Investor sentiment and the market reaction to dividend news: European evidence

Abstract

Purpose: This paper examines the effect of investor sentiment on the market reaction to dividend change announcements.

Design/methodology/approach: We use the European Economic Sentiment Indicator data, from *Directorate General for Economic and Financial Affairs* (DG ECFIN), as a proxy for investor sentiment and focus on the market reaction to dividend change announcements, using panel data methodology.

Findings: Using data from three European markets, our results indicate that the investor sentiment has some influence on the market reaction to dividend change announcements, for two of the three analysed markets. Globally, we find no evidence of investor sentiment influencing the market reaction to dividend change announcements for the Portuguese market. However, we find evidence that the positive share price reaction to dividend increases enlarges with sentiment, in the case of the UK markets, whereas the negative share price reaction to dividend decreases reduces with sentiment, in the French market.

Research limitations/implications: We have no access to dividend forecasts, so, our findings are based on naïve dividend changes and not unexpected change dividends.

Originality/value: This paper offers some insights on the effect of investor sentiment on the market reaction to firms' news, a strand of finance that is scarcely developed and contributes to the analysis of European markets that are in need of research. As the best of our knowledge, this is the first study to analyse the effect of investor sentiment on the market reaction to dividend news, in the context of European markets.

Key Words: *Investor Sentiment, Dividend News, Market Reaction, Behavioural Finance*

Classification: Research Paper

1. Introduction

Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985) developed the signalling theory classic models, showing that, in a world of asymmetric information, better informed insiders use the dividend policy as a costly signal to convey their firm's future prospect to less informed outsiders. So, a dividend increase signals an improvement on firm's performance, while a decrease suggests a worsening of its future profitability. Consequently, a dividend increase (decrease) should be followed by an improvement (reduction) in a firm's profitability, earnings and growth. Moreover, there should be a positive relationship between dividend changes and subsequent share price reaction.

There have been a significant number of empirical tests showing that dividend change announcements are positively related with share returns in the days surrounding the dividend change announcement. Pettit (1972, 1976) found evidence that dividend change announcements convey information to the market. Similar results were obtained by several authors, such as Aharony and Swary (1980), Benesh *et al.* (1984) and Dhillon and Johnson (1994) for dividend change announcements, Asquith and Mullins (1983) for dividend initiations, Lee and Ryan (2000, 2002) for dividend initiations and omissions and Lippert *et al.* (2000) for dividend increase announcements. Although all these studies were carried out for the USA, Travlos *et al.* (2001) analysed the Cyprus, Gurgul *et al.* (2003), the Austria, Harada and Nguyen (2005) the Japan, McCluskey *et al.* (2006) the UK and Yilmaz and Gulay (2006) the Turkey, finding also support for the dividend information content hypothesis.

However, some studies have not supported this assumption. Studies by Lang and Litzenberger (1989), Benartzi *et al.* (1997) and Bernhardt *et al.* (2005) for the American market, Conroy *et al.* (2000) for the Japanese market, Chen *et al.* (2002) for the Chinese market and Abeyratna and Power (2002), for the UK, find no evidence of a significant relationship between dividend announcements and share returns.

According to Miller (1986), the behavioural finance might help resolve long-standing anomalies in the financial area of dividend policy. The behavioural finance introduces the investor sentiment in the decision-making process of the investor. Some authors developed proxies of sentiment (for example, Lemmon and Portniaguina, 2006; Qiu and Welch, 2006 and Baker and Wurgler, 2006, 2007) and others have explored the role of

sentiment in financial markets (Han, 2008 and Yu and Yuan, 2010). The consumer confidence might be an indication about the investors' feelings in what concerns the economy and the financial markets.

Using a sample of three distinct European markets, Portugal, France and the UK, we try to provide further evidence on the role of the investor sentiment on the market reaction to dividend change announcements, analysing how the market reaction to dividend change announcements diverges with investor sentiment.

Our results suggest that the market reaction to dividend change announcements is more sensitive to dividend increases when sentiment is increasing, for the UK market and that the market reaction to dividend change announcements is less sensitive to dividend decreases when sentiment is increasing, for the French market. For the Portuguese market, we find no evidence of investor sentiment influencing the market reaction to dividend change announcements.

This study contributes to the literature in three ways. First, it offers some insights on the effect of investor sentiment on the market reaction to corporate news, a strand of finance that is scarcely developed. Second, the systematic variation in the stock market reaction to dividend news in periods of high or low sentiment means that empirical studies could improve their reliability by including the effect of market sentiment when examining the market reaction to corporate news, such as dividends and earnings announcements. Finally, the methodology is applied to three European markets that are in need of research in this domain. As the best of our knowledge, this is the first study to analyse the effect of investor sentiment on the market reaction to dividend change announcements in the context of European markets.

The remainder of this paper is organised as follows. Section 2 derives testable hypotheses and presents the research methodology. The sample selection is described in Section 3. Section 4 presents and discusses the empirical results. Finally, section 5 concludes.

2. Hypotheses and Methodology

Because we are interested in measuring the effect of sentiment on the market reaction to dividend change announcements, we need to calculate dividend changes.

Although dividend signalling is about unexpected changes in dividends, we have no access to dividends analysts' forecasts. However, as other studies, we assume that dividends follow a random walk[1], so the dividend changes were used as the proxy for the unexpected dividend changes. The annual dividend change corresponding to the dividend announcement is defined as the difference between the announced dividend in year t and the prior year dividend, scaled by the announcement day share price[2]:

$$\Delta D_{i,t} = \frac{D_{i,t} - D_{i,t-1}}{P_{i,0}} \qquad [1]$$

where:

$\Delta D_{i,t}$ = change of dividend per share i for year t;
$P_{i,0}$ = price of share i in the announcement day.

To measure the market reaction to dividend change announcements, we opt to consider the buy-and-hold abnormal returns (BHARs)[3]. The abnormal return for a share is defined as the geometrically compounded return on the share minus the geometrically compounded return on the market index. Therefore, the "buy-and-hold" abnormal return for share i from time -1 to +1 [$BHAR_{i\ (-1\ to\ +1)}$] generating model takes the following form (we consider a 3-day event window, where t = 0 is the dividend announcement day):

$$BHAR_{i(-1\,to\,+1)} = \prod_{t=-1}^{1}(1+R_{i,t}) - \prod_{t=-1}^{1}(1+R_{m,t}) \qquad [2]$$

where:

$R_{i,t}$ = return for share i in day t;
$R_{m,t}$ = market return for day t.

In order to measure the investor sentiment, we consider two approaches. First, we rely on the European Economic Sentiment Indicator (ESI), published by the European Commission and obtained from DG ECFIN database. The ESI index is based on sentiment surveys carried out in all member states of the European Union (EU)[4], considering fifteen sentiment components[5]. Schmeling (2009) also used the DG ECFIN consumer confidence measure for the European markets considered in its sample.

In addition, we closely follow the methodology of Lemmon and Portniaguina (2006) to obtain a *proxy* for investor sentiment (ISENT). We regress the ESI indicator on a set of macroeconomic variables, in order to separate the rational and sentimental components

of the ESI[6] and obtain a variable that is unrelated to fundamental risk factors. We consider the residual from this regression as our sentiment measure (optimism or pessimism). Qiu and Welch (2006) document that investors are excessively optimistic or pessimistic because of good or bad news, returns or macro developments, thus, sentiment should be related to return and macro variables.

Figure 1 shows the level of ISENT (Figure 1A) and ESI (Figure 1B) indexes, for the period from 1995 to 2002 and from 1989 to 2002, respectively. The first period is limited by the availability of some data in what concerns the macroeconomic variables used in the methodology of Lemmon and Portniaguina (2006) to obtain the *proxy* for investor sentiment (ISENT). As we can see, although the indexes have the same type of evolution for the three countries, globally, the sentiment is lower in Portugal and higher in the UK, for both sentiment proxies. The indexes values increases in the boom period of the late 1990s, and decreases after the crash of 2000-2001.

Baker and Wurgler (2006, 2007) and Lemmon and Portniaguina (2006) argue that stocks become underpriced (overpriced) during periods of low (high) sentiment. Based on these results, we formulate the hypothesis in what concerns the relationship between dividend change announcements and the share price movements around dividend announcements, considering the investor sentiment:

H_1: "The market reaction to dividend change announcements is higher (lower) for dividend increases (decreases) when sentiment is increasing".

To analyse the market reaction to dividend change announcements, considering the investor sentiment, we estimate the following regression:

$$BHAR_{i(1\,\text{to}+1)} = \alpha + \beta_1 \text{ DI x } \Delta \text{ D}_{i,0} + \beta_2 \text{ DD x } \Delta\text{D}_{i,0} + \beta_3 \text{ DI x } \Delta \text{ D}_{i,0} \text{ x SENT} + \\ + \beta_4 \text{ DD x } \Delta \text{ D}_{i,0} \text{ x SENT} + \beta_5 \text{ SIZE}_i + \varepsilon_{i,t} \qquad [3]$$

where:

DI	=	dummy variable that takes value 1 if dividend increases and zero otherwise;
DD	=	dummy variable that takes value 1 if dividend decreases and zero otherwise;
SENT	=	measure of investor sentiment at the end of the year before the dividend change year (considering both the ESI and the ISENT indexes);
SIZE_i	=	size for share i, computed as the natural log of total assets at the end of the year before the dividend change year.

The coefficients β_1 and β_2 would capture the market reaction to dividend changes not considering the sentiment.

The coefficients on SENT allow us to test whether the market reaction to dividend changes varies with the investor sentiment. We use the prior years' sentiment to avoid a look-ahead bias in our tests.

According to H_1, we expect that the market reaction to dividend change announcements is more (less) sensitive to dividend increases (decreases) when sentiment is increasing. Consequently, we expect β_3 to be positive and statistically significant, indicating that the market reacts more to divided increase announcements when sentiment is increasing and β_4 to be negative and statistically significant, indicating that the market reacts less to divided decrease announcements when sentiment is increasing.

We use the SIZE as a control variable in the regression, in order to control for potential scale differences (Barth and Kallapur, 1996).

We need to adapt the methodology when analysing the UK sample, as UK firms usually announce both dividends and earnings simultaneously, making it difficult to separate out the dividend announcement effect from that of earnings. However, it gives the opportunity to incorporate the interaction of the joint signals into the analysis. Therefore, for the UK market, the impact of earnings announcements is examined by dividing the sample of dividend changes into four categories instead of the previous two (dividend increases and decreases): dividend increase-earnings increase (DIEI), dividend increase-earnings decrease (DIED), dividend decrease-earnings increase (DDEI), and dividend decrease-earnings decrease (DDED). In the analysis, we split the UK sample into these groups, or consider dummy variables that distinguish the different situations in the regressions, in order to isolate the impact of dividend announcements and investigate whether dividends provide information beyond that provided by earnings announcements.

Employing the panel data methodology, we run the pooled ordinary least squares (OLS), the fixed effects model (FEM), and the random effects model (REM). Subsequently, we use an F-statistic and the Hausman (1978) test to choose the most appropriate model for our samples. We present the standard errors corrected for heteroscedasticity and covariance, based on White's (1980) heteroscedasticity consistent standard errors method.

Afterwards, we consider the following regression, an extension of equation [3], in order to estimate the model considering some more control variables.

$$
\begin{aligned}
BHAR_{i(1\,to+1)} = \alpha &+ \beta_1 \, DI \times \Delta D_{i,0} + \beta_2 \, DD \times \Delta D_{i,0} + \beta_3 \, DI \times \Delta D_{i,0} \times SENT + \\
&\beta_4 \, DD \times \Delta D_{i,0} \times SENT + \beta_5 \, DI \times \Delta D_{i,0} \times SIZE_{i,t} + \beta_6 \, DD \times \Delta D_{i,0} \times SIZE_i + \\
&\beta_7 \, DI \times \Delta D_{i,0} \times VOLAT_{i,t} + \beta_8 \, DD \times \Delta D_{i,0} \times VOLAT_{i,t} + \\
&\beta_9 \, DI \times \Delta D_{i,0} \times BM_{i,t} + \beta_{10} \, DD \times \Delta D_{i,0} \times BM_{i,t} + \beta_{11} \, PROF_i, t \times \Delta D_{i,0} + \\
&\beta_{12} \, SIZE_i + \varepsilon_{i,t}
\end{aligned}
\qquad [4]
$$

where:

$VOLAT_{i,t}$	=	share return volatility, measured as the standard deviation of daily prices over the preceding year;
$BM_{i,t}$	=	book to market ratio for share i, calculated by dividing book value per share at the end of the year before the dividend change year by the market price per share at the dividend change announcement date;
$PROF_{i,t}$	=	dummy variable that takes value 1 for profitable firms (return on equity positive) and zero otherwise. Profitability is measured by the return on equity, computed as the income before extraordinary items at the end of the year before the dividend change year divided by shareholders equity at the end of the year before the dividend change year.

The variable SIZE allows for the differential response of the market to dividend news, according to the firms size. The variable VOLAT enables to analyse the differential response of the market to dividend news, according to the firms volatility. The PROF variable allows for the differential response of the market to dividend news, according to the firms profitability and the BM variable analyses whether the market reaction to dividend change announcements is influenced by extreme growth or distressed shares. High values of BM ratio may indicate distress and low values may indicate high growth opportunities.

To the extent that informational asymmetry is greater for small firms than for large firms [Haw and Kim (1991)], the information content of dividend announcements will be greater for small firms. Although large firms have higher media coverage and greater institutional ownership, the smaller firms have less information available in the market, so, when they announce dividend changes, it will generate greater market surprises that induce a larger reaction by the market. Consequently, we expect market reaction to dividend change announcements to be lower for large firms than for small firms. Accordingly, we formulate the following hypothesis:

H_2: "There is a negative relationship between the market reaction to dividend change announcements and the firm size".

Eddy and Seifert (1988), Haw and Kim (1991), Mitra and Owers (1995) and Tudor (2008) found a negative relation between firm size and abnormal returns for firms that increase or and initiate dividends.

According to the behaviour literature, the impact of behavioural biases is greater for shares that are harder to value and difficult to arbitrage (Shleifer and Vishny, 1997). Consequently, market reaction of such firms would be more pronounced by sentiment than are the reaction of the other firms (Qiu and Welch, 2006; Baker and Wurgler, 2006, 2007 and Sankaraguruswamy and Mian, 2008).

Based on Baker and Wurgler (2006), we formulate the following hypotheses:

H_3: "The impact of sentiment on the market reaction to dividend change announcements is greater for young firms".

H_4: "The impact of sentiment on the market reaction to dividend change announcements is intensified for small firms".

H_5: "The impact of sentiment on the market reaction to dividend change announcements is greater for high volatile firms".

H_6: "The impact of sentiment on the market reaction to dividend change announcements is greater for extreme growth and distressed firms than for medium firms".

Baker and Wurgler (2006) conclude that the impact of sentiment on market reaction to news is greater for young firms, high volatile shares, extreme growth shares and distressed shares. The results of Sankaraguruswamy and Mian (2008) corroborate, in global terms, these conclusions.

To test the hypotheses 3 to 6, we closely follow the works of Baker and Wurgler (2006) and Sankaraguruswamy and Mian (2008), ranking the firms into quintiles. Firms that fall the top (bottom) quintiles are those with high (low) values for a particular variable. In what concerns the BM ratio, shares in the lowest quintile are identified as the growth shares and those in the quintile with the highest values are recognised as the distressed shares.

To analyse cross-sectional differences in the impact of investor sentiment, we estimate equation [3], considering sub-samples, according to the bottom and the top quintiles (20%) of the variables, as explained before. For instance, to investigate whether firm age causes cross-sectional differences in the impact of sentiment, we estimate equation [3] for young firms (bottom 20%) and mature firms (top 20%). If share price sensitivity of young firms is more predisposed to the impact of sentiment, the interaction variables involving sentiment must be more pronounced for these shares. AGE is computed as the number of years since the firm's first appearance on *Datastream*. We follow the same procedure for all variables, except for BM. In the BM case, we compare the extreme quintiles coefficients with those of the middle three quintiles, because extreme quintiles are likely to be more susceptible to the impact of investor sentiment. The extreme quintiles are associated with growth and distressed shares, respectively for the lowest and highest quintiles.

3. Sample Selection

We choose to examine the UK, the French and the Portuguese markets. Although they are all European markets, they are different from each other for several reasons. Firstly, they differ on size and liquidity. Secondly, they are different in what concerns the ownership of equity. This phenomenon can influence the importance of dividends as a signalling mechanism and consequently share price reaction to dividend change announcements would be expected to be lower in countries where ownership is more concentrated (Portugal and France). Thirdly, the UK is a market-based system, whereas Portugal and France are bank-based systems, which can influence dividend policy in a different way. Fourthly, they also differ in what concerns the legal rules covering protection of corporate shareholders, which can also influence the dividend policy (La Porta *et al.*, 1998 and Aivazian *et al.*, 2002). Finally, the sentiment can influence differently the market reaction to dividend change announcements in the three countries. Globally, the UK presents the higher level of sentiment, and Portugal the lowest one, being France in a middle position (Figure 1).

Given these characteristics, we expect to find a weaker support to the dividend signalling hypothesis as well as a weaker influence of investor sentiment in Portugal and France than in the UK.

The sample is drawn from dividend announcements of firms listed on the Euronext Lisbon, Euronext Paris and London Stock Exchange. Announcement dates are available on *Bloomberg* database and all other needed information is available on *Datastream* database. For the French and the UK markets, we consider the dividend announcements between 1994 and 2002, and for the Portuguese market we consider the dividend announcements between 1988 and 2002[7].

To be included in the final sample, the dividend announcements must satisfy the following criteria:

1) The firm is not a financial institution;
2) The company paid an ordinary dividend in the current and previous year;
3) The firm's financial data is available on the *Datastream* database (or the *Dathis* database in the case of Portugal) and announcement dates are available on *Bloomberg* database;
4) For the Portuguese and French market, we consider that the firms' earnings announcements or other contaminate announcements, such as stock splits, stock dividends and mergers, did not occur within 5 trading days of the dividend announcement. For the UK market we exclude all these announcements, except the case of earnings announcements[8].

Our sample events include dividend increases, no changes and decreases from 1995 to 2002 for the French and the UK markets and from 1989 to 2002 for the Portuguese market. Our sample is an unbalanced panel data set.

Table 1 reports the number of dividend events classified by sample selection criteria. The Portuguese sample contains 380 events: 158 increases, 121 decreases and 101 no change observations. The French sample has 356 events: 235 increases, 62 decreases and 59 no change observations. Finally, the UK sample contains 3,278 events: 2,662 increases, 273 decreases and 343 no change events. The preponderance of dividend increases over no-change and decreases in the three samples is consistent with prior results that firms are reluctant to cut dividends[9]. The French and the UK percentage of dividend changes, especially the case of the UK sample, are similar to the ones of Abeyratna and Power (2002), for the UK market[10]. Portuguese percentages are similar to the ones of some emergent markets, such as Thailand and Korea[11].

4. Empirical Results

Table 2 provides summary statistics on dividend events and some financial ratios. We consider changes in dividends per share (DPS) both in monetary units and in percentage, the payout ratio (the ratio of the DPS to the earnings before extraordinary items per share) and the dividend yield (DPS divided by the share price on the day before the dividend announcement). We analyse the debt ratio (computed as the total debt divided by the total assets), the return on equity, ROE, (calculated as the earnings before extraordinary items divided by the equity) and the current ratio (computed as the current asset divided by the current debt). All the accounting variables are considered at the end of the fiscal year before the dividend announcement.

Comparing the values of each group of dividend events, the results show that for all the countries, dividend decrease events are associated with a weaker financial position than dividend increases, with higher debt ratios and lower ROE. Firms that neither cut nor increase their dividends are in a middle range. Finally, comparing the three sample statistics, we can see that, for all the events, the UK sample has higher DPS, is the most profitable sample, and presents the lowest value for the debt ratio, which is in agreement with a developed capital market, such as the US.

Similar to DeAngelo and DeAngelo (1990) and Nissim and Ziv (2001), we observe that for all the countries the dividend increases, although more frequent than dividend decreases, are smaller in magnitude. In fact, the average decrease in DPS (percentage of change in DPS) is 0.35 euros (42.20%), compared with an average increase in dividends of nearly 0.19 euros (37.57%) in Portugal. In France, the average decrease in DPS (percentage of change in DPS) is 0.36 euros (23.74%), compared with an average increase in dividends of nearly 0.25 euros (26.37%) and finally, in the UK market, the average decrease in DPS (percentage of change in DPS) is 2.27 pounds (27.16%), compared with an average increase in dividends of nearly 1.05 pounds (19.94%).

Overall, the evidence indicates that the UK is the main capital market of our sample and Portugal is the smallest one, leaving France in a middle position.

Table 3 reports the estimates of the regression model [3] for the most appropriate model for each of the country samples, based on the F-statistic and the Hausman (1978) test. The first regression results (Base Model), do not consider the interaction variables involving sentiment. In this model, for all the three countries, none coefficient presents

a significant value. Consequently, we find no evidence for the dividend signalling hypothesis, which is in agreement with some of the studies carried out before, such as the ones of Lang and Litzenberger (1989), Benartzi *et al.* (1997), Abeyratna and Power (2002) and Vieira and Raposo (2007).

Considering the investor sentiment effect on the market reaction to dividend change announcements, the results are different for the three countries.

For the Portuguese market, we find no evidence that investor sentiment influences the share price response to dividend change news, since none coefficient is statistically different from zero.

In what concerns the French market, the only coefficient that is statistically significant, and only considering the ISENT index, is the coefficient for DD_SENT, being negative, as expected. This is an indication that the share price sensitivity to bad dividend news is lower when the sentiment is increasing, which is in agreement with hypothesis one, for dividend decrease announcements situations. In addition, the results suggest that the ISENT proxy for invest sentiment is more robust that the ESI one. Indeed, although both low, the adjusted R^2 is slightly higher for the regression considering the ISENT as the investor sentiment measure.

Finally, for the UK market, only the results of the regression considering the ISENT index present significant values for the coefficients, which reinforce the robustness or this investor sentiment measure. The coefficient for DIED_SENT is positive, as expected, and statistically significant at 5% level, suggesting a stronger market reaction to dividend increase announcements when the investor sentiment is increasing. The variable SIZE is negative and statistically significant, which is an indication that, during the sample period, the returns of large shares are smaller than those of small shares, which is in agreement with the results of Mitra and Owers (1995) and Tudor (2008), among others.

Concluding, we find some evidence for the $H_{1,}$ but only for dividend bad news announcements (decreases) in the French market, and for dividend good news announcements (increases) in the UK market.

Table 4 reports the estimates of the regression model [4] for the most appropriate model for each of the country samples, based on the F-statistic and the Hausman (1978) test.

This regression is useful, namely because it allows to analyse the robustness of the regression [3] results, when we introduce a set of control variables.

For the Portuguese sample, and considering the ISENT index, we have two control variables with significant values, which are the BM and the PROF. In the first situation, the DI_BM variable is negative and statistically significant, suggesting that the market reaction to dividend increase announcements is higher for the firms that have a lower BM, which is a proxy for growth firms. This result can be an indication that investors believe firms presenting growth prospects, have higher capability to sustain dividends payment in the future, which is somewhat in agreement with the signalling hypothesis. The D_PROF variable is also negative, and statistically different from zero, suggesting that market responds more to dividend change announcements for non profitable firms. When we use the ESI index, only the DD_BM variable is statistically significant, and positive, suggesting that share prices react more to the negative dividend changes for firms with higher BM ratios, or, in other words, for distressed firms.

Analysing the French market results, we can see that only the ISENT index presents some significant coefficients. Once more, we find evidence of this index to be more robust that the ESI one. The DD coefficient is positive and significantly different from zero, suggesting that share prices decline in response to the dividend decrease announcements. The coefficient for DD_SIZE is negative and significant, indicating that the market reacts more to dividend decrease news for small firms, which is in agreement with the hypothesis two, and with some other authors who find evidence of a significant effect of sentiment on returns for small, but not for large stocks, such as Schmeling (2009), Brown and Cliff (2005) and Lemmon and Portniaguina (2006).

In what concerns the UK results, we can see that the variables that are useful to explain the market sensitivity to dividend change announcements are SENT, VOLAT, BM and PROF. The coefficient for the interaction term DIEI_SENT is positive and statistically significant at the 1% level, suggesting that share price changes following good dividend and earnings news is greater when sentiment is higher, which supports H_1 for the case of dividend increases. However, the coefficient for DIED_SENT, although positive, is statistically insignificant. Comparing the significance of DIEI_SENT and DIED_SENT variables, the results suggest that earnings announcements have information power beyond that of dividend announcements, which is consistent with the conclusion of DeAngelo *et al.* (1992) and Conroy *et al.* (2000), among others.

The coefficient on DIEI_VOLAT is negative and statistically different from zero for the two investor sentiment indexes, indicating that the market reacts more to the dividend increase announcements for less volatile firms, suggesting that investors reward firms with present lower levels of volatility.

It is interesting to see that the DIEI_BM coefficient is positive and the DDEI_BM is negative, both statistically significant, indicating that the market reacts more to dividend increases for higher BM firms (the distressed ones), and reacts more to dividend decreases for lower BM firms (which indicate high growth opportunities), which is in contrast with the evidence found for the Portuguese sample. Although the Portuguese results are somewhat in agreement with the signalling hypothesis, the UK results give some support for the free cash flow hypothesis (Jensen, 1986).

Also in contrast with the Portuguese results, the D_PROF variable is positive, and statistically different from zero, suggesting that market responds more to dividend change announcements for profitable firms.

Next, we will test hypotheses 3 to 6, associated with the assumption that firms that are more difficult to arbitrage are more influenced by sentiment (Baker and Wurgler, 2006). Consequently, we estimate equation [3], considering sub-samples of firms arranged by specific characteristics, such as size and age. The results are reported in Table 5. Panel A through D present the results of equation [3] for sub-samples sorted on firm age, size, volatility and growth/distressed, respectively.

Panel A presents the results concerning the impact of sentiment on firm AGE (young *versus* mature firms). We present the results for young and for mature firms, considering the two investor sentiment indexes. For the Portuguese sample, none coefficient is statistically significant. Consequently, we find no support for the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for young firms (H_3).

In what concerns the French sample, the only variable involving sentiment that is statistically significant, is the DI_SENT. Comparing the significance of the variable between young and mature firms, we find evidence that the impact of sentiment on the market reaction to dividend increase announcements is greater for young firms, which is predicted in H_3. However, its signal is negative, contrary to what we expect, but in agreement with the results found in Table 3. The DD_SENT is always insignificant,

suggesting that the market reaction to dividend decreases does not diverge across high and low sentiment periods. The SIZE is negative for all the situations, but only statistically significant for the young firms, suggesting that, for this group of firms, during the sample period, the returns of large firms are smaller than those of small firms.

Seeing the results for the UK market, we find some evidence supporting the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for young firms. Indeed, for the dividend increase announcements, the only interaction variable that is significantly positive is the DIED_SENT (for the ISENT index), which indicates that the market reaction to dividend good news is higher for young firms. In what concerns the dividend decrease announcements, the coefficient is also only statistically significant for the young firms (for the ESI index). However, it presents a positive signal for the DDEI events and a negative signal for DDED events (the expected signal). Once more, this result suggests that earnings announcements have information power beyond that of dividend announcements. In sum, we find some evidence supporting H_3 for the UK market.

Panel B reports the differential impact of sentiment on small firms. For the Portuguese and the French samples, none coefficient is statistically significant. Consequently, we find no support for the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is intensified for small firms (H_4). For the UK sample, the interaction coefficient for dividend increase announcements is always statistically insignificant, suggesting that the market reaction to dividend good news does not vary across high and low sentiment periods. However, comparing the significance of the DDEI_SENT variable, the results suggest that the market response to dividend bad news, considering the investor sentiment, is more pronounced for the small firms. Consequently, we find some evidence supporting the H_4, but only for the UK market, and in the DDEI events.

Panel C examines whether the relation between sentiment and the market reaction to dividend change announcements is exacerbated for volatile firms relative to the other ones, in order to test the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for high volatile firms (H_5). The Portuguese results indicate that the market reaction to dividend change announcements

does not vary across high and low sentiments periods as well as between stable or volatile firms. Thus, we find no evidence supporting H_5 for the Portuguese sample.

The French results reveal that sentiment plays a greater role for stable firms, being evident that the effect of sentiment is more pronounced for stable firms, disappearing for the volatile firms. Consequently, the French evidence does not give support to the H_5. The same conclusion is obtained for the UK market, as the interaction variables involving sentiment that are statistically significant, occurs for the stable firms sub-sample. However, the coefficient on DDEI_SENT is positive, contrary to the expected signal. Again, it seems that when dividend and earnings are announced together, the earnings good news has more impact in the market reaction than the dividend bad news, suggesting that earnings have more information content than dividends.

Finally, Panel D shows the results for the separation of firms according to the BM ratio, comparing the distressed and growth firms with the others, in order to test the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for extreme growth and distressed firms than for medium firms (H_6). We find no evidence supporting H_6 for the Portuguese sample, as the market reaction to dividend change announcements does not vary across high and low sentiments periods as well as between medium and distressed or growth firms.

In what concerns the French sample, the only coefficient that captures the effect of investor sentiment that is statistically significant, is the DD_SENT (and negative), for the sub-sample of growth and distressed firms (ESI index), suggesting that the effect of sentiment on market reaction to dividend decrease news is higher for growth and distressed firms, relative to the firms with a medium value for the BM ratio, which is in accordance with H_6.

The UK results are not so clear. The results show that, considering the effect of investor sentiment, the market reaction to DIEI and DDEI events is higher for the medium BM ratio firms, which is in contrast with the prediction on hypothesis 6. However, share price movements following the DDED events are stronger for the growth and distressed firms, in accordance with H_6. All the UK interaction variables that have statistically significant values are associated with the ISENT measure, being these regression results more robust.

In summary, our results in Table 5 give no support for the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for high volatile firms, which contradict the results of Baker and Wurgler (2006) and Sankaraguruswamy and Mian (2008). However, we find some evidence that the role of investor sentiment is reinforced for young firms, small firms and growth and distressed firms, but only for the French and the UK markets, and only for some of the dividend events. Consequently, the results are only partially consistent with the assumption that the investor sentiment influence is stronger on market reaction for firms that are harder to arbitrage and more difficult to value.

Our results are only partially in accordance with the ones of Sankaraguruswamy and Mian (2008), who found that the positive (negative) market response to good (bad) earnings news increases (decreases) with sentiment. They found that the influence of sentiment is stronger on the stock price response to earnings news for small, young firms, volatile firms, and growth and value firms. Perhaps the difference in results can be associated with the fact that we analyse the investor sentiment effect on market reaction to dividend change news, whether they analyse this effect for earnings news, and, as we conclude, the last events have more information power than dividends.

To evaluate the robustness of the results, we consider the use of the capital asset pricing model (CAPM) to compute the abnormal returns, in place of the BHAR. Furthermore, and in order to reduce the impact of outliers, we consider the elimination of the observations that are less than 1% or greater than 99% of the distribution[12]. As the results do not differ substantially, our conclusions remain unchanged.

5. Conclusions

The main relevant issue of our study is to analyse whether the market reaction to dividend change announcements vary with the existing investor sentiment.

We find some differences according to the analysed sample. For the Portuguese market, we find no evidence of investor sentiment influencing the market reaction to dividend change announcements. For the French and the UK, we find mixed results.

We find some evidence that the market reaction to dividend change announcements is more sensitive to dividend increases when sentiment is increasing, for the UK market

and that the market reaction to dividend change announcements is less sensitive to dividend decreases when sentiment is increasing, for the French market.

For the French market, the results suggest that the market reacts more to dividend decrease news for small firms, which is in agreement with the hypothesis that the market reaction to dividend change announcements is lower for large firms than for small firms. However, this evidence is only associated with the dividend decrease events.

We find some evidence supporting the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for young and small firms, but only for the UK market. In addition, we find some evidence, but only for the dividend decrease events, and for the French and the UK markets, that the impact of sentiment on the market reaction to dividend change announcements is greater for extreme growth and distressed firms than for medium firms. However, our results do not support the hypothesis that the impact of sentiment on the market reaction to dividend change announcements is greater for high volatile firms.

In addition, the results suggest that the ISENT proxy for invest sentiment is more robust that the ESI measure.

Furthermore, the evidence suggests that earnings announcements have information power beyond that of dividend announcements, which is consistent with the conclusion of DeAngelo *et al.* (1992) and Conroy *et al.* (2000), among others.

Globally, our results are somewhat in agreement with the ones of Brown and Cliff (2004), who find no evidence of fund discounts reflecting investor sentiment when they use an investor sentiment indicator from the American Association of Individual investors, and find little evidence of sentiment having forecasting power for near-term returns, using a measure of sentiment constructed by them.

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Table 1 - Sample

This table reports the number of dividend events for the Portuguese, the French and the UK samples. To be included in the final sample, a dividend announcement must satisfy the following criteria: 1) The firm is not a financial institution; 2) The firm paid an annual ordinary dividend in the current and previous year; 3) The firm's financial data is available on the *Datastream* or *Dhatis* (in the Portuguese sample) and announcement dates are available on *Bloomberg* database; 4) For the Portuguese and French samples, the dividend, earnings or other potentially contaminating announcements did not occur within 5 trading days of each other. For the UK firms we consider the same condition, except for earnings announcements. As they are simultaneous in almost the cases, we exclude dividend announcements which earnings announcements are announced on separate dates.

	Portugal		**France**		**UK**	
	Number	(%)	Number	(%)	Number	(%)
Dividend increases	158	41.6%	235	66.0%	2,662	81.2%
No change	101	26.6%	59	16.6%	343	10.5%
Dividend decreases	121	31.8%	62	17.4%	273	8.3%
Total dividend events	380	100.0%	356	100.0%	3,278	100.0%

Table 2 - Summary Statistics

This table reports some descriptive statistics for dividend event observations during the sample period. DPS is the dividend per share. Dividend changes are the changes in DPS relative to the previous year, calculated both in monetary units and in percentage. Payout ratio is the DPS divided by the earnings before extraordinary items per share. Dividend yield is the DPS divided by the share price on the day before the dividend announcement. Debt ratio is the total debt divided by the total assets. Return on equity is the earnings before extraordinary items divided by the equity. Current ratio is the current asset divided by the current debt. All the accounting variables are considered at the end of the fiscal year before the dividend announcement.

Summary Statistics								
Portugal: 1989-2002								
	DPS, €	**Dividend Changes, €**	**Dividend Changes, (%)**	**Payout Ratio**	**Dividend Yield**	**Debt Ratio**	**Return on Equity**	**Current Ratio**
	All dividend events (N = 380)							
Mean	0.458	-0.031	2.055	0.641	0.132	0.389	0.089	1.989
Median	0.349	0.000	0.000	0.440	0.059	0.368	0.074	1.335
Stand. Dev.	0.624	0.771	46.153	1.251	0.288	0.213	0.086	3.055
	Dividend increases (N = 158)							
Mean	0.631	0.193	37.573	0.458	0.145	0.367	0.109	2.261
Median	0.449	0.100	20.000	0.318	0.073	0.343	0.091	1.410
Stand. Dev.	0.902	0.776	42.093	0.698	0.346	0.205	0.086	4.075
	No changes (N = 101)							
Mean	0.350	0.000	0.000	0.539	0.136	0.432	0.078	1.920
Median	0.324	0.000	0.000	0.414	0.050	0.426	0.057	1.328
Stand. Dev.	0.208	0.000	0.000	0.693	0.238	0.216	0.079	2.338
	Dividend decreases (N = 121)							
Mean	0.322	-0.350	-42.197	0.965	0.111	0.382	0.071	1.691
Median	0.249	-0.175	-41.176	0.882	0.051	0.374	0.054	1.257
Stand. Dev.	0.246	0.959	23.613	1.936	0.240	0.218	0.087	1.734
France: 1995-2002								
	DPS, €	**Dividend Changes, €**	**Dividend Changes, (%)**	**Payout Ratio**	**Dividend Yield**	**Debt Ratio**	**Return on Equity**	**Current Ratio**
	All dividend events (N = 356)							
Mean	1.243	0.102	13.046	0.296	0.020	0.247	0.051	1.365
Median	0.860	0.055	9.222	0.180	0.018	0.248	0.045	1.177
Stand. Dev.	1.267	0.498	32.848	2.672	0.016	0.136	0.040	0.541
	Dividend increases (N = 235)							
Mean	1.319	0.250	26.367	0.371	0.021	0.246	0.052	1.392
Median	0.910	0.130	15.797	0.166	0.018	0.246	0.046	1.205
Stand. Dev.	1.336	0.417	30.497	3.244	0.018	0.133	0.038	0.537
	No changes (N = 59)							
Mean	1.148	0.000	0.000	0.202	0.020	0.237	0.054	1.301
Median	0.830	0.000	0.000	0.200	0.018	0.214	0.049	1.190
Stand. Dev.	0.995	0.000	0.000	0.335	0.013	0.142	0.039	0.504
	Dividend decreases (N = 62)							
Mean	1.042	-0.362	-23.742	0.098	0.019	0.265	0.042	1.324
Median	0.640	-0.150	-18.7686	0.224	0.016	0.276	0.037	1.097
Stand. Dev.	1.218	0.680	22.163	1.007	0.012	0.140	0.046	0.589

(Continue)

Table 2 - Summary Statistics (continued)

Summary Statistics								
UK: 1995-2002								
	DPS, £	**Dividend Changes, £**	**Dividend Changes, (%)**	**Payout Ratio**	**Dividend Yield**	**Debt Ratio**	**Return on Equity**	**Current Ratio**
	All dividend events (N = 3278)							
Mean	8.474	0.661	13.906	0.509	0.035	0.207	0.131	1.478
Median	6.355	0.500	9.655	0.429	0.030	0.186	0.133	1.302
Stand. Dev.	7.930	2.061	32.355	0.812	0.024	0.164	0.201	0.922
	Dividend increases (N = 2662)							
Mean	8.757	1.047	19.941	0.453	0.032	0.208	0.145	1.446
Median	6.550	0.650	11.355	0.415	0.028	0.186	0.141	1.290
Stand. Dev.	8.189	1.780	31.606	0.273	0.021	0.165	0.191	0.822
	No change (N = 343)							
Mean	7.432	0.000	0.000	0.902	0.048	0.182	0.061	1.702
Median	6.000	0.000	0.000	0.630	0.044	0.169	0.074	1.339
Stand. Dev.	6.113	0.000	0.000	2.381	0.029	0.147	0.207	1.532
	Dividend decreases (N = 273)							
Mean	7.103	-2.272	-27.160	0.621	0.044	0.229	0.042	1.489
Median	5.165	-1.070	-20.471	0.483	0.036	0.213	0.072	1.363
Stand. Dev.	7.282	3.088	23.434	0.627	0.034	0.178	0.230	0.713

Table 3 – Regression of market reaction to dividend change announcements, considering the sentiment

This table reports the following regression:

$$BHAR_{i(1\,to+1)} = \alpha + \beta_1 \text{ DI x } \Delta D_{i,0} + \beta_2 \text{ DD x } \Delta D_{i,0} + \beta_3 \text{ DI x } \Delta D_{i,0} \text{ x SENT} + \\ + \beta_4 \text{ DD x } \Delta D_{i,0} \text{ x SENT} + \beta_5 \text{ SIZE}_i + \varepsilon_{i,t}$$

$BHAR_3$ is the buy and hold accumulated abnormal return on the 3-day period as calculated by equation [2]; DI is a dummy variable that takes value 1 if dividend increases and zero otherwise; DD is a dummy variable that takes value 1 if dividend decreases and zero otherwise; SENT is a measure of investor sentiment at the end of the year before the dividend change year, considering both the ESI and the ISENT indexes and $SIZE_i$ is the size for share i, computed as the natural log of total assets at the end of the year before the dividend change year. The table presents the best model among pooled OLS, FEM and REM. In order to choose the most appropriate model for each particular sample, we run the F test, a test for the equality of sets of coefficients, and the Hausman (1978) test, a test with H_0: random effects are consistent and efficient, versus H_1: random effects are inconsistent. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method.

Portugal						
Pooled OLS						
	Base Model		ISENT		ESI	
	Coefficient	t	Coefficient	t	Coefficient	t
Intercept	0.0075	0.449	-0.0009	-0.041	0.0071	0.425
DI	0.0113	1.223	0.0210	0.512	-0.4281	-0.703
DD	0.0073	0.587	-0.0103	-0.396	-0.0913	-0.517
DI_SENT			-0.0027	-0.227	0.0042	0.721
DD_SENT			-0.0047	-0.498	0.0010	0.559
SIZE	-0.0005	-0.499	-0.0001	-0.074	-0.0004	-0.469
N	380		125		380	
Adjusted R^2	0.006		0.015		0.008	

France						
Pooled OLS						
	Base Model		ISENT		ESI	
	Coefficient	t	Coefficient	t	Coefficient	t
Intercept	-0.0067	-0.323	-0.0049	-0.239	-0.0081	-0.390
DI	-0.1000	-0.414	-0.5299	-1.475	-0.2915	-0.923
DD	0.1061	0.669	0.2600	1.444	0.7121	1.618
DI_SENT			-0.5867	-1.577	0.0291	0.893
DD_SENT			-0.1866 *	-1.673	-0.0689	-1.596
SIZE	0.0014	0.430	0.0013	0.407	0.0015	0.484
N	356		356		356	
Adjusted R^2	0.002		0.017		0.012	

(Continue)

* Significantly different from zero at the 10% level

Table 3 – Regression of market reaction to dividend change announcements, considering the sentiment (continued)

	UK							
	Base Model - FEM		ISENT - REM			ESI – FEM		
	Coefficient	t	Coefficient		t	Coefficient		t
Intercept	0.0691*	1.683	0.0404	***	3.615	0.0700	*	1.702
DIEI	0.0001	0.575	-0.0002		-0.741	-0.0156		-1.125
DIED	-0.0068	-0.923	-0.0079		-1.120	-0.0387		-0.165
DDEI	-0.0197	-0.667	-0.0265		-1.022	-0.5647		-0.847
DDED	-0.0190	-1.137	-0.0139		-0.906	0.1914		0.414
DIEI_SENT			0.0002		0.644	0.0002		1.132
DIED_SENT			0.0149	**	2.281	0.0003		0.137
DDEI_SENT			-0.0259		-1.548	0.0053		0.818
DDED_SENT			0.0110		1.046	-0.0021		-0.456
SIZE	-0.0095	-1.234	-0.0041	**	-1.999	-0.0097		-1.255
N	3,276		3,276			3,276		
Adjusted R^2	0.193		0.196			0.194		

*** Significantly different from zero at the 1% level
** Significantly different from zero at the 5% level
* Significantly different from zero at the 10% level

Table 4 – Regression of market reaction to dividend change announcements, considering the sentiment and control variables

This table reports the following regression:

$$
\begin{aligned}
BHAR_{i(1\,to+1)} = {} & \alpha + \beta_1 \, DI \times \Delta D_{i,0} + \beta_2 \, DD \times \Delta D_{i,0} + \beta_3 \, DI \times \Delta D_{i,0} \times SENT + \\
& \beta_4 \, DD \times \Delta D_{i,0} \times SENT + \beta_5 \, DI \times \Delta D_{i,0} \times SIZE_{i,t} + \beta_6 \, DD \times \Delta D_{i,0} \times SIZE_i + \\
& \beta_7 \, DI \times \Delta D_{i,0} \times VOLAT_{i,t} + \beta_8 \, DD \times \Delta D_{i,0} \times VOLAT_{i,t} + \\
& \beta_9 \, DI \times \Delta D_{i,0} \times BM_{i,t} + \beta_{10} \, DD \times \Delta D_{i,0} \times BM_{i,t} + \beta_{11} \, PROF_i \times \Delta D_{i,0} + \\
& \beta_{12} \, SIZE_i + \varepsilon_{i,t}
\end{aligned}
$$

$BHAR_3$ is the buy and hold accumulated abnormal return on the 3-day period as calculated by equation [2]; DI is a dummy variable that takes value 1 if dividend increases and zero otherwise; DD is a dummy variable that takes value 1 if dividend decreases and zero otherwise; SENT is a measure of investor sentiment at the end of the year before the dividend change year considering both the ESI and the ISENT indexes; $VOLAT_i$ is the share return volatility, measured as the standard deviation of daily prices over the preceding year; $BM_{i,t}$ is the book to market ratio for share i, calculated by dividing book value per share at the end of the year before the dividend change year by the market price per share at the dividend change announcement date; PROF is a dummy variable that takes value 1 for profitable firms (return on equity positive) and zero otherwise. Profitability is measured by the return on equity, computed as the income before extraordinary items at the end of the year before the dividend change year divided by shareholders equity at the end of the year before the dividend change year and $SIZE_i$ is the size for share i, computed as the natural log of total assets at the end of the year before the dividend change year. The table presents the best model among pooled OLS, FEM and REM. In order to choose the most appropriate model for each particular sample, we run the F test, a test for the equality of sets of coefficients, and the Hausman (1978) test, a test with H_0: random effects are consistent and efficient, versus H_1: random effects are inconsistent. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method.

Portugal					
Pooled OLS					
	ISENT			ESI	
	Coefficient		t	Coefficient		t
Intercept	0.0089		0.399	0.0556	*	1.738
DI	0.3410		1.476	-0.6091		-0.815
DD	-0.1458		-1.349	-0.4753		-1.415
DI_SENT	0.0063		0.229	0.0094		1.240
DD_SENT	0.0001		0.007	-0.0009		-1.131
DI_SIZE	0.0091		1.050	0.0543		0.554
DD_SIZE	-0.0001		-1.178	0.0029		0.048
DI_VOLAT	-0.1480		-0.509	0.0010		0.513
DD_VOLAT	0.0262		0.201	-0.0012		-1.112
DI_BM	-0.0287	*	-1.726	-0.0159		-0.604
DD_BM	0.0098		1.003	-0.0030	*	-1.736
D_PROF	-0.0556	*	-2.057	0.0055		0.793
SIZE	-0.0003		-0.286	0.0037		1.271
N	125			378		
Adjusted R^2	0.091			0.255		

(Continue)

* Significantly different from zero at the 10% level

Table 4 – Regression of market reaction to dividend change announcements, considering the sentiment and control variables (continued)

France					
Pooled OLS					
	ISENT			ESI	
	Coefficient		t	Coefficient	t
Intercept	0.0077		0.286	0.0052	0.192
DI	2.8105		0.617	-0.1928	-0.029
DD	1.0260	*	1.707	1.1734	1.343
DI_SENT	-0.4513		-1.155	-0.4027	-0.530
DD_SENT	-0.2601		-1.442	-1.0684	-1.321
DI_SIZE	-0.5151		-0.720	-0.0963	-1.181
DD_SIZE	-1.6284	*	-1.709	0.0539	0.812
DI_VOLAT	-0.0660		-0.811	0.0174	0.288
DD_VOLAT	0.0394		0.580	0.0049	10467
DI_BM	0.0142		0.235	-0.0578	-0.935
DD_BM	0.0036		1.054	0.0002	0.045
D_PROF	-0.0491		-1.798	0.0275	0.771
SIZE	-0.0001		-0.035	-0.0511	-0.916
N	356			356	
Adjusted R^2	0.038			0.033	

(Continue)

* Significantly different from zero at the 10% level

Table 4 – Regression of market reaction to dividend change announcements, considering the sentiment and control variables (continued)

	UK					
	FEM					
	ISENT			ESI		
	Coefficient		t	Coefficient		t
Intercept	-0.0047		-0.109	-0.0072		-0.165
DIEI	0.0001		-1.121	-0.0001		-10142
DIED	-0.0041		-0.240	-0.0001		-1.539
DDEI	0.1059		1.540	-0.2875		-0.415
DDED	-0.0338		-0.965	0.0062		0.013
DIEI_SENT	0.0102	***	3.430	0.0003		0.531
DIED_SENT	0.0113		1.546	-0.0002		-0.125
DDEI_SENT	-0.0297		-1.635	0.0037		0.568
DDED_SENT	0.0152		1.335	-0.0005		-0.099
DIEI_SIZE	0.0001		1.121	0.0001		1.142
DIED_SIZE	0.0001		1.580	0.0001		1.539
DDEI_SIZE	0.0210		1.562	-0.0561		-0.413
DDED_SIZE	-0.0067		-0.983	0.0005		0.006
DIEI_VOLAT	-0.0001	**	-2.074	-0.0001	*	-1.725
DIED_VOLAT	0.0001		0.618	0.0001		0.634
DDEI_VOLAT	-0.00080		-0.882	-0.0007		-0.772
DDED_VOLAT	0.0004		0.767	0.0004		0.696
DIEI_BM	0.0085	*	1.706	-0.0044		-1.314
DIED_BM	-0.0102		-0.680	-0.0138		-0.915
DDEI_BM	-0.0857	**	-2.355	-0.0795	*	-2.140
DDED_BM	-0.0028		-0.145	0.0010		0.053
D_PROF	0.1340	***	5.166	0.1292	***	4.955
SIZE	0.0021		0.257	0.0025		0.309
N	3,276			3,276		
Adjusted R^2	0.210			0.205		

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

Table 5 – Regression of market reaction to dividend change announcements, considering the sentiment and firm specific characteristics

This table reports the following regression:

$$BHAR_{i(1\text{ to }+1)} = \alpha + \beta_1 \text{ DI x } \Delta \text{ D}_{i,0} + \beta_2 \text{ DD x } \Delta \text{D}_{i,0} + \beta_3 \text{ DI x } \Delta \text{ D}_{i,0} \text{ x SENT} + \\ + \beta_4 \text{ DD x } \Delta \text{ D}_{i,0} \text{ x SENT} + \beta_5 \text{ SIZE}_i + \varepsilon_{i,t}$$

$BHAR_3$ is the buy and hold accumulated abnormal return on the 3-day period as calculated by equation [2]; DI is a dummy variable that takes value 1 if dividend increases and zero otherwise; DD is a dummy variable that takes value 1 if dividend decreases and zero otherwise; SENT is a measure of investor sentiment at the end of the year before the dividend change year considering both the ESI and the ISENT indexes and $SIZE_i$ is the size for share i, computed as the natural log of total assets at the end of the year before the dividend change year. Panel A through D present the equation results for sub-samples sorted on firm age, size, volatility and growth/distressed, respectively. Age is computed as the number of years since the firm's first appearance on *Datastream*; volatility is the share return volatility, measured as the standard deviation of daily prices over the preceding year and the proxy for growth/distressed is the book to market ratio, calculated by dividing book value per share at the end of the year before the dividend change year by the market price per share at the dividend change announcement date. The table presents the best model among pooled OLS, FEM and REM. In order to choose the most appropriate model for each particular sample, we run the F test, a test for the equality of sets of coefficients, and the Hausman (1978) test, a test with H_0: random effects are consistent and efficient, versus H_1: random effects are inconsistent. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method.

Panel A – Age: Young *versus* Mature Firms

Portugal - Pooled OLS

	Young - ISENT		**Mature - ISENT**		**Young - ESI**		**Mature - ESI**	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
Intercept	0.0177	0.751	-0.0401	-0.387	0.0137	0.629	0.0425	0.851
DI	0.0874	0.400	0.0771	0.268	0.4475	1.193	0.0841	0.065
DD	-0.0309	-0.440	0.2918	1.313	0.2941	0.213	-0.7218	-0.979
DI_SENT	-0.0038	-0.068	0.0155	0.212	-0.0395	-1.163	-0.0006	-0.051
DD_SENT	-0.0027	-0.015	-0.0067	-0.087	-0.0032	-0.243	0.0068	0.989
SIZE	-0.0009	-0.753	0.0015	0.269	-0.0007	-0.675	-0.0027	-0.966
N	53		32		72		103	
Adjusted R^2	0.024		0.102		0.0395		0.023	

France - FEM

	Young - ISENT			**Mature - ISENT**		**Young - ESI**			**Mature - ESI**	
	Coefficient		t	Coefficient	t	Coefficient		t	Coefficient	t
Intercept	0.1047	**	2.529	0.0681	0.822	0.0986	*	1.961	0.0653	0.792
DI	-0.2804		-0.173	0.4101	0.518	0.3604		0.270	-0.4431	-1.072
DD	-0.4788	***	-3.146	0.0346	0.125	1.5339		0.534	-0.5512	-0.074
DI_SENT	-0.3678	***	-3.318	0.5439	0.635	-0.0423		-0.319	0.0457	1.061
DD_SENT	-1.8621		-1.530	0.0007	0.004	-0.2088		-0.727	0.0057	0.079
SIZE	-0.0175	**	-2.654	-0.0098	-0.806	-0.0168	**	-2.096	-0.0094	-0.774
N	53			85		53			85	
Adjusted R^2	0.771			0.013		0.686			0.022	

(Continue)

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

Table 5 – Regression of market reaction to dividend change announcements, considering the sentiment and firm specific characteristics (continued)

Panel A – Age: Young *versus* Mature Firms

UK - REM

	Young - ISENT			**Mature - ISENT**			**Young - ESI**			**Mature - ESI**		
	Coefficient		t	Coefficient		t	Coefficient		t	Coefficient		t
Intercept	0.0487		1.354	0.0610	**	2.350	0.0989		0.882	0.0609	**	2.323
DIEI	-0.0007		-0.141	0.0214	**	2.071	0.1311		0.696	0.3388		1.053
DIED	0.0003		0.017	0.0177		0.908	-0.0310		-0.066	-0.6303		-1.563
DDEI	-0.0058		-0.067	-0.0249		-0.511	-0.3998	*	-1.890	1.7405		1.279
DDED	-0.0990	**	-2.084	-0.0321		-1.091	0.4387	**	2.040	0.8175		0.819
DIEI_SENT	0.0006		0.139	-0.0020		-0.190	-0.0013		-0.696	-0.0031		-0.988
DIED_SENT	0.0194	**	2.130	-0.0055		-0.189	0.0001		0.028	0.0064		1.602
DDEI_SENT	-0.0025		-0.021	-0.0049		-0.888	0.0382	*	1.873	-0.0172		-1.295
DDED_SENT	-0.0151		-0.582	-0.0008		-0.051	-0.0448	**	-2.087	-0.0084		-0.853
SIZE	-0.0066		-0.968	-0.0076	*	-1.735	-0.0162		-0.748	-0.0078	*	-1.744
N	439			752			439			752		
Adjusted R^2	0.304			0.186			0.315			0.192		

Panel B – Size: Small *versus* Large Firms

Portugal - Pooled OLS

	Small - ISENT		**Large - ISENT**		**Small - ESI**		**Large - ESI**	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
Intercept	-0.0463	-0.303	-0.0426	-0.956	0.0094	0.182	-0.0229	-0.626
DI	0.0258	0.503	0.0179	0.436	-0.4745	-0.620	0.0427	0.049
DD	0.0326	0.359	0.0019	0.077	-0.3036	-0.879	-0.0739	-0.392
DI_SENT	-0.0034	-0.235	-0.0017	-0.145	0.0047	0.635	-0.0003	-0.036
DD_SENT	0.0135	0.394	-0.0002	-0.025	0.0033	0.901	0.0008	0.423
SIZE	0.0019	0.227	0.0022	0.950	-0.0006	-0.198	0.0011	0.602
N	46		110		235		238	
Adjusted R^2	0.053		0.023		0.012		0.009	

(Continue)

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

Table 5 – Regression of market reaction to dividend change announcements, considering the sentiment and firm specific characteristics (continued)

Panel B – Size: Small *versus* Large Firms

France - Pooled OLS

	Small - ISENT		**Large - ISENT**		**Small - ESI**		**Large - ESI**	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
Intercept	-0.0699	-1.223	0.0851	1.447	-0.0783	-1.387	0.0799	1.356
DI	-0.5120	-0.654	-0.7414	-0.879	0.9632	0.916	-0.7252	-0.898
DD	0.5999	1.137	0.1799	0.263	1.5051	1.225	1.0334	0.670
DI_SENT	-0.9101	-0.930	0.2133	0.333	-0.0953	-0.899	0.0629	0.815
DD_SENT	-0.3935	-1.159	-1.2290	-1.157	-0.1456	-1.223	-0.0949	-0.656
SIZE	0.0124	1.275	-0.0112	-1.370	0.0137	1.422	-0.0104	-1.269
N	152		152		152		152	
Adjusted R^2	0.032		0.025		0.034		0.022	

UK

Pooled OLS

	Small - ISENT			**Large - ISENT**			**Small - ESI**			**Large - ESI**		
	Coefficient	t		Coefficient		t	Coefficient		t	Coefficient		t
Intercept	0.0470	1.019		0.0934	***	2.740	0.0493		1.066	0.0888	***	2.611
DIEI	-0.0039	-0.792		-0.0232		-1.122	-0.0782		-0.658	0.1673		0.455
DIED	0.0133	0.729		0.0002		0.013	-0.0008		-0.018	0.2190		0.600
DDEI	-0.0677	-1.582		0.0262		0.394	-0.2078	**	-2.118	0.2749	*	1.821
DDED	-0.0187	-0.666		-0.0385		-1.037	-0.4666		-0.594	0.7655		0.690
DIEI_SENT	0.0035	0.775		0.0010		0.076	0.0008		0.657	-0.0018		-0.522
DIED_SENT	0.0260	1.354		-0.0148		-0.599	0.0001		0.018	-0.0022		-0.615
DDEI_SENT	-0.0334	-1.204		0.0148		0.294	0.0198	**	2.061	-0.0262	*	-1.801
DDED_SENT	0.0265	1.246		-0.0398		-1.461	0.0044		0.565	-0.0079		-0.722
SIZE	-0.0056	-0.535		-0.0123	**	-2.323	-0.0064		-0.614	-0.0116	**	-2.187
N	838			838			838			838		
Adjusted R^2	0.010			0.012			0.010			0.014		

(Continue)

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

Table 5 – Regression of market reaction to dividend change announcements, considering the sentiment and firm specific characteristics (continued)

Panel C – Volatility: Stable *versus* Volatile Firms

Portugal - Pooled OLS

	Stable - ISENT		**Volatile - ISENT**		**Stable - ESI**		**Volatile - ESI**	
	Coefficient	t	Coefficient	t	Coefficient	t	Coefficient	t
Intercept	-0.0018	-0.079	-0.0347	-0.590	-0.0088	-0.467	0.0228	0.803
DI	0.0193	0.459	-0.0082	-0.121	-0.3107	-0.485	0.1384	0.104
DD	-0.0160	-0.594	0.3349	1.583	-0.0960	-0.524	0.9979	1.053
DI_SENT	-0.0021	-0.178	0.0058	0.295	0.0031	0.503	-0.0012	-0.096
DD_SENT	-0.0065	-0.672	0.0121	0.158	0.0010	0.534	-0.0086	-0.958
SIZE	-0.0001	-0.041	0.0017	0.553	0.0003	0.305	-0.0012	-0.785
N	95		58		238		238	
Adjusted R^2	0.021		0.082		0.010		0.019	

France - Pooled OLS

	Stable - ISENT			**Volatile - ISENT**		**Stable - ESI**			**Volatile - ESI**	
	Coefficient		t	Coefficient	t	Coefficient		t	Coefficient	t
Intercept	0.0119		0.423	-0.0465	-1.338	0.0072		0.257	-0.0443	-1.259
DI	-0.0783		-0.210	0.2479	0.223	-0.4962	*	-1.713	0.6446	0.457
DD	0.2966	*	1.917	-0.7576	-0.477	0.5719		1.508	3.1367	1.371
DI_SENT	0.0471		0.119	-0.2196	-0.240	0.0503	*	1.680	-0.0606	-0.444
DD_SENT	-0.1874	**	-1.983	-1.2049	-0.694	-0.0547		-1.472	-0.3101	-1.397
SIZE	-0.0010		-0.228	0.0007	1.330	-0.0004		-0.089	0.0065	1.223
N	152			152		152			152	
Adjusted R^2	0.035			0.054		0.420			0.028	

(Continue)

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

Table 5 – Regression of market reaction to dividend change announcements, considering the sentiment and firm specific characteristics (continued)

Panel C – Volatility: Stable *versus* Volatile Firms

UK - REM

	Stable - ISENT			**Volatile - ISENT**		**Stable - ESI**			**Volatile - ESI**	
	Coefficient		t	Coefficient	t	Coefficient		t	Coefficient	t
Intercept	0.0579	***	3.065	0.0038	0.174	0.0574	***	3.027	0.0005	0.025
DIEI	0.0017		0.763	-0.0051	-0.806	-0.0408		-0.676	0.0007	0.005
DIED	-0.0154	*	-1.803	0.0201	1.706	-0.2560		-0.574	0.0565	0.140
DDEI	-0.0530		-1.485	-0.0322	-0.442	-1.7329	**	-2.362	0.1825	0.689
DDED	-0.0242		-0.884	-0.0645	-1.510	-0.1698		-0.277	0.7415	0.454
DIEI_SENT	0.0024		0.865	0.0045	0.796	0.0004		0.673	-0.0001	-0.006
DIED_SENT	0.0149	**	2.054	0.0165	0.809	0.0024		0.551	-0.0003	-0.069
DDEI_SENT	-0.0318		-1.399	-0.0327	-0.916	0.0163	**	2.306	-0.0179	-0.695
DDED_SENT	0.0242		0.556	0.0207	0.863	0.0014		0.247	-0.0081	-0.501
SIZE	-0.0066	*	-1.736	0.0011	0.286	-0.0065	*	-1.707	0.0015	0.382
N	839			837		838			837	
Adjusted R^2	0.017			0.011		0.016			0.008	

Panel D – BM: Medium *versus* Distressed/Growth (D/G) Firms

Portugal - Pooled OLS

	Medium - ISENT			**D/G - ISENT**		**Medium - ESI**			**D/G - ESI**	
	Coefficient		t	Coefficient	t	Coefficient		t	Coefficient	t
Intercept	-0.0852	*	-1.788	-0.0009	-0.041	-0.0358		-1.172	0.0071	0.425
DI	0.0754		0.386	0.0210	0.512	1.7907		0.633	-0.4281	-0.703
DD	0.0257		0.147	-0.0103	-0.396	0.4599		0.345	-0.0913	-0.517
DI_SENT	-0.0320		-0.641	-0.0027	-0.227	-0.0150		-0.587	0.0042	0.721
DD_SENT	-0.0061		-0.122	-0.0047	-0.498	-0.0040		-0.317	0.0010	0.559
SIZE	0.0043	*	1.734	-0.0001	-0.074	0.0019		1.142	-0.0004	-0.469
N	70			125		236			380	
Adjusted R^2	0.075			0.015		0.018			0.008	

(Continue)

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

Table 5 – Regression of market reaction to dividend change announcements, considering the sentiment and firm specific characteristics (continued)

Panel D – BM: Medium *versus* Distressed/Growth (D/G) Firms

France - Pooled OLS

	Medium - ISENT			**D/G - ISENT**			**Medium - ESI**			**D/G - ESI**		
	Coefficient		t	Coefficient		t	Coefficient		t	Coefficient		t
Intercept	-0.0019		-0.048	-0.0132		-0.620	-0.0072		-0.188	-0.0155		-0.730
DI	-0.1078	*	-1.893	-0.0180		-0.046	-0.6376		-0.151	-0.4103		-1.304
DD	0.6695		0.588	0.2606		1.461	0.6587		0.571	0.7671	*	1.768
DI_SENT	-0.5640		-1.214	0.0349		0.852	-0.0003		-0.006	0.0421		1.296
DD_SENT	0.2097		0.349	-0.1907		-1.733	-0.0656		-0.547	-0.0742	*	-1.745
SIZE	0.0015		0.258	0.0024		0.743	0.0020		0.349	0.0027		0.819
N	152			152			152			304		
Adjusted R^2	0.026			0.014			0.018			0.019		

UK

Pooled OLS

	Medium - ISENT			**D/G - ISENT**			**Medium - ESI**			**D/G - ESI**		
	Coefficient		t	Coefficient		t	Coefficient		t	Coefficient		t
Intercept	0.0574	***	3.536	0.0405	***	3.022	0.0547	***	3.346	0.0394	***	2.938
DIEI	-0.0044		-0.723	-0.0001		-0.508	-0.0737		-0.497	-0.0020		-0.149
DIED	-0.0098		-1.201	-0.0024		-0.173	-0.3897		-0.916	-0.0554		-0.216
DDEI	-0.0578		-0.931	-0.0317		-1.042	-0.1134		-0.669	-0.1004		-1.389
DDED	-0.0561	*	-1.653	-0.0085		-0.425	0.3590		0.292	0.1929		0.369
DIEI_SENT	0.0050		0.748	0.0001		0.216	0.0007		0.488	0.0001		0.142
DIED_SENT	0.0184	***	2.808	0.0125		0.710	0.0037		0.905	0.0006		0.230
DDEI_SENT	-0.0774	**	-2.052	-0.0209		-1.069	-0.0112		-0.696	0.0095		1.353
DDED_SENT	-0.0171		-0.973	0.0339	**	2.318	-0.0040		-0.329	-0.0020		-0.392
SIZE	-0.0064	**	-2.200	-0.0046	*	-1.831	-0.0060	**	-2.046	-0.0044	**	-1.760
N	836			1,679			836			1,679		
Adjusted R^2	0.025			0.007			0.011			0.004		

* Significantly different from zero at the 10% level
** Significantly different from zero at the 5% level
*** Significantly different from zero at the 1% level

[1] We define the dividend process to be a martingale, having the background in the reluctance to change dividends evidence, which assumes that managers are averse to change dividends unless they perceive substantial changes in the future economic situation of their firm. This proxy (naïve dividend changes) has been used in other studies, such as in Nissim and Ziv (2001), Benartzi *et al.* (2005) and Sankaraguruswamy and Mian (2008).

[2] Although deflating the dividend change by the prior dividend is not unusual, deflating by price is more prevalent in the literature and is likely to be a better measure. See Nissim (2003) for an extensive discussion of the merits of normalizing the change in dividends by price per share.

[3] Barber and Lyon (1997) investigated the bias sources in abnormal returns. They suggest that cumulative abnormal returns (CARs) are subject to a measurement, a new listing and a skewness bias, which all lead to positively biased test statistics. BHARs are subject to a new listing, a skewness (which is worse than that for CARs) and a rebalancing bias, which leads to negatively biased test statistics. However, in assessing these different biases, Barber and Lyon (1997, p.347) states that *"we favor the use of buy-and-hold abnormal returns to cumulative abnormal returns on conceptual grounds"*.

[4] Gelper and Croux (2007) conclude that, although constructed in a rather *ad-hoc* way, the ESI can compete with other indicators constructed according to statistical principles.

[5] The DG ECFIN conducts regular harmonized surveys for different sectors of the economies in the EU to provide information for economic surveillance, short term forecasting and economic research. The surveys provide information on a wide range of variables (for example, production, business activity, consumer financial situation, unemployment, savings, among others) that are useful to monitor cyclical developments. The economic sentiment indicator is made with a range of individual components of the industry, services, consumers, construction and retail trade confidence indicators.
The economic sentiment data was collected in DG ECFIN website:
http://ec.europa.eu/economy_finance/db_indicators/surveys/time_series/index_en.htm.

[6] Our variable set includes short and long-term interest rates, consumption, inflation, exportations and importations, as well the lags of these variables.

[7] The year of 1994 is conditioned by the availability of announcement dates *on Bloomberg* database. For the Portuguese sample we consider a longer period, in order to maximize the number of observations, since this is a small market, with a small number of dividend events. Because *Bloomberg* and *Datastream* lack information on the Portuguese market, we obtain data from *Dhatis*, an EL database and we also needed to collect some financial statements directly from the companies.

[8] For the UK market, dividends and earnings are usually announced in the same date. We, therefore, exclude the dividend events for which dividends and earnings information were announced on separate dates, which is a small number (6 events). In addition, we adapt the methodology in order to separate the two effects (dividends and earnings).

[9] We emphasise, for the Portuguese sample, the significant number of dividend decreases (about 32% of sample events). One possible explanation for these sample statistics may be the exposure of emerging and Portuguese markets to more economic risks.

[10] They found the following percentages for dividend increases, no-change dividends and dividend decreases, respectively: 75%, 15.7% and 9.3%, for the period between 1989 and 1993.

[11] Aivazian *et al.* (2003) found the following percentages for dividend increases, no-change dividends and dividend decreases, respectively, for the Thailand market: 47%, 22.6% and 30.4%, and for the Korea market: 42%, 14.6% and 43.4%, both for the period between 1981 and 1990.

[12] Results are not reported here for the sake of brevity, but are available upon request.