INVERSE MARKET REACTION TO DIVIDEND CHANGES IN THE EUROPEAN CONTEXT

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Abstract

This study tries to understand why the market sometimes reacts negatively/positively to dividend increases/decreases, showing an inverse market reaction to dividend change announcements; using samples from three European markets (Portuguese, French and British). The results are different across these three countries. Data from a small country, Portugal, suggests that the inverse market reaction to dividend change announcements takes place because the market does not understand the signal given by firms through dividend-change announcements. For the UK market, the results have some success in explaining the inverse signalling effects. Finally, the results suggest that in the UK investors can better predict future earnings based on dividends than in Portugal or France.

Keywords: *Cash Dividends, Signalling Hypothesis, Inverse Market Reaction*

AVRUPA BAĞLAMINDA TEMETTÜ DEĞİŞİKLİKLERİNİN TERS PİYASA REAKSİYONU

Öz

Bu çalışma, piyasanın neden bazı durumlarda temettü artışlarına (azalış) negatif (pozitif) reaksiyon gösterdiğini temettü değişim duyurularına ters piyasa reaksiyonu gösteren üç Avrupa pazarı örneğinde açıklamaktadır. Sonuçlar 3 ülke bağlamında farklılaşmaktadır. Küçük ülke verisi olan Portekiz'de, temettü değişim duyurularına ters piyasa reaksiyonu gösterilmesinin nedeni piyasanın temettü değişimi duyuruları aracılığıyla firmalar tarafından verilen sinyali algılamamasıdır. Ayrıca, sonuçlar İngiltere piyasası için "ters sinyalleşme etkisi"nin açıklanmasında belli bir başarılı göstermiştir. Son olarak, sonuçlar

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İngiltere'deki yatırımcıların Portekiz ya da Fransa ile kıyaslandığında gelecekteki temettü bazlı getiriyi daha iyi tahmin ettiğini ortaya koymaktadır.

Anahtar Kelimeler: *Nakit Temettü, Sinyal Hipotezi, Ters Piyasa Reaksiyonu*

Introduction

The dividend policy irrelevance hypothesis states that dividend policy affects neither a company's value nor its cost of capital. Thus, there is no particular dividend policy that allows an increase in shareholder wealth (Miller and Modigliani, 1961). However, Gordon (1963) argues that investors prefer to receive current dividends to capital gains because they are less risky. Indeed, shareholders believe that dividends are less risky than capital gains, preferring high to low dividends. This fact is known in the corporate finance world as "a-bird-in-the-hand" fallacy.

According to the dividend signalling hypothesis, developed by Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985), dividend change announcements convey to the market valuable information concerning the managers' expectations about future cash flows of firms, because managers have better information than investors. While dividend increases are considered good news, dividend decreases are considered bad news. Consequently, a positive and significant relationship between dividend change announcements and the subsequent share price reactions, as well as future changes in earnings, are expected.

Among the vast literature that analyses the market reaction to dividend change announcements, a significant number of studies find evidence for the information content of dividends for the cases of dividend change announcements (Pettit, 1972 and 1976; Aharony and Swary, 1980; Benesh *et al.*, 1984; Dhillon and Johnson, 1994; Gurgul *et al.*, 2003; McClusky *et al.*, 2006;Yilmaz and Gulay, 2006; Hussin *et al.*, 2010; Yilmaz and Selcuk, 2010), for dividend initiations (Asquith and Mullins, 1983) for dividend initiations and omissions (Lee and Ryan, 2000, 2002) and for dividend increase announcements (Lippert *et al.*, 2000). Some studies find also evidence of an asymmetric market reaction to dividend changes, reacting strongly to dividend increases than to dividend decreases (e.g., Amihudand Li, 2002; Vieira, 2011). However, some studies find no evidence of a positive relationship between dividend change announcements and the subsequent market reaction (Lang and Litzenberger, 1989; Benartzi *et al.*, 1997; Conroy *et al.*, 2000; Chen *et al.*, 2002; Abeyratna and Power, 2002; Ali and Chowdhury, 2010; Asamoah, 2010; Vieira, 2012).

Furthermore, several studies find evidence of a significant percentage of cases where share price reactions are opposite to the dividend changes direction, like the works of Asquith and Mullins (1983), Dhillon and Johnson (1994) and Healy *et al.* (1997). Moreover, Urooj and Zafar (2008) find a negative abnormal return at dividend increase announcements.

Asquith and Mullins (1983) find evidence supporting the dividend information content hypothesis. However, they verified that about 32% of their sample firms showed a negative market reaction to dividend initiations. Benesh *et al.* (1984) and Born *et al.* (1988) show that in 20 to 60% of the cases, the market reacted positively to dividend decreases and negatively to their increases. Dhillon and Johnson (1994) and Healy *et al.* (1997) find evidence of this enigmatic behaviour in about 34% (for dividend initiations) and 27% (for omissions) of the cases in the first study, and 42.5% of the cases in the latter.

Although Sant and Cowan (1994) find a negative reaction to dividend omission announcements in the announcement period, the results show that almost 23.4% of the sample had an inverse reaction, with a positive reaction to dividend omission announcements. Dhillon *et al.* (2003) find that about 43% of the dividend increase announcements are associated with an inverse market reaction.

Previous literature suggests possible reasons for the negative relation between dividend changes and the subsequent market reaction. There can be a negative relationship between dividend increases and share prices for several reasons: the market may wrongly interpret the signal conveyed by managers; managers may be signalling falsely, but investors recognise this and react appropriately, or it can be the result of the differential tax treatment between dividends and capital gains. However, Elton and Gruber (1970), among other authors, investigate the relationship between corporate dividend policy and investor tax rates and find that the market prefers dividends to capital gains.

Elfakhani (1995) suggests that the share price reaction to dividends is determined, jointly, by three factors: the expected content favourableness from the dividend signal (flat, good, bad or ambiguous), the sign of dividend change and the dividend-signalling role (confirmatory, clarificatory or unclear). He states that content favourableness dominates the sign of dividend change since their results show that dividend decreases (increases) signalling good (bad) news bring on positive (negative) market answer.

Mozes and Rapaccioli (1998) and Abeyratna and Power (2002) suggest possible reasons for a positive market reaction to dividend decrease announcements. Mozes and Rapaccioli (1998) find evidence that small dividend decreases do not provide a negative signal about future earnings probably because they may represent an attempt to keep resources for future growth opportunities.

Abeyratna and Power (2002) find evidence of a significant improvement in profitability as well as financial and liquidity ratios in a sample of firms that had, in a certain period, decreases in both dividends and earnings, suggesting that dividend decreases may not be bad news to the market concerning firms' future earnings, as assumed by signalling theory, but rather reflect managers' decisions to solve firms' financial problems.

Consistent with the maturity hypothesis suggested by Grullon *et al.* (2002), a dividend increase announcement may transmit two types of news: good news, i.e., the firms' systematic risk decreased, and bad news, i.e., limited growth opportunities. The former will lead to a positive market reaction and the latter to a negative reaction.

Dhillon *et al.* (2003) highlight a possible sample misclassification arising from the use of naïve dividend models that does not really distinguish between expected and unexpected dividend changes. Their results suggest that if the dividend increase is smaller than was forecasted by analysts, the market may react negatively, and if the dividend decrease is smaller than forecast by analysts, the market may react positively.

However, only Healy *et al.*(1997) explore the negative relationship between dividend changes and the subsequent market reaction, concluding that firms whose market reaction to an initial dividend announcement was negative, document lower dividend yield ratio and PER and higher debt/equity ratio, current ratio and growth earnings before the announcement. I concluded elsewhere (Vieira: 2011) that to convey good news to the market, the dividend increases must have a significant magnitude. Also, the likelihood that the market reacts positively to a dividend decrease announcement is decreased when the percentage of dividend negative changes is high (Vieira, 2011).

In this context, my paper makes three main contributions to the literature. First, it analyses the relation between dividend change announcements and future earnings, conditioned to the relation between dividend changes and the subsequent market reaction. Second, the paper contributes to the scarce analyses of an inverse market reaction to dividend change announcements. To the best of my knowledge, this is the first study to analyse this phenomenon from a dataset of European countries. Finally, I analyse different European markets: the UK (an Anglo-Saxon influence country and a market based system), and, France and Portugal (which are characterised by a continental influence and a bank based system). Thus, I expect that the signalling role must be more relevant in the UK market than in France or Portugal.

Generally, I find only weak evidence for the dividend information content hypothesis. Data from Portugal suggests that the inverse market reaction to

dividend change announcements is due to the fact that the market does not understand the signal given by firms through dividend-change announcements. Moreover, I find evidence for the *inverse signalling effect* in the UK market. The results suggest that in the UK investors are better able to predict future earnings than in Portugal or France.

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

2. Hypotheses and Methodology

I analyse the relation between dividend changes and future earnings, conditioned to the relation between dividend change announcements and the subsequent market reaction, starting by identifying the cases where share price reactions are opposite to the dividend changes direction. To do so, I need to classify the dividend changes in distinct groups, according to the relationship between dividend change announcements and the subsequent market share reaction surrounding the announcement date, which can be described by four situations, presented below:

	Dividend Increases	Dividend Decreases
Positive market reaction	**I** - PRDI	**II**- PRDD
Negative market reaction	**III** - NRDI	**IV** - NRDD

Relation between dividend changes and the market reaction

Cells I and IV are consistent with the signalling models (Bhattacharya, 1979; John and Williams, 1985; Miller and Rock, 1985). However, as noted above, some authors have found evidence that about a third of their samples lie in cells II and III.

In this context, I focus on the cases where the market reacts differently than would be expected under the dividend information content hypothesis; that is, the paradoxical cases in which the market reacts positively to a dividend decrease (cell II) and negatively to a dividend increase (cell III), trying to find reasons that can explain the negative relation between dividend change announcements and the subsequent share price reactions.

To identify cells I to IV, I split the sample according to the abnormal market reaction to dividend change announcements, measured through the “buy-and-hold”

abnormal return (BHAR). The BHAR for share i from time *a* to *b* [$BHAR_{i\ (a\ to\ b)}$] takes the following form:

$$BHAR_{i(a\ to\ b)} = \prod_{t=a}^{b}(1+R_{i,t}) - \prod_{t=a}^{b}(1+R_{m,t}) \quad (1)$$

Ri,t is the return of share *i* in day *t* and *Rm,t* is the market return on day *t*. The time period *a* to *b* constitutes three trading days from t = -1, 0 +1, with 0 being the event date.

For the observations in cells I and IV (positive relationship between dividends and the market reaction), I develop the following alternative hypothesis, in order to analyse the relation between dividend changes and future earnings, for the events with a positive relationship between dividend change announcements and the subsequent market reaction:

> *H_1: "For the events with a positive relation between dividend change announcements and the market reaction, future earnings are positively associated with current dividend changes"*

The underlying idea is that the market reacts positively to a dividend increase announcement and negatively to a dividend decrease announcement, according to the assumptions of the dividend information content hypothesis. This suggests that investors expect future earnings to increase, in the first situation and expect future earnings to decrease, in the latter situation. Thus, dividend changes and future earnings should be positively related.

To test H_1, and following Vieira (2011), I consider the following regression:

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_1\ \text{PRDI x}\ \Delta D_{i,0} + \beta_2\ \text{NRDD x}\ \Delta D_{i,0} + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t} \quad (2a)$$

where:

$E_{i,\tau}$ = earnings before extraordinary items for share i in year τ relative to the dividend event year (year 0);

τ = 1 and 2[1];

PRDI = dummy variable that takes value 1 if there is a positive reaction to dividend increases and 0 otherwise;

[1]The signalling hypothesis is based on expected and not on actual earnings. However, I do not have access to a database with dividend and earnings forecast.

NRDD = dummy variable that takes value 1 if there is a negative reaction to dividend decreases and 0 otherwise;

$BV_{i,-1}$ = book value of equity for share i at the end of year -1;

$ROE_{i,\tau-1}$ = return on equity for share i, calculated as $E_{i,\tau-1}/ BV_{i,\tau-1}$.

I adapt the methodology when analysing the UK sample, as the UK firms usually announce both dividends and earnings simultaneously, making it difficult to separate out the dividend announcement effect from that of earnings. Therefore, for the UK market, the regression will be adapted in the following manner:

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_{1A}\ \text{PRDIEI x}\ \Delta D_{i,0} + \beta_{1B}\ \text{PRDIED x}\ \Delta D_{i,0} + \\ + \beta_{2A}\ \text{NRDDEI x}\ \Delta D_{i,0} + \beta_{2B}\ \text{NRDDED x}\ \Delta D_{i,0} + \\ + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t} \quad (2b)$$

where:

PRDIEI = dummy variable that takes value 1 if there is a positive reaction to both dividend and earnings increases and 0 otherwise;

PRDIED = dummy variable that takes value 1 if there is a positive reaction to dividend increases and earnings decreases and 0 otherwise;

NRDDEI = dummy variable that takes value 1 if there is a negative reaction to dividend decreases and earnings increases and 0 otherwise;

NRDDED = dummy variable that takes value 1 if there is a negative reaction to both dividend and earnings decreases and 0 otherwise.

The regression (2) assumes that the relation between future earnings and past earnings levels and changes is linear. Consequently, I use the Fama and French (2000) modified partial adjustment model as a control for the non-linearity in the relation between future earnings changes and lagged earnings levels and changes. The model is the following:

$$(E_{i,\tau} - E_{i,\tau\ 1})/BV_{i,\ -1} = \alpha + \beta_1\ \text{PRDI x}\ \Delta D_{i,0} + \beta_2\ \text{NRDD x}\ \Delta D_{i,0} \\ + \left(\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}\right) * \text{DFE}_{i,0} \quad (3) \\ + \left(\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}\right) * \text{CE}_{i,0} + \varepsilon_{i,t}$$

Next, I analyse the relation between dividend changes and future earnings, for the events with a negative relationship between dividend change announcements and the market reaction. Thus, for the observations in cells II and III, I test the following alternative hypothesis:

> *H_2: "For the events with a negative relation between dividend change announcements and the market reaction, future earnings are negatively associated with current dividend changes"*

The underlying idea of this hypothesis is that, although dividends have increased (decreased), investors expected a decrease (increase) in future earnings, and the market reacts according to this expectation. Thus, the market reacts negatively to a dividend increase announcement and positively to a dividend decrease announcement. In consequence, dividend changes and future earnings should be negatively related.

If I find a negative relationship between dividend change announcements and future earnings changes, as predicted in the alternate hypothesis H_2, I provide evidence of a signalling effect but contrary to the sign of dividends, which I have denominated by *inverse signalling effect* because the market reaction is directly related to earnings changes. If the market reacts negatively to dividend changes while the relation between dividend changes and future earnings is consistent with the dividend information content hypothesis, it will suggests that the market did not understand the signal given by firms through dividend change announcements. Generally, I cannot support the dividend signalling hypothesis, since each one of these relations is necessary but not sufficient conditions for the dividend signalling.

To test H_2, I consider the same regression model as in H_1, but with different dummy variables:

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_1 \text{NRDI x } \Delta D_{i,0} + \beta_2 \text{ PRDD x } \Delta D_{i,0} + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t} \quad (4a)$$

where:

NRDI = dummy variable that takes value 1 if there is a negative reaction to dividend increases and 0 otherwise;

PRDD = dummy variable that takes value 1 if there is a positive reaction to dividend decreases and 0 otherwise.

For the UK the regression is the following one:

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_{1A}\ \text{NRDIEI x}\ \Delta D_{i,0} + \beta_{1B}\ \text{NRDIED x}\ \Delta D_{i,0} + \\ + \beta_{2A}\ \text{PRDDEI x}\ \Delta D_{i,0} + \beta_{2B}\ \text{PRDDED x}\ \Delta D_{i,0} + \\ + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t} \quad (4b)$$

where:

NRDIEI = dummy variable that takes value 1 if there is a negative reaction to both dividend and earnings increases and 0 otherwise;

NRDIED = dummy variable that takes value 1 if there is a negative reaction to dividend increases and earnings decreases and 0 otherwise;

PRDDEI = dummy variable that takes value 1 if there is a positive reaction to dividend decreases and earnings increases and 0 otherwise;

PRDDED = dummy variable that takes value 1 if there is a positive reaction to both dividend and earnings decreases and 0 otherwise.

Subsequently, I run the following regression to control for the non-linearity in the relation between future earnings changes and lagged earnings levels and changes, as I did before:

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,1} = \alpha + \beta_1\ \text{NRDI x}\ \Delta D_{i,0} + \beta_2\ \text{PRDD x}\ \Delta D_{i,0} \\ + (\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}) * \text{DFE}_{i,0} \quad (5) \\ + (\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}) * \text{CE}_{i,0} + \varepsilon_{i,t}$$

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

3. Sample Selection

The sample is drawn from dividend announcements of non-financial firms listed on the Euronext Lisbon (EL), Euronext Paris (EP), both integrated on the NYSE Euronext, and London Stock Exchange (LSE). Announcement dates were collected from *Bloomberg* database and all other needed information is available on *Datastream* database. For the French and the UK markets, I consider the

dividend announcements between 1994 and 2002, and for the Portuguese market I consider the dividend announcements between 1988 and 2002[2].

To be included in the final sample, the dividend announcements must satisfy the following criteria: 1) The firm is listed on the respective stock exchanges the year before and two years after the dividend events; 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) at the year before and two years after the dividend events and announcement dates are available on *Bloomberg* database; 4) For the Portuguese and French market 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, in order to control for other information that could be impacting price reaction. For the UK market, these announcements were excluded, except the case of earnings announcements[3].

My 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. Table 1 shows the number of dividend events classified by sample selection criteria. The Portuguese final sample contains 380 events: 158 increases, 121 decreases and 101 no change observations. The French final 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.

Table 2 reports the sample splitting according the relationship dividend change announcements and the share price reaction. For the Portuguese sample, I observe that of the 279 dividend change announcement events, 159 events exhibit a direct relation between dividend changes and the BHAR, while the remainder 120 events show an inverse relation between the two variables. For the French sample, the values are, respectively, of 297, 156 and 141, and finally, for the UK sample, the values are 2,935, 1,762 and 1,173. The evidence shows that, respectively for the Portuguese, the French and the UK samples, about 43%, 47% and 40% of dividend change events show an inverse relationship between dividend change

[2] The year of 1994 is conditioned by the availability of announcement dates *on Bloomberg* database. For the Portuguese sample I consider a longer period, in order to maximise 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, I obtain data from *Dhatis*, an EL database and I also needed to collect some financial statements directly from the companies.

[3] 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). I have adapted the methodology in order to separate the two effects (dividends and earnings).

announcements and the market reaction in the 3 days surrounding the announcement day, the majority of which being dividend increases with negative BHAR. This evidence confirms the need to closer examine these cases.

4. Empirical Results

I start by examining the events with a positive relationship between dividend changes and the market reaction, in order to test hypothesis 1. The results of the best model (pooled OLS, FEM or REM) of regression (2), chosen according to the F statistic and the Hausman test[4], are shown in Table 3.

The Portuguese sample results exhibit a positive and significant coefficient, at the 5% level, on dividend increases (with subsequent positive market reaction) for both years. This means that future earnings are positively related to dividend increases. Thus, the results concerning a positive reaction to dividend increases support hypothesis H_1 and provide evidence for the dividend information content hypothesis. The coefficient on the negative reaction to dividend decreases is not statistically significant for both periods. This means that, although I observe a signalling effect related to the market reaction to dividend decreases, I cannot reject the null hypothesis associated with H_1 and, consequently, I do not find evidence supporting the dividend information content hypothesis in what concerns the relationship between dividend changes and future earnings. This evidence is in accordance with Nissim and Ziv (2001) verification, since these authors found evidence of dividend increases associated with future profitability (measured in terms of earnings), whereas dividend decreases are not related to future profitability, after controlling for current profitability.

In what concerns the French market, I find no evidence supporting the dividend information content hypothesis for the dividend increase events. The coefficient on the negative reaction to dividend decreases is negative for the two periods, contrary to what is expected. However, it is only marginally significant for $\tau = 2$, at the 10% level. This means that, although I observe a signalling effect related to the market reaction to dividend decreases, the future earnings are not related to dividend changes, except for $\tau = 2$, but even in this period, they are only marginally related. Generally, I find no evidence supporting the dividend information content

[4] To simplify, I do not report the other models, as well as the correlation matrix of the exogenous variables, but they are available from authors upon request. Variables show low correlations. The higher correlation coefficients, for all the three markets, are between ROE and the earnings changes in the announcement year for $\tau=1$. The coefficient is around 75% in the Portuguese sample, approximately 70% in the French sample and is below 20% in the UK market. All the other correlation coefficients are below 25%. In general, the correlation coefficients do not appear to be sufficiently large to cause concern about multicollinearity problems.

hypothesis in what concerns the relationship between dividend changes and future earnings.

The UK sample results exhibit statistically insignificant values for all the coefficients on dividend increase events, and for both periods. Thus, I find no evidence supporting the dividend information content hypothesis for the dividend increase events in what concerns the relationship between dividend changes and future earnings. The fact that, for $\tau = 1$, the coefficient on PRDIEI is positive, while the coefficient on PRDIED is negative, although both not significant, could be an indication of a strong power of current earnings over current dividends in explaining the firm's future prosperity. This evidence is in agreement with the results of DeAngelo *et al.* (1992), Abeyratna and Power (2002) and Vieira (2011).

The coefficient on the negative reaction to dividend decreases and earnings increases is positive and statistically significant for $\tau = 2$, at the 5% level. The coefficient on the negative reaction to both dividend and earnings decreases is negative, contrary to expected, and statistically significant for $\tau = 1$, at the 1% level. I would like to try to understand the reasons behind failing to document a positive relation between dividend changes and future earnings for the NRDDED events. The fact that the coefficient on NRDDEI is positive, while the coefficient on NRDDED is negative for the two periods, could be again an indication of current earnings having a stronger power in explaining the firm's future prosperity than current dividends. In summary, the results for the dividend decrease events are not consistent. Although I observe a signalling effect related to the market reaction to dividend decreases, I only reject the null hypothesis associated with H_1 for two coefficients. For $\tau = 1$, I reject the null hypothesis associated with H_1 for the NRDDED events, but the relation between future earnings and dividend changes is negative, finding no support for the signalling hypothesis. For $\tau = 2$, I reject the null hypothesis for the NRDDEI events, finding a positive relation between future earnings and dividend changes, as expected, supporting, only for this events, the dividend information content hypothesis. In summary, I find weak evidence supporting the dividend information content hypothesis.

Table 4 shows the re-estimated coefficients of the regression models using the Fama and French (2000) methods, according to the regression (3), in order to overcome the problem of the mean reversion process of earnings being non-linear. Comparing the results from Table 3 to those of Table 4, I notice that, generally, the results are quite similar. The main differences occur in the Portuguese and in the French markets. In the Portuguese sample, the coefficient on a positive reaction to dividend increases is now only statistically significant for $\tau = 2$, which cancel some support to the signalling hypothesis, found before. However, in the French sample, the coefficient on a positive reaction to dividend increases becomes now

statistically significant for $\tau = 2$, at the 5% level, giving some support to the dividend signalling hypothesis. Neither of the other coefficients has changed considerably, so, in general terms, the conclusions obtained before remain valid. One interesting evidence is the fact that the three coefficients that are positive and statistically significant occurs always for $\tau = 2$, which is an indication that the information content effect reinforces over time.

Overall, after controlling for the non-linear patterns in the behaviour of earnings, the results do not allow me to reject the null hypothesis associated with H_1 for the majority of the coefficients. Only 3 of the 16 coefficients exhibit a positive and significant relation between future earnings and dividend changes (one for each country, and all for $\tau = 2$). Consequently, although I observe a signalling effect related to the market reaction to dividend change announcements (positive relationship between dividend changes and share price changes in the 3 days surrounding the announcement date), I find weak support for hypothesis H_1. Therefore, in general terms, the results provide weak evidence for the dividend information content hypothesis.

After analysing the events for which the behaviour is consistent with the dividend signalling hypothesis in what concerns the relationship between dividend change announcements and the subsequent market reaction, I evaluate the events with an inverse relation between these two variables, in order to test hypothesis H_2.

The estimation results of the best model of regression (4) are shown in Table 5[5].

The Portuguese sample results exhibit a positive coefficient on dividend increases with a negative market reaction for both years, contrary to what is expected. However, it is only marginally significant for $\tau = 2$, at the 10% level. Thus, although the market reacts negatively to dividend increases, the future earnings are consistent with the dividend information content hypothesis. This is an indication that the market did not understand the signal given by firms through dividend increase announcements, as I conclude previously, when testing the first hypothesis. Although for $\tau = 2$ the results exhibit a statistically significant relation between dividend changes and future earnings, I find no evidence of the dividend signalling hypothesis for the relation between dividend changes and share price movements in the announcement period, so, I cannot give support to the dividend signalling hypothesis.

[5] The higher correlation coefficients, for all the three markets, are between ROE and the earnings changes in the announcement year for τ=1. The coefficient is around 50% in the Portuguese sample, below 50% in the French sample and about 22% in the UK market. All the other correlation coefficients are below 22%. Thus, the correlation coefficients do not appear to cause concern about multicollinearity problems.

The coefficient on the positive reaction to dividend decreases is negative (as expected) and statistically significant for the first period, at the 10% level. This result suggests that, although dividends have decreased, investors forecast an increase in future earnings, and the market reacts according to this expectation, providing evidence of a signalling effect but contrary to the sign of dividends, which I denominate by *inverse signalling effect*. Therefore, as I reject the null hypothesis associated with H_2 (and earnings and dividends are negatively related) for the first year after the dividend change announcement, I give support to the *inverse signalling effect*, but only for $\tau = 1$, which can be interpreted as a capability to predict the future firm's prospects in a short term period.

For the case of the French sample, none of the coefficients on dividend changes is statistically significant. Thus, I do not reject the null hypothesis. As I find no evidence of a positive relation between dividend change announcements and the subsequent market reaction as well as between dividend changes and future earnings, I give no support to the dividend information content hypothesis.

The UK sample results exhibit a significant value for two coefficients: the one of a negative reaction to both dividend and earnings increases (NRDIEI) and the other of a positive reaction to dividend decreases and earnings increases (PRDDEI). The coefficient on NRDIEI is negative for $\tau = 1$, as expected, but positive for $\tau = 2$. The coefficient on PRDDEI is negative, as supposed, but only statistically significant for the first period. For $\tau = 1$, the rejection of the null hypothesis associated with H_2 for the NRDIEI and PRDDEI variables provide evidence for the *inverse signalling hypothesis*. For $\tau = 2$, the rejection of NRDIEI variable (positive signal) indicates that, although the relation between dividend changes and future earnings is consistent with the dividend signalling effect, the market reaction to dividend change announcements is inverse. This suggests that the market may not understand the signal given by the firms through the dividend change announcements.

The fact that, for $\tau = 1$, the coefficients on NRDIEI and PRDDEI are negative and significant, while they are positive for $\tau = 2$ (although only significant for the first case), could be an indication of a strong power of investors predicting the short term earnings behaviour over the long term. Indeed, future earnings changes are in accordance with market reaction for the first period, but in contrast with market reaction two years after the dividend and earnings change announcements. This evidence suggests that the investors' forecasting capability decays over time.

Table 6 shows the re-estimated coefficients using the Fama and French (2000) methods, according to the regression (5), in order to overcome the problem of the mean reversion process of earnings being non-linear. Comparing the results from

Table 5 to those of Table 6, I notice that, generally, the results are quite similar. The two main differences occur in the Portuguese and in the UK markets.

In the case of the Portuguese sample, the coefficient on the negative reaction to dividend increases (NRDI) is no longer statistically significant for $\tau = 2$, but becomes statistically significant for $\tau = 1$, being positive, contrary to the expected. The conclusion obtained before for $\tau = 2$ is now evidenced for $\tau = 1$; although the market reacts negatively to dividend increases, the future earnings are consistent with the dividend information content hypothesis, suggesting that the market did not understand the signal given by firms through dividend increase announcements. All the other coefficients are statistically not different from zero.

In the case of the UK sample, the coefficients that are now statistically significant are the two coefficients on the positive reaction to dividend decreases (PRDDEI and PRDDED), both negative (for $\tau = 1$) and the coefficient on NRDIEI, positive (for $\tau = 2$). The differences are that, for $\tau = 1$, NRDIEI is now statistically insignificant and the coefficient on PRDDED becomes significant. None of the other coefficients has changed considerably.

Overall, after controlling for the non-linear patterns in the behaviour of earnings, the results obtained do not allow me to reject the null hypothesis associated with H_2 for the majority of the coefficients. For the dividend decrease events in the UK market, I find some evidence of the *inverse signalling hypothesis*. For the dividend increases in the Portuguese market, it seems that the market may not understand the signal conveyed by firms' dividend policy.

To ensure robustness, and because I do not have access to dividend forecasts, I consider as dividend changes only the dividend changes superior to 15%, in order to proxy for unexpected dividend changes[6]. The results were quite similar, so, my main conclusions maintain unchanged.

Conclusion

This paper investigates the negative relationship between dividend change announcements and the subsequent market reaction.

After controlling for the non-linear patterns in the behaviour of earnings, I find only weak evidence for the dividend information content hypothesis, for all the three countries. Moreover, the results suggest that the information content effect reinforces over time.

Testing the relationship between future earnings and dividend changes for the events with a negative relation between dividend change announcements and the

[6]I do not report the results, but they are available from authors upon request.

market reaction, the obtained results for the French sample provide no evidence for the dividend information content hypothesis. In what concerns the Portuguese market, the general results provide no relation between future earnings and dividend changes, suggesting that the market did not understand the signal given by firms through dividend change announcements. In what concerns the UK market, the results show that, for the events with a negative relation between dividend change announcements and the market reaction, future earnings are negatively associated with current dividend changes, giving some evidence for the *inverse signalling effect*. In addition, the evidence suggests that investors' forecasting capability decays over time.

Generally, the results suggest that the in UK, investors are better able to predict future earnings based on dividends announcements than in Portugal or France.

The phenomenon of an inverse relationship between dividend changes and market reaction was not fully explained with this study. Beyond the possible reasons already displayed in section 2, I wonder if the inverse relation between dividend change announcements and the market reaction could be endorsed to the failure of the naïve dividend changes model rather than to a real inverse reaction to dividend changes (Dhillon *et al.*, 2003). Indeed, a research limitation of this study is the lack of access to a database containing dividend and earnings expectations based on analysts' forecasts, so, I do not control for dividend and earnings forecasts.

Consequently, in future work, I will try to consider dividend and earnings forecasts, in order to see if the main conclusions are unchanged, or, if not possible for availability of data reasons, I will consider a proxy for it, considering a shadow price, and comparing it with actual prices, in order to identify the effects of unexpected dividend change announcements. Furthermore, I would like to extent the sample and consider a distinction between the announcements made during a bear and a bull market.

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Table 1 - Sample Selection

This table reports the number of dividend events for the Portuguese, the French and the UK samples, classified by sample selection criteria. 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 is listed on the respective stock exchange the year before and two years after the dividend events; 3) The firm's financial data is available on the *Datastream* or *Dhatis* (in the Portuguese sample)database at the year before and two years after the dividend events; 4) The firm paid an annual ordinary dividend in the current and previous year; 5) 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 I consider the same condition, except for earnings announcements. As they are simultaneous in almost the cases, I exclude dividend announcements which earnings announcements are announced on separate dates.

	Dividend Increases	No Change	Dividend Decreases	Total
Portuguese Sample				
Total number of dividend events	210	139	180	529
Dividend events with other dividend types declaration events	4	5	8	17
Dividend events with firms not listed in the stock exchange the year before and two years after the events	40	24	44	108
Dividend events which earnings or other potentially contaminating announcements occurs within 5 days of the dividend change announcement	4	3	6	13
Dividend events with missing data	4	6	1	11
Total excluded dividend events	52	38	59	149
Total number of dividend events for analysis	**158**	**101**	**121**	**380**
Events Percentage (%)	**41.58**	**26.58**	**31.84**	**100.00**
French Sample				
Total number of dividend events	539	317	200	1,056
Missing announcement dates on *Bloomberg*	240	243	116	599
Dividend events with other dividend types declaration events	2	1	0	3
Dividend events with firms not listed in the stock exchange the year before and two years after the events	12	5	5	22
Dividend events which earnings or other potentially contaminating announcements occurs within 5 days of the dividend change announcement	50	9	17	76
Dividend events with missing data	-	-	-	-
Total excluded dividend events	304	258	138	700
Total number of dividend events for analysis	**235**	**59**	**62**	**356**
Events Percentage (%)	**66.01**	**16.57**	**17.42**	**100.00**
UK Sample				
Total number of dividend events	2,838	380	341	3,559
Missing announcement dates on *Bloomberg*	124	26	62	212
Dividend events with other dividend types declaration events	20	2	4	26

Dividend events with firms not listed in the stock exchange the year before and two years after the events	1	1	1	3
Dividend events which potentially contaminating announcements (except earnings announcements) occurs within 5 days of the dividend change announcement	24	4	1	29
Dividend events which dividends and earnings information were announced on separate dates	4	2	0	6
Dividend events with missing data	3	2	0	5
Total excluded dividend events	176	37	68	281
Total number of dividend events for analysis	**2,662**	**343**	**273**	**3,278**
Events Percentage (%)	**81.21**	**10.46**	**8.33**	**100.00**

Table 2 - Sample Splitting

This table reports the sample splitting for the Portuguese, the French and the UK samples, according to the relationship between dividend change announcements and the share price reaction in the announcement period.

Portugal		
	Events	
	Number	**%**
Dividend increases with positive BHAR	86	54.43
Dividend increases with negative BHAR	72	*45.57*
Dividend increases	**158**	**100.00**
Dividend decreases with negative BHAR	73	60.33
Dividend decreases with positive BHAR	48	*39.67*
Dividend decreases	**121**	**100.00**
	279	
Dividend increases with positive BHAR	86	30.82
Dividend decreases with negative BHAR	73	26.16
Direct relation between dividend changes and BHAR	**159**	**56.99**
Dividend increases with negative BHAR	72	25.81
Dividend decreases with positive BHAR	48	17.20
Inverse relation between dividend changes and BHAR	**120**	**43.01**
Dividend increases with null BHAR	0	0.00
Dividend decreases with null BHAR	0	0.00
No relation between dividend changes and BHAR	**0**	**0.00**
Total of Dividend Change Announcement Events	**279**	**100.00**
France		
	Events	
	Number	**%**
Dividend increases with positive BHAR	127	54.04
Dividend increases with negative BHAR	108	*45.96*
Dividend increases	**235**	**100.00**
Dividend decreases with negative BHAR	29	46.77
Dividend decreases with positive BHAR	33	*53.23*
Dividend decreases	**62**	**100.00**
	297	
Dividend increases with positive BHAR	127	42.76

Dividend decreases with negative BHAR	29	9.76
Direct relation between dividend changes and BHAR	**156**	**52.53**
Dividend increases with negative BHAR	108	36.36
Dividend decreases with positive BHAR	33	11.11
Inverse relation between dividend changes and BHAR	**141**	**47.47**
Dividend increases with null BHAR	0	0.00
Dividend decreases with null BHAR	0	0.00
No relation between dividend changes and BHAR	**0**	**0.00**
Total of Dividend Change Announcement Events	**297**	**100.00**

UK

	Events	
	Number	**%**
DIEI with negative BHAR	1,201	62.20
DIEI with negative BHAR	730	*37.80*
DIEI	**1,931**	**100.00**
DIED with positive BHAR	448	61.29
DIED with negative BHAR	283	*38.71*
DIED	**731**	**100.00**
DDEI with negative BHAR	46	42.59
DDEI with positive BHAR	62	*57.41*
DDEI	**108**	**100.00**
DDED with negative BHAR	67	40.61
DDED with positive BHAR	98	*59.39*
DDED	**165**	**100.00**
	2,935	
DIEI with positive BHAR	1,201	40.92
DIED with positive BHAR	448	15.26
DDEI with negative BHAR	46	1.57
DDED with negative BHAR	67	2.28
Direct relation between dividend changes and BHAR	**1,762**	**60.03**
DIEI with negative BHAR	730	24.87
DIED with negative BHAR	283	9.64
DDEI with positive BHAR	62	2.11
DDED with positive BHAR	98	3.34
Inverse relation between dividend changes and BHAR	**1,173**	**39.97**
DIEI with null BHAR	0	0.00
DIED with null BHAR	0	0.00
DDEI with null BHAR	0	0.00
DDED with null BHAR	0	0.00
No relation between dividend changes and BHAR	**0**	**0.00**
Total of Dividend Change Announcement Events	**2,935**	**100.00**

Table 3 - Regression of earnings changes on dividend changes for positive association between dividend change announcements and subsequent market reaction

This table reports the estimation of a regression relating earnings changes to dividend changes for the sub sample of events whose market reaction is positively related with dividend changes. $E_{i,\tau}$ denotes earnings before extraordinary items in year τ (year 0 is the event year); $BV_{i,-1}$ is the book value of equity at the end of year -1; $\Delta D_{i,t}$ is the annual change in the cash dividend payment, scaled by the share price in the announcement day; PRDI (NRDD) is a dummy variable that takes the value 1 for a positive (negative) reaction to dividend increases (decreases) and 0 otherwise; PRDIEI (PRDIED) is a dummy variable that takes value 1 for a positive reaction to dividend increases and earnings increases (decreases) and 0 otherwise; NRDDEI (NRDDED) is a dummy variable that takes value 1 for a negative reaction to dividend decreases and earnings increases (decreases) and 0 otherwise; $ROE_{i,\tau-1}$ is equal to the earnings before extraordinary items in year τ-1 scaled by the book value of equity at the end of year τ-1. The regression results are estimated using pooled OLS, FEM and REM. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method. It reports 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, in order to choose the most appropriate model for each particular sample.

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_1 \text{ PRDI x } \Delta D_{i,0} + \beta_2 \text{ NRDD x } \Delta D_{i,0} + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t}$$

Coefficient	Portugal		France	
	FEM	FEM	FEM	FEM
	$\tau = 1$	$\tau = 2$	$\tau = 1$	$\tau = 2$
Constant				
PRDI x $\Delta D_{i,0}$	0.029**	0.136**	0.678	1.195
	(2.217)	(2.213)	(0.345)	(1.281)
NRDD x $\Delta D_{i,0}$	0.042	-0.038	-0.189	-0.335*
	(1.092)	(-0.846)	(-0.930)	(-1.961)
$ROE_{i,\tau-1}$	-0.879***	-0.761***	-0.936***	-1.006***
	(-4.265)	(-3.387)	(-4.775)	(-3.227)
$(E_{i,o}-E_{i,-1})/BV_{i,-1}$	0.086	-0.173	-0.194	-0.628**
	(0.528)	(-1.182)	(-0.777)	(-2.469)
N	152	147	129	108
Adjusted R^2	0.666	0.441	0.602	0.560
F Test	1.42*	2.01***	3.18***	2.57***
Hausman Test	24.46***	73.88***	48.75***	8.75*

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 3 - Regression of earnings changes on dividend changes for positive association between dividend change announcements and subsequent market reaction (continued)

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_{1A}\,\text{PRDIEI x } \Delta D_{i,0} + \beta_{1B}\,\text{PRDIED x } \Delta D_{i,0} + \beta_{2A}\,\text{NRDDEI x } \Delta D_{i,0} + \beta_{2B}\,\text{NRDDED x } \Delta D_{i,0} + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t}$$

Coefficient	**REM** $\tau = 1$	**Pooled OLS** $\tau = 2$
Constant	0.007	-0.010
	(0.423)	(-0.581)
PRDIEI x $\Delta D_{i,0}$	1.241	1.338
	(0.573)	(0.595)
PRDIED x $\Delta D_{i,0}$	-0.630	0.297
	(-0.285)	(0.108)
NRDDEI x $\Delta D_{i,0}$	4.554	6.560***
	(0.876)	(2.118)
NRDDED x $\Delta D_{i,0}$	-4.567***	-0.166
	(-3.501)	(-0.192)
$ROE_{i,\tau-1}$	-0.095**	-0.042
	(-2.572)	(-0.575)
$(E_{i,0}-E_{i,-1})/BV_{i,-1}$	-0.264***	0.043
	(-9.638)	(0.479)
N	1,510	1,260
Adjusted R^2	0.355	0.001
F Test	1.13*	0.83
Hausman Test	5.49	7.54

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 4 - Regression of earnings changes on dividend changes for positive association between dividend change announcements and subsequent market reaction using Fama and French Approach

This table reports the estimation of a regression relating earnings changes to dividend changes for the sub sample of events whose market reaction is positively related with dividend changes. $E_{i,\tau}$ denotes earnings before extraordinary items in year τ (year 0 is the event year); $BV_{i,-1}$ is the book value of equity at the end of year -1; $\Delta D_{i,t}$ is the annual change in the cash dividend payment, scaled by the share price in the announcement day; $ROE_{i,\tau}$ is equal to the earnings before extraordinary items in year τ scaled by the book value of equity at the end of year τ; $DFE_{i,0}$ is equal to $ROE_{i,0} - E[ROE_{i,0}]$, where $E[ROE_{i,0}]$ is the fitted value from the cross-sectional regression of $ROE_{i,0}$ on the log of total assets in year -1, the market-to-book ratio of equity in year -1, and $ROE_{i,-1}$; $CE_{i,0}$ is equal to $(E_{i,0} - E_{i,-1})/BV_{i,-1}$; $NDFED_0$ is a dummy variable that takes value 1 if $DFE_{i,0}$ is negative and 0 otherwise; $PDFED_0$is a dummy variable that takes value 1 if $DFE_{i,0}$ is positive and 0 otherwise; $NCED_0$ is a dummy variable that takes value 1 if $CE_{i,0}$ is negative and 0 otherwise; $PCED_0$ is a dummy variable that takes value 1 if $CE_{i,0}$ is positive and 0 otherwise; PRDI (NRDD) is a dummy variable that takes the value 1 for a positive (negative) reaction to dividend increases (decreases) and 0 otherwise; PRDIEI (PRDIED) is a dummy variable that takes value 1 for a positive reaction to dividend increases and earnings increases (decreases) and 0 otherwise; NRDDEI (NRDDED) is a dummy variable that takes value 1 for a negative reaction to dividend decreases and earnings increases (decreases) and 0 otherwise. The regression results are estimated using pooled OLS, FEM and REM. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method. It reports 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, in order to choose the most appropriate model for each particular sample.

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_1 \text{ PRDI x } \Delta D_{i,0} + \beta_2 \text{ NRDD x } \Delta D_{i,0} + \left(\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}\right) * \text{DFE}_{i,0} + \left(\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}\right) * \text{CE}_{i,0} + \varepsilon_{i,t}$$

Coefficient	Portugal		France	
	Pooled OLS	Pooled OLS	FEM	Pooled OLS
	$\tau = 1$	$\tau = 2$	$\tau = 1$	$\tau = 2$
Constant	-0.013	-0.014		-0.167
	(-0.930)	(-1.031)		(-1.398)
PRDI x $\Delta D_{i,0}$	-0.006	0.130***	1.505	4.096**
	(-0.440)	(3.016)	(0.871)	(2.104)
NRDD x $\Delta D_{i,0}$	0.015	-0.074	-0.245	-0.360
	(0.527)	(-0.941)	(-1.002)	(-1.256)
N	152	147	128	108
Adjusted R^2	0.630	0.247	0.590	0.151
F Test	0.80	1.15	2.36***	1.33
Hausman Test	15.95	26.54	81.64***	25.52***

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 4 - Regression of earnings changes on dividend changes for positive association between dividend change announcements and subsequent market reaction using Fama and French Approach (continued)

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_{1A}\,\text{PRDIEI x } \Delta D_{i,0} + \beta_{1B}\,\text{PRDIED x } \Delta D_{i,0} + \beta_{2A}\,\text{NRDIEI x } \Delta D_{i,0} + \beta_{2B}\,\text{NRDIED x } \Delta D_{i,0} + (\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}) * \text{DFE}_{i,0} + (\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}) * \text{CE}_{i,0} + \varepsilon_{i,t}$$

	UK	
Coefficient	**FEM** $\tau = 1$	**Pooled OLS** $\tau = 2$
Constant		0.012
		(0.699)
PRDIEI x $\Delta D_{i,0}$	1.148	1.138
	(0.468)	(0.506)
PRDIED x $\Delta D_{i,0}$	-0.275	0.701
	(-0.117)	(0.245)
NRDDEI x $\Delta D_{i,0}$	7.793	6.434**
	(1.505)	(2.015)
NRDDED x $\Delta D_{i,0}$	-4.565***	-0.406
	(-2.888)	(-0.433)
N	1,507	1,246
Adjusted R^2	0.106	0.012
F Test	1.15**	0.91
Hausman Test	26.46**	72.40***

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 5 - Regression of earnings changes on dividend changes for negative association between dividend change announcements and subsequent market reaction

This table reports the estimation of a regression relating earnings changes to dividend changes for the sub sample of events whose market reaction is negatively related with dividend changes. $E_{i,\tau}$ denotes earnings before extraordinary items in year τ (year 0 is the event year); $BV_{i,-1}$ is the book value of equity at the end of year -1; $\Delta D_{i,t}$ is the annual change in the cash dividend payment, scaled by the share price in the announcement day; NRDI (PRDD) is a dummy variable that takes the value 1 for a negative (positive) reaction to dividend increases (decreases) and 0 otherwise; NRDIEI (NRDIED) is a dummy variable that takes value 1 for a negative reaction to dividend increases and earnings increases (decreases) and 0 otherwise; PRDDEI (PRDDED) is a dummy variable that takes value 1 for a positive reaction to dividend decreases and earnings increases (decreases) and 0 otherwise; $ROE_{i,\tau-1}$ is equal to the earnings before extraordinary items in year τ-1 scaled by the book value of equity at the end of year τ-1. The regression results are estimated using pooled OLS, FEM and REM. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method. It reports 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, in order to choose the most appropriate model for each particular sample.

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_1 \text{ NRDI x } \Delta D_{i,0} + \beta_2 \text{ PRDD x } \Delta D_{i,0} + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t}$$

Coefficient	Portugal		France	
	Pooled OLS	Pooled OLS	FEM	FEM
	$\tau = 1$	$\tau = 2$	$\tau = 1$	$\tau = 2$
Constant	-0.008	0.008		
	(-0.469)	(0.487)		
NRDI x $\Delta D_{i,0}$	0.002	0.423*	0.153	-0.047
	(0.009)	(1.812)	(0.785)	(-0.454)
PRDD x $\Delta D_{i,0}$	-0.142*	-0.044	-0.197	-0.063
	(-1.941)	(-0.202)	(-0.793)	(-0.573)
$ROE_{i,\tau-1}$	0.021	-0.336**	-0.485***	-0.400***
	(0.104)	(-2.188)	(-3.723)	(-3.793)
$(E_{i,0}-E_{i,-1})/BV_{i,-1}$	-0.244	-0.176	-0.414***	-0.102
	(-0.903)	(-1.394)	(-6.478)	(-0.877)
N	116	105	127	101
Adjusted R^2	0.006	0.062	0.655	0.734
F Test	0.95	1.20	3.95***	3.37***
Hausman Test	6.20	35.41***	11.60**	12.15**

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 5 - Regression of earnings changes on dividend changes for negative association between dividend change announcements and subsequent market reaction (continued)

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_{1A}\ \text{NRDIEI x}\ \Delta D_{i,0} + \beta_{1B}\ \text{NRDIED x}\ \Delta D_{i,0} + \beta_{2A}\ \text{PRDDE}$$
$$+ \beta_{2B}\ \text{PRDDED x}\ \Delta D_{i,0} + \beta_3 ROE_{i,\tau-1} + \beta_4 (E_{i,0} - E_{i,-1})/BV_{i,-1} + \varepsilon_{i,t}$$

	UK	
Coefficient	**Pooled OLS**	**Pooled OLS**
	$\tau = 1$	**$\tau = 2$**
Constant	0.020	-0.038*
	(1.127)	(-1.816)
NRDIEI x $\Delta D_{i,0}$	-3.943*	7.547***
	(-1.764)	(3.124)
NRDIED x $\Delta D_{i,0}$	-1.959	-0.162
	(-0.522)	(-0.041)
PRDDEI x $\Delta D_{i,0}$	-8.159**	0.262
	(-2.437)	(0.051)
PRDDED x $\Delta D_{i,0}$	-0.186	-0.255
	(-0.294)	(-0.327)
$ROE_{i,\tau-1}$	-0.137*	-0.090
	(-1.755)	(-1.078)
$(E_{i,0}-E_{i,-1})/BV_{i,-1}$	-0.045	-0.009
	(-0.556)	(-0.106)
N	1,029	882
Adjusted R^2	0.036	0.003
F Test	1.09	0.98
Hausman Test	15.43**	6.55

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 6 - Regression of earnings changes on dividend changes for negative association between dividend change announcements and subsequent market reaction using Fama and French Approach

This table reports the estimation of a regression relating earnings changes to dividend changes for the sub sample of events whose market reaction is negatively related with dividend changes. $E_{i,\tau}$ denotes earnings before extraordinary items in year τ (year 0 is the event year); $BV_{i,-1}$ is the book value of equity at the end of year -1; $\Delta D_{i,t}$ is the annual change in the cash dividend payment, scaled by the share price in the announcement day; $ROE_{i,\tau}$ is equal to the earnings before extraordinary items in year τ scaled by the book value of equity at the end of year τ; $DFE_{i,0}$ is equal to $ROE_{i,0} - E[ROE_{i,0}]$, where $E[ROE_{i,0}]$ is the fitted value from the cross-sectional regression of $ROE_{i,0}$ on the log of total assets in year -1, the market-to-book ratio of equity in year -1, and $ROE_{i,-1}$; $CE_{i,0}$ is equal to $(E_{i,0} - E_{i,-1})/BV_{i,-1}$; $NDFED_0$ is a dummy variable that takes value 1 if $DFE_{i,0}$ is negative and 0 otherwise; $PDFED_0$is a dummy variable that takes value 1 if $DFE_{i,}$ is positive and 0 otherwise; $NCED_0$ is a dummy variable that takes value 1 if $CE_{i,0}$ is negative and 0 otherwise; $PCED_0$ is a dummy variable that takes value 1 if $CE_{i,0}$ is positive and 0 otherwise; NRDI (PRDD) is a dummy variable that takes the value 1 for a negative (positive) reaction to dividend increases (decreases) and 0 otherwise; NRDIEI (NRDIED) is a dummy variable that takes value 1 for a negative reaction to dividend increases and earnings increases (decreases) and 0 otherwise; PRDDEI (PRDDED) is a dummy variable that takes value 1 for a positive reaction to dividend decreases and earnings increases (decreases) and 0 otherwise. The regression results are estimated using pooled OLS, FEM and REM. The numbers in parentheses are the t-statistics corrected for heteroscedasticity using the White (1980) method. It reports 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, in order to choose the most appropriate model for each particular sample.

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_1 \text{ NRDI x } \Delta D_{i,0} + \beta_2 \text{ PRDD x } \Delta D_{i,0} + \left(\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}\right) * DFE_{i,0} + \left(\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}\right) * CE_{i,0} + \varepsilon_{i,t}$$

Coefficient	Portugal		France	
	Pooled OLS	Pooled OLS	REM	REM
	$\tau = 1$	$\tau = 2$	$\tau = 1$	$\tau = 2$
Constant	-0.021	0.047	-0.002	0.009
	(-1.188)	(1.479)	(-0.274)	(0.747)
NRDI x $\Delta D_{i,0}$	0.426**	-0.044	0.131	-0.112
	(2.005)	(-0.264)	(0.551)	(-0.391)
PRDD x $\Delta D_{i,0}$	-0.097	-0.001	-0.211	-0.028
	(-1.200)	(-0.003)	(-0.950)	(-0.088)
N	116	105	127	101
Adjusted R^2	0.194	0.017	0.800	0.860
F Test	1.10	0.49	4.20***	5.53***
Hausman Test	17.44*	6.05	17.78	10.96

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.

Table 6 - Regression of earnings changes on dividend changes for negative association between dividend change announcements and subsequent market reaction using Fama and French Approach (continued)

$$(E_{i,\tau} - E_{i,\tau-1})/BV_{i,-1} = \alpha + \beta_{1A}\ \text{NRDIEI x}\ \Delta D_{i,0} + \beta_{1B}\ \text{NRDIED x}\ \Delta D_{i,0} + \beta_{2A}\ \text{PRDIEI x}\ \Delta D_{i,0} + \beta_{2B}\ \text{PRDIED x}\ \Delta D_{i,0} + \left(\gamma_1 + \gamma_2 NDFED_0 + \gamma_3 NDFED_0 * DFE_{i,0} + \gamma_4 PDFED_0 * DFE_{i,0}\right) * \text{DFE}_{i,0} + \left(\lambda_1 + \lambda_2 NCED_0 + \lambda_3 NCED_0 * CE_{i,0} + \lambda_4 PCED_0 * CE_{i,0}\right) * \text{CE}_{i,0} + \varepsilon_{i,t}$$

UK		
Coefficient	**FEM**	**Pooled OLS**
	$\tau = 1$	**$\tau = 2$**
Constant		-0.032
		(-1.367)
NRDIEI x $\Delta D_{i,0}$	-2.365	6.036**
	(-1.314)	(2.330)
NRDIED x $\Delta D_{i,0}$	6.955	0.383
	(1.483)	(0.101)
PRDDEI x $\Delta D_{i,0}$	-9.408**	0.259
	(-2.532)	(0.052)
PRDDED x $\Delta D_{i,0}$	-1.879**	-0.635
	(-2.200)	(-0.722)
N	1,029	882
Adjusted R^2	0.165	0.018
F Test	1.23**	1.01
Hausman Test	41.73***	27.43***

Note: (***) denotes significancy at 1%; (**) denotes significancy at 5%; (*) denotes significancy at 10%.