggest that a reduction in dividends indicates serious deterioration in a firm's future prospects. In contrast, Jensen et al. (2010) and Stepanyan (2009) report an improvement in firm performance after dividend reductions in the years following dividend cuts.

Wang et *al.* (2011) find that the dividend payment decisions taken by Chinese listed firms are heavily based on their contemporaneous earnings. Bulan *et al.* (2007) find no significant changes in the profitability of initiators compared to non-initiators in the six years surrounding initiation. Focusing on newly public firms, Lipson *et al.* (1998) compare the performance of those firms that initiate dividends with those that do not. They report that earnings increases following dividend initiations and earnings surprises for initiating firms are more favorable than those of non-initiating firms. Benartzi *et al.* (1997) analyze the link between dividend changes and subsequent firm earnings and conclude that "the only strong predictive power we can find is that dividend cuts reliably signal an increase in future earnings."

We use earnings before interest and taxes scaled by total assets *($EBIT_t/A_t$)* to measure firm profitability.

2.2.4. Retained earnings-to-total equity

The life cycle theory of dividends suggests that a profitable firm with several years of successful business operations reaches a mature position where its ability to generate cash overtakes its ability to find profitable investment opportunities. Eventually, it starts dividend payments to distribute its free cash flow to shareholders. In contrast, a young firm faces a large investment opportunity set, but is relatively less profitable, leading to low earned-equity ratio. Therefore, it needs to raise capital from external sources. In addition, being a relatively new and small firm, it faces substantial hurdles in terms of raising capital from external sources. As a result, the firm will conserve cash by forgoing dividend payments to shareholders. DeAngelo, DeAngelo, and Stulz (2006) suggest that earned-to-contributed capital mix measures the extent to which firms finance their projects through external or internal sources. The earned-to-contributed capital is thus a logical proxy for the life-cycle stage of a firm.

DeAngelo, DeAngelo and Stulz (2006) find that the propensity to pay dividends is strongly related to the retained earnings/ contributed capital mix ratio (RE_t/TE_t). Denis and Osobov (2008) report that firms with high proportion of retained earnings in relation to their equity are more likely to be dividend payers.

We use retained earnings-to-total equity ratio (RE_t/TE_t) as a proxy for firm maturity, where RE_t and TE_t are retained earnings and total equity respectively.

2.2.5. Borrowing ratio

Jensen and Meckling (1976), Stulz (1988) and Jensen (1986) state that leverage plays a role in reducing agency costs arising from stockholder-manager conflicts of interest. Borrowing ratio can affect dividend payment decisions because of the potential monitoring role of debt on managers that results from the regular cash outflows that are necessary to ensure cash settlement of debt service. Eije and Megginson (2006) report that high leverage reduces both the propensity to pay and the amounts of dividends paid. Benito and Young (2003) analyze the relationship between leverage and dividend payments using a sample of UK firms and report that higher level of indebtedness leads to dividend omissions. Fama and French (2001) report that former dividend payers are more indebted than current dividend payers[40]. Level of debt may also affect the dividend policy of a firm because of debt covenants and related restrictions imposed on the firm by its lenders[41]. DeAngelo and DeAngelo (1990) show that debt covenants affect the dividend policy of firms with multiple annual losses. Because dividend payments and borrowings are two substitutes likely to mitigate agency problem, we expect a negative association between dividend payments and leverage. According to Payne (2011) the greater the financial risk, the less likely the firm to be a dividend initiator. Thus, we can expect a negative association between financial risk and dividend payments. Insofar as financial debt increases risk, this reinforces our expectation of a negative relationship between dividends and leverage.

We measure leverage by scaling total loans with equity capital and reserves.

2.2.6. Age

The life cycle hypothesis suggests that mature firms are more likely to pay dividends. A firm's age therefore increases the propensity to pay dividend and the amount of dividend paid (Eije and Megginson 2006). Thus in addition to earned equity-to-contibuted capital mix ratio, we use age as a second proxy for firm maturity status.

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[40] They define former payers as firms that have paid dividends in past but omit them in current year.

[41] Debt covenants are restrictions in debt agreements that aim to protect the creditor by restricting the activities of the borrower.

We use the year of incorporation to determine age of sample firms. If the year of incorporation is not available, we use the IPO date as birth year of the firm. Bulan, Subramanian and Tanlu (2007) state that this metric is robust. Using the IPO year as the "year of birth" leads to the same conclusions as the ones resulting from the use of the year of incorporation.

3. Characteristics of dividend switchers and non-switchers

In this section, we examine the characteristics of dividend switchers and non-switchers. We analyze the changes in the characteristics of positive and negative switchers during each year of a 7 year switch window over the period 1994-2006. The switch window starts 3 years before the year of the switch and ends 3 years after the switch. To highlight the determinants of firm dividend policies, our univariate and multivariate analysis compare: i) positive switchers (negative switchers) against regular non-payers (regular payers); ii) positive switchers against negative switchers; iii) regular payers against regular non-payers. These analyses will help us determine the factors that are crucial in defining firm dividend payment policies. This will also help us determine whether the determinants of dividend policies are the same for the different dividend groups under consideration (i.e. positive and negative switchers, regular payers and regular non-payers), and whether these different dividend groups have the same level of sensitivity towards the factors. Furthermore, these analyses will help us establish which dividend theory best explains the dividend behaviour of our sample firms.

During the pre-switch period, negative switchers pay dividends and positive switchers do not, while in the post-switch period positive switchers pay and negative switchers do not. Firms that start to pay a dividend (positive switchers) are expected to adopt the former characteristics of negative switchers. Similarly, negative switchers are expected to adopt the former characteristics of the group that previously did not pay dividends (positive switchers). For example, if negative switchers are more profitable than positive switchers during the pre-switch period, and if profitablity is an important factor in formulating dividend policy for both type of switchers, a decline (increase) in the profitability of negative (positive) switchers should take place during the post-switch period. Bulan and Subramanian (2009) report that in the the years following termination of dividends, non-payers have persistent debt overhang, low investment and continue to under-perform as compared with their industry peers. If these characteristics affect dividend policies, we expect that positive (negative) switchers will adopt the characteristics of regular payers (never-paid firms) during the post switch period. The post-switch analysis aims to determine whether the changes in various characteristics of these switchers are permanent or temporary.

Below, we describe the results of the univariate statistics. Then the evidence is confirmed with logit regressions.

3.1. Univariate tests

3.1.1. Size

Data in table 2 panel B shows that regular dividend payers have an average size of 482.73 million €. This group is significantly larger than the other dividend groups[42]. Negative switchers (with an average size of 27.97 m €) also payed dividends regularly before the switch year, but they are much smaller in size than positive switchers (140.4 m€) and regular dividend payers. Table 2 shows that during the seven year switch

[42] The size of regular payers and regular non-payers are measured by averaging the annual median sizes of these groups during the period 1994 to 2010.

window the size of negative (positive) switchers decreases (increases) significantly. The median size of positive switchers rises from 100.2 m€ (T-3) to 192.7 m€ (T+3). On the other hand, the median size of negative switchers falls from 102.7 m€ (T-3) to 73.8 m€ (T+3). There are three possible reasons for the difference in the size of negative switchers and regular payers: (i) these firms were large in size in the past, but due to successive losses they became smaller; (ii) these firms were small firms, but they tried to imitate large firms; (iii) we may have a large number of new, small firms in our sample that paid dividends for a couple of years and then stopped dividend payments. We observe that regular dividend payers are generally older than negative switchers. This indicates that negative switchers are relatively new and small firms that tried to pay dividend regularly, but were unable to maintain the policy.

Table 2

Characteristics of various dividend groups

Panel A reports median and mean (in brackets) values for measures of profitability, growth opportunities, firm size, earned-to-contributed capital mix, and borrowing ratio for switchers and matched non-switchers. Panel B presents median and mean (in brackets) values of the same set of independent variables for the full samples of regular payers and regular non-payers. Each panel has T-statistics and p values (in brackets). T-statistics and p values for the size variable are computed from log of total assets. The sample period for switchers is 1994-2006. *T* in the year column indicates the year of switch. During the period under stuy we have 341 positive switchers and 268 negative switchers. For each positive (negative) switcher, we selected a control firm from the same industry that is the closest in size the year of switch and is a never paid firm, i.e. a regular non-payer (a regular dividend payer). Panel B also reports the values of t-tests for the comparative analysis of regular payers and regular non-payers. We measure size as total assets at the end of year t. EBIT, RE, TE, and TA stand for earnings before interest and taxes, retained earnings, shareholders' equity, and total assets at the end of year *t* respectively. We measure asset growth as dA_t/A_t; where dA_t=A_t–A_{t-1}, and A_t stands for total assets at the end of current fiscal year *t*. We define the borrowing ratio as total assets scaled by total liabilities. We exclude financials, and firms having negative stockholder equity (TE).

Panel A.1

	Positive switchers						Regular non-payers (matched sample)					
Year	Size (*TA* mn€)	Asset Growth	*M/B*	*RE /TE*	*EBIT /TA*	Debt Ratio	Size (*TA* mn€)	Asset Growth	*M/B*	*RE /TE*	*EBIT /TA*	Debt Ratio
T+3	192.75	6.59	2.10	90.9	9.02	31.8	125.61	-0.64	1.26	69.2	1.35	59.5
	[1940.17]	[10.12]	[3.48]	[81.21]	[11.09]	[64.24]	[841.95]	[-3.71]	[3.47]	[21.38]	[-4.54]	[274.17]
T+2	188.18	9.94	2.13	89.2	9.69	33.7	132.55	0.03	1.56	70.7	1.22	50.9
	[2281.67]	[11.32]	[2.83]	[78.81]	[10.94]	[69.48]	[760.33]	[-2.79]	[3.23]	[23.30]	[-4.31]	[152.56]
T+1	148.50	11.00	2.27	87.5	10.36	34.8	122.59	1.14	1.53	72.4	1.32	56.0
	[2055.24]	[12.72]	[3.32]	[76.74]	[11.76]	[75.43]	[708.04]	[-0.94]	[3.05]	[34.80]	[-6.50]	[145.96]
T	140.41	14.76	2.55	86.3	10.03	34.3	103.94	5.61	1.72	74.2	1.05	36.9
	[1589.52]	[17.15]	[3.76]	[64.66]	[11.71]	[67.94]	[652.05]	[4.53]	[3.67]	[52.20]	[-5.36]	[80.81]
T-1	95.85	10.27	2.41	80.9	9.13	52.9	85.44	6.56	1.75	65.1	0.76	43.1
	[1299.75]	[10.37]	[3.69]	[65.12]	[9.24]	[165.71]	[670.09]	[3.66]	[3.04]	[29.47]	[-3.72]	[149.39]
T-2	94.84	3.89	1.88	78.2	7.03	46.7	70.35	4.54	1.66	67.4	0.20	43.4
	[1453.37]	[9.07]	[2.89]	[56.49]	[6.51]	[182.94]	[735.20]	[7.05]	[4.12]	[37.81]	[-7.51]	[187.45]
T-3	100.22	2.76	1.66	75.3	4.18	65.7	63.99	5.93	1.49	68.7	-1.04	47.0
	[1476.95]	[4.87]	[3.88]	[50.92]	[2.61]	[265.63]	[810.65]	[-7.44]	[5.20]	[17.50]	[-11.16]	[250.81]

	Negative switchers						Regular payers (matched sample)					
Year	Size (*TA* mn€)	Asset Growth	*M/B*	*RE /TE*	*EBIT /TA*	Debt Ratio	Size (*TA* mn€)	Asset Growth	*M/B*	*RE /TE*	*EBIT /TA*	Debt Ratio
T+3	73.86	0.63	1.25	65.9	1.53	58.4	104.00	6.86	1.89	90.6	10.62	21.9
	[501.35]	[- 4.31]	[4.03]	[29.20]	[- 3.98]	[136.78]	[635.05]	[8.71]	[2.42]	[86.49]	[11.71]	[40.9]
T+2	74.42	-3.09	1.44	68.1	0.72	60.1	99.17	6.45	1.89	89.9	10.09	21.9
	[443.37]	[-7.69]	[3.71]	[9.19]	[-2.15]	[135.24]	[537.1]	[8.55]	[2.55]	[85.48]	[11.60]	[42.8]
T+1	88.83	-2.30	1.30	75.2	-0.83	66.9	98.75	6.13	1.91	88.7	10.06	23.3
	[461.77]	[-0.07]	[2.14]	[45.68]	[-8.87]	[185.04]	[485.41]	[5.57]	[3.19]	[82.87]	[11.58]	[60.9]
T	98.57	-2.67	1.43	79.1	-1.56	53.6	98.11	6.88	1.81	88.2	10.35	22.2
	[424.61]	[-7.36]	[3.66]	[73.05]	[-8.27]	[87.59]	[430.73]	[8.97]	[3.60]	[81.02]	[11.83]	[93.6]
T-1	100.12	4.90	1.42	80.6	5.88	49.1	85.70	6.35	1.94	87.0	10.61	20.7
	[413.45]	[3.75]	[2.01]	[68.38]	[7.11]	[87.40]	[416.00]	[7.83]	[3.5]	[81.77]	[11.85]	[46.7]
T-2	110.55	5.10	1.64	82.8	7.67	48.1	83.36	8.24	1.88	86.9	10.31	26.7
	[443.56]	[8.09]	[3.20]	[74.40]	[7.66]	[80.72]	[442.08]	[11.4]	[3.05]	[82.09]	[11.99]	[49.0]
T-3	102.70	6.88	1.86	83.1	8.12	45.6	76.77	6.58	1.81	85.5	10.74	28.0
	[452.27]	[10.86]	[3.01]	[76.21]	[8.58]	[90.60]	[403.04]	[7.00]	[2.97]	[81.26]	[11.19]	[60.8]

Panel A.2 T-statistics. and p (in brackets) values

	Positive switchers vs. Negative switchers						Positive switchers vs. Regular non payers (matched sample)						Negative switchers vs. Regular payers (matched sample)					
Year	Size (*TA* mn€)	Asset Growth	*M/B*	*RE/TE*	*EBIT /TA*	Debt Ratio	Size (*TA* mn€)	Asset Growth	*M/B*	*RE/TE*	*EBIT /TA*	Debt Ratio	Size (*TA* mn€)	Asset Growth	*M/B*	*RE/TE*	*EBIT /TA*	Debt Ratio
T+3	5.54	5.11	-0.34	4.38	7.38	-3.93	2.86	5.30	0.00	5.92	10.20	-3.02	2.65	4.42	-1.10	4.84	7.72	-5.54
	(0.00)	(0.00)	(0.73)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.99)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.26)	(0.00)	(0.00)	(0.00)
T+2	5.66	5.71	-1.04	2.24	9.07	-3.56	3.10	4.53	-0.68	5.16	10.91	-2.65	2.35	4.77	-1.38	2.45	9.41	-4.84
	(0.00)	(0.00)	(0.29)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.49)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.16)	(0.01)	(0.00)	(0.00)
T+1	4.91	2.32	3.06	3.75	7.65	-3.29	2.50	3.77	0.50	3.81	8.17	-2.69	2.51	3.57	2.07	4.56	7.57	-3.32
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.61)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.03)	(0.00)	(0.00)	(0.00)
T	3.98	7.90	0.05	-0.98	8.43	-0.35	1.43	3.86	0.06	0.76	9.65	-0.15	1.62	5.32	-0.21	1.83	8.33	0.10
	(0.00)	(0.00)	(0.95)	(0.32)	(0.00)	(0.72)	(0.15)	(0.00)	(0.94)	(0.44)	(0.00)	(0.87)	(0.10)	(0.00)	(0.83)	(0.06)	(0.00)	(0.91)
T-1	1.85	1.99	2.93	-0.54	1.33	2.14	1.29	1.19	0.95	2.68	6.59	0.39	2.28	1.34	2.57	3.10	3.46	-4.86
	(0.06)	(0.04)	(0.00)	(0.58)	(0.18)	(0.03)	(0.19)	(0.23)	(0.34)	(0.00)	(0.00)	(0.69)	(0.02)	(0.17)	(0.01)	(0.00)	(0.00)	(0.00)
T-2	1.50	0.40	-0.44	-3.00	-1.00	2.69	2.30	0.62	-1.12	2.38	5.61	-0.09	-0.27	1.56	-0.25	3.42	4.49	-3.35
	(0.13)	(0.68)	(0.65)	(0.00)	(0.31)	(0.00)	(0.02)	(0.53)	(0.26)	(0.01)	(0.00)	(0.92)	(0.77)	(0.11)	(0.79)	(0.00)	(0.00)	(0.00)
T-3	1.28	-1.84	0.62	-2.86	-4.24	2.57	1.85	0.97	-0.58	1.58	5.25	0.16	-1.21	-1.63	-0.08	2.59	2.79	-1.57
	(0.19)	(0.06)	(0.53)	(0.00)	(0.00)	(0.01)	(0.06)	(0.33)	(0.55)	(0.11)	(0.00)	(0.87)	(0.22)	(0.10)	(0.93)	(0.00)	(0.00)	(0.11)

Panel B.1
Regular payers
Annual Median, and Mean (in brackets) values

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TA (mn€)	251,6	272,67	283,31	319,33	317,43	395,98	376,03	415,31	422,98	427,30	475,98	528,91	639,63	735,20	737,35	733,14	874,30
	[2033,02]	[2123,36]	[2282,06]	[2622,52]	[2897,22]	[3346,35]	[3864]	[4278,03]	[3806,85]	[3642,39]	[3806,33]	[4710,1]	[5266,17]	[5634,56]	[5953,47]	[5726,51]	[6841,16]
Asset Growth	6,69	6,57	6,49	7,28	7,71	9,88	11,93	6,83	1,62	2,14	4,57	10,25	7,72	8,08	6,76	0,33	5,98
	[8,29]	[8,06]	[7,88]	[10,25]	[10,27]	[12,32]	[14,41]	[8,52]	[1,86]	[3,01]	[5,59]	[10,99]	[9,24]	[10,32]	[7,52]	[0,28]	[6,47]
M/B	1,93	1,88	1,99	2,17	2,04	2,07	1,92	1,77	1,48	1,84	2,07	2,30	2,56	2,39	1,33	1,65	1,83
	[2,36]	[2,49]	[2,60]	[2,99]	[2,86]	[3,71]	[2,97]	[2,49]	[1,95]	[2,34]	[2,69]	[2,89]	[3,17]	[3,04]	[1,83]	[2,28]	[2,53]
RE/TE	83,72	83,99	85,22	85,53	86,20	86,85	87,79	88,95	88,69	88,56	89,57	90,21	90,63	91,30	91,29	91,78	92,51
	[78,87]	[79,81]	[79,86]	[80,56]	[80,62]	[82,15]	[82,43]	[83,68]	[83,38]	[83,95]	[84,68]	[84,65]	[86,33]	[87,84]	[87,6]	[87,9]	[88,54]
EBIT/TA	10,06	10,50	10,30	10,58	10,66	10,06	10,12	8,69	8,27	7,93	8,88	9,29	9,79	10,21	8,81	7,47	7,99
	[10,91]	[11,20]	[11,32]	[11,87]	[11,75]	[11,31]	[11,3]	[9,82]	[8,71]	[8,89]	[10,21]	[10,83]	[11,45]	[11,79]	[10,23]	[8,5]	[9,49]
Borrowing Ratio	34,66	36,47	34,31	34,28	37,72	43,38	44,19	48,76	46,88	48,17	45,37	43,63	45,38	45,45	51,83	44,55	42,88
	[54,93]	[55,43]	[59,18]	[63,46]	[107,12]	[56,48]	[73,31]	[81,16]	[65,59]	[68,12]	[61,44]	[79,14]	[76,06]	[79,89]	[99,35]	[93,87]	[80,12]

Regular non-payers

Annual Median, and Mean (in brackets) values

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TA (mn€)	29,48	34,18	31,13	32,60	16,55	19,40	37,85	31,58	20,05	18,18	16,29	18,73	23,89	30,09	31,87	36,90	46,77
	[357,43]	[319,7]	[316,57]	[254,21]	[191,11]	[189,23]	[204,14]	[285,5]	[231,45]	[160,58]	[166,01]	[306,15]	[815,33]	[1291,56]	[1312,22]	[1454,5]	[1887,3]
Asset Growth	6,76	8,13	8,66	8,30	17,10	17,74	39,27	1,68	-10,49	-4,68	7,75	18,01	13,05	13,74	8,62	-1,72	5,60
	[-1,52]	[5,10]	[10,07]	[9,83]	[9,73]	[17,76]	[36,24]	[-10,03]	[-29,61]	[-9,89]	[7,82]	[18,98]	[10,9]	[10,61]	[1,37]	[-12,98]	[4,48]
M/B	1,76	2,26	2,80	2,78	2,03	3,13	2,87	1,74	1,18	1,91	2,23	2,25	2,37	2,07	0,92	1,46	1,70
	[3,09]	[5,79]	[5,36]	[6,38]	[4,18]	[5,84]	[5,28]	[3,54]	[3,56]	[4,66]	[4,31]	[3,95]	[4,18]	[3,46]	[1,98]	[3,14]	[4,65]
RE/TE	40,13	32,97	39,89	56,82	57,99	62,34	80,23	74,47	68,09	65,97	71,79	76,17	78,59	80,97	80,08	77,51	79,03
	[16,64]	[6,47]	[6,22]	[15,47]	[-11,23]	[10,07]	[47,13]	[-19,4]	[-13,98]	[-26,93]	[-34,77]	[12,56]	[-5,04]	[29,54]	[20,3]	[10,27]	[15,22]
EBIT/TA	-2,58	-1,08	-0,02	1,37	-5,42	-2,43	-5,24	-12,13	-14,86	-8,75	-4,11	-3,87	-4,72	-3,95	-5,39	-4,68	-1,34
	[-11,11]	[-10,89]	[-18,64]	[-8,37]	[-19,13]	[-15,91]	[-16,56]	[-33,08]	[-40,09]	[-21,59]	[-16,65]	[-13,64]	[-19,05]	[-17,54]	[-19,59]	[-19,48]	[-10,49]
Borrowing Ratio	25,54	43,91	18,52	31,79	18,45	14,33	6,15	11,05	16,86	13,81	9,99	9,41	9,45	12,16	15,15	20,20	16,26
	[147,38]	[175,16]	[137,28]	[162,42]	[113,64]	[83,44]	[124,43]	[149,88]	[124,86]	[88,92]	[123,11]	[72,78]	[116,69]	[54,23]	[91,26]	[136,34]	[114,55]

Panel B.2

Regular payers vs. Regular non payers

T- statistics, and p values (in brackets)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
TA (log)	8,72	9,53	8,74	10,61	15,78	17,16	19,00	6,35	6,52	25,82	27,53	27,49	34,64	33,57	31,64	29,83	28,25
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Asset Growth	1,43	0,53	-0,39	0,09	0,13	-1,84	-9,07	5,17	7,67	4,82	-1,02	-4,09	-0,72	-0,13	2,51	5,59	1,29
	(0.15)	(0.59)	(0.69)	(0.92)	(0.89)	(0.06)	(0.00)	(0.00)	(0.00)	(0.00)	(0.30)	(0.00)	(0.47)	(0.89)	(0.01)	(0.00)	(0.19)
M/B	-0,86	-2,72	-3,17	-2,85	-2,01	-1,81	-5,07	-3,59	-2,35	-5,03	-3,11	-3,65	-2,98	-1,72	-0,65	-2,85	-4,44
	(0.38)	(0.00)	(0.00)	(0.00)	(0.04)	(0.07)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.08)	(0.51)	(0.00)	(0.00)
RE/TE	5,20	5,56	5,15	6,68	5,53	6,03	7,69	5,28	6,72	6,31	5,11	6,05	6,64	10,15	9,52	8,07	7,17
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
EBIT/TA	6,39	5,92	4,91	6,56	9,77	9,38	14,71	13,98	9,65	9,2	12,84	20,15	15,54	11,93	14,71	14,24	13,77
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Borrowing Ratio	-2,48	-2,12	-2,04	-3,00	-2,20	-1,61	-1,32	-1,01	-1,68	-1,08	-2,51	0,56	-0,98	2,07	0,42	-2,98	-1,43
	(0.01)	(0.03)	(0.04)	(0.00)	(0.02)	(0.10)	(0.18)	(0.30)	(0.09)	(0.27)	(0.01)	(0.56)	(0.32)	(0.03)	(0.66)	(0.18)	(0.15)

3.1.2. Investment opportunities

Table 2 indicates that during the post switch years, positive switchers have higher growth opportunities than negative switchers and regular non-payers (matched sample)[43]. Median asset growth of positive switchers remains 14.7 % in year T. On the other hand, negative switchers grow at the rate of -2.6 %. Investment opportunities of positive switchers follow an increasing trend in the pre-switch period and a declining trend in the post-switch years. For negative switchers asset growth and M/B ratios register an overall decline during the seven year switch window. The difference between the asset growth ratio of negative switchers and regular payers (matched sample) is not significant during the pre-switch period, but the ratio for negative switchers becomes significantly smaller in the post switch years. This indicates that before the switch year, when negative switchers were dividend payers, they had high investment opportunities. These findings suggest a positive association between dividend payments and growth opportunities. Inconsistent with these findings, Panel B of table 2 reports that regular non-payers have greater investment opportunities than regular dividend payers, suggesting a negative relation between dividend payments and investment opportunities. The primary reason for this contradiction could be: (i) the significantly large change in the profitability of dividend switchers around the switch year[44]; (ii) the large earnings changes in the switch year that may affect investors' sentiments and thus market-to-book ratios of switchers[45].

While negative switchers and regular non-payers should have similar characteristics during the post switch years, as they are both non-payers, we observe a large

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[43] We compare regular non-payers (matched sample) with positive switchers because, positive switchers were also regular non-payers before the year of switch but they switched from their existing dividend policy while regular non-payers stick to their non-payment policy.

[44] The asset growth measure (dA/A) is affected directly by earnings (Denis and Osobov, 2008).

[45] Market to book ratio is affected by investor sentiments and therefore may not be an effective proxy to measure investment opportunities (Denis and Osobov, 2008).

difference between their asset growth ratios. This suggests that firm investment opportunities affect the dividend policies of different dividend groups differently. Regular non-payers do not pay dividends in order to tap the available investment opportunities. In contrast, negative switchers stop dividend payments because of poor performance.

3.1.3. Profitability

Panel B of table 2 reports that regular dividend payers are far more profitable than regular non-payers. The median of profitability ratio remains more than 10% for both the full sample and the matched sample of regular payers. Regular non-payers remained significantly less profitable than regular payers throughout the 1994-2010 period. Panel A of table 2 shows that both positive and negative switchers have a high $EBIT_t/TA_t$ ratio when they are dividend payers.

The profitability of positive switchers improves substantially during the pre-switch years. It rises from 4.18% (*T-3*) to 10.03% (*T*). During the post switch years, however, this rising trend in the profitability of positive switchers stops and we observe stability in the ratio. During the switch year, profitability of positive switchers gets very close to that of regular dividend payers. Negative switchers, on the other hand, experience a substantial decline in their profitability during the pre-switch years. Their *EBIT/TA* ratio declines from 8.12% (T-3) to -1.56% (T). During the years T-3 and T-2, negative switchers are significantly more profitable than positive switchers of the same years, but after the dividend switch, positive switchers become significantly more profitable than negative switchers. Although, the negative (positive) switchers were consistent payers (non-payers) in the years before the switch, they were still significantly less (more) profitable than the regular payers (non-payers). In other words, operating performance is a primary factor that differentiates switchers from their matched peers.

These findings are consistent with the Lintner proposition (1956) that predicts that changes in earnings precede dividend changes, and that changes in earnings followed by dividend changes in the same direction indicate that these changes in earnings are permanent in nature and will be sustained in the future.

3.1.4. Retained earnings -to- owner's equity

Table 2 reports that during the pre-switch period negative switchers have a higher *RE/TE* ratio than positive switchers. But, around the switch year, we observe a sharp increase (decline) in the ratio for positive (negative) switchers. It rises from 51% (T-3) to 91% (T+3) for positive switchers, and falls from 76% (T-3) to 66% (T+3) for negative switchers. Thus, the proportion of retained earnings in positive switchers' equity becomes significantly higher than that of negative switchers during the post-switch period.

Around the switch year, positive switchers have a significantly higher *RE/TE* ratio than size and industry matched non-switchers (regular non-payers). Similarly during the post switch years, negative switchers have a significantly lower *RE/TE* ratio than their size and industry matched non-switchers (regular payers). Furthermore, table 2 shows that regular dividend payers (full sample) have consistently and significantly higher *RE/TE* ratios than regular non-payers (full sample) during the sample period. These findings suggest that dividend payments are positively associated with *RE/TE*. This is consistent with the life cycle theory and the free cash flow theory of dividends. Both these theories predict that mature firms are more likely to pay dividends.

3.1.5. Borrowing ratio

Table 2 reports that the borrowing ratio of positive switchers declines from 265.6 (T-3) to 64.2 (T+3). This could either be because of debt repayment or due to funds raised from equity markets. Negative switchers are more significantly indebted than positive switchers or regular payers (matched sample) during the post switch years. Similarly, regular non-payers (full sample) have significantly higher borrowing ratios than regular payers (full sample). These findings suggest a negative association between dividend payment and leverage.

3.1.6. Age

Consistent with Fama and French (2001) we find that regular payers are older than all the other dividend groups. For the period 1990-2010, averages of annual medians of age are 56, 45, and 21 years for regular payers, irregular payers and regular non-payers respectively. Similarly, median ages of positive and negative switchers are 33 and 35 years respectively. These findings suggest that old firms are less likely to change their dividend policy in the long run. Appendix II reports the age distribution of our sample firms.

3.1.7. Summary

Firms in the regular payers group tend to be larger, older, and more profitable than those in the other dividend groups. Positive switchers are larger than negative switchers. These results cast doubt on signaling as a first-order determinant of dividend policy[46].

Regular non-payers exhibit high growth opportunities but low profitability. This compels them to retain earnings for financing their investment opportunities. Negative switchers, however, stop paying dividends because of poor operating performance.

During the switch window, the improvement of profitability, size, asset growth and earned-to-contributed equity mix (*RE/TE*), and a decline in the debt ratio suggest that

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[46] Larger firms are followed by more analysts and are much more exposed to outsiders than smaller, newly registered firms.

higher earnings enable positive switchers to pay dividends, reinvest part of their earnings, and repay part of their debts[47]. Positive switchers, once they start dividend payments, adopt several characteristics of regular payers. For instance both have very similar borrowing ratios, profitability ratios, and earned-to-contributed capital mix. Negative switchers are smaller in size than the other dividend groups. Their asset growth and profitability declines sharply, and their borrowing ratios rise around the switch year. Regular dividend payers are the largest in size as compared with the rest of the dividend groups. They exhibit higher profitability, and more retained earnings compared to their total equity than regular non-payers.

3.2. Logit regressions

In the previous section, through univariate analyses, we examined and compared the characteristics of various dividend groups. We also examined how these characteristics evolve over time. In this section we use logit regression to challenge our univariate findings. First, we use a matched sample method. For each switcher of our sample, we choose a control firm from the same industry that is the closest in size in the year of switch. For positive switchers, control firms are selected from the pool of never-paid firms, while for negative switchers they are taken from the pool of regular payers. Then we use the whole population of regular payers (regular non-payers) as control firms against negative switchers (positive switchers). Similarly, we regress positive switchers against negative switchers to identify the differences between the characteristics of positive and these of negative switchers. For further verification we regress post-switch years against pre-switch years.

[47] Beside earnings, the issue of new ordinary shares may also result in an increase in size, asset growth ratio and a decline in borrowing ratio.

3.2.1 Matched sample logit analysis

To identify firms' characteristics that are significant in explaining a dividend policy switch, we conduct matched-sample logit analyses. For both positive and negative switchers we construct matched samples of non-switchers on the basis of year, size (total assets) and industry (two-digit GICS). For each positive switcher in our sample, we choose a control firm from the same industry that is the closest in size the year of the switch and is a never paid (regular non-payer) firm. This gives us a sample of 340 matched non-switchers (from among the group of regular non-payers) for the total 341 positive switchers. For one positive switcher we did not find any industry matching regular non-payer. Similarly, for each negative switcher, we choose a regular dividend payer control firm from the same industry that is the closest in size the year of the switch. This gives us 258 non-switchers (from among the group of regular payers) for the total 268 negative switchers. Thus, during the switch window each pair of firms faces the same market conditions[48].

Positive switchers

A positive switcher is a firm that has never paid dividends (during its Datastream history) before the year of switch, and after the switch year never omits dividends till the year of its delistment or year 2010, whichever is earlier. As mentioned above, we have 341 positive switchers and 340 size and industry matched non-switchers (regular non-payers). The switch window consists of seven years, starting from year *T-3* to year *T+3*. Year *T* is the year of switch. We measure averages for all independent variables for the pre switch years (*T-3* to *T)* and name them "L". Similarly, we average the three year (from T+1 to T+3) values and use the letter "F" to distinguish them from other values. To find whether positive switchers experience significant changes in the

[48]For further verification we construct matched samples of control firms on the basis of year, size, sector, and profitability and the results are similar to those we report here.

characteristics around the switch, we subtract “L” values from “F” values and name these values “D”. We estimate logit regressions to identify factors that trigger positive switches (table 3). The dependent variable equals 1 if the firm is a positive switcher and zero if it is a regular non-payer. We use firm size (log of total assets), profitability (*EBIT/TA*), asset growth (dA_t/A_t), market-to-book, and borrowing ratio as independent variables. The *p*-values are calculated from bootstrapped robust standard errors with 500 repetitions. Column 1 in table 3 indicates that positive switchers are likely to be firms with significantly higher profitability and earned-to-contributed capital mix ratio than non-switchers (regular non-payers).

Table 3

Cross-Sectional Logit Regressions for Positive Switchers (size and industry matched)

Logit estimates of factors leading to a positive dividend switch. The dependent variable equals 1 if a firm is positive switcher and 0 if it is a regular non-payer. A positive switcher is a firm that has never paid dividends before the switch year but has never omitted dividend payments after the switch. The sample includes 341 positive switchers and 340 size and industry matched non-switchers (regular non-payers). "L" stands for pre switch period and is the average of values of independent variables over the 4 years ending in the year of switch (T). "F" stands for post switch period and is the average over the 3 years following the year of switch. "D" stands for the difference between F and L (i.e., F - L). Column 1 The *p*-values are calculated from bootstrapped robust standard errors with 500 repetitions.

	(1)		(2)
Log Assets	0.000	Log Assets	0.000
	(0.409)		(0.158)
L-Asset Growth	0.450	D-Asset Growth	-0.023
	(0.132)		(0.929)
L-Market to Book	-0.000	D-Market to Book	-0.004
	(0.996)		(0.681)
L-Earned Equity to Equity	0.354***	D-Earned Equity to Equity	-0.059*
	(0.005)		(0.081)
L-EBIT/Assets	2.535***	D-EBIT/Assets	2.408***
	(0.000)		(0.000)
L-Borrowing Ratio	0.000***	D-Borrowing Ratio	-0.000***
	(0.003)		(0.003)
Constant	-0.464***	Constant	-0.123
	(0.001)		(0.173)
Pseudo-R2 (%)	5.79%		
Observations	659		
F-Asset Growth	0.000*		
	(0.082)		
F-Market to Book	-0.023		
	(0.457)		
F-Earned Equity to Equity	1.051***		
	(0.001)		
F-EBIT/Assets	15.267***		
	(0.000)		
F-Borrowing Ratio	-0.001*		
	(0.057)		
Constant	-1.32***		
	(0.000)		
Pseudo-R2 (%)	33.8%		5.60%
Observations	599		583

***p<0.01, **p<0.05, *p<0.1

Column 2 reports that the increase in the profitability of positive switchers is higher than the increase in the profitability of regular non-payers. Similarly the decline in the retained earnings ratios and borrowing ratios of positive switchers are higher than those of regular non-payers.

Negative switchers

A negative switcher is a firm that has never omitted dividend payments (during its DataStream history) before the year of switch, and never pays dividends after the switch year till the year of its delistment or year 2010, whichever is earlier. To identify the factors that are significant in explaining negative switches we conduct similar matched-sample logit analyses as we did above for positive switchers.

We identify control firms from a pool of regular dividend payers. A regular dividend payer is a firm that has never omitted dividends in its entire Datastream history till the year 2010. We have 268 negative switchers and 258 size and industry matched non-switchers (regular payers). As with the positive switchers, our switch window for negative switchers covers seven years, starting from year T-3 to year T+3. We measure "L", "F", and "D" values for negative switchers and run logit regressions like we did for positive switchers. The dependent variable equals 1 if the firm is a negative switcher and 0 if it is regular payer from the matched sample. The *p*-values are calculated from bootstrapped robust standard errors with 500 repetitions.

In column 1 the variables starting with letter "L" measure firm characteristics in the period prior to the switch year. Similarly, variables starting with letter "F" measure the characteristics of firms in the post-switch period. Column 2 shows whether the adjusted changes in these characteristics after switch are significant.

Column 1 of table 4 indicates that in the pre switch period negative switchers are likely to be firms with significantly low profitability ratios. In the post switch years, negative

Table 4

Cross-Sectional Logit Regressions for Negative Switchers (size and industry matched)

Logit estimates of factors leading to a Negative dividend switch. The dependent variable equals 1 if a firm is a negative switcher and zero if it is a regular payer. A negative switcher is a firm that has never omitted dividends before the switch year but has never paid dividends after the switch. The sample includes 268 negative switchers and 258 size and industry matched non-switchers (regular payers). "L" stands for pre switch period and is the average over the 4 years ending in the year of switch (T). "F" stands for post switch period and is the average over the 3 years following the year of switch. "D" stands for the difference between F and L (i.e., F - L). The *p*-values are calculated from bootstrapped robust standard errors with 500 repetitions.

	(1)		(2)
Log Assets	-0.000	Log Assets	-0.000
	(0.523)		(0.482)
L-Asset Growth	0.344	D-Asset Growth	-0.383
	(0.539)		(0.236)
L-Market to Book	-0.022	D-Market to Book	-0.014
	(0.261)		(0.664)
L-Earned Equity/Equity	-0.268	D-Earned Equity/Equity	-8.003***
	(0.359)		(0.000)
L-EBIT/Assets	-10.934***	D-EBIT/Assets	-5.888***
	(0.000)		(0.000)
L-Borrowing Ratio	0.000**	D-Borrowing Ratio	-0.001**
	(0.168)		(0.042)
Constant	0.980***	Constant	-0.773***
	(0.001)		(0.000)
Pseudo-R2 (%)	15.01%		
Observations	509		
F-Asset Growth	0.000		
	(0.476)		
F-Market to Book	0.008		
	(0.833)		
F-Earned Equity/Equity	-2.976***		
	(0.000)		
F-EBIT/Assets	-16.668***		
	(0.000)		
F-Borrowing Ratio	-0.000		
	(0.268)		
Constant	2.772***		
	(0.000)		
Pseudo-R2 (%)	37.09%		25.83%
Observations	515		439

***p<0.01, **p<0.05, *p<0.1

switchers experience a decline in their profitability, retained earnings, and leverage ratios. Column 2 reports that decline in profitability, retained earnings ratios, and borrowing ratios of negative switchers are significant. Bulan and Subramanian (2009) report that poor performance, high investments coupled with high leverage lead to a dividend omission. In contrast with their results, we do not find the role of investment opportunities in the change in dividend policy of negative switchers.

3.2.2. Logit regressions using full sample of non-switchers as control firms

In table 5, instead of using a matched sample of control firms we use the full sample of non-switchers as control firms. We regress regular payers against negative switchers and never-paid firms against positive switchers. We have a total of 341 positive switchers and 268 negative switchers. Similarly, we have 8,727 regular payers and 5,810 regular non-payers. The data are winsorized on a yearly basis[49]. In addition to EBIT/Assets, in this section, we use a earnings-per-share dummy variable in our regression model[50] which is equal to 1 if the net reported earnings are positive and 0 if they are negative. As negative net earnings may prevent firms from paying dividends, firms declaring positive net earnings are more likely to pay dividends. In the previous regressions we did not include EPS dummy due to methodological issues. The use of average values of independent variables did not permit us to include a binary variable.

Consistent with the previous findings, table 5 reports that positive switchers are significantly more profitable than non-switchers (regular non-payers) throughout the

[49]We call anything that falls more than three standard deviations away from the mean an outlier.
[50] We got similar results, when we exclude the earning per share dummy from our regression model. The results are not reported here.

Table 5

Logit estimates of factors leading to a dividend switch.

A positive switcher is a firm that has never paid dividends before the switch year but has never omitted them after the switch. A negative switcher is a firm that has never omitted dividends before the switch year but has never paid them after the switch. The sample includes 268 negative switchers and 341 positive switchers. The dependent variable equals 1 if the firm is a switcher and zero otherwise. Earnings per share is the net EPS after interest and taxes and is equal to 1 if the net reported EPS are positive and 0 if they are negative. All variables are defined in Appendix III.

Panel A. Positive switchers vs. Regular non-payers (full sample)

Variables	T-3	T-2	T-1	T	T+1	T+2	T+3
Assets (log)	0.245***	0.210***	0.222***	0.269***	0.338***	0.396***	0.434***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AssetGrowth	-1.075***	-1.132***	-1.448***	-1.008***	-1.570***	-1.651***	-1.952***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Market/Book	0.013	-0.008	0.005	0.021**	0.014	-0.008	0.016
	(0.235)	(0.600)	(0.727	(0.049)	(0.336)	(0.661)	(0.113)
RE/TE	0.113	0.233	0.461***	0.862***	1.621***	1.638***	2.094***
	(0.287)	(0.104)	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)
EPS (Dummy)	0.566**	1.552***	2.449***	3.151***	3.151***	3.146***	3.197***
	(0.010)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
EBIT/Assets	0.272**	0.241**	0.225*	0.360***	0.462***	0.434***	0.487***
	(0.022)	(0.046)	(0.063)	(0.036)	(0.005)	(0.002)	(0.000)
Borrowing Ratio	-0.000	0.000	0.000	0.000**	0.000	0.000	-0.000
	(0.873)	(0.496)	(0.772)	(0.040)	(0.726)	(0.980)	(0.226)
Constant	-6.455***	-6.412***	-7.037***	-8.098***	-9.439***	-10.119***	-11.059***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo-R2 (%)	8.01	13.49	22.32	31.34	35.55	36.99	39.01
Observations	4492	4518	4573	4703	4684	4668	4644

***p<0.01, **p<0.05, *p<0.1

Panel B. Negative switchers vs. Regular payers (full sample)

Variables	T-3	T-2	T-1	T	T+1	T+2	T+3
Assets (log)	-0.254***	-0.264***	-0.282***	-0.289***	-0.285***	-0.309***	-0.299***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AssetGrowth	1.163**	0.117	-0.272	-0.0349	-0.286***	-0.784**	0.363
	(0.010)	(0.789)	(0.420)	(0.933)	(0.003)	(0.031)	(0.497)
Market/Book	0.047**	0.063***	-0.040*	0.007	0.003	0.022	0.009
	(0.014)	(0.000)	(0.082)	(0.656)	(0.908)	(0.356)	(0.704)
RE/TE	-0.453*	-0.446**	-0.746***	-0.435**	-1.110***	-1.340***	-1.700***
	(0.057)	(0.046)	(0.000)	(0.031)	(0.000)	(0.000)	(0.000)
EPS (Dummy)	-0.197	-0.167	-0.671***	-2.098***	-1.986***	-1.422***	-1.197***
	(0.543	(0.574)	(0.007)	(0.000)	(0.000)	(0.000)	(0.000)
EBIT/Assets	-6.842***	-7.235***	-7.187***	-9.125***	-8.519***	-8.861***	-10.659***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Borrowing Ratio	-0.000	-0.000	0.000**	0.000	0.000	-0.000	-0.000*
	(0.578)	(0.622)	(0.031)	(0.787)	(0.987)	(0.142)	(0.068)
Constant	0.237	0.510	1.755***	2.327***	2.475***	2.527***	2.410***
	(0.575	(0.198	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo-R2 (%)	7.08	8.51	13.69	37.7	38.53	32.95	33.07
Observations	8207	8230	8262	8275	8232	8209	8183

***p<0.01, **p<0.05, *p<0.1

seven years of the event window. Similarly, the positive switchers are significantly larger than the unmatched non-switchers. Furthermore, panel A of table 5 shows that the ratio of retained earnings-to-total equity improves around the switch year. Asset growth ratio of positive switchers remains significantly less than that of non-switchers. Panel B of table 5 reports that in the years T-3 and T-2 firms with greater market to book ratio and asset growth are more likely to be negative switchers. This indicates that investment opportunities of negative switchers decline significantly around the dividend switch year. Furthermore, both the ratios of earnings show that negative switchers are significantly less profitable than non-switchers (regular payers).

3.2.3 Pre vs. post switch years

In the previous section we analyzed size and industry adjusted changes in the characteristics of positive and negative switchers. This section, however, focuses on the unadjusted changes in the characteristics of switchers. For this purpose we estimate logit regressions aimed at comparing pre-switch years against post-switch years. We regress T-1 against T+1, T-2 against T+2, and T-3 against T+3. The findings will help determine how and when the characteristics of switchers change during the switch window. Table 6 reports logit estimates for positive and negative switchers. The dependent variable equals 1 if the year is a post-switch and 0 if it is a pre-switch year.

Consistent with previous findings, coefficients associated with profitability are highly significant and positive for positive switchers, and negative and significant for negative switchers. This suggests that positive switches are associated with a significant increase in profitability from the pre-switch years to the post–switch ones. Conversely, a decrease in profitability between the pre-switch period and the post-switch one leads to a negative switch.

Coefficients of the RE/TE ratio are systematically significant and positive for positive switchers indicating a significant growth in the proportion of retained earnings in the

Table 6

Logit regressions for pre versus post switch years

The table reports logit estimates of pre-switch years against post-switch years for both positive and negative switchers. The dependent variable equals one for years of the post-switch period, and zero for years of the pre-switch one. T stands for the year of switch. The data for the independent variables are winsorized. The full sample includes 341 positive switchers and 268 negative switchers. These firms changed their dividend policies between 1994 and 2006. The smaller sample period enables us to follow firms' dividend payment behavior before and after the year of switch. We took the sample period of 1994-2006 in order to be able to follow firms past dividend behaviour. All the variables are defined in Appendix A.

	Positive Switchers			Negative Switchers		
Variables	T-3 to T+3	T-2 to T+2	T-1 to T+1	T-3 to T+3	T-2 to T+2	T-1 to T+1
Total Assets (log)	0.00**	0.00	0.00	-0.07	-0.12**	-0.06
	(0.04)	(0.12)	(0.11)	(0.18)	(0.02)	(0.13)
Asset growth	-0.26	-0.66	-0.28	-0.44	-1.25**	-0.15
	(0.70)	(0.22)	(0.52)	(0.51)	(0.01)	(0.24)
Market/Book	-0.02	-0.02	-0.00	-0.02	-0.00	0.05*
	(0.49)	(0.49)	(0.96)	(0.19)	(0.91)	(0.07)
RE/TE	2.22***	1.35***	0.76**	-2.07***	0.05	-0.21
	(0.00)	(0.00)	(0.01)	(0.00)	(0.23)	(0.19)
EBIT/TA	13.21***	7.50***	3.29***	-8.24***	-6.01***	-5.15***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Debt Ratio	-0.00	0.00	-0.00	0.00	(0.00)	(0.00)
	(0.43)	(0.32)	(0.82)	(0.27)	(0.81)	(0.57)
Constant	-1.45***	-0.82**	-0.51*	2.39***	1.46**	0.60
	(0.00)	(0.01)	(0.09)	(0.00)	(0.01)	(0.21)
Observations	352	400	481	300	360	412
r2_p	0.29	0.12	0.04	0.22	0.11	0.10
chi2	125.3	62.26	26.86	94.61	57.76	58.68

***$p<0.01$, ** $p<0.05$, * $p<0.1$

equity of positive switchers. In contrast, negative switchers register a decline in the retained earnings ratio.

For positive switchers, the coefficient of the size variable is positive and significant for year T+3, indicating an increase in the size of positive switchers over the 7-year window under consideration. For negative switchers, the coefficient of the size variable is negative for year T+2 only, indicating a decline in the size of negative switchers during the post switch period.

3.2.4. Positive switchers vs. negative switchers

To compare the characteristics of positive and negative switchers we estimate logit regressions for each year of the 7-year period under consideration. Data are winsorized. The regression estimates indicate the characteristics that differ between positive and negative switchers.

Table 7 summarizes annual logit regressions that document the marginal effects of size, profitability, investment opportunities, earned-to-contributed capital mix, indebtedness and age on the likelihood to be a positive switcher rather than a negative one. The dependent variable is equal to 1 if a firm is a positive switcher and 0 if it is negative switchers. We estimate regressions for the 7 years starting from *T-3* until *T+3*, where *T* is the year of switch. We find that the likelihood to be a positive switcher increases with firm size after the switch year only. This indicates an increase in the size of positive switchers compared to the size of negative swichers after the switch. Table 7 shows that during post-switch years, coefficients of $EBIT_t/TA_t$ are negative and significant during *T-3* and *T-2.* They are positive and highly significant during the period of positive switchers. These findings support our univariate findings, indicating that negative switchers are more profitable than positive switchers during the pre switch period but a significant growth in profitablility of positive switchers and a drastic decline in that of negative switchers takes place during the seven year switch window. This confirms that dividend payers are more profitable than non-payers.

Table 7
Positive switchers vs. Negative switchers
Logit analyses of the characteristics of positive vs. negative switchers for each year of the switch window. The dependent variable equals 1 for positive switchers,; 0 for negative ones. The data for the independent variables are winsorized. The full sample includes 341 positive switchers and 268 negative switchers. We took the sample period of 1994-2006 for switchers in order to be able to follow the firms' dividend payment policies, before and after the switch year.

Variables	T-3	T-2	T-1	T	T+1	T+2	T+3
Total Assets (log)	-0.06	-0.08	0.01	0.19***	0.22***	0.26***	0.23***
	(0.38)	(0.15)	(0.73)	(0.00)	(0.00)	(0.00)	(0.00)
Asset growth	-0.12	0.45	0.38	2.05***	1.33**	1.66***	0.17
	(0.84)	(0.33)	(0.22)	(0.00)	(0.02)	(0.00)	(0.82)
Market/Book	-0.01	-0.00	0.11***	-0.00	-0.00	-0.02	0.01
	(0.70)	(0.75)	(0.00)	(0.600)	(0.96)	(0.56)	(0.49)
RE/TE	-2.80***	0.03	-0.14	-0.42	0.24	0.81**	1.91***
	(0.00)	(0.58)	(0.42)	(0.12)	(0.45)	(0.02)	(0.00)
EBIT/TA	-8.47***	-2.82**	0.15	13.69***	14.35***	10.63***	11.32***
	(0.00)	(0.01)	(0.82)	(0.00)	(0.00)	(0.00)	(0.00)
Borrowing Ratio	-0.00	-0.00	-0.00	-0.00**	-0.00**	-0.00	-0.00*
	(0.71)	(0.76)	(0.51)	(0.03)	(0.02)	(0.16)	(0.05)
Constant	2.62***	0.74	-0.50	-2.40***	-3.07***	-3.69***	-3.97***
	(0.00)	(0.29)	(0.34)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	267	320	416	553	485	447	393
r2_p	0.21	0.02	0.03	0.33	0.35	0.29	0.33
chi2	76.62	9.69	19.27	253.9	231.0	177.4	168.5

***p<0.01, ** p<0.05, * p<0.1

The coefficients of asset growth are insignificant during the pre-switch years. They are positive and significant during the years *T*, *T+1*, and *T+2.* This indicates that during the post-switch period asset growth ratios of positive switchers have improved in relation to those of negative switchers. These findings are also consistent with our previous findings. Furthermore table 7 also confirms that during the post switch years positive switchers have higher earned-to-contributed equity mix ratios than negative switchers. We observe the opposite in T-3. This suggests that the proportion of retained earnings in the equity of dividend payers is higher than that of non-payers. Regarding indebtedness, positive switchers tend to be less indebted than negative switchers once they have changed their dividend policy.

3.3. Regular payers vs. regular non-payers

To compare the characteristics of regular dividend payers with those of regular non-payers we estimate logit regressions for each year *t* of the sample period 1994-2010. The dependent variable equals 1 if a firm is a regular payer and 0 if it is a regular non-payer. Regular payers are the firms that have never omitted a dividend payment since their dividend data has been available on the Datastream database, until 2010 or their delistment year, whichever is earlier. Regular non-payers are firms that have never paid dividends during their Datastream history, until 2010 or their delistment year, whichever is earlier. Consistent with our univariate findings, table 8 reports that the coefficient of size (Log of total assets), retained earnings (RE/TE), and profitability (EBIT/TA) are positive and highly significant. This indicates that large and highly profitable firms with high earned equity mix ratio are more likely to be regular dividend payers. Similarly, during most of the sample years, the coefficients of asset growth and market-to-book ratio are negative and significant. These results indicate that regular non-payers have relatively higher growth opportunities than regular dividend payers. These results are consistent with our univariate findings.

Table 8

Logit regressions of regular dividend payers against regular non-payers

We estimate logit regressions for each year *t* of 1994-2010. Dependent variable is 1 if a firm is a regular payer and 0 if it is a regular non-payer. Regular payers are the firms that have never omitted dividend payment since their divided data availability on Datastream database until 2010 or their delistment year, whichever is earlier. Regular non-payers are firms that have never paid dividends during their Datastream history until 2010 or their delistment year, whichever is earlier. Dividends mean ordinary dividends. All variables are defined in Appendix III.

Variables	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Assets (log)	0.41***	0.34***	0.25***	0.32***	0.49***	0.51***	0.53***	0.56***	0.59***	0.75***	0.72***	0.56***	0.80***	0.71***	0.73***	0.71***	0.69***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Asset growth	-3.47**	-3.48***	-5.90***	-3.62***	-3.08***	-3.21***	-3.55***	-2.21***	-1.88***	0.36	-0.90***	-2.09***	-2.44***	-1.81***	-3.45***	-1.50***	-2.43***
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.29)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Market/Book	-0.05	-0.09	-0.12	-0.11**	-0.15***	-0.06***	-0.11***	-0.18***	-0.02	-0.02	-0.04**	-0.26***	-0.03	-0.00	0.03	0.00	-0.03
	(0.57)	(0.25)	(0.10)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.65)	(0.32)	(0.00)	(0.00)	(0.14)	(0.99)	(0.41)	(0.87)	(0.29)
RE/TE	3.63***	4.94***	2.94***	3.52***	2.55***	3.01***	2.47***	2.66***	2.72***	2.41***	2.45***	1.45***	2.73***	2.42***	2.57***	2.65***	2.82***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
EBIT/TA	26.39***	16.83***	23.42***	15.70***	21.55***	13.69***	20.85***	24.89***	14.40***	2.48***	10.48***	21.60***	13.82***	8.14***	14.46***	12.87***	11.03***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Borrowing Ratio	-0.00	0.00	0.00	0.00***	0.00**	0.00	0.00**	0.00*	0.00	0.00	-0.00	0.00***	0.00	0.00	0.00	0.00	0.00
	(0.36)	(0.55)	(0.78)	(0.00)	(0.04)	(0.92)	(0.03)	(0.09)	(0.71)	(0.12)	(0.64)	(0.00)	(0.45)	(0.52)	(0.47)	(0.98)	(0.59)
Constant	-5.40***	-5.50***	-2.96**	-4.64***	-6.48***	-6.89***	-7.49***	-8.49***	-8.55***	-10.08***	-10.23***	-7.96***	-12.19***	-10.99***	-11.56***	-11.33***	-11.20***
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Observations	510	543	568	612	724	782	1,071	1,177	1,226	1,2	1,258	1,366	1,473	1,52	1,453	1,377	1,273
r2_p	0.61	0.56	0.61	0.56	0.65	0.57	0.63	0.66	0.62	0.49	0.56	0.59	0.59	0.52	0.58	0.53	0.49
chi2	167.9	182.9	217.5	273.5	461.1	493.8	892.2	1059	1038	798.3	969.5	1133	1210	1095	1163	1021	879.6

*** p<0.01, ** p<0.05, * p<0.1

3.4. Additional evidence

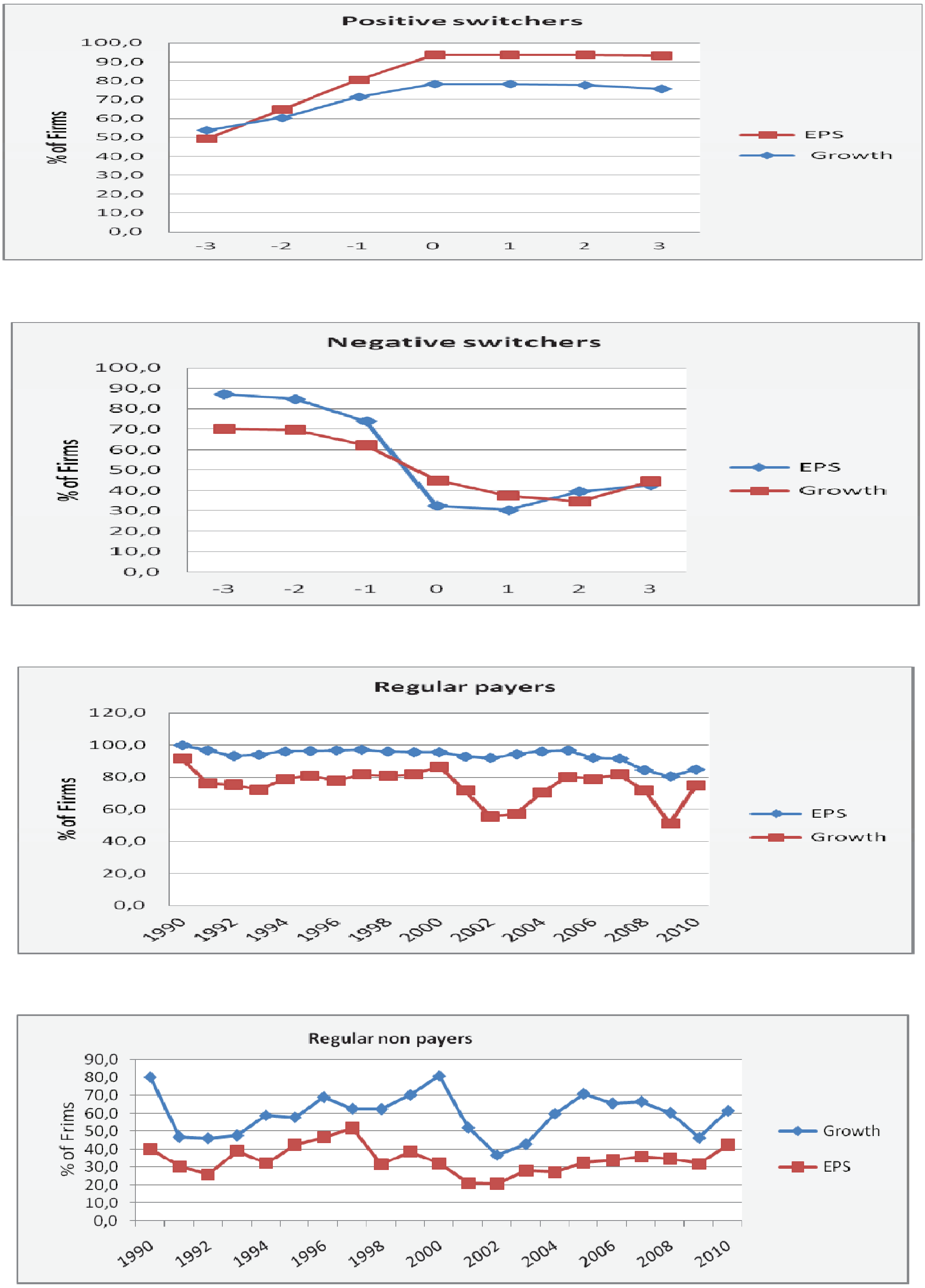
Figure 1 reports the proportion of firms with positive net earnings as well as the proportion of firms with positive asset growth for each year. It indicates that regular payers have the highest proportion of firms with positive earnings and positive asset growth and that these two variables have a strong positive relationship. The average number of regular payers with positive earnings is 94.6 %, but for the regular non-payers only 30.1% have positive earnings.

Figure 1 confirms the results of table 2 by reporting that the proportion of positive switchers with positive net earnings increases from 49.3% in the year T-3 to 93.3% in the year of switch "T" and remains about 93% in years T+1, T+2 and T+3. The proportion of negative switchers with positive net earnings falls from 87.3%, in year T-3, to 32.5% in the year of switch, and remains 30.5%, 39.4 and 42.6% during years T+1, T+2 and T+3 respectively. Furthermore, figure 1 indicates that the positive switchers group experiences a large increase in the number of firms with positive asset growth around the switch year.The proportion of positive switchers with positive asset growth rises from 53% (T-3) to 78% (T). On the other hand, we observe a sharp decline in the proportion of negative switchers with positive asset growth around the switch year. The proportion of negative switchers with positive assets falls from 70% (T-3) to 44% (T). We observe that the proportion of positive growth firms and positive EPS firms among negative switchers (positive switchers) in the year T-3 is close to those of the regular dividend payers (regular non-payers). This is because negative switchers (positive switchers) were also regular payers (regular non-payers) before the dividend switch.

These findings suggest that profitability plays a key role in determining dividend policies. Firms quickly respond to a change in their profitability by changing their dividend policy. Similarly, negative switchers experience the worst operational performance during the initial years of the post-switch period, but in year T+3 we observe a reasonable improvement in the performance of these firms.

Fig 1. Proportion of firms with positive earnings, and positive asset growth

The graphs show the percent of firms with (i) positive net earnings and (ii) positive asset growth. Y axis measures the proportion of number of firms with positive earnings and positive asset growth. For switchers 0 is the year of switch. A firm whose net earnings in the year t are more than zero is a positive earnings firm during the year t. Assets growth is equal to dA_t/A_t where dA_t is equal to A_t - A_{t-1}. A_t stands for total assets at the end of year t.



5. Discussion

Both profitability and asset growth of positive switchers improve over the pre-switch period. After the switch, their profitability remains stable and the asset growth ratio starts falling, indicating that these firms have entered their maturity phase. These findings support the life cycle theory of dividends that posits that a firm begins paying dividends when it becomes mature because its growth and profitability tend to decline. Therefore, dividend initiation conveys information about firm transition to a "mature" phase that will result in slower growth. If we consider negative switchers within this framework, a dividend omission would be an optimal policy response to a transition into a “new growth” phase, e.g. a firm reinvents its earnings by entering new markets with valuable growth opportunities. Actually we observe deterioration in asset growth and profitability for negative switchers after the switch. Therefore, these findings for negative switchers do not support the life cycle explanation. Similarly we find that regular non-payers are young, small, less profitable firms with greater investment opportunities and a low retained earnings equity mix ratio. In contrast, regular payers are old, large, profitable firms with few growth opportunities and a large retained earnings ratio. These findings support the life cycle theory of dividends.

Lintner (1956) states that managers are reluctant to change dividends if changes might have to be reversed. In other words, managers change dividends when they expect a permanent change in earnings. Accordingly; (i) earnings changes should lead dividend changes; (ii) managers should consider future earnings before making any changes in dividends; (iii) current dividends are predicated upon past dividends and current earnings. In line we this view, our findings show that firms prefer not to change their dividends unless they observe a permanent change in their earnings.

The most common interpretation of the signaling theory states that a change in dividends signals changes in future earnings, suggesting that dividend changes precede earnings changes. This is not what we find. Our results show that positive switchers (negative switchers) show a sizable increase (decline) in their profitability and in the number of firms with positive (negative) EPS during the pre-switch years. During the post switch period, however, we do not observe a significant change in the profitability of these firms. It means that earnings lead dividends and managers stop or start dividend payments on the basis of their past performance rather than their expectation of future earnings changes.

Similarly, the signaling theory of dividends suggests that firms pay dividends to convey their inside information about their future prospects to outsiders. As older, larger, and more profitable firms are much more exposed to outsiders than their younger, smaller and less profitable counterparts, the latter group is expected to pay dividends more frequently than the former group. Our findings, however, suggest that dividend payers are precisely large, old, and more profitable than non-payers.

The life cycle theory of dividends states that mature firms pay dividends because their ability to generate cash overtakes their ability to find profitable investment opportunities. Within this framework a firm will opt for a negative switch if it enters into a new "growth phase". Instead, we find that growth opportunities of negative switchers decline sharply around the switch year. Negative switches result from poor operating performance and financial distress. Previous literature argues that managers prefer to maintain payout levels once they have started paying dividends[51]. Moreover, DeAngelo and DeAngelo (2007) report that dividend payers have relatively greater access to external equity markets. Therefore, rather than retaining cash they can easily

[51] Lintner (1956) also suggests in his dividend theory that firms hesitate to change their dividend policy, meaning that firms change their payout policies only when they expect a permanent change in their profitability.

raise capital from external sources. The decline in agency costs (by paying dividends) counters the increased cost in raising funds from external sources. On the other hand, we find that regular non-payers are younger, smaller, and less profitable than regular dividend payers, and they have reasonable investment opportunities. These findings are consistent with the life cycle theory of dividends which states that firms in the initial stage of their life cycle tend to be small, with more growth opportunities, have a low level of profitability, and are less likely to pay dividends.

6. Conclusion

In this study, we take a closer look at the factors that lead to permanent dividend policy changes to better understand the motivations behind this major financial decision. We focus on changes in firms characteristics of positive and negative switchers around the year of the dividend switch. Both our univariate and multivariate findings suggest that positive (negative) switchers experience significant and permanent improvement (decline) in their operating performance around the year of dividend policy switch.

A relatively permanent change in current and/or previous year's profitability is the primary factor that motivates a firm to change its dividend policy. Consistent dividend payers and non-payers are more sensitive to their earnings level than to their available investment opportunities. Consistent dividend payers stop paying dividends only when their poor performance does not allow them to pay dividends anymore. Non-payers start paying dividends when their profitability rises up permanently. Interestingly they experience a reasonable rise in their asset growth at the same time. Logically asset growth is negatively associated with dividend increases.

The increase in profitability, high earned equity -to- total equity ratios for positive switchers provides evidence in support of the Jensen (1986) free cash flow theory. Inconsistent with the signaling theory of dividends, we find that earnings changes precede dividend changes. These findings are consistent with the life cycle theory of dividends and the Lintner (1956) proposition.

Appendix I

Number of switchers and non-switchers by country

A positive switcher is a firm that has never paid dividends during its Datastream history before the year of the switch and never omitted dividends after the switch year till the year of its delistment or year 2010, whichever is earlier. A negative switcher is a firm that has never omitted dividend payments during its Datastream history before the year of switch and never paid dividends after the switch year till the year of its delistment or year 2010, whichever is earlier. Regular payers/regular non-payers are firms that have never omitted/paid dividends during their Datastream history till 2010.

		Non-Switchers		Switchers	
Country	Total Firms	Regular payers	Regular non-payers	Positive switchers	Negative switchers
AUSTRIA	72	19	16	2	4
BELGIUM	66	17	16	8	0
CYPRUS	5	0	3	0	0
DENMARK	77	19	19	1	3
FINLAND	110	44	14	6	3
FRANCE	555	174	110	33	43
GERMANY	445	79	123	37	31
GIBRALTAR	3	0	0	0	0
GREECE	154	45	18	1	20
ICELAND	6	0	4	0	0
IRELAND	79	12	43	2	1
ITALY	188	53	34	16	9
LUXEMBOURG	20	5	7	0	0
NETHERLANDS	153	22	38	11	7
NORWAY	105	16	36	8	5
PORTUGAL	37	13	8	1	1
SPAIN	105	46	18	6	2
SWEDEN	163	34	40	18	6
SWITZERLAND	204	46	38	17	15
TURKEY	158	8	51	4	8
UK	1941	349	896	170	110
Total	4646	1001	1532	391	268

Appendix II

Age distribution of firms

Reported values are the percentage of number of firms. Numbers given in the column titles represent age in years. Age of a firm is calculated from its incorporation date. If both IPO and incorporation dates are missing the firm is excluded from this table.

	Regular payers				Regular non-payers				Positive switchers				Negative switchers			
Year	Age < 5	5≤ Age <10	10 ≤ Age < 20	Age ≥ 20	Age < 5	5≤ Age <10	10 ≤ Age < 20	Age ≥ 20	Age < 5	5≤ Age <10	10 ≤ Age < 20	Age ≥ 20	Age < 5	5≤ Age <10	10 ≤ Age < 20	Age ≥ 20
1990	8	6	7	79	13	0	50	38	--	--	--	--	--	--	--	--
1991	4	10	8	77	13	7	13	67	--	--	--	--	--	--	--	--
1992	5	7	10	77	8	17	14	61	--	--	--	--	--	--	--	--
1993	5	9	10	76	2	24	17	57	--	--	--	--	--	--	--	--
1994	4	10	10	76	14	20	18	48	10	20	10	60	0	17	17	67
1995	4	10	12	75	16	23	19	42	13	0	13	75	0	0	13	88
1996	6	8	14	73	25	18	19	38	31	13	0	56	0	0	14	86
1997	8	7	14	71	24	15	25	36	14	0	0	86	0	14	14	71
1998	11	7	15	67	38	18	22	21	23	0	31	46	36	7	14	43
1999	12	7	15	66	32	22	25	21	32	11	21	37	15	10	20	55
2000	13	7	16	64	48	19	16	18	42	17	8	33	2	7	21	70
2001	14	10	15	61	45	21	19	15	8	25	42	25	11	11	29	50
2002	7	10	15	67	44	21	20	15	21	29	21	29	5	10	40	45
2003	10	12	15	63	43	21	20	15	21	26	16	37	20	0	15	65
2004	9	14	15	63	42	23	19	16	40	27	10	23	11	6	17	67
2005	4	8	15	73	39	29	17	15	33	19	19	29	10	3	32	55
2006	7	13	14	66	40	28	18	14	35	20	22	24	9	18	18	55
2007	6	11	15	67	37	26	21	17	--	--	--	--	--	--	--	--
2008	6	11	16	68	36	26	21	17	--	--	--	--	--	--	--	--
2009	4	9	17	70	26	33	23	19	--	--	--	--	--	--	--	--
2010	3	8	18	71	15	32	33	20	--	--	--	--	--	--	--	--

Appendix III

- **Postive switcher**

  We define a positive switcher as a firm that has never paid dividends during its DataStream history before the year of switch and then has never omitted dividends from the year of the switch until the year of its delistment or year 2010, whichever is earlier.

- **Negative switcher**

  A negative switcher is a firm that has never omitted dividend payments during its DataStream history until the year of switch and has never paid any dividend from the year of the switch until the year of its delistment or year 2010, whichever is earlier.

- **Regular payers**

  Regular payers are firms that have never omitted dividends during their Datastream history until 2010.

- **Regular non-payers**

  Regular non-payers are those that have never paid dividends during their DataStream history until 2010.

- **Borrowing ratio**

  Total loans divided by equity capital and reserves minus total intangibles

  [Debts / ((Equity + reserves) - intangibles)].

- **Book Value Per Share**

  Book value per share represents the book value (proportioned common equity divided by outstanding shares) at the company's fiscal year end. Preference stock has been included in equity in the calculation of book value per share where it participates with common/ordinary shares in the profits of the company. It is excluded in all other cases.

- **Total share capital and Reserves**

Ordinary + preference capital +reserves

- **Equity capital and reserves**

  COMMON EQUITY represents common shareholders' investment in a company.

  It includes but is not restricted to:

  Common stock value

  Retained earnings

  Capital surplus

  Capital stock premium

- **Ordinary share capital**

  COMMON STOCK represents the par or stated value of the issued common shares of the company. It includes the value of all multiple shares. Along with capital surplus it is the equity capital received from parties outside the firm.

- **Retained Earnings**

  Equity capital and reserves - Ordinary share capital

- **Earnings before interest and taxes (EBIT)**

  Earnings before interest and taxes (EBIT) represent the earnings of a company before interest expense and income taxes. It is calculated by taking the pretax income and adding back interest expense on debt and subtracting interest capitalized.

- **Total Assets**

  Total assets represent the sum of total current assets, long term receivables, investment in unconsolidated subsidiaries, other investments, net property plant and equipment and other assets.

- **Asset Growth**

We measure asset growth as dA_t/A_t; where $dA_t=A_t - A_{t-1}$, and A_t stands for total assets at the end of current fiscal year *t*.

Chapter III: The relation between dividend changes and future earnings: Additional Evidence

1. Introduction

The dividend information content hypothesis is a longstanding hypothesis in the field of financial economics. Are dividends informative? If yes, which information do they convey? These are two open ended questions. Given the importance of this issue to corporate finance, and because of the puzzling results of our previous studies regarding the signaling issue, we reexamine the empirical validity of the information content of dividends by examining the relationship of dividend changes with stock market reaction, and future profitability (that will be captured by changes in future earnings).

Miller and Modigliani (1961) suggest that dividends are paid notably because they can convey information about future cash flows. In other words, an increase in dividends would signal management's confidence that future earnings will increase sufficiently to cope with the dividend increase. Likewise, managers decrease dividends only if future earnings are expected to decline. An announcement of dividend increase is, therefore, considered a positive signal (good news), and a dividend decrease announcement is viewed as a negative signal (bad news).

Bhattacharya (1979), Miller and Rock (1985), and John and Williams (1985) developed models of dividend signaling theory. They suggest that dividends convey relevant information about firm future prospects because they are costly. Bhattacharya (1979) states that the transaction cost of share issues resulting from dividend payments is the cost of using dividends as a signal. Miller and Rock (1985) assume that firms forgo positive NPV investment opportunities by paying dividends. John and Williams (1985) and Bernheim (1991) declare the higher tax rates on dividends relative to capital gains as the signaling costs. Thus, in the context of the dividend signaling theory, we should observe: (i) a positive association between dividend changes and earning changes in the years following the dividend change; (ii) abnormal stock returns around the dividend change announcements.

If the dividend literature overflows with empirical studies showing that announcements of increase (decrease) in dividends are systematically associated with positive (negative) abnormal stock returns, prior evidence regarding the association between dividend changes and future performance is inconclusive. This makes market reactions to dividend announcements a puzzling phenomenon. If dividends have no relationship with future performance, why do capital markets react to dividend change announcements?

Most of past dividend related empirical literature focuses on US firms and the findings are perceived as global (Bruce 1997). Among others, Travlos et al. (2001), Kang and Lee (2003), and Kang (2004) suggest that firms in different countries may follow different dividend policies because of differences in macro-economic environments, regulations, economic developments, tax systems, market transaction costs, and other institutional factors. In this context we examine the empirical validity of the signaling theory using sample of firms in non-US countries i.e. France and Germany[52]. Both France and Germany are civil law countries and are characterized as "relationship-

[52] For other than European countries we do not have dividend announcement dates. We exclude UK firms because in UK dividend and earnings are usually announced on the same date.

oriented" systems. The dividend payment behavior of firms in France and Germany is clearly different from that in US. Many US firms, for example, pay dividends quarterly while German and French firms prefer to pay dividends annually. Ownership, in both France and Germany, is concentrated. Firms in these countries are monitored by a combination of large corporate shareholders, banks, and other inter-corporate relationships (e.g., co-owner family members etc). In such conditions, firms face relatively few information asymmetry problems and thus the need to convey information to stock market. Therefore, we expect that the association between earnings and dividends may differ from the one in the US.

We extend prior research by introducing the notion of ''market rationality". In particular, we investigate whether market participants discriminate between dividend announcements that convey information on firms' future profitability and those that do not More precisely, using the model of Nissim and Ziv (2001) in a first step, we examine whether current dividend changes are associated with earnings changes in any of the three years following the dividend change year. If it is not the case on average, we will assume that market forces are rational and they can distinguish between fake and genuine dividend signals. Thus, investors react positively to only those dividend change announcements that are positively associated with future earnings/profitability. Therefore, we expect that dividend changes that are positively associated with future earnings changes are only those that result in abnormal stock returns at the dividend change announcement date. This leads us, in a second step, to test the same relationship for the only dividend changes that trigger abnormal stock returns in the dividend change direction during the three day period around the dividend announcement date. We use an event study methodology (e.g., Brown et Warner (1985); Lasfer (1995)), to compute the three-day abnormal stock returns around the dividend announcement day. The level of abnormal returns determines the information content of the dividend announcement about the future changes in earnings.

Consistent with the previous studies, we find a very weak relationship between current dividend changes and subsequent changes in earnings. Inconsistent with our expectations, we find that the association between current dividends changes and future earnings changes, for firms with the highest abnormal returns in the dividend change direction, is not stronger than the rest of the firms. These findings cast doubt on the validity of the dividend signaling theory.

2. Market reaction to dividend change announcements

One of the most important assumptions of the dividend signaling theory is that dividend change announcements trigger abnormal stock returns because they convey inside information about management's assessment on firms' future prospects. So, a dividend increase should signal an improvement in a firm's future performance, while a decrease should suggest a decline in its future profitability. Moreover, there should be a positive relationship between current dividend changes and subsequent profitability/earnings.

A significant number of empirical studies have been conducted to investigate the impact of dividend change announcements on stock returns. Among many others, Pettit (1976), and Aharony and Swary (1980) found evidence showing that dividend change announcements are positively associated with contemporaneous abnormal stock returns, probably because such announcements convey inside information to the market[53]. Asquith and Mullins (1983) examined the impact of dividend initiation on stockholders' wealth and found significant stock price increases around initiation announcements. Dielman and Oppenheimer (1984) report significantly more negative market reaction to announcements of dividend omissions by firms with a reputation of dividend consistency. Michaely et al. (1995) demonstrate that dividend initiations and omissions induce 3.4 percent and −7.0 percent average excess returns. Similarly, Lee and Ryan (2000) report a significant stock price reaction around dividend initiations and omissions. Apostolos et al. (2009) report that dividend initiations result in significant positive abnormal stock returns and that the price response to dividend initiations is inversely associated with the firms' information environment. Brav et al. (2005) present findings based on an extensive survey indicating that managers believe that dividend payments convey information to outsiders about the future earnings. Although these studies were based on the US firms, Travlos, Trigerorgis and Vafaes (2001) analyzed firms headquartered in Cyprus. Gurgul, Madjosz and Mestel (2003) focused on the Austrian market, and Yilmaz and Gulay (2006) on Turkish firms. All these studies found results consistent with the dividend information content hypothesis.

Although there are many empirical studies reporting positive relationship between dividend change announcements and share price reactions, some studies do not support this idea. Furthermore, several studies even report inverse relationship between dividend changes and the subsequent share price reactions, meaning that an increase in dividends leads to negative stock returns around the date of dividend change announcement. Lang and Litzenberger (1989) and Benartzi, Michaely and

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[53] Sant and Cowan (1994), Dhillon et al. (1994), Christie et al. (1994), Michaely et al. (1995), Benartzi et al. (1997), Nissim and Ziv (2001) and Koch and Sun (2004) also report significant announcement period returns associated with dividend changes.

Thaler (1997) analyzed the US market, Conroy, Eades and Harris (2000) the Japanese market, Chen, Firth and Gao (2002) the Chinese market, and Abeyratna and Power (2002) the UK firms. They did not find any significant relationship between dividend announcements and share returns.

Based on these findings, we assume that market forces are rational and abnormal stock returns around dividend announcements are highly significant only when these announcements do convey information on the firm's future prospect. Therefore, we hypothesize that dividend changes are positively associated with changes in future earnings only when their announcement has resulted in highly significant stock market reactions.

3. Dividend changes and changes in future earnings

Empirical evidence, in support of the view that dividend changes convey information, has been largely documented. Market forces, supposedly, react to dividend changes because they expect a change in future earnings in the dividend change direction. In order to investigate the relationship between dividend changes and changes in future earnings, a sizable number of studies have been conducted, but the empirical evidence is weak. Some studies support the positive relationship hypothesis between dividend changes and changes in future earnings. Many others find no or very weak relationship. Some even find a negative association between the two.

Brickley (1983) uses a sample of 35 firms that increased their dividends by more than 20 percent and finds a significant positive change in the earnings of the current year (the dividend change year) and the year after the dividend change. Healy and Palepu (1988) use a sample of 131 dividend initiators and 172 dividend omitters. They report a rising trend in earnings for dividend initiators, which starts in the pre initiation years and lasts till two years following the initiation year. Results of Leftwich and Zmijewski (1994) suggest that a reduction in dividends indicates serious long term deterioration in a firm's future prospects. Addressing the issues related to the estimation of unexpected earnings (measurement error and omitted correlated variables), Nissim and Ziv (2001) find a positive association between dividend changes and earnings changes for each of the two years following the dividend change.

Empirical studies of the relationship between current dividend changes and changes in future earnings provide mixed evidence. By regressing next year's earnings on current year's dividends for 310 firms during the period 1946 to 1967 Watts (1973) reports positive coefficients for earnings with a very low t-statistics. Penman (1983) shows that if we control for management's future earnings forecasts, the signaling role of dividends becomes negligible. Evidence by DeAngelo et al. (1996) suggests that dividend changes contain virtually no information about future changes in earnings. Using also US firms, Grullon et al. (2005) found a very weak relationship between dividend changes and changes in earnings in the two years following the dividend change announcement year.

Paradoxically, several studies found negative relationship between dividend changes and subsequent changes in earnings. Healy and Palepu (1988) analyzed 172 dividend omitters. They found results opposite to the signaling hypothesis. Earnings of omitters declined in the year of omission but improved significantly in the following years. Using 1025 firms during the period 1979 to 1991, Benartzi et al. (1997) found that earnings in the year of and the year before the dividend changes are strongly correlated to dividends. But they did not find evidence in support that dividend changes are positively associated with future earnings. Similar to Healy and Palepu (1988) findings, they reported an increase in earnings after dividend decreases in the two years following dividend cuts. They found some support for the Lintner (1956) proposition and suggested that dividend changes probably convey information about permanent shift in earnings rather than a future decline or growth in earnings. Grullon et al. (2002) suggested that the increase in dividends convey information about changes in a firm's life cycle, specifically a firm's transition from a higher growth phase to a lower growth (mature) phase. They reported a decline in profitability of dividend-increasing firms in the years after the dividend change, and reported that the positive market reaction to a dividend increase is significantly associated with the subsequent decline in systematic risk. Koch and Sun (2004) demonstrated a negative relationship between dividend increases and future earnings changes and argued that dividend changes convey information about the persistence of past earnings changes, claiming that ".... all that is implied by a dividend increase is that past earnings increases will not 'reverse' in future periods". Jensen et al. (2010) reported an earnings rebound in the post dividend change years for firms that announce dividend reductions. In sum, the above mentioned literature finds little or no evidence that dividend changes predict abnormal increases in future earnings.

4. Hypotheses development

According to the signaling theory of dividends, current dividend changes should be positively related to changes in future earnings. Therefore, to test the dividends-earnings relationship, we formulate the following alternative hypothesis:

> ***H_1: "Dividend changes are positively associated with future changes in earnings"***

Rejection of the null hypothesis associated with H_1 is consistent with the dividend signaling hypothesis that insiders (managers), who are more informed about the future prospects of their firms, use dividends to convey inside information to outsiders. However, the dividend signaling hypothesis is not systematically rejected if the null hypothesis is not rejected since dividend changes are not expected to convey information if they do not result in significant abnormal stock returns. Therefore, we also hypothesize that the only dividend changes that should be positively related to subsequent earnings changes are those that are informative, i.e. those that lead to economically significant abnormal returns around their announcement dates:

> ***H_2: "Dividend changes that result in economically significant stock price reaction are positively associated with future earnings".***

Rejection of the null hypothesis associated with H_2 is consistent with the dividend signaling theory. On the other hand, if we fail to reject the null hypothesis, this will be evidence inconsistent with the dividend signaling hypothesis. Moreover, it will suggest that either dividend changes give information about any other aspect (other than future earnings) of the firms, or market forces react irrationally to dividend change announcements.

We investigate the relationship between current dividend changes and changes in future earnings in two steps. In a first step, using all firms that changed their dividends, we analyze the relationship between current dividend changes and subsequent changes in earnings. In a second step we analyze the same relationship by considering only the dividend change announcements that trigger economically significant excess stock returns during the three days around the dividend change announcement dates.

5. Research design

To test whether dividend changes convey information about changes in future profitability, we follow Nissim and Ziv (2001). They use earnings as a proxy for future profitability. In their initial analysis, they assume that earnings follow a random walk and estimate unexpected earnings as the difference between current year and previous year earnings. Most prior studies used similar approach.

To verify that the results of prior studies hold in their sample, Nissim and Ziv (2001) regressed

$$(E_T - E_{T-1})/P_{-1} = \beta_0 + \beta_1 R\Delta DIV_0 + \varepsilon_T \tag{1}$$

for T = 0, 1, and 2, where E_T denotes earnings in year T, P_{-1} is the market value of equity at the start of the dividend change year, and $R\Delta DIV_0$ is the rate of change (annual percentage change)[54] in dividend per share in year zero. They find that $\boldsymbol{\beta_1}$ is positive and highly significant for $T = 0$, but it is insignificant for T= 1 and 2. They argue that equation (1) has two specification issues related to the estimation of unexpected earnings: measurement error and omitted correlated variables. These specification issues may cause β_1 to be non-positive for T = 1 and 2. Firstly, equation (1) assumes that the change in earnings in year T is unrelated to the level of earnings in year T_{-1}, and thus may serve as a proxy for “unexpected earnings” in year T. This assumption may be suitable for undeflated earnings. However, the change in earnings $(E_T - E_{T-1})$ in equation (1) is deflated by stock price at the beginning of the dividend change year (P_-

[54] They compute it as the difference between current year and last year dividends scaled by last year’s dividend.

$_1$). Since stock price reflects market expectations about future earnings, the ratio of earnings to price is likely to be negatively associated with the expected change in earnings. Thus, the dependent variable in equation (1) measures unexpected earnings with error that is negatively correlated with the ratio of current earnings to price. Since companies that increase (decrease) dividends usually have a high (low) ratio of current earnings to price, the dividend change is likely to capture this measurement error in a way that may bias against finding information content in dividends. Secondly, Nissim and Ziv (2001) argue that equation 1 omits an important control variable that is correlated with the dividend change. They suggest that if one considers only earnings information, the expected change in earnings will be zero (or constant, if there is a drift). But in the presence of additional information, this property may not hold. For example, Freeman, Ohlson, et Penman (1982) suggest that an important predictor of future earnings changes is the ratio of earnings to the book value of equity (*ROE*). They show that since *ROE* is mean reverting, high (low) *ROE* implies an expected decrease (increase) in earnings. Since the correlation between dividend changes and current *ROE* is positive, the expected change in earnings is likely to be negatively correlated with the current changes in dividends. Hence, a lack of correlation between earnings changes and dividend changes would indicate that dividend changes do not convey information about future earnings. To address these issues Nissim and Ziv (2001) include the return on equity (ROE_{t-1}) and past changes in earnings in their model. Furthermore, they consider that the magnitude of the relationship between earnings changes and dividend changes depends on whether dividends increase or decrease. Therefore, they introduce two dummy variables to make a distinction between dividend increases and dividend decreases. With the modified model (equation (2)), they demonstrated a positive relationship between dividend changes and changes in earnings in each of the two years following the dividend change.

$$(E_T - E_{T-1})/B_{-1} = \beta_0 + \beta_{1P} DPC_0 \times R\Delta DIV_0 + \beta_{1N} DNC_0 \times R\Delta DIV_0 + \beta_2 ROE_{T-1} + \beta_3 (E_0 - E_{-1})/B_{-1} + \varepsilon_T \quad (2)$$

where

E_T = earnings before extraordinary items for share i in year t (year 0 is event year)

B_{-1} = book value of equity at the end of year –1.

$R\Delta DIV_0$ = rate of change in the ordinary dividend payment in year 0. It is computed as the difference between current year and last year dividends scaled by last year dividend.

DPC = dummy variable that equals one if dividends are increased and zero otherwise

DNC = dummy variable that equals one if dividends are decreased and zero otherwise

ROE_{T-1} = earnings before extraordinary items in year T_{-1} scaled by the book value of equity at the end of the same year

To test the association between current dividend changes and future performance for German and French firms, we use the model (2) proposed by Nissim and Ziv (2001)[55] on French and German firms. This model assumes linear relationship between future earnings changes and past earnings changes. Following Benartzi *et al.* (1997) we use the Fama and MacBeth (1973) procedure. First, we estimate cross-sectional regression

[55] We use the model in order to make our findings comparable to those of Nissim and Ziv (2001) and Benartzi *et al.* (2005). Both studies apply the model on US data and find a positive relationship between dividend changes and changes in future earnings.

coefficients for each year *t*, and then we compute time series- means of the estimated coefficients and their corresponding t-statistics[56].

On the basis of the dividend signaling hypothesis, we expect that a dividend increase will be followed by an increase in future earnings while dividend decreasing firms should experience deterioration in their future earnings.

In the second stage, to test the sub-hypothesis **H_2**, we limit our sample to dividend change announcements that fulfill the following three conditions: i) the dividend change and the subsequent market reaction are positively related; ii) the change in dividends is at least 5 percent; and iii) the three days abnormal return to the dividend change announcement is at least 1 percent.

Condition 1 finds its justification in the fact that it has been noted that cross sectional and time series market reactions to firms' dividend change announcements may differ, meaning that market forces do not consider every dividend increase (decrease) a positive (negative) message. For instance, in the period of business boom, a dividend increase may be considered as a bad news. The market may consider it as a sign of low investment opportunities available for the firm. Similarly, larger firms, firms with concentrated ownerships, or firms with few information asymmetry problems due to any other reason may experience relatively small or negative market (opposite to dividend change direction) reaction after dividend change announcements. For European firms, specifically, a negative relation between dividend changes and market reaction has been largely reported. Therefore, to give a full chance to the dividend signaling theory, we hypothesize that only those dividend changes of our sample firms are positively related to future earnings that are positively related to market reaction.

[56] The t-statistics are obtained by dividing the mean values by their standard errors[56].

In other words, we assume that investors are rational and can distinguish between genuine and fake signals conveyed by firm managers. Therefore only dividend changes, that are positively associated with stock market returns, are positively related with future changes in earnings.

Condition 2 finds its justification in the likely weak information content of small dividend changes. Condition 3 finds its justification in the expected rationality of markets forces. If the dividend signaling mechanism is effective in providing market participants with useful information, investors should react to dividend announcements only if they convey relevant information on the firm's future prospects. Therefore, announcements that are not associated with significant market reaction should be regarded as uninformative. Here we do not consider the statistical significance but the economic significance of the market reaction, i.e. abnormal stock returns at dividend announcements. We fix the threshold at 1 percent, considering that abnormal stock returns lower than 1 percent do not result in economically significant changes in firm value.

We compute the changes in dividends as the difference between the dividend announced in year t and the previous year's dividend ($\boldsymbol{D_{i,t-1}}$), deflated by previous year's dividend.

$$\boldsymbol{R\Delta DIV_{i,t} = \frac{D_{i,t} - D_{i,t-1}}{D_{i,t-1}}} \qquad \textbf{(3)}$$

where

$\boldsymbol{D_{i,t}}$ = current year's dividend

$\boldsymbol{R\Delta DIV_{i,t}}$ = rate of change in dividend of firm *i* in year t.

$\boldsymbol{D_{i,t-1}}$= previous year's dividend

We use the market model to estimate the expected stock returns. The estimation window comprises of 120 trading days, ending 3 days before the event date. The event window comprises of three trading days centered by the event day. The abnormal stock returns over these three days measure the stock market reaction around the dividend change announcements. The level of abnormal returns determines the information content of dividend changes. $R\Delta DIV_0$

$$\mathbf{E(R_{it}) = \boldsymbol{\alpha_i} + \boldsymbol{\beta_i R_{mt}}} \tag{4}$$

In equation 4, R_{it} and R_{mt} represent the daily returns on stock *i* and the SBF 250 Index respectively. The abnormal returns on stock i (AR_{it}) on day *t* are equal to the difference between the actual returns and the expected returns (ER_{it}).

$$\mathbf{AR_{it} = R_{it} - E(R_{it})} \tag{5}$$

We compute the cumulative abnormal return (CAR) for each dividend change announcement. This represents the market reaction to the concerned dividend announcement. The cumulative abnormal return for firm *i* on day *t* equals the sum of three days abnormal returns surrounding the event date.

$$\mathbf{CARit} = \sum_{t=-1}^{t=+1} \mathbf{ARit} \tag{6}$$

where t = 0 is the dividend announcement day. If CAR_{it} is positively correlated with ΔD_{it}, and significantly different larger (or smaller) than 1(-1) percent, then the dividend change is expected to convey useful information to market participants. Therefore subsequent earnings should be positively related to the dividend change.

To examine the relation between stock returns and dividend changes, the cumulative abnormal stock returns to dividend change announcements are regressed against dividend changes. For this purpose, the following regression model is estimated:

$$\mathbf{CAR_{it} = \beta_0 + \beta_1\, DPC{\times}R\Delta DIV + \beta_1\, DNC{\times}R\Delta DIV + \varepsilon} \tag{7}$$

where

CAR_{it} = cumulative abnormal return for stock *i* in the 3-day period, surrounding the dividend change event date

DPC = dummy variable that takes value 1 if dividend increases and 0 otherwise

DNC = dummy variable that takes value 1 if dividend decreases and 0 otherwise

If dividend changes convey inside information to outsiders about a firm's future prospects, as suggested by the dividend information content hypothesis, we expect β1 to be positive and statistically significant.

6. Sample selection

Our purpose is to test the empirical validity of the signaling hypothesis using European markets. But, unfortunately, dividend announcement dates are not available for most of the European countries in the Reuters 3000 Xtra database. Furthermore, UK firms have to be excluded because a majority of them announce dividends and earnings simultaneously. Therefore, we limit our sample to only German and French firms. France and Germany are both civil law countries. The ownership of firms tends to be more concentrated in these countries as compared to UK and US. The financial model in Germany and France is bank based while in the US, UK and other common law countries it is more market based oriented. French and German listed firms provide us a sample of firms from countries with a reasonably homogenous highly developed set of legal institutions and comparatively high level legal enforcement systems. Given these characteristics we expect strong similarities between French and German markets. Furthermore, we expect relatively low information asymmetry problems and thus low market reaction to dividend change announcements.

Using the Reuters 3000 Xtra database, we identify annual dividend announcements made between January 1991 and December 2009 by French and German firms[57]. The rest of the data are extracted from Datastream database. A complete list of the sample criteria is as follows:

- Firms classified as financials (codes that start from digit 40) by Global Industry Classification Standard (GICS) are excluded from the sample.

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[57] We use the database to get the dividend announcement dates, which we need for the computation of three days announcement returns and identification of other events around the dividend announcements.

- To be included in the sample a firm must be a dividend payer in the current year "*t*" as well as in the previous year "*t-1*" (We need two years of dividend payments to calculate the change in dividends). This criterion excludes dividend initiations and omissions[58].
- Zero change dividend announcements are excluded. Only dividend change announcements are considered.

  In addition to the above mentioned criteria, for the three day stock price return computation, a firm should fulfill the following conditions as well:

- The change in dividends should be at least ±5 percent.
- There should be no other announcements (e.g., special dividends, earnings, stock issue etc) made within 5 days interval.

We also require total assets to be available both in the current and in the preceding year. Our primary set of firms consists of 901 French and 888 German firms. The sample includes 3061 dividend increased events, and 836 decreased events for France, and a total of 1523 increased and 406 decreased events for Germany. The preponderance of dividend increases

[58] Benartzi et al. (1997) Vieira and Raposo (2007) also exclude initiations and omissions for the same reason.

Table 1

Summary Statistics

This table reports the characteristics of the sample firms. RΔDIV is the rate of change in dividends measured as the change in dividends scaled by last year's dividends [$(Div_0 - Div_{-1})/ Div_{-1}$]. MV, TA, ROE, and EBIT stand for market value, total assets, return on equity, and earnings before interest and taxes respectively. The data is winsorized. Any observation that falls more than three standard deviations away from the mean of the data under consideration is considered an outlier.

	Mean	SD	5%	90%	50%	N
A. Dividend Increases						
RΔDIV%	41.33	57.49	2.86	73.33	16.67	4616
MV (in millions of €)	2949.92	8870.15	8.31	6480.86	182.67	5288
ROE%	16.09	23.23	2.67	29.23	13.76	5022
TA (in millions of €)	4232.8	11700.0	12.9	10600.0	326.7	4943
EBIT/TA%	10.20	7.45	1.57	19.08	8.62	4697
B. Dividend Decreases						
RΔDIV%	-57.43	22.79	-75.45	-5.26	-28.80	1268
MV (in millions of €)	1106.89	4595.42	6.44	1561.33	72.12	1262
ROE%	8.71	14.69	-7.07	21.84	7.45	1184
TA (in millions of €)	2253.8	7636.5	9.2	5003.8	152.9	1129
EBIT/TA%	7.29	7.58	-1.09	14.68	6.01	1131

over decreases is inconsistent with the studies that suggest that dividends are disappearing. Prior studies that find a reduction in the number (proportion) of dividend payers suggest that it could be because of the decline in the importance if dividends over time. If such is the case, dividend increased announcements should not be a preferred option for firms. These findings suggest that the phenomenon of dividend disappearance is triggered by reasons other than the decline in the importance of dividend payments.

Table 1 provides preliminary statistics on the dividend change (RΔDIV%), the market value of equity (MV), the return on equity (ROE%), and the return on assets (ROA%), the total assets (TA), and the earnings before interest and taxes scaled by total assets (EBIT/TA%) for dividend increasing firms (panel A), and for dividend decreasing firms (panel B). The average increase in dividends is 35.3percent, compared with an average decrease in dividends of nearly -32.43 percent. These results are inconsistent with prior empirical studies (e.g., Michaely, Thaler, and Womack (1995)) showing that dividend cuts are more extreme in magnitude than dividend increases. The rest of the table shows that firms that increase dividends are larger and more profitable than firms that cut their dividends.

Table 2
Number of firm year observations
This table reports the number of dividend events for the French and German samples. The sample period is 1990-2009. Our primary set of firms consists of 901 French and 888 German firms. Dividend means

ordinary dividends. Zero change announcements, initiations and omissions are excluded. Financial firms are also excluded. To be included in the sample, a firm should pay dividends in both the current and previous year.

	France	Germany
Total number of dividend announcements	11193	7894
Less:		
Number of interim dividend announcements	1340	664
No change announcements plus initiations		
	4985	4517
Number of observations used to test H_1	**4868**	**2713**
Less:		
Announcts. made within 5 days interval of any other announcements[59]	2388	1861
Number of observations excluded	8713	7042
Total number of dividend change events used in H_2	**2480**	**852**

[59] Dividend announcements are excluded if they are announced within 5 days interval of any other announcements such as earnings announcements, special dividends announcements etc.

Table 3
Breakdown of dividend increases and dividend decreases per year
This table reports the number of dividend increases, decreases, initiations, omissions, and no change firms in each year of our sample period. Initiators are firms that pay positive dividends in the current year but have not paid dividends in the last year. Omitters are firms that have paid dividends in the last year but do not pay them in the current year. No change firms are firms that do not change the amount of dividends in the current year (t) relative to the amount paid in the previous (t-1) year.

	France			Germany			All Firms		
Year	Incr.	Decr.	No change	Incr.	Decr.	No change	Incr.	Decr.	No change
1991	86	24	94	50	6	64	136	30	158
1992	84	36	86	23	16	81	107	52	167
1993	85	25	91	58	11	55	143	36	146
1994	112	20	94	50	10	64	162	30	158
1995	112	21	110	58	6	68	170	27	178
1996	121	35	106	55	11	78	176	46	184
1997	140	23	121	69	6	76	209	29	197
1998	175	43	110	83	13	67	258	56	177
1999	194	39	167	101	14	102	295	53	269
2000	213	45	205	110	16	161	323	61	366
2001	208	68	233	125	35	230	333	103	463
2002	174	65	307	72	27	333	246	92	640
2003	182	48	338	74	15	353	256	63	691
2004	207	37	308	90	21	330	297	58	638
2005	222	43	288	126	14	311	348	57	599
2006	249	42	304	150	17	337	399	59	641
2007	270	46	338	152	26	396	422	72	734
2008	126	119	394	74	135	381	200	254	775
2009	101	57	159	3	7	27	104	64	186
Total	3061	836	3853	1523	406	3514	4584	1242	7367

Table 3 provides statistics on the number of dividend increases, decreases, initiations, omissions, and no change firms in each year of our sample period. Initiators are firms that pay positive dividends in the current year but have not paid dividends in the last year. Omitters are firms that have paid dividends in the last year but do not pay them in the current year. No change firms are firms that do not change the amount of dividends in the current year (t) relative to the amount paid in the previous (t-1) year. Table 3 reports that both in France and Germany, firms that do not change their dividends (zero change firms) are far more in number than the other dividend groups. The resulting sample contains 4584 dividend increases, 1242 dividend decreases, and 7367 no-change events. These results are consistent with prior empirical studies (e.g., Grullon et al. (2005)) showing that firms prefer to maintain their existing dividend levels, but in case of changes, they prefer to increase dividends.

7. Empirical findings

To test the relationship between current dividend changes and changes in future performance, first we consider regression [2] by using all dividend change events. In order to reduce the problems associated with residual cross-correlation, we follow Fama and MacBeth (1973) to estimate the coefficients of the regression model. First, we estimate cross-sectional regression coefficients for each year. Then we compute time-series means of the computed regression coefficients. T-statistics are obtained by dividing mean values by their standard errors.

7.1. Hypothesis 1

Table 4 reports the results of equation (2). In this table we estimate the regression coefficients by using all firm year observations. Panel A of table 4 suggests that the positive dividend changes in year zero are positively associated with earnings changes in year 1 and 2; and is significant in year 2 only. The coefficient for positive dividend changes, β_{1P}, equal to 0.02 when T=1 and T=2[60]. In contrast, the coefficient for negative dividend changes, $\beta_{1P,}$ is positive (0.08) and significant in year T=1. The coefficients for both positive and negative changes become negative in year three; that is when T=3. This suggests a recovery, in terms of profitability, of dividend decreased firms, and a decline in the earnings of firms that increased dividends.

Panel B of table 4 reports annual cross-sectional regression coefficients for dividend changes. It helps us analyze the relationship between dividend changes and changes in future earnings in much more detail. It also helps us determine whether the relationship between dividend changes and changes in future earnings varies through time systematically. We observe that the coefficients of positive dividend changes are positive and significant only for 21.05 percent of the years when T=1 and 26.32 percent when T=2. Similarly, the coefficients for negative dividend changes are positive and significant for 36.8 percent and 15.79 percent of the total years (19) when T=1 and T=2 respectively. For year *T*=3, however, the number declines to 5.26 percent for both dividends increased and decreased firms. Furthermore in year T=3, the number of years with negative and significant coefficients rises to 15.79 percent from 5.25 (10.52) percent for dividend increased (decreased) firms. These findings confirm that firms that cut dividends due to poor performance start to recover in the third year after dividend changes. Similarly, firms that announce dividend increases, face a

[60] Nissim and Ziv (2001) and Grullon et al., (2005) report significant coefficients for year T=1 and T=2 for positive dividend changes in US.

deterioration in their profitability in year T=3. Consistent with previous studies, these results indicate a weak relationship between current dividend changes and changes in future earnings.

Table 4
Regression of earnings changes on dividend changes
This table reports regression estimates relating earning changes to dividend changes. E_T is the net earnings in year T (year 0 is the event year). B_{-1} is the book value of owner's equity at the end of year $_{-1}$. R∆DIV is the annual rate of change in ordinary dividends, computed as the change in dividends scaled by last year's dividends. DPC (DNC) is equal to one for dividend increases (decreases) and zero otherwise. ROE stands for returns on equity. Following Fama and MacBeth (1973), first we estimate intercept and slope coefficients from annual regressions of each year of the sample period 1991-2010, then we compute time-series averages of the cross sectional regression coefficients. The t-statistics are obtained by dividing the mean values by their standard errors. In table 4, positive and significant coefficients are highlighted.

Panel A: Time series Means of the cross-sectional regression coefficients

$$(E_0 - E_{-1})/B_{-1} = \beta_0 + \beta_{1P} DPC_0 \times R\Delta DIV_0 + \beta_{1N} DNC_0 \times R\Delta DIV_0 + \beta_2 ROE_{T-1} + \beta_3 (E_0 - E_{-1})/B_{-1} + \varepsilon_T$$

Year	-	β_{1p}	β_{1n}	β_2	β_3	β_0	Mean Adjusted R_2
T = 1	Mean	0.02	**0.08**	-0.09	-0.37	0.02	0.18
	t-statistics	1.72	**2.83**	-0.76	-5.88	1.46	
T = 2	Mean	**0.02**	0.02	0.58	-0.44	-0.05	0.39
	t-statistics	**2.10**	0.80	4.18	-6.85	-3.74	
T = 3	Mean	-0.01	-0.04	-0.13	0.15	0.01	0.12
	t-statistics	-0.83	-0.95	-1.47	1.63	1.33	

Panel B: Annual cross sectional regression coefficients of dividend changes

$$(E_T - E_{T-1})/B_{-1} = \beta_0 + \beta_{1P}DPC_0 \times R\Delta DIV_0 + \beta_{1N}DNC_0 \times R\Delta DIV_0 + \beta_2 ROE_{T-1} + \beta_3(E_0 - E_{-1})/B_{-1} + \varepsilon_T$$

	T=1				T=2				T=3			
Year	β_{1P}	$t(\beta_{1P})$	B_{1N}	$t(B_{1N})$	β_{1P}	$t(\beta_{1P})$	B_{1N}	$t(B_{1N})$	β_{1P}	$t(\beta_{1P})$	B_{1N}	$t(B_{1N})$
1991	-0.04	-2.23	**0.18**	**3.03**	-0.02	-1.63	**0.07**	**2.04**	0.01	0.56	-0.02	-0.32
1992	-0.01	-0.16	0.07	0.89	-0.03	-0.46	0.10	1.5	0.02	0.22	-0.14	-1.93
1993	**0.10**	**2.11**	-0.15	-2.40	**0.11**	**3.03**	-0.09	-1.84	-0.25	-2.44	0.05	0.38
1994	-0.03	-0.98	-0.03	-0.19	0.03	1.09	-0.02	-0.19	0.03	0.82	-0.18	-1.07
1995	0.00	0.01	**0.19**	**2.94**	0.01	0.25	-0.13	**-1.00**	0.02	0.72	0.07	0.44
1996	**0.04**	**3.06**	-0.12	-1.84	**0.02**	**1.87**	-0.20	-5.05	-0.06	-2.9	**0.26**	**2.73**
1997	0.01	0.33	0.09	0.96	0.01	0.74	0.09	1.02	-0.02	-0.59	-0.04	-0.26
1998	0.02	1.31	0.10	1.61	-0.01	-0.81	0.06	**1.35**	0.03	1.5	-0.05	-0.5
1999	-0.02	-1.68	-0.03	-0.39	0.00	-0.32	0.02	0.25	-0.08	-3.57	-0.19	-1.32
2000	**0.10**	**4.53**	**0.31**	**4.25**	**0.07**	**3.9**	0.00	0.07	-0.02	-0.66	0.03	0.27
2001	0.03	1.27	0.07	0.98	**0.04**	**3.05**	-0.11	-1.96	0.02	0.88	-0.05	-0.56
2002	0.01	0.53	**0.21**	**4.95**	0.01	0.64	**0.22**	**4.93**	0.02	0.71	-0.15	-2.44
2003	0.00	0.24	**0.09**	**1.85**	0.00	0.31	0.08	1.66	0.01	0.96	-0.04	-0.65
2004	0.02	1.22	-0.02	-0.18	0.00	0.22	-0.02	-0.21	-0.02	-1.1	0.01	0.07
2005	0.00	0.22	0.05	0.77	0.00	0.1	-0.02	-0.43	0.00	-0.21	0.17	0.93
2006	**0.06**	**4.68**	0.10	1.31	**0.07**	**5.26**	0.04	0.57	**0.06**	**3.19**	0.13	1.28
2007	0.01	1.07	**0.33**	**4.55**	0.01	0.53	**0.30**	**4.09**	0.00	-0.02	-0.53	-4.06
2008	-0.01	-0.49	**0.08**	**2.71**	-0.01	-0.62	0.02	0.89				
2009	0.00	0.23	0.06	1.38								

*** Significant at the 0.01 level using a two-tailed Student's t-test for the means.

7.2. Hypothesis 2

Prior findings in support of positive association between abnormal stock returns and dividend changes are considered evidence in support of the dividend signaling hypothesis. In other words, market participants react to dividend changes because these changes have information content about firm future profitability. In order to examine whether dividend changes are related to subsequent share price reactions, we compute three days market adjusted abnormal stock returns around the dividend change announcements. Here we assume that market forces can distinguish between genuine and fake dividend change signals. Thus the relationship between dividend changes and future earnings is expected to be positive and significant only if market participants react to the dividend changes in the dividend change direction and the magnitude of dividend changes and market reaction is reasonably large. To test the relationship between dividend changes and future earnings changes we consider only the dividend change announcements where the dividend increase (decrease) is at least ±5 percent and the market reaction is at least ±1 percent. We use annual rather than interim data because dividends are set in response to annual rather than interim earnings (Watts, 1973).

Table 5 presents the distribution of dividend changes and the direction of market response to these changes. Total number of dividend increases (decreases) that triggered market adjusted abnormal returns is 2480 (847). The excess returns are computed based on market model. Consistent with previous findings (e.g., Asquith and Mullins (1983); Benesh, Keown and Pinkerton (1984); Born, Mozer and Officer (1988); Dhillon and Johnson (1994); Healy, Hathorn and Kirch (1997)) we find that a substantial proportion of firms experience adverse market reaction to dividend change announcements. Furthermore, relative to positive dividend changes, negative dividend changes are frequently negatively associated with subsequent excess returns. This could be because minor negative changes may prove a positive signal when market forces expect large dividend cuts.

Table 5
Direction of market reaction to the announcement of dividend increases or decreases
This table reports the number of dividend change announcements and the proportion of the dividend change events that trigger positive (or negative) returns. “Firms” are the number of firms that change their annual dividend per share during the year *t*. A dividend change is defined as the difference between the announced dividend in year *t* and the prior year’s dividend. Dividend changes announced during the 5 days interval of earnings announcements or any other special dividends announcements are excluded. Positive (negative) returns are the proportion of three day cumulated abnormal returns computed by using market model. Here we consider all dividend change events irrespective of the magnitude of dividend change and returns.

	Dividend Increases			Dividend Decreases		
Year	Firms	Positive returns%	Negative returns%	Firms	Positive returns%	Negative returns%
1991	59	75.0	25.0	10	20.0	80.0
1992	58	45.0	55.0	24	43.5	56.5
1993	62	57.1	42.9	17	53.0	47.0
1994	72	85.0	15.0	8	37.5	62.6
1995	66	78.9	21.1	12	33.3	66.6
1996	80	46.4	53.6	28	53.5	46.4
1997	94	69.2	30.8	14	57.1	42.8
1998	87	65.7	34.3	24	50.0	50.0
1999	148	67.4	32.6	25	54.5	45.4
2000	179	69.2	30.8	40	50.0	50.0
2001	141	47.8	52.2	63	58.6	41.3
2002	134	53.6	46.4	60	43.9	56.1
2003	148	65.4	34.6	41	43.9	56.0
2004	176	73.2	26.8	43	35.7	64.2
2005	258	74.2	25.8	42	40.0	60.0
2006	276	78.9	21.1	42	38.0	61.9
2007	262	70.9	29.1	39	59.0	41.0
2008	108	34.7	65.3	119	37.6	62.4
2009	72	79.2	20.8	33	34.9	65.1

Table 6 presents descriptive statistics for the sample used to test hypotheses 2 (H2). Panel A of table 6 considers all dividend events for which stock price data is available for computing the three days abnormal stock returns. The sample selection criteria resulted in a sample of 8780 observations: 847 dividend decreases, 2480 dividend increases, and 5453 no-change observations. Similar to DeAngelo and DeAngelo (1990), and Nissim and Ziv (2001) we find that dividend increases, although more frequent than dividend decreases, are smaller in magnitude. Panel A of table 6reflects that the rate of change in dividend per share relative to the previous year dividend has a mean of 35.02 percent for dividend increases and 51.4 percent for dividend decreases. Furthermore, the same panel of the same table shows that market reaction to dividend increase announcements is positive and significant. The mean stock return during the three days surrounding the dividend increase announcements (days-1, 0, and 1) is 1.04 percent (*t*-statistic 13.02). The full sample of dividend decrease announcements and no change events trigger only 0.3 and 0.2 percent of statistically insignificant positive returns. The number of no change events exceeds the number of dividend change events; the reason is that most companies change their dividends only once every few years.

Unlike panel A, panel B of table 6considers only the dividend announcements that are positively associated with their corresponding three days cumulative abnormal stock returns. Panel B reflects that the mean stock return during the three days surrounding the announcement date is -4.50 percent for the dividend decrease sample (*t*-statistic 14.91), 5.50 percent (*t*-statistic 35.61) for the dividend increase sample.

In contrast to the first two panels, panel C of table 6considers only the dividend changes that are at least 5 percent and trigger accumulative abnormal returns not less than 1 percent. In addition these dividend changes are positively associated with their corresponding three days accumulative abnormal stock returns. The resulting firm-year sample that fulfills the three conditions includes 1267 observations: 1057

Table 6

Descriptive statistics on the distributions of the cumulative abnormal returns and dividend changes

The 10% is the 10th percentile of the distribution (i.e., 10% of the observations have a lower value), 25% is the twenty-fifth percentile. The RΔDIV is the relative change in dividends defined as the annual change in dividends relative to the value at the previous year scaled by the previous year dividend. R refers to the three day cumulative abnormal stock returns based on the market model. Panel A considers all dividend announcements for which we have the data required for computing abnormal returns. Panel B considers only the dividend change announcements that have positive association with their abnormal stock returns. Panel C considers the dividend change events that fulfill the three conditions: i) Dividend changes and cumulative abnormal returns are positively associated; ii) Dividend changes are at least 5 percent; iii) Cumulative abnormal returns are at least ±1percent.

Panel A : All dividend announcements

	Mean	SD	10%	25%	50%	75%	90%
			Dividend Decreases (847)				
RΔDIV	-0.514	0.361	-0.1	-0.74	-0.444	-0.193	-0.079
R	0.003	0.079	-0.072	-0.029	-0.000	0.028	0.077
t-statistics	(1.01)						
p-value	0.311						
			Dividend Increases (2480)				
RΔDIV	0.350	0.323	0.071	0.101	0.200	0.502	1.00
R	0.01***	0.065	-0.045	-0.016	0.008	0.048	0.098
t-statistics	(13.02)						
p-value	0.000						
			No Change (5453)				
R	0.002	0.055	-0.045	-0.021	0.000	0.029	0.065
t-statistics	(0.900)						
p-value	0.368						
			All Firms (8780)				
RΔDIV	0.139	0.754	-0.501	0.000	0.051	0.243	1.00
R	0.01***	0.068	-0.049	-0.019	0.005	0.043	0.091
t-statistics	(11.174)						
p-value	0.000						

Panel B: Dividend announcements with positive relation between the dividend change and associated abnormal stock returns

	Mean	SD	10%	25%	50%	75%	90%
			Dividend Decreases (333)				
RΔDIV	-0.502	0.250	-0.860	-0.750	-0.353	-0.133	-0.063
R	-0.045***	0.055	-0.112	-0.059	-0.028	-0.01	-0.003
t-statistics	(14.917)						
p-value	0.000						
			Dividend Increases (1266)				
RΔDIV	0.401	0.391	0.053	0.021	0.245	0.630	1.12
R	0.055***	0.055	0.005	0.015	0.040	0.077	0.123
t-statistics	(35.612)						
p-value	0.000						
			All Firms (1599)				
RΔDIV	0.347	0.710	-0.450	0.001	0.080	0.271	1.21
R	0.034***	0.068	-0.029	0.003	0.025	0.064	0.113
t-statistics	(19.976)						
p-value	0.000						

--continued--

----Table 6 continued-----

Panel C : Dividend changes that fulfill the three restrictive conditions of the study

	Mean	SD	10%	25%	50%	75%	90%
			Dividend Decreases (210)				
RΔDIV	-.603	.302	-.852	-.453	-.201	-.01	-.000
R	-.061***	.059	-.129	-.076	-.042	-.023	-.013
t-statistics	(15.031)						
p-value	0.000						
			Dividend Increases (1057)				
RΔDIV	.456	.435	.052	.021	.247	.66	1.15
R	0.065***	.055	.015	.026	.050	.085	.135
t-statistics	(38.33)						
p-value	0.000						
			All Firms (1267)				
RΔDIV	.377	.791	-.460	.001	.070	.311	1.28
R	.044***	.073	-.034	.015	.040	.077	.123
t-statistics	(21.57)						
p-value	0.000						

*** Significant at the 0.01 level using a two-tailed Student's t-test for the means.

dividend increases, and 210 dividend decreases. Panel C reflects that dividend increases decreases) trigger 6.5 (-6.1) percent of mean abnormal stock returns.

Inconsistent with Nissim and Ziv (2001), we find that the market reaction to dividend increases is higher than that of dividend decreases[61].

Relation between Dividend Changes and Abnormal Returns

In order to analyze the relation between stock returns and dividend changes, we estimate equation (7). We use the three commonly used techniques for estimating the model with panel data: the pooled ordinary least squares (OLS), the fixed effects model (FEM), and the random effects model (REM). We use an F-statistic and the Hausman (1978) test to choose the most appropriate model for our samples.

[61] The difference is Significant at the 0.01 level using a two-tailed Student's t-test for the means.

Table 7
Regression of market reaction on dividend changes

This table shows the regression of dividend changes on cumulative abnormal returns (CAR) during the three days, centered on the dividend change announcement date. CAR is computed by using equation (6). Rate of change in dividends (RΔDIV) is the change in dividend per share scaled by previous year dividend. DPC is a dummy variable that takes the value 1 if dividend increases and zero otherwise; DNC is a dummy variable that takes the value 1 if dividend decreases and zero otherwise. The table reports the results estimated using pooled OLS, Fixed effect model and (FEM) and Random effect model (REM). The numbers in parentheses are the t-statistics. Panel A reports regression coefficients of all dividend change events, while panel B considers only those dividend changes that are positively associated with abnormal stock returns. Panel C considers those dividend change events that fullfil the three conditions: i) Dividend changes and cumulative abnormal returns are positively associated; ii) Dividend changes are at least ±5 percent; iii) Cumulative abnormal returns are at least ±1percent.

Panel A: All dividend announcements

Coefficient	$\mathbf{CAR_{it} = \beta_0 + \beta_1 DPC \times R\Delta DIV + \beta_1 DNC \times R\Delta DIV + \varepsilon}$		
	FEM	REM	Pooled OLS
Constant	0.01***	0.01***	0.01***
	(8.69)	(7.21)	(9.26)
DPC×RΔDIV	0.26***	0.20***	0.21***
	(4.49)	(4.68)	(4.69)
DNC×RΔDIV	-0.01	-0.04	-0.04
	(-0.19)	(-1.21)	(-1.39)
N	3327	3327	3327
Adjusted R^2	0.008	0.008	0.006
Test F			19.54***
Hausman Test	3.01		

Panel B: Dividend announcements with positive relation between the dividend change and associated abnormal stock returns

Coefficient	$\mathbf{CAR_{it} = \beta_0 + \beta_1 DPC \times R\Delta DIV + \beta_1 DNC \times R\Delta DIV + \varepsilon}$		
	FEM	REM	Pooled OLS
Constant	0.02***	0.03***	0.03***
	(15.71)	(17.49)	(21.35)
DPC×RΔDIV	0.90***	0.24***	0.22***
	(8.55)	(5.29)	(5.03)
DNC×RΔDIV	0.744***	0.93***	0.94***
	(7.77)	(12.05)	(12.17)
N	1599	1599	1599
Adjusted R^2	0.13	0.10	0.10
Test F			61.30***
Hausman Test	50.94***		

(continued)

----Table 7 continued-----

Panel C: Dividend changes that fulfill the three restrictive conditions of the study

Coefficient	$CAR_{it} = \beta_0 + \beta_1 DPC\times R\Delta DIV + \beta_1 DNC\times R\Delta DIV + \varepsilon$		
	FEM	REM	Pooled OLS
Constant	.025***	.041 ***	.040***
	(5.51)	(11.54)	(11.80)
DPC×RΔDIV	1.04 ***	.224 ***	.223***
	(5.77)	(3.84)	(3.81)
DNC×RΔDIV	.811***	.958***	.958***
	(5.11)	(9.15)	(9.10)
N	688	688	688
Adjusted R^2	0.214	0.155	0.155
Test F			106.12***
Hausman Test	16.76 ***		

***p<0.01, **p<0.05, *p<0.1

The output from the regression is reported in table 7. The firm-year sample used in panel A includes all dividend announcements for which we have the necessary data to compute abnormal stock returns. Panel B considers only those dividend changes that are positively associated with their subsequent stock price returns. Panel C considers only the dividend changes that are at least 5 percent and trigger cumulative abnormal returns not less than 1 percent; moreover, dividend changes and cumulative abnormal returns should be positively associated. The REM is the best suitable model for the sample used in panel A,

while for panel B and C, the best one is fixed effect model.

For the panel A, based on REM results, we observe that positive dividend changes are positively and significantly correlated with abnormal stock returns. This result suggests that dividend increases convey useful information to the market. The coefficient for dividend decreases is however negative and insignificant. The reason could be that a large number of minor decreases are included in our sample. A small dividend decrease may sometimes be considered as a positive signal. This is notably the case, in recessionary business periods, when investors expect strong decreases in dividend payments.

For panel B and C, the coefficients for both positive and negative dividend changes are positive and significant at 1 percent level, suggesting that the magnitude of the positive (negative) stock price reaction increases with the intensity of the positive (negative) signals being conveyed. The coefficients for positive (1.04) and negative (0.81) dividend changes are the larger than those of panel A and B. If we assume that dividend change announcements have information content about the future prospects of firms and market forces rationally react to these announcements, then the dividend events of panel C should have greater association with future earnings.

Dividend Changes and Future Earnings Changes (conditioned on market reaction)

The dividend signaling hypothesis suggests that dividend changes convey information about firms' future prospects. Empirical studies reporting excess returns subsequent to dividend change announcements are seen as an evidence in support of this hypothesis [see Travlos, Trigerorgis and Vafaes (2001); Gurgul, Madjosz and Mestel (2003); Yilmaz and Gulay (2006)]. In this study we assume that investors can distinguish between fake and genuine signals and react accordingly to dividend change announcements. Based on these assumptions we predict that the only dividend changes that should be positively related to subsequent earnings changes are those that are informative, i.e.

those that lead to economically significant abnormal returns in the dividend change direction at dividend announcements. This is our hypothesis 2 (H2).

Table 88 reports the regression estimates based on H_2. In this regression the firm-year sample include only the dividend changes that are at least ±5 percent relative to previous year dividends and trigger at least 1 percent excess stock returns during the three days surrounding the date of the dividend change announcement. In addition, these dividend changes should be positively associated with the subsequent abnormal stock returns.

To estimate the coefficients in panel A we follow Fama and MacBeth (1973). First, we estimate intercept and slope coefficients from annual regressions of each year of the sample period 1991-2010, then we compute time-series averages of the cross sectional regression coefficients. T-statistics are obtained by dividing the mean values by their standard errors. Panel B, however, presents annual regression coefficients estimates along with their *t*-statistics.

Surprisingly, inconsistent with the dividend signaling hypothesis, the coefficients for both positive and negative dividend changes are insignificant during all the three post dividend change years (see panel A, table 8). The sign of the coefficient becomes negative for dividend decreases when T=2; while for dividend increases it is negative when T=3. These findings suggest that dividend decreased firms start to recover from losses during the second year after dividend cuts ; while the deterioration of the profitability of dividend increased firms starts from the third year after dividend changes. A possible reason for early reversal of profitability of dividend decreased firms is related to management behavior. In the presence of bad news, management, in many cases, elects to take a “big bath” in order to create accounting reserves for the future (e.g., by recognizing restructuring liabilities) or reduce future depreciation charges (e.g., by writing off assets). Consequently, earnings of the dividend change year are significantly reduced. This results in earnings reversal in the following years (see, e.g., Healy and Palepu (1988) and Benartzi et al. (1997).

Panel B of table 8 presents the results of panel A in much more detail. It demonstrates that in 36.84 percent of the years the β_{1N} remains significant, when T=1. We observe that the coefficient of positive dividend changes is positive and significant only for 10.53 percent (T=1), 26.32 percent (T=3), and 10.53 percent (T=3) of the total 19 years. On the other hand, the coefficients for negative dividend changes remain significant and positive for 36.8 percent (T=1), 0.0 percent (T=2), and 10.53 percent (T=3) of the total 19 years.

Overall, these results do not support the hypothesis that market forces react to dividend change announcements because these changes convey inside information about the future profitability of firms. These findings suggest that if dividend changes convey some information, it may not be necessarily regarding the changes in future earnings. For instance dividend changes may convey information regarding earnings stability rather than changes in future earnings (Lintner, 1956). Skinner and Soltes (2011) find evidence in support that dividend changes signal reported earnings future persistence. Jensen (1986) and Stulz (1990) suggest that the market may react positively to dividend increases because dividend payments decline the ability of firms to invest excess cash in negative net present value projects. Grullon et al. (2002) suggest that investors react to increases in dividends because they give information about a decrease in systematic risk. The catering theory of Baker and Wurgler (2004) suggests that dividend policy is formulated by managers according to the demand of investors, meaning that dividends are paid when investors put a stock price premium on payers. The life cycle hypothesis also suggests earnings stability in the post dividend increase years. Jensen (1985) free cash flow hypothesis suggests a decrease in agency problems after dividend payments. All these factors can be possible factors affecting firm stock price around the dividend change announcements.

Table 8

Regression of earnings changes on dividend changes

This table reports regression estimates considering only the dividend changes positively correlated with cumulative abnormal returns. The dividend changes are at least ±5 percent and the abnormal returns are at least ±1 percent. E_T is the net earnings in year T (year 0 is the event year). B_{-1} is the book value of owner's equity at the end of year $_{-1.}$ RΔDIV is the annual rate of change in ordinary dividends, computed as the change in dividends scaled by last year's dividends. DPC (DNC) is equal to one for dividend increases (decreases) and zero otherwise. ROE stands for returns on equity. To estimate coefficients in panel A we follow Fama and MacBeth (1973). First we estimate intercept and slope coefficients from annual regressions of each year of the sample period 1991-2010, then we compute time-series averages of the cross sectional regression coefficients. T-statistics are obtained by dividing the mean values by their standard errors. In panel A and B positive and significant coefficients are highlighted.

Panel A

Panel A: Time series Means of the cross-sectional regression coefficients

$$(E_T - E_{T-1})/B_{-1} = \boldsymbol{\beta_0} + \boldsymbol{\beta_{1P}}DPC_0 \times R\Delta DIV_0 + \boldsymbol{\beta_{1N}}DNC_0 \times R\Delta DIV_0 + \boldsymbol{\beta_2}ROE_{T-1} + \boldsymbol{\beta_3}(E_0 - E_{-1})/B_{-1} + \boldsymbol{\varepsilon}_T$$

Year		β_{1p}	β_{1n}	β_2	β_3	β_0	Mean Adjusted R^2
T = 1	Mean	0.02	0.09	0.14	-0.05	-0.01	0.16
	t-statistics	(1.09)	(1.54)	(1.38)	(-0.49)	(-0.33)	
T = 2	Mean	0.01	-0.07***	0.59***	-0.29***	-0.06***	0.53
	t-statistics	(1.24)	(-1.88)	(5.90)	(-2.99)	(-5.56)	
T = 3	Mean	-0.02	0.00	-0.23***	0.09	0.04***	0.07
	t-statistics	(-0.89)	(0.05)	(-3.65)	(1.18)	(3.64)	

Panel B: Annual cross sectional regression coefficients of dividend changes

$$(E_T - E_{T-1})/B_{-1} = \boldsymbol{\beta_0} + \boldsymbol{\beta_{1P}}DPC_0 \times R\Delta DIV_0 + \boldsymbol{\beta_{1N}}DNC_0 \times R\Delta DIV_0 + \boldsymbol{\beta_2}ROE_{T-1} + \boldsymbol{\beta_3}(E_0 - E_{-1})/B_{-1} + \boldsymbol{\varepsilon}_T$$

	T=1				T=2				T=3			
Year	β_{1P}	$t(\beta_{1P})$	B_{1N}	$t(B_{1N})$	β_{1P}	$t(\beta_{1P})$	B_{1N}	$t(B_{1N})$	β_{1P}	$t(\beta_{1P})$	B_{1N}	$t(B_{1N})$
1991	0.24	(1.11)	-0.19	(-1.10)	-0.08	(-0.47)	-0.05	(-0.31)	0.00	(-0.04)	-0.06	(-0.37)
1992	0.04	(0.35)	0.10	(1.00)	0.03	(0.47)	-0.08	(-1.47)	-0.04	(-0.23)	-0.11	(-0.80)
1993	0.07	(0.52)	-0.50	(-2.90)	0.03	(0.50)	-0.41	(-5.14)	0.04	(0.62)	**0.28*****	**(3.14)**
1994	0.06	(1.30)	**0.38*****	**(1.88)**	**0.04*****	**(1.87)**	-0.04	(-0.38)	0.04	(0.92)	-0.41	(-1.56)
1995	0.02	(1.12)	**0.23*****	**(2.66)**	0.03	(1.50)	0.12	(1.21)	0.00	(-0.02)	0.04	(0.31)
1996	-0.01	(-0.93)	**0.22*****	**(2.39)**	0.00	(-0.36)	-0.03	(-0.21)	-0.01	(-0.33)	0.09	(0.38)
1997	**0.08*****	**(1.75)**	0.00	(-0.04)	**0.06*****	**(1.74)**	-0.09	(-0.94)	-0.02	(-0.21)	0.11	(0.36)
1998	0.01	(0.35)	0.19	(1.72)	0.01	(0.02)	-0.05	(0.07)	**0.08*****	**(2.12)**	0.04	(0.11)
1999	-0.15	(-2.19)	-0.15	(-0.94)	-0.03	(-0.74)	-0.19	(-2.17)	-0.08	(-2.16)	-0.54	(-1.63)
2000	-0.01	(-0.36)	**0.32*****	**(3.75)**	-0.02	(-0.79)	0.05	(0.75)	-0.18	(-4.03)	-0.30	(-2.24)
2001	-0.03	(-0.64)	-0.17	(-0.99)	0.02	(0.58)	-0.43	(-3.48)	-0.04	(-1.30)	0.12	(0.79)
2002	0.01	(0.19)	**0.24*****	**(1.97)**	0.01	(0.41)	0.14	(1.28)	0.01	(0.32)	-0.12	(-1.08)
2003	0.02	(0.38)	0.09	(0.84)	0.04	(0.86)	-0.02	(-0.20)	0.01	(0.21)	-0.09	(-0.72)
2004	0.00	(-0.15)	0.01	(0.08)	0.00	(0.04)	-0.06	(-0.72)	0.01	(0.24)	-0.09	(-0.22)
2005	**0.09*****	**(1.93)**	0.24	(1.50)	**0.07*****	**(2.05)**	-0.12	(-0.94)	-0.36	(-4.57)	0.17	(0.51)
2006	-0.07	(-4.93)	**0.22*****	**(2.40)**	-0.03	(-2.32)	-0.04	(-0.60)	**0.15*****	**(4.86)**	**0.92*****	**(4.96)**
2007	0.00	(0.04)	**0.57*****	**(2.27)**	-0.01	(-1.60)	0.11	(0.81)	0.00	(-0.18	0.02	(0.12)
2008	0.03	(1.13)	-0.03	(-0.38)	0.02	(1.44)	-0.05	(-1.14)				
2009	-0.02	(-0.15)	-0.07	(-0.47)								

8. Conclusion

Since Miller and Modigliani (1961) and Watts (1973), researchers have often examined the relationship between dividend changes and future earnings changes. Most investigate the information hypothesis by examining whether changes in dividends translate directly into changes in future earnings. The empirical studies offer little support for the hypothesis that current dividend changes signal future earnings changes. However, Nissim and Ziv (2001) report some evidence in support of a positive association between dividend changes and future earnings changes in the US. They examine the changes in earnings in the two years following dividend changes. By adding one more year and using their model, we analyze changes in earnings in three years leading dividend changes. Using German and French sample, first we use all dividend change observations to know the association between dividend changes and future earnings. In the second step, however, we consider only those dividend changes that are at least ±5 percent, and the subsequent market adjusted abnormal returns, triggered by these changes, are at least ±1 percent in the dividend change direction. We find weak evidence in support of the relationship between dividend changes and earnings changes in the two years following dividend change year. Moreover, the sign of the coefficients becomes negative in year 3; indicating a reversal in the performance of dividend changed firms. We do not find evidence in support that market forces react to dividend change announcements because these announcements provide them information about the changes in future profitability. Furthermore, our findings indicate that the Lintner model better explains dividend behavior of the sample firms, which suggests that earnings changes precede dividend changes.

Conclusion of the dissertation

This dissertation consisted of three essays. The first essay examined the dividend paying trends in Europe during 1990 to 2010. Fama and French (2010) reports that dividends are disappearing in the US. Fatemi and Bildik (2012) show that it is an international phenomenon; the number and proportion of dividend payers are declining throughout the world. Using univariate and multivariate analysis, we find that dividends are not disappearing in Europe, rather they are reappearing. Furthermore we find that old, large, profitable firms, and those with high ratios of retained earnings-to-total equity are more likely to pay dividends. Although we find a decline in the proportion of dividend payers over time, it seems to be a temporary decline. The primary driver for this decline is the influx of a large number of young and less profitable firms into the database. With the passage of time, successful newly added firms start paying dividends and unsuccessful non-payers get delisted. The contribution of newly born firms, that are expected to be dividend payers but do not pay dividends, is negligible in the overall decline. We also find some evidence in support of dividend abandonments by a few old firms. Over time, when the influx of new additions to the sample/database slows down, the declining trend in the proportion of dividend payers stops. Non-payers switch to payers at a higher rate than the rate at which payers switch to non-payers. On the basis of these findings we suggest that the decline in the proportion of dividend payers is temporary and we expect a rise in the proportion of dividend payers over time. The life cycle theory of dividends better explains our findings. However, we do not find evidence in support of the signaling theory of dividends.

The second essay of our disseration aimed to understand the motivation behind permanent changes in long term corporate dividend policies. We classified firms in five exclusive dividend groups: positive switchers, negative switchers, regular payers, regular non-payers, and irregular payers. Irregular dividend payers are excluded from our study because of their inconsistent dividend payment behavior. Thus, we focused on the first four groups. Following listed firms from 21 European countries between 1991 and 2010, we analyzed the factors that motivate firms to change their dividend policy. By using univariate and multivariate (matched sample and full sample cross-sectional logit regressions) tests, we found that: (i) around the dividend switch year, positive (negative) switchers experience a significant increase (decrease) in their profitability; (ii) asset growth ratio improves for positive switchers and declines for negative switchers during the seven year switch window; (iii) earnings changes precede dividend changes; (iv) negative switchers stop dividend payments due to poor operating performance and increased financial risk; while large investment opportunities and low level of profitability do not permit regular non-payers to pay dividends. The life cycle theory of dividends and the Lintner's (1956) proposition best explains the dividend payment behavior of our sample firms. Our results do not provide any evidence that dividend changes convey information about future changes in earnings.

The third essay of our dissertation investigated the association between current dividend changes and future changes in earnings. The signaling theory asserts that dividend changes convey information about future changes in profitability in the same direction. We observed that firms that increase dividends in year *t* experience significant earnings increases only for 4 (out of 19) years and 4 (out of 18) years, in years t_{+1} and t_{+2} respectively. For dividend-decreasing firms, however, dividend changes are significantly and positively associated with earnings changes in 7 years (in year t_{+1}) and 3 years (in year t_{+2}). Furthermore, we observe a negative association between dividend changes and earnings changes of the year $t_{+3.}$ We do not find also evidence showing that market forces react to dividend change announcements in anticipation of future changes in earnings. However, our findings are consistent to some extent with the Lintner's (1956) proposition that firms that increase (decrease) dividends are less likely to experience a decrease (increase) in earnings in the post dividend change period.

Overall, our findings are consistent with the life cycle theory, the Lintner proposition, and the free cash flow theory, but they are inconsistent with the signaling theory. As suggested by the life cycle theory, we find that large, old, profitable firms and those with high ratios of retained earnings-to-total equity are more likely to pay dividends. In contrast with the signaling theory, we do not provide evidence showing that dividend changes are positively associated with future profitability, and that market forces react to dividend changes in anticipation of future changes in earnings in the same direction. Furthermore, our results support the Lintner’s (1956) proposition that earnings changes drive dividend changes. Past profitability is the primary factor that motivates a firm to change its long term dividend policy. Finally, we do not find evidence in support of the Fama and French’s (2001) proposition that dividends are disappearing.

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