"JOINT EFFECTS OF INTERIM DIVIDEND AND EARNINGS ANNOUNCEMENTS IN GREECE"

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Abstract

Purpose of the paper – We empirically investigate stock price and trading volume reactions to simultaneous interim dividend and earnings announcements by the Greek firms listed on the Athens Stock Exchange (ASE).

Design/methodology/approach – We employ the classical event study methodology of Brown and Warner (1985) to examine the share price and trading volume reaction to interim dividends and earnings announcements.

Findings – Our results confirm the signaling hypothesis which predicts positive market reaction to the joint dividend and earnings announcements. However, the magnitude of the price reaction initiated by the final dividend announcement seems to be higher than the one by the interim dividend announcement.

Research limitations/Implications – The observations are not many, although we include the whole population, since there are no data available prior to 1998.

Practical Implications – Our findings are useful to researchers, practitioners and investors that have an interest in firms listed on the ASE for their proper strategic decision making.

Originality/value –For the first time the stock price and trading volume behaviour of firms listed on the ASE around contemporaneous dividend and earnings announcement dates is examined.

Keywords – Interim dividends, interim earnings, signalling effects.

Paper type – Research paper.

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I. Introduction

There is a surfeit of empirical evidence associating dividend change announcements with abnormal stock price performance. Most of this evidence indicates that positive dividend changes (dividend increases) are associated with positive stock price reaction, while negative dividend changes (dividend decreases) are associated with negative stock price reaction. This market phenomenon is known as the "dividend announcement effect", or "the information content hypothesis" or "the dividend signaling hypothesis" and it is based on Miller and Modigliani's (1961) proposition that dividends may convey new information to the market, if managers have better information than investors regarding the firms' future prospects (information content of dividends hypothesis or dividend signaling hypothesis). Therefore, a dividend increase (decrease) conveys good (bad) news to the market and results in an upward (downward) price reaction. The information content of dividends was further formalized in dividend signaling type models by Bhattacharya (1979 and 1980), John and Williams (1985), Miller and Rock (1985) and Ambarish et al. (1987).

Greece has an interesting corporate environment regarding the dividend signaling hypothesis due to the Greek corporate law 2190/1920. This law puts a specific quantifiable floor on the amounts of dividends a firm can distribute to its shareholders. Moreover, the distribution of interim dividends is a rare phenomenon and is the result of firms' extraordinary good performance during the first three quarters (nine months) of the fiscal year. Another striking feature of interim dividends in the Greek market is their simultaneous announcement with interim earnings making it impossible to separate the market's reaction to the dividend news from the earnings news. Finally, interim dividends are much smaller on average than final dividends. As such, it is expected that the simultaneous announcement of interim dividends and earnings will result in a smaller market reaction than the joint announcement of final earnings and dividends.

The purpose of our study which is also its uniqueness is that it examines for the first time in the existing literature both the stock price and the trading volume behaviour to the concurrent announcement of interim dividends and earnings. Then, the magnitude of the market reaction to interim dividend and earnings announcements is compared with that one of final dividend and earnings announcements. Our empirical results shed new light in the debate of the interim dividend and earnings announcements taking into consideration the different dividend policy laws that exist in the Greek market versus the rest of developed markets.

The rest of the paper is organised as follows. Section 2 presents a brief literature review regarding dividend and earnings announcements. Section 3 discusses the institutional framework of the Greek capital market. Section 4 describes the research design. Section 5 presents and analyses the results of price and trading volume reactions to joint interim dividend and earnings announcements. Section 6 contains the concluding remarks.

II. Literature review

The impact of dividend announcements on stock prices has been examined in a wide variety of scenarios. There is a very rich literature on the information content of dividends and the effect of dividend announcements on the price of common shares. For example, a number of studies have analysed the share price reaction to the announcement of changes in regular paid dividends (i.e. Petit, 1972; Charest, 1978; Aharony and Swary, 1980, Woolridge, 1982, Divecha and Morse, 1983; Dielman and Oppenheimer, 1984; Eades et al., 1985; Kalay and Loewenstein, 1985; Aharony et al., 1988; Ghosh and Woolridge, 1988; Capstaff et al., 2004). Other studies have examined the market reaction to dividend initiations (the distributions that firms pay for the first time in their corporate history or after a long hiatus) and/or omissions (when firms omit to distribute a dividend after a good track record of distributions) (i.e. Asquith and Mullins, 1983; Dielman and Oppenheimer, 1984; Eades et al., 1985; Kalay and Loewenstein, 1985; Wansley and Lane, 1987; Ghosh and Woolridge, 1988; Healy and Palepu,

1988; Ghosh and Woolridge, 1991; John and Lang, 1991). In addition, some studies have investigated the impact of special and extra dividend announcements on stock prices (Brickely, 1983; Chhachhi and Davidson, 1997; DeAngelo et al., 2000; Cruchley et al., 2003). However, Richardson et al. (1986) and Gurgul et al. (2003) are the only academics that have considered the impact of a dividend announcement on trading volume.

Another set of studies have examined the contemporaneous announcements of dividends and earnings and their effect on stock prices (i.e. Kane et al., 1984; Brown et al., 1991; Leftwich and Zmijewski, 1994; Gurgul et al., 2003; Gunasekerage and Power, 2006; McCluskey et al., 2006). In these studies the effect of dividend announcements on stock prices could not be examined in isolation with those of earnings announcements as both announcements occurred on the same date. All these studies found support for the corroboration effect of dividend and earnings announcements.

Interim dividend announcements have received much less attention in the academic literature, despite their significant economic implications. Previous work is limited to the UK market where dividends are typically paid twice per year. The first payment is made mid-year and is referred to as an interim payment and the second and final payment at year end (Balachandran, 2003).

The first studies examining the market response to interim dividend cuts and omissions in the UK are those by Balachandran et al. (1996 and 1999). The authors employed the classical event study methodology to estimate the stock price behaviour to a dividend cut and/or omission on and around the announcement day. They found that initial interim dividend reductions lead to a stronger negative price reaction than interim dividend reductions following an earlier final dividend reduction. The price reaction was weaker when the subsequent interim dividend reduction was less than the prior final reduction. Balachandran et al. (1999) attributed this pattern to the fact that the market had already incorporated the earlier innovation in the

dividend series into its expectations regarding the interim dividend. Hence, the dividend reduction caused a lesser shock in this case with a consequent diminution of the price reaction. Balachandran et al. (1999) tried to give an explanation to the aforementioned price behaviour to interim dividend reductions. They found that the magnitude of price reactions to interim dividend reductions is significantly related to the size of the dividend reduction, the gearing ratio, the industrial classification, the incidence of a prior dividend cut and the actual change in interim earnings.

A more recent study by Balachandran (2003) investigated the impact of initial interim dividend reductions and initial final reductions upon stock prices for the UK firms that had not reduced their dividends in the previous three-year period. His empirical results supported the contention that interim dividend reductions conveyed a stronger signal to the market final dividend reductions did, resulting in a stronger negative reaction as opposed to the final dividend reductions. Although the market reacted negatively around final dividend cut announcements it bounced back to its prior level within 13 days of announcements. Balachandran (2003) run also a sensitivity analysis and found that the magnitude of price reactions to dividend reductions was significantly related to the size of the dividend reduction, the post-announcement effect, the pre-announcement effect, the gearing ratio and the dummy variable interim versus final dividend reduction.

III. Institutional framework in Greece

By international standards the Athens Stock Exchange (ASE) is small compared to the US, the UK and other European stock exchanges in terms of market capitalisation, the number of firms listed and the daily trading volume. Moreover, the ownership structure of Greek listed firms is concentrated on the hands of few large stakeholders. According to official sources from the ASE the three largest owners hold more than 50% of firms' shares and the

institutional foreign shareholding is about 42% of the market capitalisation of the ASE by the of 2006.

The Greek capital market presents some striking features regarding the distribution of dividends which are not observed in other developed markets. First, unlike the USA and the UK market where dividends are paid on a quarterly and semi-annually basis, respectively, dividends in Greece are paid on a yearly basis. A unique aspect of the Greek stock market is that the Greek corporate law 2190/1920 puts a specific quantifiable floor on the dividend distribution amount that a firm can pay in any given year to its shareholders. Specifically, a firm should distribute annual cash dividends equal either to 6% of its stock capital or to 35% of its net profits minus the amount kept for the formation of regular reserves[2], whichever of the two amounts is larger. In case the dividend amount which corresponds to the 6% of the stock capital is smaller than the one that corresponds to the 35% of the net profits, the company can distribute the smaller amount only by the decision of its shareholders representing a majority of 80% of the stock capital. In this case the undistributed dividend up to a percentage of at least 35% of net profits is transferred to a special account called "reserves to be capitalised". These reserves have to be capitalised within four years by the issuance of new shares to be delivered to the entitled shareholders. Dividends may not be distributed only when there is a decision of shareholders representing a majority of 95% of the stock capital. The rest of the profits are distributed in accordance to the aim of the corporate memorandum (i.e remuneration of the board of directors, additional wages for employees, distribution of additional dividends, formation of emergency stock, etc.).

Second, unlike regular dividends, in Greece, interim dividends are not mandatory. No law determines the distribution of a minimum or regular interim dividend. Interim dividends

[2] At least 5% of the net profits are withheld for the formation of regular reserves. This obligation ceases to exist when the amount of the stock in formation reaches the 1/3 of the stock capital.

have the form of interim payments to the shareholders from the retained earnings of a company. The distribution of an interim dividend depends on the company's discretion. Moreover, unlike regular dividends which are declared and paid within the following fiscal year, interim dividends are declared and paid during the current fiscal year. Common practice of the companies listed on the ASE is to announce interim dividends simultaneously with quarterly financial results[3] which experience an extreme increase (more than 50%) compared to those of the previous year. The financial results are referred to the third quarter and are released between October and November of the current fiscal year. The interim dividend is, on average, much smaller than the final dividend. In particular, the interim dividend should not exceed 50% of the final dividend (article 46, paragraph 2 of the codified corporate law 2190/1920).

Third, due to high ownership concentration, Greek firms should have lower agency costs since owner-managers face more of the wealth effects of their decisions, whilst the presence of large external shareholders is also likely to reduce agency costs (similar argument is proposed by Capstaff et al. 2004 for Norwegian firms). Therefore, the motivation to use dividends to reduce agency costs is weaker in Greece than in the US or the UK. However, Capstaff et al. (2004) asserted that "although corporate ownership renders dividends less important in reducing agency costs, if outside investors are important for the formation of share prices, dividends may have a signaling role to play".

Finally, the Greek tax system does not impose any personal taxes on dividends. Corporate dividends are determined after corporate taxes have been deducted from profits before taxes (law 2065/1992). Therefore, the shareholders are not subject to double taxation as in the USA. Similarly, no taxes are imposed on capital gains. The only tax that exists is a flat

[3] In Australia, New Zealand, Japan, Ireland, the UK and Austria interim or final dividends are contemporaneously announced with interim or final earnings.

tax of 0.3% imposed on every stock sale proceeds. Therefore, the neutrality of the tax system in Greece further implies that tax has little impact on the chosen corporate dividend policy.

For the above reasons, therefore, the Greek stock market appears to be suitable environment in which to test the dividend signalling hypothesis in a small market where the information asymmetry between managers and major shareholders is weaker compared to the other developed capital markets.

IV. Research design

Data, Sample Selection and Testable Hypothesis

Interim and final dividend distributions were identified for all firms listed on the Athens Stock Exchange (ASE) over the period January 1, 1999 to December 31, 2004. No interim dividend distributions were observed before 1999. Dividend per share data, closing stock prices and trading volume data were extracted from the Dissemination Information Department of the Athens Stock Exchange. Dividend and quarterly earnings announcements were obtained from the Greek daily and periodical press releases.

The companies included in the sample of interim and final dividends met the following criteria: (a) special dividends or more than one interim or extra ordinary dividend were not declared during the event period; (b) companies did not change their accounting periods (The firms included in the sample had accounting period that started on January 1st and ended on December 31st) during the event period; (c) price data were available for the period commencing 220 days prior to the dividend/earnings announcement date to 20 days subsequent to the dividend/earnings announcement date; (d) trading volume data were available for the period commencing 120 days prior to the dividend/earnings announcement to 120 days subsequent to the announcement date; and (e) to avoid confounding effects, other concurrently announced corporate events (such as share issues, stock splits, mergers and acquisitions and share repurchases) were excluded from the final sample in the 20-day period surrounding the

joint dividend/earnings announcement date. These criteria that applied to the whole population resulted in a sample of 24 interim dividend and earnings announcements. Our sample is small, but it includes all the pertinent cases available for the Greek market during the examined period.

Table 1 presents the distribution of interim dividends included in the final sample by year and frequency. The majority of the interim dividends occurred in 2004 comprising more than 33% of the total announcements (8 cases).

[Insert Table 1 here]

Separating the effects of interim dividend announcements from earnings information in Greece is very difficult as both these items are released simultaneously. However, this joint announcement feature offers a unique opportunity to incorporate the interaction of the joint signals into the analysis. We compare this joint announcement of interim dividends and earnings for a sample of firms with the joint announcement of final dividends and earnings for the same sample of firms. Due to the unexpected and non-occasional announcement of interim dividends in Greece, we expect that both the share price and the trading volume behaviour to be stronger in the joint announcement of interim dividends and earnings as compared to that of final dividends and earnings. Therefore, we test the following hypotheses:

H_1: The stock price reaction is stronger at the joint interim dividend and earnings announcements vis-à-vis the joint final dividend and earnings announcements in the Greek capital market.

H_2: The trading volume reaction is stronger at the joint interim dividend and earnings announcements vis-à-vis the joint final dividend and earnings announcements in the Greek capital market.

Methodology

Daily closing prices as well as trading volume data are used to measure the stock price and trading volume reaction in a 41-day event window surrounding the joint interim dividend and earnings announcement day. Similar to Gurgul et al. (2003), we define the announcement

date as the occasion of the very first official statement on interim and final dividends made by the executive board of the sample of firms.

To estimate the stock price response to joint announcements of dividends and earnings first, we calculate log-returns. Logarithmic returns are preferred because they are theoretically better when linking together subperiod returns to form returns over longer periods (Strong, 1992). Hence, we have $R_{i,t}$ for share i at date t as:

$$R_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1}) \tag{1}$$

where $P_{i,t}$ denotes the daily closing price of share i on day t and P_{t-1} is the daily closing price of the of share i on day t-1. Then, abnormal returns were calculated for each share according to the equation:

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \tag{2}$$

where $AR_{i,t}$ is the abnormal return on share i on day t and $E(R_{i,t})$ is the expected return on share i on day t. The expected return is estimated employing: (i) the market model, (ii) the market-adjusted return model and (iii) the raw-return model, which assumes that the expected return is equal to zero: $E(R_{i,t}) = 0$.

The market-adjusted return model is derived as:

$$E(R_{i,t}) = R_{m,t} \tag{3}$$

where $R_{m,t}$ is the return on the market portfolio on day t proxied by the ASE composite index.

Market model parameters were estimated using 200 observations prior to the event window:

$$E(R_{i,t}) = a_i + b_i R_{m,t} + e_{i,t} \tag{4}$$

where $R_{m,t}$ is the return on the market portfolio on day t proxied by the ASE composite index, $e_{i,t}$ is the random error term and a_i and b_i are the market model parameters.

The daily abnormal returns are then averaged across the sample of firms according to the formula:

$$\overline{AR_t} = (\frac{1}{N})AR_{i,t} \tag{5}$$

where N is the number of observations.

In addition to the impact on stock prices, we also estimate the abnormal trading volume (AV) to joint dividend and earnings announcements. As a measure for trading volume, we use the daily turnover in Euros. To estimate expected (normal) trading volume used to determine the abnormal trading volume around joint dividend and earnings announcements, we employ the mean-adjusted model using 100 observations prior to the event day (day 0), that is, from day -120 to day -21, and 100 observations after the event day, that is, from day +21 to day +121. A post along with pre-event period for the estimation of normal volume was also used by Lakonishok and Vermaelen (1986), Kato and Loewenstein (1995), Michaely and Vila (1995, 1996), Athanasakos (1996), Dhaliwal and Zhen Li (2006).

$$AV_{i,t} = V_{i,t} - \overline{V_{i,t}} \tag{6}$$

where $V_{i,t}$ is the trading volume of share i on day t and $\overline{V_{i,t}}$ is the expected (normal) trading volume of share i on the estimation period (-121 to -21 and +21 to +121).

The daily abnormal trading volume is then averaged across the sample of firms according to the equation:

$$\overline{AV_t} = (\frac{1}{N})AV_{i,t} \tag{7}$$

where N is the number of observations.

The abnormal returns and the abnormal trading volume for the announcement periods are generated for several event windows: day 0 to day +1, day 0 to day +2, day 0 to day +20, day 0 to day +10 and day 0 to day +5, day -20 to day -1, day -10 to day -1 and day -5 to day -1. These event windows are used to control for information leakages and for ‘after hours’

announcements (Balachandran, 2003). In particular, we derived the dividend/earnings announcement dates by searching in the daily and periodical press releases. We checked out these dates by screening the daily web releases of firms traded on the ASE. Common practice in Greece is that corporate news is released on the official web site of the ASE in the same day that occurs, usually, after the closing of the trading hours. This means that electronic releases precede those of press releases at least by one day. For that reason, we defined as day 0 the actual date that the event took place and was released electronically through the web site and day +1 the day that news was released through the press.

V. Empirical results

Price Reaction Results

The price reactions to the announcements are partitioned into reactions to joint interim dividend and earnings announcements and reactions to joint final dividend and earnings announcements. Both dividend distributions refer to the same group of 24 firms. Table 2 and Figure 1 present the results from the stock price response to interim dividend/earnings announcements for the whole event window (from day – 20 to day +20). As it can be seen, share price reaction on day 0 is positive (0.189% measured by the market model) but not statically significant. We report the results from the market model because this performs better than other models according to Brown and Warner (1985). Moreover, the other two models (the market-adjusted return models and the raw return model) offer similar results. However, the price response continues to be positive from day 0 to day +8. In particular, the magnitude of the price reaction is 0.743 on day +1 and 0.847 on day +2, statistically significant at the 10% significance level.

[Insert Table 2 and Figure 1 here]

Table 3 and Figure 2 display the price reaction to joint final dividend and earnings announcements. The price reaction to joint final dividends and earnings refers to the same

group of 24 firms that have already announced interim dividends and earnings. As in the case of interim dividends and earnings, the sample of firms concurrently announces final dividends and earnings. In this case, share price reaction on day 0 is 1.185% and statically significant at the 10% significance level. On day +1, the price response is also positive (1.310%) and statistically significant at the 10% significance level. The positive reaction continues until day +3 (0.426), but without being statistically significant.

[Insert Table 3 and Figure 2 here]

At first sight, the share price response to final dividend and earnings announcements seems to be stronger than to interim ones. Table 4 presents the t-value for the difference between the price responses to final dividend and earnings announcements vis-à-vis to interim dividend and earnings announcements for various event windows. The different share price response to final and interim dividend and earnings announcements is measured only by the market model. On day 0 the magnitude of the price reaction is statically significant between final and interim announcements (t = 2.15) using the two tail t-statistic. The same is true for the case of the event window from day 0 to day +1 (t = 2.01). These results reject the null hypothesis that the average price reaction on the announcement days (day 0 and day +1) is the same for both groups. Concurrently announced final dividends and earnings provide stronger signals to the market than interim announcements. However, in all the other event windows the magnitude of the price response does not differ statistically between final and interim announcements.

The different price reaction to final and interim announcements seems to be eliminated by day +5 (t = 0.35). In particular, for the period day 0 to day +5, the price reaction to both interim and final announcements is almost equal (0.46% vs 0.38%). This implies that the market absorbs very quickly the favourable signal released by the final and interim dividend and earnings announcements. This is in line with the efficient market hypothesis predictions

[Insert Table 4 here]

Trading Volume Reaction Results

Similar to the case of stock price reaction, trading volume reaction to dividend and earnings announcements is partitioned into reactions to joint interim dividend and earnings announcements and reactions to joint final dividend and earnings announcements. Table 5 and Figure 3 present the volume reaction to contemporaneous interim dividend and earnings announcements. The trading volume is positive but not statistically significant in the two days of the announcement period (day 0 and day +1). In particular, on day 0 the abnormal volume (AV) is 455,020.91 Euros and equal to 23.36% of the normal volume and on day +1 the abnormal volume is 119,004.18 Euros and equal to 6.11% of the normal volume. The positive volume reaction continues until day +7 (252,413.07 Euros). This abnormal volume pattern seems to be very similar to that of the abnormal return reaction, lending support to the hypothesis that joint dividend and earnings announcements send important information to the market.

[Insert Table 5 and Figure 3 here]

The corresponding trading volume reaction to joint final dividend and earnings announcements is illustrated in Table 6 and Figure 4. As in the case of interim announcements, the trading volume reacts positively on the announcement day (day 0) and the day after (day +1) without, being statistically significant. Particularly, on day 0 the abnormal volume is 261.179.39 Euros and equal to 13.82% of the normal volume. On day +1 the abnormal volume is greater than day 0 (2,169,556.6 Euros) and equal to 114.83% of the normal volume. The abnormal volume reaction continues to be positive but not statistically significant up to day +6 (1,524,295.8 Euros). On the other hand, the volume reaction to joint final dividend and earnings announcements displays one striking difference compared to that one of the interim dividends and earnings. The positive reaction to joint final dividend and earnings

announcements begins on day -1 (551,715 Euros) and not on day 0. This result should be attributed to the anticipation of the joint annually earnings and dividends announcements on specific dates as the Greek corporate law 2190/1920 designates.

[Insert Table 6 and Figure 4 here]

Table 7 presents the t-values (two-tailed test) for the difference between the volume response to joint final dividends and earnings announcements vis-à-vis the response to joint interim dividends and earnings announcements for various event windows. The magnitude of the volume reaction for the post-event windows does not differ between final and interim announcements; however, it does differ for the pre-event windows. In particular, for the windows from day -20 to day -1, from day -10 to day -1 and from day -5 to day -1, the mean abnormal volume for final announcements is negative and statistically significant. For the same event windows, the mean abnormal volume for interim announcements is positive but not statistically significant, except for the event window from day -20 to day -1 which is statistically significant at the 10% significance level (t=1.91). These results from the trading volume behaviour are not in absolute line with those of the abnormal returns, even though they share some common patterns. In particular, in the post-announcement period there is an upward trend for both price and volume reaction to both groups of announcements. However, the magnitude of the price and volume reaction is stronger in the case of final announcements compared to the interim ones. In other words, the joint announcement of earnings and final dividends convey a stronger signal to the market than the joint announcement of interim earnings and dividends. This result is in contrast to that of Balachandran (2003) who finds that the latter announcement is stronger than the former for the UK market.

[Insert Table 7here]

A reasonable explanation for the stronger behaviour of the Greek market to the end-of-year announcements should be attributed to the more informational signals conveyed by the

final results compared to those of the interim ones. Initially, the market does not know whether the extraordinary good performance of the first three quarters of the current fiscal year it truly reflects a company's operating performance or it is a result of earnings management[4]. This is disentangled with the announcements of the audited end-of-year results. For the meantime, the market receives the interim results with caution. The above argument is reinforced by the low investor protection that exists in the Greek capital market where corporate governance is at an infant stage.

In addition, in Greece the final dividend exceeds by far (more than 50%) the interim dividend and according to the information content of dividends hypothesis the market is positively correlated with the magnitude of the announced dividend. In short, the market considers the final results along with the final dividend distribution more trustworthy information for the current and future position of a firm than the joint announcement of interim earnings and dividends.

VI. Conclusions

The impact of the joint announcement of interim earnings and dividends on stock prices and trading volume is examined empirically for a sample of firms listed on the ASE. The Interim dividend distribution is not a common corporate practice among Greek listed firms. It results from an extraordinary performance during the first quarter of the fiscal year. Moreover, the size of the interim dividend is much smaller than that of the final dividend. As it is expected, the market reacts positively to the concurrent announcement of interim earnings and dividends as it is demonstrated from the price and volume behaviour on and around the announcement day. We compare the market behaviour to the joint announcement of interim earnings and dividends with the joint announcement of final earnings and dividends. We find that the latter announcement conveys stronger signals to the market than the former, as it is

[4] Thanks to an anonymous reviewer who made this valid point.

reflected on the response of stock price and trading volume on and around the announcement date. This result is in contrast to that of Balachandran (2003).

Overall, our results lend empirical support to the information content of dividends hypothesis and the proposition which states that the magnitude of the market response is positively associated with the size of the dividend. These results are consistent with earlier empirical evidence from the USA, the UK and other developed markets. These similarities occur despite a number of idiosyncrasies of the Greek capital market, most notably the different dividend distribution setting, the neutralised tax system and the ownership structure of the Greek listed firms. Similar to the Irish stock exchange (McCluskey et al., 2006), the evidence from the Greek stock market suggests that the joint signaling effect of dividends in developed stock markets is not restricted to the largest and most liquid exchanges. In contrast, evidence from a small in size market with a neutralized tax system and a simple payout procedure appears to be the suitable institutional environment to test market efficiency and investors' portfolio choices.

The paper has a number of limitations, most notably the relatively small number of companies that paid an interim dividend. This issue is, however, endogenous since no Greek company was found to declare an interim dividend before 1999. In addition, in Greece there is no official source to extract the exact date of dividend and earnings announcement dates, a fact that forced us to detect corporate news releases on the website and daily press. This resulted in extracting announcement dates that were some days apart.

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Table 1. Interim Dividend Announcements by year

Year	Frequency	Frequency %
1999	3	12.5
2000	1	4.20
2001	2	8.30
2002	5	20.8
2003	5	20.8
2004	8	33.3
TOTAL	24	100

Note: We define the announcement date as the occasion of the very first official statement on interim dividends of the executive boards of the sample of firms. We extracted interim dividend announcement dates by searching the daily web and press releases of firms traded in the ASE.

Table 2. Price reaction to joint interim dividend and earnings announcements

	Market model		Market-adjusted model		Raw-return model	
Day	AR %	t-Statistic	AR %	t-Statistic	AR %	t-Statistic
-20	-0.472	-0.95	-0.561	-1.10	-0.184	-0.39
-19	-0.760	-1.53	-0.741**	-1.93	-0.667	-1.47
-18	-0.779	-1.57	-0.768**	-2.47	-0.131	-0.48
-17	0.100	0.20	0.120	0.36	0.649	1.63
-16	-0.064	-0.13	0.039	0.12	0.096	0.18
-15	0.246	0.50	0.229	0.56	0.323	0.72
-14	-0.365	-0.73	-0.196	-0.43	-0.194	-0.34
-13	-0.693	-1.40	-0.456	-0.86	-0.605	-0.92
-12	0.000	0.00	0.179	0.58	0.199	0.40
-11	-0.171	-0.34	-0.019	-0.06	-0.070	-0.14
-10	-0.219	-0.44	-0.020	-0.04	-0.495	-0.96
-9	0.107	0.22	0.231	1.01	0.071	0.16
-8	0.187	0.38	0.313	0.95	0.131	0.27
-7	-0.901*	-1.81	-0.743*	-1.92	-0.884*	-1.72
-6	0.108	0.22	0.284	1.14	0.588	1.27
-5	-0.475	-0.96	-0.328	-0.79	-0.320	-0.76
-4	-0.060	-0.12	0.080	0.21	0.060	0.18
-3	-0.534	-1.08	-0.254	-0.79	-0.377	-1.07
-2	-0.055	-0.11	0.035	0.07	0.212	0.38
-1	-0.359	-0.72	-0.060	-0.13	-0.437	-0.78
0	0.189	0.38	0.284	0.75	0.264	0.63
1	0.743	1.50	0.863*	1.66	0.866*	1.77
2	0.847*	1.70	1.116***	2.55	0.915*	1.78
3	0.186	0.38	0.291	0.60	0.271	0.51
4	0.260	0.52	0.115	0.25	0.429	0.94
5	0.063	0.13	0.010	0.03	0.402	0.94
6	0.147	0.29	0.374	0.94	0.448	0.85
7	0.144	0.29	0.102	0.22	0.206	0.48
8	0.395	0.80	0.398	0.85	0.656	1.63
9	-0.160	-0.32	0.015	0.04	0.070	0.15
10	0.247	0.50	0.264	0.69	0.486	1.13
11	0.702	1.41	0.652	1.38	1.020*	1.88
12	-0.375	-0.75	-0.255	-0.67	-0.229	-0.48
13	-0.044	-0.09	0.023	0.07	0.117	0.38
14	-0.508	-1.02	-0.256	-0.48	-0.642	-1.27
15	0.191	0.39	0.299	0.71	0.489	0.83
16	-0.067	-0.13	0.059	0.11	-0.236	-0.37
17	-0.645	-1.30	-0.504	-0.93	-0.433	-0.78
18	-0.667	-1.34	-0.306	-0.62	-0.799	-1.30
19	-0.201	-0.40	0.072	0.21	-0.357	-0.88
20	0.577	1.16	0.712**	2.18	0.607*	1.85

Note: This table displays the abnormal returns for the sample firms for 41 days around the joint interim dividend and earnings announcement (day 0). Daily abnormal returns are calculated employing the market model, the market-adjusted return model and the raw return model. ***denotes significance at the 1% level, **denotes significance at the 5% level, *denotes significance at the 10% level.

Table 3. Price reaction to joint final dividend and earnings announcements

	Market model		Market-adjusted model		Raw-return model	
Day	AR %	t-Statistic	AR %	t-Statistic	AR %	t-Statistic
-20	0.006	0.01	-0.204	-0.55	-0.783	-1.19
-19	-0.358	-0.66	-0.484	-1.05	-0.497	-0.74
-18	0.186	0.35	0.523**	2.05	0.791**	2.14
-17	-0.191	-0.36	-0.016	-0.04	-0.343	-0.67
-16	-0.259	-0.48	-0.103	-0.26	-0.432	-0.86
-15	-0.352	-0.65	-0.304	-0.92	-0.082	-0.22
-14	-0.394	-0.73	-0.398	-0.76	-0.393	-0.53
-13	-0.010	-0.02	-0.033	-0.08	-0.304	-0.66
-12	-0.647	-1.20	-0.662	-1.28	-0.703	-1.09
-11	-0.591	-1.10	-0.334	-1.57	-0.245	-1.07
-10	-0.588	-1.09	-0.399	-1.18	-0.261	-0.73
-9	0.155	0.29	0.149	0.56	0.244	0.83
-8	0.339	0.63	0.433	0.97	0.160	0.28
-7	-0.081	-0.15	-0.017	-0.07	0.159	0.48
-6	-0.621	-1.15	-0.431	-1.07	-0.443	-1.19
-5	-0.662	-1.23	-0.515*	-1.72	-0.660**	-2.23
-4	0.268	0.50	0.431	0.91	0.247	0.47
-3	0.132	0.25	0.401	1.01	-0.100	-0.19
-2	0.276	0.51	0.432	1.60	-0.093	-0.29
-1	-0.205	-0.38	-0.204	-0.60	-0.137	-0.32
0	1.185**	2.20	1.391***	3.73	1.654***	4.02
1	1.310**	2.43	1.565***	3.90	1.587***	4.16
2	0.426	0.79	0.540	1.07	0.499	0.90
3	0.023	0.04	0.195	0.72	-0.078	-0.25
4	-0.118	-0.22	-0.032	-0.11	0.116	0.28
5	-0.043	-0.08	0.078	0.15	0.217	0.36
6	-0.171	-0.32	-0.012	-0.03	0.141	0.34
7	-1.070**	-1.99	-0.831*	-1.93	-1.000**	-2..27
8	-0.621	-1.15	-0.486	-1.51	-0.960***	-2.94
9	0.196	0.36	0.148	0.46	0.000	0.00
10	0.490	0.91	0.357	1.07	0.088	0.25
11	-0.323	-0.60	-0.141	-0.57	-0.588**	-2.13
12	-0.039	-0.07	-0.276	-0.61	-0.296	-0.57
13	-0.298	-0.55	-0.129	-0.75	-0.122	-0.40
14	-0.135	-0.25	0.061	0.28	-0.096	-0.45
15	-0.207	-0.38	-0.272	-0.76	-0.653	-1.35
16	-0.393	-0.73	-0.260	-1.16	-0.983***	-2.94
17	-0.506	-0.94	-0.635	-1.41	-1.205*	-1.79
18	0.124	0.23	0.322	0.64	0.477	0.76
19	0.054	0.10	0.182	0.48	0.006	0.01
20	0,467	0.87	0,869	1,58	0.995	1,47

Note: This table displays the abnormal returns for the sample firms for 41 days around the joint final dividend and earnings announcement (day 0). Daily abnormal returns are calculated employing the market model, the market-adjusted return model and the raw return model. ***denotes significance at the 1% level, **denotes significance at the 5% level, *denotes significance at the 10% level.

Table 4. Price reaction to final versus interim dividend and earnings announcements

		Final dividends and earnings	Interim dividends and earnings	t-statistic (two-tailed) for final vs interim dividends and earnings	p-value
Day 0	Mean	1.19	0.19		
	t-statistic	(3.83)***	(0.55)	2.15**	0.037
Days 0 to +1	Mean	1.25	0.47		
	t-statistic	(4.77)***	(1.63)	2.01**	0.047
Days 0 to +2	Mean	0.97	0.59		
	t-statistic	(3.97)***	(2.48)**	1.11	0.268
Days 0 to +5	Mean	0.46	0.38		
	t-statistic	(2.76)***	(2.25)**	0.35	0.730
Days 0 to +10	Mean	0.15	0.28		
	t-statistic	(1.21)	(2.22)**	-0.76	0.448
Days 0 to +20	Mean	0.02	0.10		
	t-statistic	(0.20)	(1.01)	-0.63	0.528
Days -20 to -1	Mean	-0.18	-0.26		
	t-statistic	(-2.13)**	(-2.82)***	0.63	0.530
Days -10 to -1	Mean	-0.10	0.22		
	t-statistic	(-0.89)	(-1.73)*	0.72	0.472
Days -5 to -1	Mean	-0.04	-0.30		
	t-statistic	(-0.23)	(-1.61)	1.05	0.295

Note: This table displays abnormal returns and t-statistics for the joint announcement of interim dividends and earnings and final dividends and earnings employing the market model. It also provides test statistics (two-tailed test) comparing the announcement period abnormal returns between interim and final dividends and earnings. ***denotes significance at the 1% level, **denotes significance at the 5% level, *denotes significance at the 10% level.

Table 5. Trading volume reaction to joint interim dividend and earnings announcements

Day	Abnormal volume in Euros	t-Statistic	% Abnormal volume
-20	-244,135.08	-0.88	-12.54
-19	184,472.59	0.38	9.47
-18	359,047.68	0.67	18.44
-17	1,167,182.70	1.53	59.93
-16	114,931.48	0.19	5.90
-15	155,225.45	0.34	7.97
-14	212,718.20	0.42	10.92
-13	502,091.59	1.00	25.78
-12	-180,935.79	-0.36	-9.29
-11	566,408	0.99	29.08
-10	1,131,679.16	1.47	58.11
-9	-70,444.64	-0.18	-3.62
-8	-254,347.25	-0.59	-13.06
-7	-490,241.64	-1.83	-25.17
-6	583,236.75	1.03	29.95
-5	508,205.36	0.66	26.09
-4	-300,964.76	-1.83	-15.45
-3	1,262,950.07	1.27	64.85
-2	-156,337.47	-0.70	-8.03
-1	-420,720.41	-1.60	-21.60
0	455,020.91	1.11	23.36
1	119,004.18	0.31	6.11
2	771,548.97	0.94	39.62
3	148,921.69	0.34	7.65
4	345,062.45	0.84	17.72
5	818,615.64	0.76	42.03
6	344,798.86	1.38	17.70
7	252,413.07	0.61	12.96
8	-159,658.05	-0.86	-8.20
9	869,703.43	1.01	44.65
10	380,227.25	1.24	19.52
11	1,064,408.04	1.43	54.65
12	-31,650.10	-0.09	-1.63
13	226,522.38	0.68	11.63
14	63,255.79	0.19	3.25
15	652,585.38	2.06	33.51
16	924,410.37	1.07	47.46
17	1,855,000.59	1.57	95.25
18	653,832.34	0.90	33.57
19	395,010.71	0.81	20.28
20	-289,662.04	-1.07	-14.87

Note: This table displays the abnormal volume for the sample firms for 41 days around the joint interim dividend and earnings announcement (day 0). Daily abnormal volume is calculated employing the mean-adjusted model. In the third column, daily abnormal volume is presented as percentage of the normal volume ***denotes significance at the 1% level, **denotes significance at the 5% level, *denotes significance at the 10% level.

Table 6. Trading volume reaction to joint final dividend and earnings announcements

Day	Abnormal volume in Euros	t-Statistic	% Abnormal volume
-20	-982,947.57***	-3.06	-52.03
-19	212,653.87	0.57	11.26
-18	-195,240.50	-0.59	-10.33
-17	-660,830.72***	-3.16	-34.98
-16	-513,258.96*	-1.87	-27.17
-15	-158,974.11	-0.62	-8.41
-14	34,917.08	0.07	1.85
-13	281,382.46	0.42	14.89
-12	274,799.90	0.69	14.55
-11	-619,309.67***	-2.75	-32.78
-10	-625,230.46**	-1.97	-33.09
-9	-157,121.25	-0.35	-8.32
-8	-299,289.54	-1.21	-15.84
-7	-452,526.33***	-2.66	-23.95
-6	-781,747.37**	-2.22	-41.38
-5	-587,230.27***	-2.60	-31.08
-4	-584,874.08**	-2.05	-30.96
-3	-595,406.16*	-1.66	-31.51
-2	-133,207.16	-0.74	-7.05
-1	551,715.84	0.87	29.20
0	261,179.39	0.47	13.82
1	2,169,556.60	1.53	114.83
2	1,073,134.92	1.01	56.80
3	506,773.10	0.68	26.82
4	452,873.08	0.87	23.97
5	1,149,297.94	1.30	60.83
6	1,524,295.80	1.21	80.68
7	-258,763.71	-0.91	-13.70
8	-436,690.98**	-2.45	-23.11
9	-236,048.88	-1.18	-12.49
10	309,087.75	0.57	16.36
11	-606,431.40***	-3.08	-32.10
12	-10,089.01	-0.03	-0.53
13	-745,438.88***	-2.92	-39.46
14	-100,186.68	-0.35	-5.30
15	48,980.86	0.10	2.59
16	-251,550.53	-0.87	-13.31
17	-123,017.99	-0.49	-6.51
18	-888,538.81***	-3.68	-47.03
19	175,502.21	0.55	9.29
20	1,081,349.15	0.94	57.24

Note: This table displays the abnormal volume for the sample firms for 41 days around the joint final dividend and earnings announcement (day 0). Daily abnormal volume is calculated employing the mean-adjusted model. In the third column, daily abnormal volume is presented as percentage of the normal volume ***denotes significance at the 1% level, **denotes significance at the 5% level, *denotes significance at the 10% level.

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Table 7. Trading volume reaction to final versus interim dividend and earnings announcements

		Final dividends and earnings	Interim dividends and earnings	t-statistic (two-tailed) for final vs interim dividends and earnings	p-value
Day 0	Mean	261,179	455,021		
	t-statistic	0.47	1.11	-0.28	0.781
Days 0 to +1	Mean	1,215,368	287,013		
	t-statistic	1.59	1.03	1.14	0.259
Days 0 to +2	Mean	941,916	448,525		
	t-statistic	(1.73)*	1.36	0.77	0.440
Days 0 to +5	Mean	935,469	443,029		
	t-statistic	(2.52)**	(1.70)*	1.09	0.279
Days 0 to +10	Mean	592,245	395,060		
	t-statistic	(2.45)**	(2.32)**	0.67	0.506
Days 0 to +20	Mean	242,632	469,494		
	t-statistic	(1.66)*	(3.60)***	-1.16	0.247
Days -20 to -1	Mean	-299,586	231,501		
	t-statistic	(-3.66)***	(1.91)*	(-3.63)***	0.000
Days -10 to -1	Mean	-366,492	179,302		
	t-statistic	(-3.31)***	1.02	(-2.63)***	0.009
Days -5 to -1	Mean	-269,800	178,627		
	t-statistic	-1.60	0.67	-1.42	0.156

Note: This table displays abnormal volume and t-statistics for the joint announcement of interim dividends and earnings and final dividends and earnings employing the mean-adjusted model. It also provides test statistics (two-tailed test) comparing the announcement period abnormal volume between interim and final dividends and earnings. ***denotes significance at the 1% level, **denotes significance at the 5% level, *denotes significance at the 10% level.

FIGURE 1

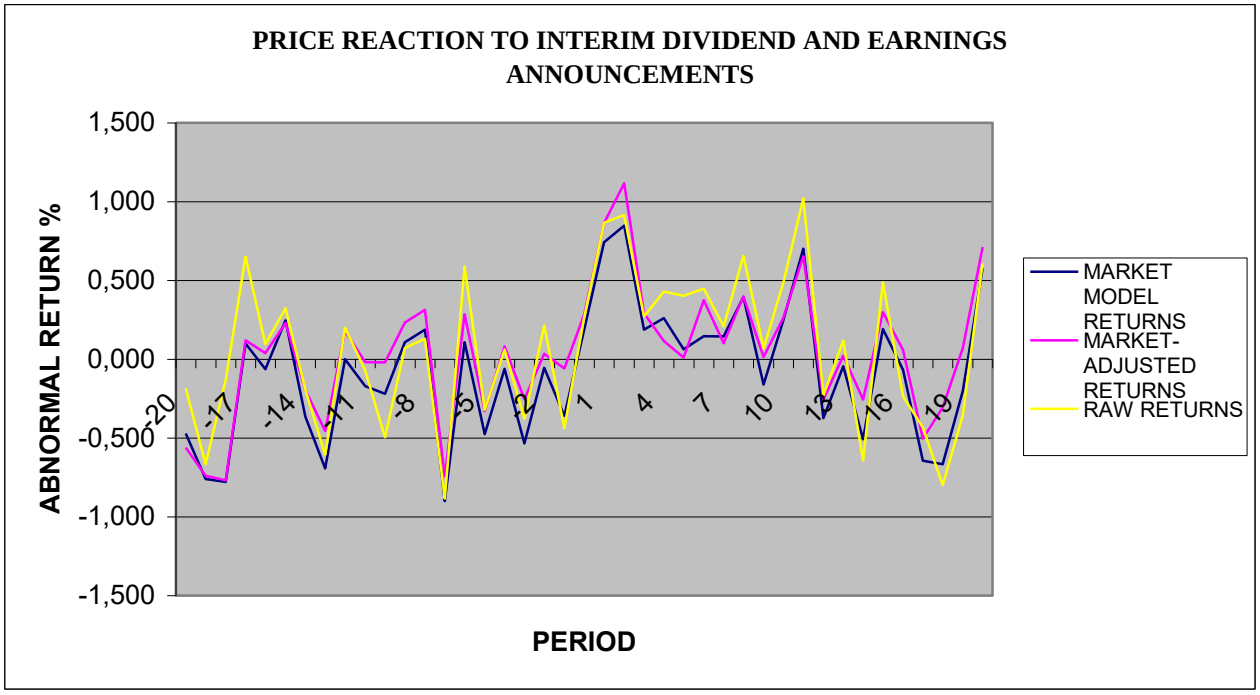

FIGURE 2

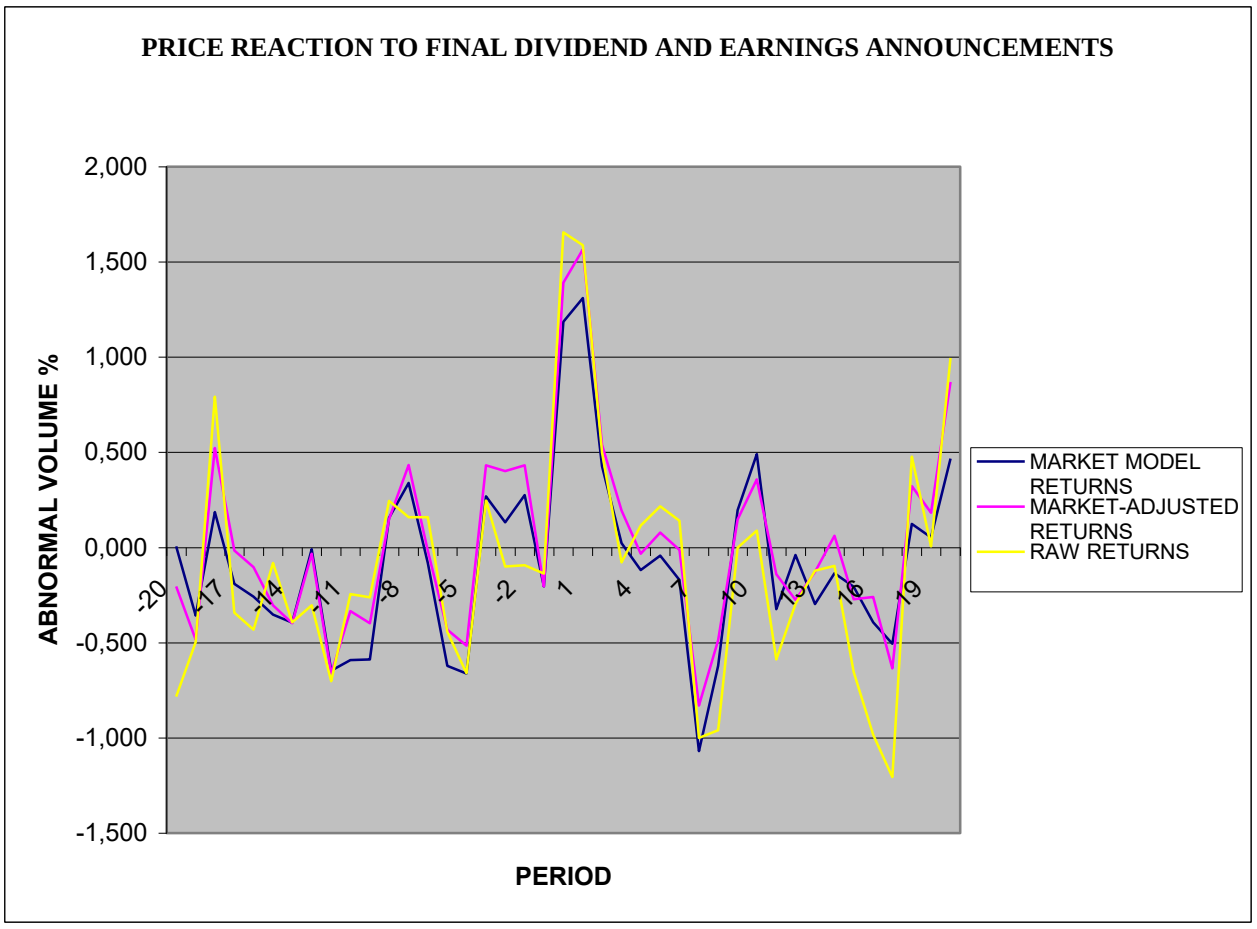

FIGURE 3

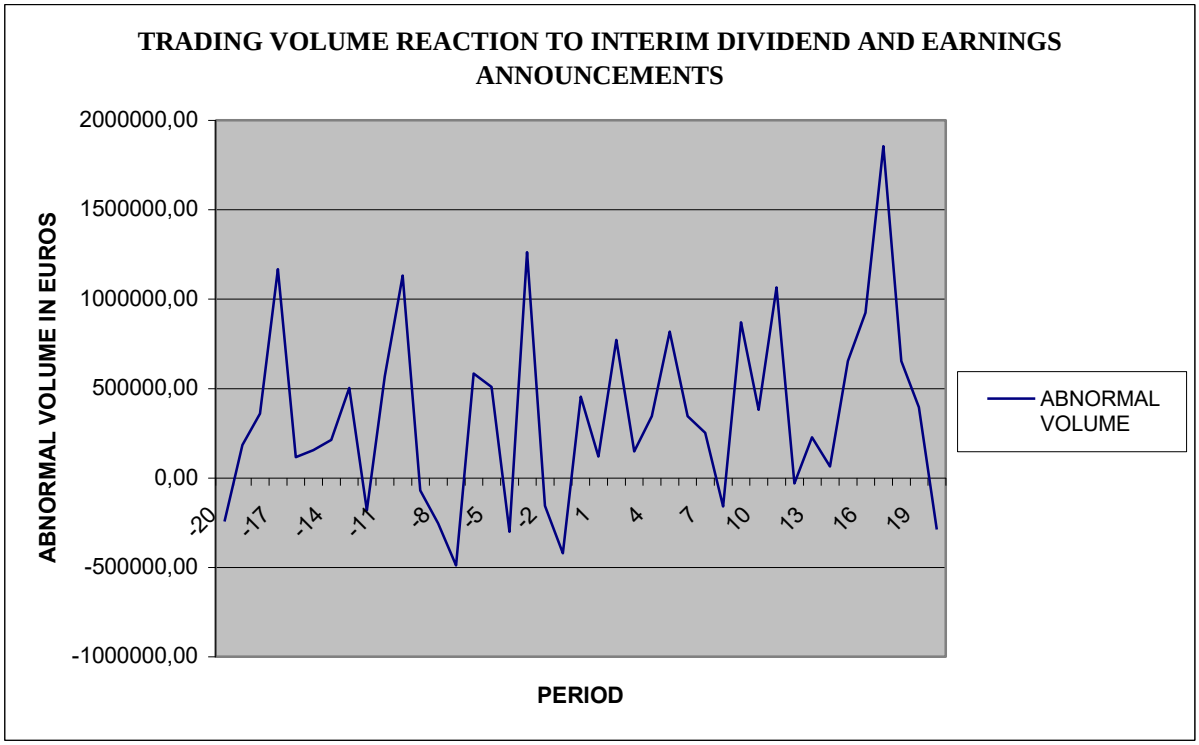

FIGURE 4