



**Sofia Madalena
Sequeira Parada**

**Reacção do Mercado Português ao Anúncio de
Resultados e Dividendos**

**Portuguese Market Reaction to Earnings and
Dividend Announcements**



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Dissertação apresentada à Universidade de Aveiro para cumprimento dos requisitos necessários à obtenção do grau de Mestre em Economia, realizada sob a orientação científica do Doutor Joaquim Carlos da Costa Pinho, Professor Auxiliar do Departamento de Economia, Gestão e Engenharia Industrial da Universidade de Aveiro.

Dedico este trabalho a toda a minha família e ao amor da minha vida.

o júri

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palavras-chave

Resultados, Dividendos, Eficiência na Forma Semi-Forte, Estudo de Eventos, Preço das Acções, Rentabilidade Anormal, Volume de Transacções Anormal.

resumo

O principal objectivo desta dissertação de mestrado é contribuir para uma melhor compreensão do mercado de acções Português, através de evidência empírica sobre a eficiência do mercado na forma semi-forte. Para atingir este objectivo concentramo-nos no efeito da divulgação de informação financeira (anúncio de resultados e dividendos), analisando tanto a reacção do preço das acções como do seu volume de negócios.

A investigação baseou-se na metodologia do estudo de eventos, através da análise de 548 eventos, 446 anúncios de resultados e 102 anúncios de dividendos por empresas admitidas à cotação no índice bolsista PSI-20 durante o período de Janeiro de 2005 a Dezembro de 2010.

Os resultados evidenciam o conteúdo informativo dos anúncios de resultados e dividendos, uma vez que encontramos evidência empírica de rentabilidade e volume de transacção anormal em torno do dia dos anúncios. No entanto, encontramos também evidência que sugere que o mercado Português não é eficiente na forma semi-forte quanto à divulgação de informação financeira, verificando-se que este não reage imediata e totalmente à nova informação divulgada.

Esta dissertação fornece nova evidência sobre o conteúdo informativo da informação financeira divulgada no mercado Português, através da análise da reacção do preço das acções e do seu volume de negócios a anúncios de resultados e dividendos considerados pelo mercado como “boas” notícias, “más” notícias ou anúncios que não transmitem “nenhuma” notícia. Ao utilizar a amplitude relativa do preço das acções, o nosso estudo contribui para a literatura existente, dado que tanto quanto sabemos, nenhum outro estudo explorou a variação da amplitude do preço das acções em torno de determinados anúncios.

keywords

Earnings, Dividends, Semi-strong Form Efficiency, Event Studies, Stock Prices, Abnormal Return, Abnormal Trading Volume.
Jel classification: G12, G14

abstract

The main intent of this master degree thesis is to contribute to a better understanding of the Portuguese stock market based on empirical evidence on the semi-strong market efficiency. To achieve this goal, we focused on the announcement effect of financial information (corporate earnings and dividend announcements), analysing both the stock price and trading volume response to the announcements.

The investigation is based on the event studies methodology, with the analysis of 548 events, 446 earnings announcements and 102 dividend announcements for 23 companies listed on the PSI-20 stock index from January 2005 through December 2010.

The results provide some evidence of the information content of earnings and dividends, as we found evidence of abnormal returns and abnormal trading volume around the announcement day. Nevertheless, our evidence also suggests that the Portuguese stock market is not semi-strong form efficient regarding the disclosure of financial information, as we verify that the stock market does not react immediately and fully to the new information.

This thesis provides new evidence on the information content of financial information for the Portuguese stock market, as we aim to examine both earnings and dividend announcements through the analysis of the stock price and the trading volume response to good, bad and no news announcements. By using the stock price relative range, our study adds to the existing literature, as far as we know, no previous study explored the analysis of the stock price range variation around certain announcements.

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ACRONYMS

AGM	Annual General Meetings
API	Abnormal Performance Index
APT	Arbitrage Pricing Theory
AR	Abnormal Returns
\overline{AR} or AAR	Average Abnormal Returns
ARA	Annual Report and Accounts
ARR	Abnormal Relative Range
\overline{ARR}	Average Abnormal Relative Range
ASE	Athens Stock Exchange
AVAR	Abnormal Stock Price Volatility
AV or AVOL	Abnormal Trading Volume
\overline{AV} or \overline{AVOL}	Average Abnormal Trading Volume
BCP	Banco Comercial Português
BES	Banco Espírito Santo
BHAR	Buy-and-Hold Abnormal Returns
BPI	Banco Português de Investimento
BSE	Bombay Stock Exchange
CAPM	Capital Asset Pricing Model
CAR	Cumulative Abnormal Returns
\overline{CAR} or CAAR	Cumulative Average Abnormal Returns
CER	Cumulative Excess Returns
CMVM	Comissão De Mercado De Valores Mobiliários
CPRA	Comparison Period Return Approach

CRSP	Center for Research in Security Prices
CSE	Copenhagen Stock Exchange
EA	Earnings Announcements
EDP	Electricidade de Portugal
EDPR	EDP Renováveis
EL	Euronext Lisbon
EMH	Efficient Market Hypothesis
EPS	Earnings Per Share
FFJR	Fama, Fisher, Jensen and Roll
GSM	Ghana Stock Market
GSR	Graham Standardized Residuals
I/B/E/S	Institutional Brokers Estimate System
IBEX	Iberia Index
Ibovespa	São Paulo Stock Index
IR	Half-yearly Interim Results
JM	Jerónimo Martins
JSE	Johannesburg Stock Exchange
KSE	Karachi Stock Exchange
MPRA	Munich Personal RePEc Archive
NYSE	New York Stock Index
PA	Preliminary Announcement
PEAD	Post-earnings Announcement Drifts
PhD	Philosophiæ Doctor
PPI	Pettit Performance Index

PSI	Portuguese Stock Index
PT	Portugal Telecom
REN	Rede Energética Nacional
RePEc	Research Papers In Economics
RR	Relative Range
SES	Stock Exchange of Singapore
SSRN	Social Science Research Network
SRV	Security Returns Variability
SUE	Standardized Unexpected Earnings
TSE	Tokyo Stock Exchange
UE	Unexpected Earnings
UK	United Kingdom
US	United States
WSE	Warsaw Stock Exchange
WSJI	Wall Street Journal Index

VARIABLES DEFINITION

α_i and β_i	Market model parameters of the stock i
$\hat{\alpha}_i$ and $\hat{\beta}_i$	Estimated market model parameters
$AR_{i,t}$	Abnormal return of the stock i for the period t
\overline{AR}_t	Average abnormal returns for the period t
$ARR_{i,t}$	Abnormal relative range of the stock i for the period t
\overline{ARR}_t	Average abnormal relative range for the period t
AV_{it} or $AVOL_{i,t}$	Abnormal trading volume of the stock i for the period t
\overline{AV}_t or \overline{AVOL}_t	Average abnormal trading volume for the period t
$CAR_i(t_1, t_2)$	Cumulative abnormal returns of the stock i between the period t_1 and t_2
$\overline{CAR}(t_1, t_2)$	Cumulative average abnormal returns between the period t_1 and t_2
$\varepsilon_{i,t}$	Zero mean disturbance term
$E(R_{i,t} X_t)$	Expected or normal return of the stock i for the period t conditioned by the information for the normal return model (X_t)
$E(RR_{i,t} X_t)$	Expected or normal relative range of the stock i for the period t conditioned by the information for the normal return model (X_t)
$E(V_{i,t} X_t)$	Expected or normal trading volume of the stock i for the period t conditioned by the information for the normal return model (X_t)
$E(r_{t+1})$	Expected return for the period $t+1$
$E(r_{t+1} \Phi_t)$	Expected return for the period $t+1$ conditioned by the information set
$\sigma_{\varepsilon_i}^2$	Disturbance variance of the stock i regression residuals
σ_m^2	Variance of the market return over the estimation window
L	Estimation window
$\sigma^2(AR_{i,t})$	Variance of $AR_{i,t}$
$\sigma_i^2(t_1, t_2)$	Variance of $CAR_i(t_1, t_2)$

$R_{i,t}$	Actual return of the stock i for the period t
$R_{m,t}$	Actual return of the market portfolio for the period t
$RR_{i,t}$	Actual relative range of the stock i for the period t
$RR_{m,t}$	Actual relative range of the market portfolio for the period t
$\hat{\mu}_m$	Mean market return over the estimation window
$\text{Var}(\overline{AR}_t)$	Asymptotically variance of \overline{AR}_t
$\text{Var}(\overline{ARR}_t)$	Asymptotically variance of \overline{ARR}_t
$\text{Var}(\overline{AV}_t)$	Asymptotically variance of \overline{AV}_t
$V_{i,t}$	Trading volume of the stock i for the period t
$V_{m,t}$	Trading volume of the market portfolio for the period t
Φ_t	Information set at the time t

1. INTRODUCTION

“The primary role of the capital market is allocation of ownership of the economy's capital stock. In general terms, the ideal is a market in which prices provide accurate signals for resource allocation: that is, a market in which firms can make production-investment decisions, and investors can choose among the securities that represent ownership of firms' activities under the assumption that security prices at any time "fully reflect" all available information. A market in which prices always "fully reflect" available information is called "efficient".”

Fama (1970)

Understanding the market efficiency has been one of the most important and controversial topics in the economic literature and has increased the interest and demand on different applications. The Efficient Market Hypothesis defined by Eugene Fama in 1970, which states that in an efficient capital market new information is immediately reflected in the stock market, as it is, without any delay or lag, incorporated in the stock prices has been the basis for a vast number of published papers searching to analyse the stock market efficiency with respect to new publicly available information such as earnings announcements, accounting statements, annual reports, stock splits, dividend announcements, new issues of stock announcements, general business related information, capital structure related information and announcements of macroeconomic variables.

Over the last decades several studies were carried out in a number of developed and emerging capital markets in order to assess the stock market reaction to several different announcements/events. The first empirical studies of Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (1969) who investigated the stock price adjustment to earnings and stock splits announcements, respectively, led to a new empirical event studies literature, with focus on the analysis of the semi-strong stock market efficiency hypothesis defined by Fama (1970).

“Assuming that managers possess inside information about their firms' future prospects, they may use various signalling devices to convey this information to the public. Two of the most important signalling devices available are earnings and dividend figures”. (Aharony and Swary (1980)) Therefore, the information effects of accounting earnings and dividends have been two of the most important and consequently investigated events, with substantial empirical evidence published investigating both developed and emerging capital markets.

Prior research on the stock price response to earnings and dividend announcements has provided evidence of an informational effect in developed capital markets, as stock prices incorporate the available information almost immediately, approaching an efficient capital market and evidence of a non informational effect in emerging capital markets, as the stock markets react slowly to the

available information, not consistent with the efficient capital market hypothesis, as earnings and dividends carry little or no information value for investors.

In the Portuguese stock market, a few authors attempted to analyse the stock market reaction to accounting earnings and dividends. The previous studies on the information content of financial information for the Portuguese stock market, namely Fernandes (1996), Isidro (1997), Wilton (2002), Alves and Santos (2005), Romacho and Cidrais (2007) and Lourenço and Coelho (2008) have shown that the Portuguese stock market is semi-strong efficient as it reacts efficiently to the financial information and that there is an anticipation effect, as the market anticipates some of the information contained in the announcements (Fernandes (1996) and Isidro (1997)). The prior studies of Borges (2004), Vieira (2007) and Farinha and Soro (2006) that investigated the market reaction to dividend announcements found that, in general, dividend information does not convey useful information to the market, therefore the dividend signalling theory is not verified for the Portuguese stock market, as the market does not react to dividend announcements. Although a considerable amount of evidence has been provided for the Portuguese stock market this evidence is underdeveloped and has analysed essentially the period before 2004.

The relevance of the financial disclosure and dividend policy in the economic literature and the different empirical results obtained in the previous studies lead us to investigate the impact of earnings and dividend announcements in the firm's value for the Portuguese stock market in order to assess the capital market semi-strong form efficiency. In this sense, we analyse the abnormal stock return, the abnormal relative range and the abnormal stock trading volume behaviour around both earnings and dividend announcements in the Portuguese Stock Index PSI-20 between 2005 through 2010 using the event studies methodology to determine whether the Portuguese stock market reacts to the selected announcements, supporting or rejecting the market efficiency hypothesis.

In this thesis we seek to extend the existent literature in three directions. The first main contribution of the present thesis is that our empirical work considers a more recent period than the periods analysed by the previous studies, as the empirical study covers the period of 2005 through 2010. The second main contribution is that we attempt to test the information hypothesis analysing both the stock price reaction (through the analysis of the abnormal returns and the abnormal relative range) and the trading volume reaction (through the analysis of the abnormal trading volume). The third contribution of this thesis is that we try to give special attention to the cases where the market reacts differently to the announcements, furthermore we separate earnings announcements in annual and interim announcements and categorize all the announcements in three categories: good news, bad news or no news announcements in order to assess if the market reacts differentially according to the adopted categorization, both at the stock price and trading volume level.

The remainder of this thesis is organized as follows. Section 2 presents a brief literature review, with an overview of the market efficiency theory and an historical review on the published event studies, both studies analysing the stock market impact of earnings and dividend announcements. Additionally, section 2 also covers previously empirical studies analysing both developed and emerging markets and empirical studies with focus on the Portuguese stock market reaction to earnings, dividends and other announcements. Section 3 describes the data sample used in the empirical analysis and section 4 explains the event studies methodology used to test the market efficiency hypothesis. Additionally, section 5 presents the results and the analysis of the empirical research and finally, on section 6 the main conclusions are presented, with the presentation of the final considerations, the main contributions and the possible lines of future research.

2. LITERATURE REVIEW

2.1 – Market efficiency

The concept of market efficiency, intent as a market in which the prices of financial assets absorb all relevant information is one of the most relevant concepts in the finance literature (more particularly in the financial markets research) and has been stimulating both “interest and controversy among researchers and practitioners”.¹

The first known research on the market efficiency issue was developed by Bachelier (1900) in his PhD dissertation in mathematics. In his empirical study of French governmental bonds, Bachelier recognized that "past, present and even discounted future events are reflected in market price, but often show no apparent relation to price changes".

After Bachelier, Cowles (1933) in his study of the ability of selecting stocks or anticipating the movements of the market for 45 professional agencies, such as financial services and fire insurance companies for the period of January 1928 through June 1932 found that there was no statistically significant forecasting performance for the analysed period.

Although several other studies on the random nature of equity price changes were developed after the work of Bachelier (1900) and Cowles (1933) (such as Working (1934), Cowles and Jones (1937), Kendall (1953), Roberts (1959), Fama (1965) and others), the market efficient hypothesis was only consolidated with the studies of Samuelson (1965) and Fama (1970).

Eugene Fama, considered by many the father of market efficiency published in 1970 a theoretical and empirical literature review on market efficiency. In his 1970 review, Fama defined an efficient market as a market in which “prices always “fully reflect” available information” and established a set of sufficient conditions for capital market efficiency: “(i) there are no transactions costs in trading securities, (ii) all available information is costlessly available to all market participants, and (iii) all agree on the implications of current information for the current price and distributions of future prices of each security”.

To Fama (1970), a capital market is efficient if all the information in some information set at the time t (Φ_t) is fully “utilized in determining equilibrium expected return”, which means that “investors who possess information nevertheless earn a competitive expected return from investing: that is, the information does not alter expected returns. This is the basis of $E(r_{t+1}|\Phi_t) = E(r_{t+1})$ definition, equating securities’ conditional (on the information set) and unconditional expected returns”².

¹ Ball (1989)

² Ball (1989)

Also in his 1970 review, Fama distinguished three levels of market efficiency according to the type of information reflected in the security prices: weak form efficiency, semi-strong form efficiency and strong form efficiency.

- The weak form efficiency implies that the information set (Φ_t) includes only past prices (or returns), which means that security prices will only reflect historical prices.
- The semi-strong form efficiency asserts that the information set (Φ_t) comprises all relevant information that is publicly available, so security prices will reflect all public information.
- The strong form efficiency states that the information set (Φ_t) includes all information, both insider and public and that security prices will reflect all information.

The Efficient Market Hypothesis defined by Fama in his 1970 review became widely used in the financial literature and influenced many empirical studies. However, this concept also inspired controversy with several published studies criticizing the efficient market hypothesis (such as Jensen (1978), Grossman and Stiglitz (1980), Beaver (1981) and LeRoy (1989)).

Jensen (1978) believes that “a market is efficient with respect to information set Φ_t if it is impossible to make economic profits by trading on the basis of information set Φ_t . By economic profits, we mean the risk adjusted returns net of all costs. Application of the zero profit condition to speculative markets under the assumption of zero storage costs and zero transactions costs gives us the result that asset prices (after adjustment for required returns) will behave as a martingale with respect to the information set”, which means that prices reflect information to the point where the marginal benefits of acting on information do not exceed the marginal costs.

Grossman and Stiglitz (1980) try to “redefine the Efficient Market Model”, stating that “efficient market theorists seem to be aware that costless information is a sufficient condition for prices to fully reflect all available information; they are not aware that it is a necessary condition. But this is a *reducto ad absurdum*, since price systems and competitive markets are important only when information is costly”.

Beaver (1981) argues that the market efficiency problem “is not simply that concepts are difficult to test empirically, a pervasive phenomenon not unique to the efficient market literature, rather, the problem is that, at a conceptual level, prior to empirical testing, it is unclear what is meant by the term market efficiency”. Moreover, LeRoy (1989) in his study on efficient capital markets criticizes the fair game model of Fama (1970) showing that it is tautological.

As a reply to the critics, Fama in 1991 redefined his own definition of market efficiency, stating that an efficient market is a market in which “security prices fully reflect all available information. A precondition for this strong version of the hypothesis is that information and trading costs, the costs

of getting prices to reflect information, are always 0 (Grossman and Stiglitz (1980)). A weaker and economically more sensible version of the efficiency hypothesis says that prices reflect information to the point where the marginal benefits of acting on information (the profits to be made) do not exceed marginal costs (Jensen (1978))”.

Despite all controversy, the Market Efficient Hypothesis defined by Fama has been the basis for a vast empirical research. To test the semi-strong efficiency defined by Fama (1970) is used the event studies methodology. This methodology analyses and measures the speed of adjustment of security prices to new publicly available information such as accounting statements, annual reports, stock splits, dividend announcements, new issues of stock announcements and earnings announcements and other events.

2.2 – Event studies

2.2.1 - Historical review

An event study is an empirical study that allows the assessment of the market reactions and abnormal returns around specific events (through the analysing of the period surrounding the events).

As pointed out by MacKinlay (1997) “using financial market data, an event study measures the impact of a specific event on the value of a firm. The usefulness of such a study comes from the fact that, given rationality in the marketplace, the effects of an event will be reflected immediately in security prices. Thus a measure of the event’s economic impact can be constructed using security prices observed over a relatively short time period”.

Event studies have been used to test the semi-strong efficiency defined by Fama (1970) and “(...) because they come closest to allowing a break between market efficiency and equilibrium-pricing issues, event studies give the most direct evidence on efficiency”.³

According to MacKinlay (1997), the first event study published was Dolley (1933) who reviewed “the practice and the effects of stock-splitting with particular focus given to the price effect of splitting common shares” to a sample of 95 splits from 1921 through 1931.

After Dolley, other studies following a similar approach were also published, such as Myers and Bakay (1948), Barker (1956, 1957 and 1958) and Ashley (1962), but only in the late 60’s with the studies of Ball and Brown (1968) and Fama, Fisher, Jensen and Roll (FFJR) (1969) the event studies methodology used today was established.

Ball and Brown (1968) conducted an event study to analyse the stock price adjustment to earnings announcements made by 261 US firms for the period of 1957 through 1965. In their study, Ball and

³ Fama (1991)

Brown found an anticipation effect, which means that most of the information within the annual reports was anticipated by the market before the announcement itself and concluded that “since the efficiency of the capital market is largely determinate by the adequacy of its data sources, we do not find it disconcerting that the market has turned to other sources which can be acted upon more promptly than annual net income”.

Fama, Fisher, Jensen and Roll (1969) examined “the stock prices adjustment to the information (if any) that is implicit in stock splits”. In their event study, FFJR analysed all stock splits that occurred on the New York Stock Exchange from January 1927 through December 1959 and concluded that “on the average the market’s judgments concerning the information implications of a split are fully reflected in the price of a share at least by the end of the split month but most probably almost immediately after the announcement date”, which means that the stock market was efficient regarding stock splits announcements, once stock prices adjusted rapidly to the new information.

After the publication of Fama, Fisher, Jensen and Roll, the event studies literature has grown widely. Kothari and Warner (2006) in an overview of the event studies methods mentioned “the enormity of the event studies literature” and conducting a census on event studies published from 1974 through 2000 in 5 leading journals: the Journal of Business, Journal of Finance, Journal of Financial Economics, Journal of Financial and Quantitative Analysis and the Review of Financial Studies Kothari and Warner concluded that the total number of papers reporting event studies results was 565 and “since many academic and practitioner-oriented journals are excluded, the size of event studies literature is much higher than 565”.⁴

More recently, the publications of McKinlay (1997) and Kothari and Warner (2006) present a review on the event studies methodology, synthesizing the existing work and the procedures for conducting event studies and also presenting limitations and success cases of event studies.

The event studies methodology has many applications. Event studies are useful in the accounting and finance research (to the analysis of a variety of firm specific and economy wide events) and also to the field of laws and economics (to the analysis of the effect of regulation as well as to assess damages in legal liability cases).⁵ Some of the events analyzed in the finance event studies research are earning announcements, changes in accounting principles/ information about taxes, changes in the composition of the Board of Directors and/or the Supervisory Board or any other supervisory body, capital structure related information: dividends, own shares, stock/debt issues, announcements of macroeconomic variables such as the trade deficit, restructuring related

⁴ Kothari and Warner (2006)

⁵ See MacKinlay (1997) and Kothari and Warner (2006).

information: mergers, acquisitions, asset sales and general business related information: turnover, alliances, new products or services.⁶

Since this study aims to analyze the Portuguese market reaction to both earnings and dividend announcements, the next sections present a detailed literature review on the published event studies regarding these specific events.

2.2.2 – Earnings announcements

“Stock market has been found to react to various corporate announcements. One such significant announcement, which has a bearing on the stock price movement of the firm, is earnings information disclosure.”⁷

The pioneer studies of Ball and Brown (1968) and Beaver (1968) initiated the analysis of the market efficiency issue with respect to earnings announcements and reports publications, seeking to understand whether the market reflects all available financial information.

Ball and Brown (1968) in the first empirical work on the association between the accounting earnings announcements and stock returns analysed, using monthly data, the usefulness of the annual earnings disclosure in the Wall Street Journal for 261 New York Stock Exchange firms through the period of 1957 to 1965. Dividing the firms into two groups, firms where actual earnings were higher than expected (positive earnings residual) and firms where actual earnings were lower than expected (negative earnings residual), Ball and Brown recognized that the sign of the cumulative price residual was highly associated with the sign of the earnings residual and that even after the earnings were announced, the estimated cumulative abnormal returns continued to drift up for positive earnings residual and down for negative earnings residual. Ball and Brown also found that “85 to 90 per cent of the net effect of information about annual income is already reflected in security prices by the month of its announcement”, which means that only 10 to 15 per cent of the information within the annual reports was not anticipated by the market before the earnings announcement, showing an anticipation effect to the earnings disclosure.

Beaver (1968) in his seminal paper on the information content of earnings announcements examined “the extent to which common stock investors perceive earnings to possess informational value” for 143 New York Stock Exchange firms during the years of 1961 through 1965. Analysing 506 earnings announcements, Beaver observed an “above normal price activity when earnings reports are released” as both trading volume and stock price volatility increase in the week surrounding the announcements, which was consistent with investors looking directly and evaluating the content of the released reports, meaning that earnings possess informational value, as “the behaviour of the price changes uniformly supports the contention that earnings reports

⁶ See MacKinlay (1997) and Duque and Pinto (2004).

⁷ Das et al. (2008)

possess information content. Observing a price reaction as well as a volume reaction indicates that not only are expectations of individual investors altered by the earnings report but also the expectations of the market as a whole, as reflected in the changes in equilibrium prices”.

“Since the pioneering work of Ball and Brown (1968), the relationship between accounting information and capital markets has attracted considerable attention, to the point that it is probably one of the most popular issues in the accounting literature.”⁸ The studies of Ball and Brown (1968) and Beaver (1968) that introduced the analysis of the market reaction to the accounting disclosure have become widely known in the empirical literature and enhanced the appearance of numerous studies on this issue. This new empirical area led to the publication of several studies, analysing different countries and time periods and also considering not only annual earnings announcements (as Ball and Brown (1968) and Beaver (1968)), but also interim earnings announcements (half yearly and quarterly disclosure).

2.2.2.1 – Interim earnings announcements

The pioneer studies of Ball and Brown (1968) and Beaver (1968) analysed the market efficiency regarding annual earnings announcements and later, Jones and Litzenberger (1970) and May (1971) expanded the existent literature to the analysis of interim earnings announcements (half-yearly and quarterly announcements).

Although the studies of Benston (1967)⁹ and Brown and Kennelly (1972)¹⁰ “attempted to measure empirically the significance of quarterly accounting data to investor decisions as reflected in stock price changes”¹¹ the first remarkable studies on interim earnings announcements are Jones and Litzenberger (1970) and May (1971), once the studies of Benston (1967) and Brown and Kennelly (1972) had several potential specification errors associated.¹²

Jones and Litzenberger (1970) analysed quarterly earnings announcements for two samples of stocks, the first sample of 510 companies for the period of 1962 through 1965 and the second sample of 618 companies for the period of 1964 through 1967 and concluded that the market does not adjust “instantaneously and correctly” to the information content of quarterly earnings announcements. On the other hand, May (1971) analysed quarterly and annual earnings

⁸ Dumontier and Raffournier (2002)

⁹ Benston (1967) hypothesized a relationship between the changes in stock prices and the measured rate of change in an accounting variable and concluded that “the effects (as measured here) of published accounting data on stock prices are not very great, especially when one considers that the market is capitalizing future expected changes in income”.

¹⁰ Brown and Kennelly (1972) reported on the information content of quarterly earnings-per-share and found that “interim reports increase apparently by some 30-40 percent, the value of information contained in annual EPS”.

¹¹ May (1971)

¹² To a more detailed analysis on the specification errors pointed out to the studies of Benston (1967) and Brown and Kennelly (1972) see May (1971).

announcements for a sample of 105 American Stock Exchange firms from July 1964 through June 1968 and noticed that the “price changes in the weeks of quarterly earnings announcements are greater than average price changes”.

Over the last decades several studies have been analysing the information content of interim earnings announcements (half-yearly and quarterly earnings disclosure) for different markets (such as Joy et al. (1977), Aharony and Swary (1980), Chambers and Penman (1984), Chari et al. (1987), van Huffel et al. (1996), Vieru (2002), Atiase et al. (2005), Ball and Shivakumar (2008), Das et al. (2008) and many others). Overall, we can conclude that both annual and interim earnings announcements convey relevant market information, as they seem to lead to a market reaction.

2.2.2.2 – International scope

The first empirical studies on the market reaction to earnings announcements attempted to study the semi-strong market efficiency for the United States developed market (such as Ball and Brown (1968), Beaver (1968), Jones and Litzenberger (1970), May (1971), Brown and Kennelly (1972), Griffin (1976) and others). Overall, the evidence has shown that the United States stock market is semi-strong efficient when analysing the effect of earnings disclosure.¹³

In the 70's and 80's other developed markets were also studied, such as Australia by Brown (1970), United Kingdom by Firth (1981) and Maingot (1984) and New Zeland by Emanuel (1984). Brown (1970) found that around 75% to 80% of the price effects of the annual earnings announcements were captured prior to the month of the Preliminary Final Statement, Firth (1981) and Maingot (1984) shown that share prices react when earnings are announced, consistent with the efficient markets hypothesis and Emanuel (1984) showed that the magnitude of the price response was positively related to the magnitude of the earnings change for 1196 earnings announcements.

Over the last decades different developed and emerging markets have also been studied. Although this issue has been widely investigated in the financial literature, the conclusions of the various published studies are extremely divergent, even when the same market is analysed. There has been a significant number of studies showing that earnings announcements are positively associated with stock returns in the days surrounding the announcement, such as Ball and Brown (1968), Beaver (1968), May (1971), Brown and Kennelly (1972) Griffin (1976), Joy et al. (1977) and Chari et al. (1987) for the United States market, Laurent (2000) for Belgium, Berezovskis and Visnapuu (2010) for the Baltics, Wael (2004) for France, Borch (2008) for Norweig, Pellicer and Rees (1999) for Spain, Pope and Inyangete (1992) and Opong (1995) for the United Kingdom, Haw et al. (2000) for China and Arrif and Finn (1989) for Singapore. Opposite results were also obtained by several authors, such as Sponholtz (2005) for Denmark, Cotter (1997) for Ireland, Kong and

¹³ To a more detailed analysis on each study please see the Appendix 9.1 - Earnings Announcements.

Taghavi (2006) for China, Osei (2002) for Ghana, Das et al. (2008) for India and Bhana (1995) for South Africa.

Table 1 and 2 present a brief summary on some of the studies published on the stock market reaction to earnings announcements, Table 1 for studies analysing European markets and Table 2 for studies analysing international markets.

Table 1 - European studies on the stock market reaction to earnings announcements

Country	Author(s)	Data	Results
Belgium	Laurent (2000)	108 earnings released by Belgian companies listed on the First Market of the Brussels Stock Exchange (January 1997 - June 1999)	"(...) presence of a significant reaction at the earnings announcement date."
Denmark	Sponholtz (2005)	Firms listed on the CSE on April 17 2002 (1998 - 2002)	"Our results have shown that the Danish stock market reacts slowly to EAs (...) evidence of inefficiency."
Estonia, Latvia and Lithuania	Berezovskis and Visnapuu (2010)	Earnings announcements from all companies that were listed in the Baltic's in December 2009 (2000 - 2009)	"The result means that Baltic markets are fairly developed and efficient."
Finland	Kallunki (1996)	92 firm-year observations (1990 - 1993)	"The results indicate that there is a greater delay in the stock market's reaction to the negative information concerning the firms' earnings than to that of the positive information."
France	Wael (2004)	117 overnight announcements published among Reuters monitors (January 2001 - March 2003)	"We find that price reaction to earnings disclosures begins very quickly (...) Euronext Paris is efficient according to the semi-strong."
Greece	Maditinos et al. (2007)	163 companies with a final sample consisted of 977 year-observations (1992 - 2001)	"Revealed results provided evidence that there is an association between EPS and stock market returns (although low explanatory power)."
Ireland	Cotter (1997)	22 companies listed on the Irish Stock Exchange (31 March 1989 - 31 March 1996)	"(...) Irish stock market is inefficient."
Norway	Borch (2008)	Earnings announcement for Oslo Stock Exchange firms (1999 - 2007)	"(...) I find no results that can reject that the Oslo Stock Exchange is weak form efficient."
Poland	Jermakowicz and Tomaszewski (1998)	139 annual earnings announcements for 52 firms (1995 - 1997)	"The findings provide evidence that the annual earnings reported according to new accounting rules by firms listed on the WSE are an important element of the valuation process."
Spain	Pellicer and Rees (1999)	660 earnings announcements made by Spanish firms (1991 - 1995)	"In Spain earnings announcements are accompanied by an increase in share price volatility which persists for a few days."
	Firth (1981)	120 randomly chosen firms (1976, 1977, and 1978)	"The results are consistent with the efficient markets theory, in that the abnormal returns and abnormal share-dealing behavior associated with the information are confined to the week of its release."
United Kingdom	Pope and Inyangete(1992)	3,541 UK corporate earnings announcements for 1,329 firms (1985 - 1987)	"The variability of returns in announcement weeks is significantly higher than in the preannouncement period."
	Opong (1995)	237 interim report release dates for 100 random firms (January 1983 - January 1987)	"Interim reports contain information and the effect of this information is experienced on the day that the report is released."

Table 2 - International studies on the stock market reaction to earnings announcements

Country	Author(s)	Data	Results
Australia	Brown (1970)	647 dividend and profit announcements (January 1963 - December 1969) and 363 dividend and profit announcements (January 1964 - December 1972)	"In Australia, dividend and profit reports are normally announced simultaneously, and have an immediate impact on share prices. There have been interactive informational effects, whereby dividend and profit changes have tended to reinforce one another."
	Chan et al. (2005)	1,725 firm/year observations (1 January, 1994 - 30 June, 2001)	"Consistent with prior research, we find that annual earnings announcements in Australia are associated with significant unexpected returns."
Brazil	Scarpin et al. (2007)	62 firms listed on the Stock IBrX Paulo Stock Exchange (Bovespa) (2005)	"(...) rejected the hypothesis that the date of financial statements publication does not impact the behavior of the Brazilian capital market."
China	Haw et al. (2000)	1,890 annual report releases by listed A-share Chinese firms and a subsample of 288 annual report releases by A-share firms (1994 - 1997)	"The market reacts to the annual report releases (earnings announcements)."
	Kong and Taghavi (2006)	Annual earnings announcement for 1,224 listed companies, 698 in Shanghai and 526 in Shenzhen	"(...) rejection of semi-strong-form efficiency."
Ghana	Osei (2002)	16 listed companies on the GSM (1992 -1997)	"(...) Ghana Stock Market is inefficient with respect to annual earnings information releases by the companies listed on the exchange."
India	Das et al. (2008)	Earnings announcements for 30 companies constituting the BSE-Sensex (2006 - 2007)	"It may also be inferred that these announcements carry little information value for investors."
	Ganguli (2010)	49 turnaround companies spanning over a period of 5 years and 6 months (April 2004 - September 2009)	"The results show weak form of market efficiency in respect of the first time reporting of positive earning by the turnaround companies as price adjustment takes place subsequent to announcement."
Malaysia	Hussin et al. (2010)	120 companies listed on the Main Board of Bursa Malaysia (January 2006 - November 2006)	"The results provide some evidence of semi-strong form efficiency in the Malaysian stock market, where stock prices adjust in an efficient manner to dividend and earnings announcements."
New Zealand	Emanuel (1984)	1,196 earnings announcements	The magnitude of the price response was positively related to the magnitude of the earnings change.
Singapore	Arrif and Finn (1989)	Announcements for 329 shares which were listed in the SES (July 1973 - December 1982)	"(...) semi-strong form efficiency is thus observed."
South Africa	Bhana (1995)	Random samples of 200 companies reporting negative earnings and 200 companies reporting positive earnings (1975 - 1989)	"Market inefficiency associated with overreaction to company specific negative earnings announcements."

Thereby, we can conclude that, overall, earnings announcements do appear to contain relevant information, as the stock markets react efficiently to this information. With several exceptions, we can also conclude that the most developed capital markets appear to exhibit a higher reaction to the announcements and that emerging markets appear to exhibit a minor or no reaction to the earnings announcements analysed by the different authors.

2.2.3 – Dividend announcements

“When a firm announces a payment of a cash dividend, or reduces a cash dividend, the firm is making an extremely visible qualitative change in corporate policy. What effects do such events have on returns? The topic of corporate payout policy is extremely controversial in finance literature. It has been argued whether dividend changes or payout changes contain information about the futures earnings, profitability, stock returns or futures prospects from a managerial perspective.”¹⁴

The first author to study the dividend policy was Lintner (1956), who analysed the dividend policy of 28 companies from 1947 through 1953 and concluded that “the belief on the part of many managements that most stockholders prefer a reasonably stable rate and that the market puts a premium on stability or gradual growth in rate were strong enough that most managements sought to avoid making changes in their dividend rates that might have to be reversed within a year or so”, which means that “managers tend to smooth dividends over time” and that they “are extremely reluctant to decrease the level of dividends, because they are afraid of sending negative information to the market”.¹⁵

Assuming the effect of a firm's dividend policy on the current share prices, Miller and Modigliani (1961) showed that considering “perfect capital markets”¹⁶ “regardless of any possible difference in dividend payments during period 1 (...) the current valuation is unaffected by differences in dividend payments in any future period and thus that dividend policy is irrelevant for the determination of market prices, given investment policy”. However, “the introduction of market imperfections, such as taxes and transactions costs, may lead to a systematic preference of a large segment of the investing public for non-dividend paying shares. But these may also be many investors who actually prefer to receive dividends in lieu of capital gains. This is only the demand side of the dividend question. There is also the important supply side.”¹⁷

Although Black (1976) stated that “the harder we look at the dividend picture, the more it seems like a puzzle, with pieces that just don't fit together”, the “dividend policy conveys information”, once, as expected, the announcement of a dividend increase “often leads” to an increase in the company's stock price and that the announcement of a dividend cut “often leads” to a drop in the company's stock price. This signalling theory developed by Miller and Rock (1985) and John and

¹⁴ Salminen (2008)

¹⁵ Vieira (2007)

¹⁶ “In “perfect capital markets,” no buyer or seller (or issuer) of securities is large enough for his transactions to have an appreciable impact on the then ruling price. All traders have equal and costless access to information about the ruling price and about all other relevant characteristics of shares (...) No brokerage fees, transfer taxes, or other transaction costs are incurred when securities are bought, sold, or issued, and there are no tax differentials either between distributed and undistributed profits or between dividends and capital gains.” Miller and Modigliani (1961)

¹⁷ Black and Scholes (1970)

Williams (1985) has increased its significance and became widely studied, with several empirical studies published regarding the impact of dividend changes in stock prices.

The first empirical studies on the market reaction to dividend announcements were developed by Pettit (1972) and Watts (1973). Even though Pettit (1972) found evidence that dividend changes had significant information content, Watts (1973) stated that the information content of dividends was trivial.

In the first empirical study on the information content of dividends, Pettit (1972) applied Fama's market efficiency definition to dividend announcements. To Pettit "in an efficient market current prices fully and without bias reflect all published, widely available information. This implies that the return expected from a security in one period is independent of all information available in the previous period since the security's price already reflects the effect of this information. Announcements of changes in dividends would be immediately and unbiasedly reflected in the security's price resulting in a one time actual return that exceeds (if a dividend increase) or falls short of (if a dividend decrease) the expected security return". Using a sample of approximately 1,000 dividend changes announced for 625 New York Stock Exchange firms from January 1964 through June 1968 Pettit demonstrated that "the results of this investigation clearly support the proposition that the market makes use of announcements of changes in dividend payments in assessing the value of a security" and that the information content of the announcement was reflected in the stock prices "as of the end of the announcement period", therefore the market was efficient regarding dividend announcements.

Watts (1973) tested the hypothesis that dividends contain information about future earnings for 310 firms for the period of June 1945 through June 1968 and concluded that "an examination of the relationship between unexpected dividend changes and stock prices indicates that even if the future earnings changes associated with unexpected dividend changes convey information to market participants, that information is trivial. (...) This is the main conclusion of the study - that, in general, the information content of dividends can only be trivial."

Since the studies of Pettit (1972) and Watts (1973) a number of studies have investigated the stock price reaction to the announcement of dividend changes for companies listed on the NYSE, such as the studies of Charest (1978), Aharony and Swary (1980), Kwan (1981), Eades (1982), Woolridge (1982), Dielman and Oppenheimer (1984) and Lang and Litzenberger (1989). The information content of dividend announcements has also been studied in several other markets, both developed and emerging markets.

Table 3 and 4 present a summary on some of the published studies regarding the stock market reaction to dividend announcements, Table 3 for studies analysing European markets and Table 4 for studies analysing international markets.

Table 3 - European studies on the stock market reaction to dividend announcements

Country	Author(s)	Data	Results
Austria	Gurgul et al. (2003)	164 dividend announcements for 22 companies listed on the Austrian stock market (January 1992 - April 2002)	"(...) our findings provide evidence that the Austrian stock market digests news on dividends into stock prices rather quickly, at least within one day."
Cyprus	Travlos et al. (2001)	181 cash dividend announcements made by 31 different firms (1985 - 1995)	"The test results reveal significantly positive stock market returns for firms announcing increases in cash and in stock dividends in line with our expectations."
Denmark	Sponholtz (2005)	Companies from the Copenhagen Stock Exchange (CSE) (1999 - 2004)	"We find that the stock market reacts to the surprise in management forecasts of next year's earnings and the current dividend. (...) Thus, our results do not support the dividend irrelevancy proposition."
France	Romon (2000)	203 industrial and commercial French companies quoted on the Parisian stock exchange, distributing a regular dividend each year (1991 - 1995)	"At the informational level, the selection of firms for those the market knows the dividend yield policy allows us to reinforce the informational effect tests of an increased dividend."
Germany	Amihud and Murgia (1997)	Dividend announcements made by the 200 companies whose stocks were most actively traded on the Frankfurter Borse (1988 - 1992)	"The results show that dividend changes induce a significant positive reaction in stock prices, beyond the effect of the information contained in earnings changes."
Greece	Papaioannou et al. (2000)	140 stock dividends undertaken by firms traded in the Athens Stock Exchange (ASE) (1981 - 1994)	"The market reaction tests showed no statistically significant adjustment of prices over and beyond what one would expect as a result of the stock dividend."
	Dasilas and Leventis (2011)	All firms listed in the ASE (1 January 2000 - 31 December 2004)	"Our results indicate that there is a statistically significant market reaction on the dividend announcement day. In line with the tenor of prior literature, we find support for the dividend signalling hypothesis."
Ireland	McCluskey et al. (2006)	50 companies whose shares were traded on the Dublin Stock Exchange (1987 - 2001)	"The results suggest that dividend announcements are important for Irish investors, but earnings signals appear to have a stronger impact on equity values."
United Kingdom	Abeyratna (1994)	620 companies which announced their annual dividends in the Financial Times (January 1991 - June 1991)	"(...) investors appear to react as though dividends convey useful information to the market."

Table 4 - International studies on the stock market reaction to dividend announcements

Country	Author(s)	Data	Results
Brazil	Bruni et al. (2003)	27 shares listed on Ibovespa (01 Jan 2002 - 31 Dec 2002)	"(...) we can establish that the market anticipates the information, or that the information of the dividend announcements is not relevant. In both cases, we accept the hypothesis of market efficiency."
Ghana	Asamoah and Nkrumah (2010)	Dividend announcements made for three companies listed on the Ghana Stock Exchange (GSE) (2005)	"The test result was that the GSE was not semi-strong efficient."
India	Mallikarjunappa and Manjunatha (2009)	170 dividend declarations from 200 companies which are called BSE-200 index (2002)	"The whole analysis in this study shows that there is no statistical evidence to accept the semi-strong form of market efficiency in the Indian market."
	Mehndiratta and Gupta (2010)	15 most actively traded companies during the year 2009	"The evidence nevertheless shows that dividend increases lead more positive abnormal returns, supporting the Efficient Market Hypothesis."
Malaysia	Jais et al. (2009)	853 dividend increase announcements and 376 dividend decrease announcements (2001 - 2005)	"The evidence shows that dividend increase announcements are greeted positively by investors, while there are some evidences suggesting investors react negatively prior to dividend decrease announcements."
Nigeria	Adelegan (2009)	596 dividend announcements from 990 firms were examined (1991 - 1999)	"Moreover, since the price is still drifting 30 days after the announcement, one can say that the Nigerian stock market is not semi-strong efficient."
	Campbell and Oluocha (2011)	132 stock dividends announced on the Nigerian stock market by 73 listed companies	"(...) support is found for both the cash substitution hypothesis and the signalling hypothesis as explanations for the information stock dividends convey to shareholders."
Pakistan	Akbar and Baig (2010)	A total of 79 companies out of KSE 100 index (1 July 2004 - 29 June 2007)	"(...) KSE is not efficient in the semi-strong form of market efficiency."
South Africa	Bhana (1997)	250 companies announcing share dividends (1986 - 1995)	"In terms of the EMH criterion, the JSE appears to be inefficient in reacting to the public announcement of share dividends."
Sri Lanka	Pathirawasam (2009)	100 stock dividend announcements for companies listed on the Colombo Stock Exchange (1998 - 2007)	"The study reveals that Colombo Stock Exchange supports the semi-strong form of efficient market hypothesis."
Turkey	Altioek-Yilmaz and Akben-Selcuk (2010)	184 dividend announcements made by 46 selected companies (2005 - 2008)	"The results suggest that the market reacts positively to dividend increases, negatively to dividend decreases and does not react when dividends are not changed, consistent with the signalling hypothesis."

Overall, and following the results obtained when analysing the market reaction to earnings announcements, we can conclude that (with several exceptions) the most developed capital markets appear to exhibit a higher reaction to dividend announcements and that emerging markets appear to exhibit a minor or no reaction to the selected announcements.

2.2.4 – Simultaneous dividend and earnings announcements

“As earnings and dividend announcements are closely related and typically released in sequence (earnings reports usually precede dividend reports), the potentially corroborating effects of these two signals have been the subject of investigation.”¹⁸

Given that in several markets earnings and dividend announcements are made simultaneously, the analysis of simultaneous announcements has also been developed, once as the studies of Penman (1984) and Kalay and Loewenstein (1986) concluded, timely is one of the most significant determinants of the informativeness of earnings and dividend announcements.

Although several authors analysed both earnings and dividend announcements (such as Griffin (1976), Aharony and Swary (1980), Brown et al. (1977) and others), Kane, Lee and Marcus (1984) were the first authors to test the “corroboration effect” between earnings and dividend announcements. Analysing 352 observations of quarterly earnings and dividend announcements separated by less than 10 days for the period of 1979 through 1981, Kane, Lee and Marcus found evidence of a corroborative relationship between the two announcements, as “investors give more credence to unanticipated dividend increases or decreases when earnings are also above or below expectations, and vice versa”.

Oppositely to the findings of Kane, Lee and Marcus (1984), Chang and Chen (1991) examined the interaction effect between earnings and dividend announcements on common stock returns and concluded that “overall test results are not supportive of a corroborative effect between earnings and dividend announcements.”

Furthermore, Easton (1991) investigated the interaction effect between earnings and dividend announcements in Australia. For a sample of 896 half-yearly reports for 339 industrial Australian companies between the second half of 1978 and the second half of 1980 Easton, as Kane, Lee and Marcus (1984), observed “the existence of an interaction effect, suggesting that the analysis is not sensitive to discretion in the relative timing of the announcements.”

Lonie, Abeyratna, Power and Sinclair (1996) analysed the capital market reactions to a variety of combinations of simultaneous dividend and earnings announcements for companies listed on the United Kingdom stock market. Examining simultaneous announcements for 620 UK companies for the period of 1 January through 30 June 1991 they found that “the results of the interaction tests were significant, indicating that both signals jointly influenced the level of abnormal returns earned by the companies in our sample”, although “the magnitude, as well as the sign, of the earnings signal remains important”, contrarily to the findings of Kane, Lee and Marcus (1984) and Easton (1991).

¹⁸ Cheng et al. (2007)

Differently to the previous studies, Conroy et al. (2000) analysed “the pricing effects of dividend and earnings announcements by taking advantage of the unique setting in Japan where managers simultaneously announce the current year’s dividend and earnings as well as forecasts of next year’s dividends and earnings” and by separating the two effects for a sample of Japanese companies listed on the first section of the Tokyo Stock Exchange concluded that for the Japanese market, share price reactions were significantly affected by earnings surprises, especially management forecasts of next year’s earnings and that the information content of dividends was marginal and restricted to announcements of next year’s dividends. This evidence supports the dividend irrelevance proposition defined by Modigliani and Miller (1961) for the Japanese market.

Finally, Sponholtz (2005) analyzed simultaneous announcement of current dividends, current earnings and management’s forecast of next year’s earnings for the Danish stock market for the period of 1999 through 2004 and found that “the stock market reaction to the simultaneous announcements can be explained by the component of surprise contained in the current dividend and management’s forecast of next year’s earnings. Thus, even after controlling for the signal inherent in management’s forecasts of next year’s earnings, there is still a price reaction to the announcement of dividends. This result does not lend support to the dividend irrelevancy proposition.”

Overall, these studies on the interaction effect of the simultaneous earnings and dividend announcements have concluded that both announcements are, in fact related, as the announcements are interpreted in relationship to each other.

For the Portuguese stock market we do not analyse the interaction effect of earnings and dividend announcements, as they are, normally presented separately. In general, earnings announcements precede dividend announcements, as dividends are only formally announced after the General Meeting of Shareholders and accounting earnings figures are presented to the market formerly.

Table 5 synthesizes the studies that analysed the corroboration effect between both earnings and dividend announcements.

Table 5 - Studies on the stock market reaction to simultaneous earnings and dividend announcements

Author(s)	Data	Methodology	Results
Kane, Lee and Marcus (1984)	352 observations of quarterly earnings and dividend announcements (4Q 1979 - 2Q 1981)	Dividend Expectation Model, Earnings Expectation Model, Measurement of Abnormal Stock Price Performance, Pettit (1972)	"(...) empirical results indicated that the announcements are indeed interpreted in relationship to each other. This interaction or corroborative effect was statistically significant."
Easton (1991)	896 half-yearly reports for 339 industrial companies. It includes 525 first half-yearly reports and 371 second half-yearly reports (2Q 1978 - 4Q1980)	"Abnormal returns in the announcement month (AR.) were computed as the residual return from the market model. This implicitly assumes that any interaction effect will be observed in the month in which earnings and dividends are announced."	"The results clearly support the existence of interaction effects, and suggest that the analysis is not sensitive to discretion in the relative timing of the announcements."
Conroy et al. (2000)	3,890 announcements (1988 - 1993)	"To measure new information, we compute the difference between management's announced value and analysts' forecast. To avoid giving undue weight to extreme values, we transform this continuous surprise variable into a grouped surprise variable."	"Our findings suggest that, at least in Japan, earnings variables dominate dividends in their ability to explain share price movements."
Sponholtz (2005)	Simultaneous announcements for Danish firms (1999 - 2004)	Event studies methodology	"We find that the stock market reacts to the component of surprise in dividend announcements and management's forecast of next year's earnings. However, the surprise component of current earnings seems to carry no information, since we find no indication of a reaction to the announcement of current earnings."

2.2.5 – Portuguese evidence

Since the aim of this study is to analyze the Portuguese stock market reaction to earnings and dividend announcements, this section presents a detailed review on the Portuguese published event studies.

2.2.5.1 – Earnings announcements

The Portuguese literature on the market response to earnings announcements has been initially developed by Fernandes (1996) and Isidro (1997) and posteriorly by Wilton (2002), Alves and Santos (2005, 2008), Romacho and Cidrais (2007) and Lourenço and Coelho (2008).

The first Portuguese published study on the effect of earnings announcements was Fernandes (1996), who analysed the semi-strong market efficiency for 16 Portuguese companies listed on the Lisbon Stock Exchange for the period of 1991 through 1995 using the Abnormal Performance Index. Fernandes (1996) concluded that the Portuguese stock market was efficient in the semi-strong form and that there was a “systematic information leakage before public announcements of net results”.

Isidro (1997) analysed the price response of the Portuguese securities to the annual announcement of accounting earnings and concluded that for the set of securities characterized with high liquidity the market was semi-strong efficient, as “the accounting earnings contain useful market information and it is not possible to obtain abnormal gains after the earnings announcements” but it was not possible to generalize these results to all the securities listed on the Lisbon Stock Exchange.

Posteriorly, Wilton (2002) presented a study on the impact of the 2002 earnings disclosure by companies with shares admitted to trading on the official quotation market of Euronext Lisbon (20 PSI-20 companies and 10 other companies). Applying hypotheses tests on trading volume, number of trades and closing price changes, Wilton concluded that the trading volume variable showed no significant reaction to earnings announcements and that the number of trades variable showed only a marginally reaction and the price change variable had, in aggregate, sensitivity to the earnings announcements¹⁹.

Alves and Santos (2005) analysed the relevance of quarterly earnings announcements for 86 Portuguese listed companies during the period of January 1994 through June 2004 and their results suggested that “quarterly earnings announcements have an impact and that this impact is no less in interim announcements than in annual announcements.” In Alves and Santos (2005) study, the financial reporting had a significant impact on the 3, 5 and 7 trading days following the

¹⁹ 21.25% of the total hypotheses tests for the 20 PSI-20 companies and 44.7% for the other 10 companies recorded significant changes in price variability.

earnings announcements, with an increase in volatility and abnormal trading volume following the announcements.

Romacho and Cidrais (2007) tested the efficient market hypothesis related to accounting earnings for 10 shares listed on the PSI-20 Portuguese index for the period of 4th January 1999 through 30th September 2004 and concluded that “for the generality of the set of stocks, the market is efficient, which is reflected in a fast adjustment of the stock prices when the accounting earnings are announced and even beforehand”. Romacho and Cidrais (2007) also concluded that the abnormal return was different for shares with different liquidity, as high liquid shares exhibit an increase in the abnormal return for the period preceding the announcement and less liquid shares exhibit an increase in the abnormal return for the periods preceding and succeeding the announcements.

Lourenço and Coelho (2008) analysed the information content of annual earnings announcements made by 41 companies listed on the Euronext Lisbon during the period of 1992 through 2002 and concluded that, in fact, this announcements possess information content.

Table 6 presents a brief summary on the above studies, which analysed the Portuguese market response to earnings disclosure.

Table 6 - Portuguese studies on the stock market reaction to earnings announcements

Author(s)	Data	Methodology	Results
Fernandes (1996)	16 Portuguese companies listed on the Lisbon Stock Exchange (1991 - 1995)	Event studies methodology - API	"(...) clear semi-strong efficiency was exhibited, with very likely systematic information leakage before public announcements of net earnings."
Isidro (1997)	51 Portuguese companies listed on the Official Quotations Market of the Lisbon Stock Exchange (January 1993 - June 1997)	Event studies methodology - CAR, SRV and GSR	"The results of this study suggest that for a set of securities, characterized with high liquidity, the accounting earnings contain useful market information and it is not possible to obtain abnormal gains after the earnings announcement , as evidenced by the semi-strong efficiency hypothesis."
Wilton (2002)	20 companies included in the index PSI 20 and 10 other companies (2002)	Statistical hypotheses tests focused on three variables of trading: trading volume, number of trades and the logarithm of changes in closing prices	"The results of the hypotheses tests suggest that the trading volume variable is little sensitive to the earnings disclosure, the number of trades is only marginally sensitive to such disclosure, but that the variability of prices has, in aggregate, few sensitivity to the earnings announcements."
Alves and Santos (2005)	1,751 earnings announcement for 86 listed companies (January 1994 - June 2004)	Event studies methodology	"(...) quarterly earnings announcements have an impact and that this impact is no less in interim announcements than in annual announcements."
Romacho and Cidrais (2007)	10 PSI-20 shares (4th January 1999 - 30th September 2004)	Event studies methodology, using the Security Returns Variability (SRV) measure	"For the generality of the set of stocks, the market is efficient."
Lourenço and Coelho (2008)	41 companies listed on the Euronext Lisbon (1992 - 2002)	Event studies methodology	"We conclude that the earnings disclosure possess information content."

Overall, analysing the previous studies on the relevance of the Portuguese companies finance disclosure we can conclude that the evidence has shown that the Portuguese stock market is, in fact, semi-strong efficient when analysing the information content of earnings, as it reacts efficiently to the information conveyed in the announcements.

2.2.5.2 – Dividend announcements

Although the dividend policy adopted by the Portuguese companies has been studied by several authors, the information content of dividends has only been studied by Borges (2004), Vieira (2007) and Farinha and Soro (2006).

Borges (2004) tested the existence of a positive abnormal volume during the dividend period for “the presence of short term traders in the market”, and found that for all firms quoted on the Lisbon Stock Exchange through the period of 1990 through 1999 “the transactions volume behaviour in the dividend period as shown evidence of a positive abnormal volume, although not very strong” and that “the abnormal transacted volume exceeded more than ten times the standard deviation of the normal volume, we found statistical evidence of a positive abnormal volume in days -2, -1, and +4. In the other days, the abnormal volume is not statistically significant”.

Vieira (2007) analysed the impact of dividend change announcements for three European countries: France, Portugal and UK and “the evidence gives no support for a positive relation between dividend change announcements and the market reaction for French firms, and only a weak support for the Portuguese and the UK firms”, which means that “the need to use dividends as a signalling device must be less pronounced in France and in Portugal than in the UK”. When analysing the Portuguese market, Vieira considered dividend announcements made from 1988 through 2002 and found that firms that leave their dividends unchanged communicate no significant new information to the market and that firms that announce dividend changes show a positive return for dividend increases and a negative return for dividend decreases, although the returns are only statistically significant for the case of dividend decreases which means that “dividend increase announcements contain less relevant information than do dividend decrease announcements.”

Farinha and Soro (2006) examined the ex-dividend stock price behaviour in the Portuguese Stock Exchange from 1993 through 2002 and showed that when analysing abnormal returns on the ex-dividend day the Portuguese market is efficient, as “(...) not a single investor category is able to earn abnormal returns when all the relevant costs are considered”.

Table 7 - Portuguese studies on the stock market reaction to dividend announcements

Author(s)	Data	Methodology	Results
Borges (2004)	All the quoted firms in the Lisbon stock exchange (1990 - 1999)	Event studies methodology - Brown and Warner (1980)	"The transactions volume behavior in the dividend period as shown evidence of a positive abnormal volume, although not very strong. (...) In the other days, the abnormal volume is not statistically significant."
Vieira (2007)	Dividend announcements of firms listed on the Euronext Lisbon (EL) (1988 - 2002)	CAPM; abnormal returns calculated from a buy-and-hold strategy, denominated by buy-and-hold abnormal returns (BHARs); abnormal returns as market-adjusted returns to test the robustness of our results	"The abnormal returns for the three-day announcement period only support the dividend content hypothesis for the dividend increase events in the UK market. In the Portuguese and in the French markets we find no significant market reaction to dividend change announcements, which do not support the hypothesis that dividend changes communicate significant new information to the market. This is in agreement with the expected results that the need to use dividends as a signalling device must be less pronounced in France and in Portugal than in the UK, namely by the effect of concentrated corporate ownership, firm's financing and level of protection of corporate shareholders."
Farinha and Soro (2006)	140 observations for 40 firms (04/01/1993 - 12/06/2002)	Elton and Gruber's (1970) model	"Our results are consistent with market efficiency as we find that not a single investor category is able to earn abnormal returns when all the relevant costs are considered."

2.2.5.3 – Other announcements

The studies of Duque and Pinto (2004, 2005), Francisco and Gonçalves (2008) and Correia (2009) have focused attention on the analysis of the semi-strong efficiency hypothesis for the Portuguese stock market regarding several other different announcements.

Duque and Pinto (2005) evaluated the sensitiveness of 1,828 events considered price sensitive²⁰ from 2000 through 2002 and concluded that these events were, in fact, price sensitive and that the market was efficient in its semi-strong form.

²⁰ The Portuguese Securities Market Commission (CMVM) obliges all listed companies to inform the market about price sensitive events (article 248 nr. 1 of the Portuguese Securities Code), "facts are price sensitive if they are expected to lead to a substantial change of share prices." Duque and Pinto (2005)

This events include earnings announcements, changes in accounting principles/ information about taxes, changes in the composition of the Board of Directors, and/or the Supervisory Board or any other supervisory body, capital structure related information: dividends, own shares, stock/debt issues, restructuring related information: mergers, acquisitions, asset sales, general business related information: turnover, alliances, new products or services and miscellaneous information, not classifiable in the previous categories.

Following the same intent as Duque and Pinto (2005), Francisco and Gonçalves (2008) studied what type of information was likely to serve as justification for the extreme abnormal returns found in a period of two years (2006 through 2007) for a sample of 25 Portuguese companies and found that all categories of information contribute to the formation of distinct abnormal returns and that the categories of information that most often justify extreme positive returns were the restructuring of enterprises and the investment recommendations.

Correia (2009) examined the information efficiency of the Portuguese stock market for the period of 1990 through 2008 for all available data relative to earnings analysts' forecasts reported on the Institutional Brokers Estimate System (I/B/E/S) and found that the Portuguese stock market was not informational efficient.

Therefore, analysing the existent Portuguese literature we can conclude that there are no recent published studies on the market reaction to earnings and dividend announcements. Although at least six Portuguese studies analysed the Portuguese stock market reaction to earnings announcement, the period of the latest analysis is September 2004 (Romacho and Cidrais (2007)). Regarding dividend announcements the latest studies analysed dividend announcements made in 2002 (Vieira (2007) and Farinha and Soro (2006)). Thus, our study seeks to analyse a more recent period and to compare the results to the evidence obtained by the earlier studies.

3. DATA

3.1 – Data set

To pursue our propose of empirically analyse the Portuguese stock market reaction to earnings and dividend announcements we primarily had to identify the types and forms of announcement to consider and also the data set to use in the analysis.

To identify the types and forms of earnings announcements to consider in the study we had to take into account that earnings announcement in Portugal, as required legally, are done quarterly. “The annual information (which includes the announcement of fourth quarter data for the first time) corresponds to the situation in which more extensive information is disclosed. This includes inter alia the report by the Board of Directors, the balance sheet, the income statements, the cash-flow statements and the report by the supervisory body. (...) The half-yearly information (which includes the announcement for the first time of information on the second quarter) also includes the report by the Board of Directors, the balance sheet and the income statements. (...) Finally, the quarterly information on the first and third quarters is basically made up of brief balance sheets and income statements.”²¹ Therefore, in our analysis we considered both annual and interim earnings announcements²² in order to perceive if all the financial disclosure is considered by the market as relevant information.

“The announcement of earnings by Portuguese companies is done in one of two ways: i) through press releases, which include key economic and financial performance indicators and brief comments on the activity developed; or ii) through immediate announcement of legally required financial statements. The direct disclosure of information with no prior announcement is common in some companies and only regarding first and third quarter earnings”.²³ Therefore, once we analyse both annual and interim earnings announcements we decided to consider as the date of the announcement the first time that the accounting earnings are formally presented (for both annual and interim earnings announcements), regardless of the way they are presented to the market.

Regarding dividend announcements, we considered in our analysis all dividend announcements made by the companies included in the sample, including both regular dividends and also special dividends. Following the same criteria as in earnings announcements, we considered as the date of the announcement the first time that the dividend is formally announced.

Before deciding the data set to use (both the period of study and the companies included in the sample) we had to take into account the limitations of the available data, especially when it comes

²¹ Alves and Santos (2005)

²² As interim announcements we consider half-yearly earnings announcements and quarterly earnings announcements.

²³ Alves and Santos (2005)

to the announcement dates and volume data and also the time periods already analysed by the previous studies.

Thereby, considering the available data and the fact that the previous Portuguese studies on this issues analysed essentially the period before 2004, we decided to consider as the period of interest, the six year period from 1 January 2005 through 31 December 2010.

To select the companies to include in the sample we decided to adopt a simple selection criteria, which consists in the inclusion of all earnings and dividend announcements made from 1 January 2005 through 31 December 2010 by companies listed on the Portuguese Stock Index PSI-20 (index composed by the 20 largest companies listed on the Portuguese stock market). We decided to include only companies listed on the PSI-20 stock index, once the rest of the companies listed on the PSI Geral Index have less liquidity, therefore conducting to the thin trading problem.

Although we decided to include in the study companies with shares listed on the main Portuguese stock market, irrespective of their admission date, the companies to include in the sample should had a minimum listing period on the PSI-20 of more than one year in order to collect sufficient data to perform the tests²⁴.

Our selection criteria lead to an initial sample of 25 companies listed on the Portuguese Stock Index PSI-20 between 2005 through 2010.²⁵

3.2 – Database

In order to obtain the data for our analysis and considering the available limitations, we decided to obtain all the information needed using the same database - Bloomberg, one of “the most known and broadly available databases in Portugal”.²⁶ Therefore, all the information on market prices, trading volume and announcement dates were collected using Bloomberg.

For the cases where it was not possible to obtain the announcement dates information using Bloomberg, we decided to use CMVM website, which “publishes all material facts of corporate issuers”²⁷ and also the information available on the websites of the listed companies.

²⁴ This criterion lead to the exclusion of Corticeira Amorim, S.G.P.S., S.A., Gescartão S.G.P.S. S.A., Inapa – Investimentos, Participações e Gestão, S.A., Reditus S.G.P.S., S.A. and Grupo Soares da Costa S.G.P.S., S.A..

²⁵ See Appendix 1 for a description of the companies included in the final sample.

²⁶ Correia (2009)

²⁷ Alves and Santos (2005)

3.3 – Sample description

In total, 562²⁸ announcements made between 2005 through 2010 were identified for our initial sample of 25 companies listed on the Portuguese Stock Index PSI-20. These 562 announcements correspond to 460 earnings announcements (81.9% of the sample) and 102 dividend announcements (18.1% of the sample).

Table 8 reports the number of earnings announcements events (annual, half-yearly and quarterly earnings).

Table 8 – Sample description – earnings announcements

	Annual earnings	Half-yearly earnings	Quarterly earnings	Total
Earnings Announcements				
Earnings events	115	115	230	460
Events Percentage	25.8%	25.8%	51.6%	

With the purpose of perceiving the different reactions to the announcements, we distinguished three types of announcements, using the same announcements categorization as Duque and Pinto (2005) and Correia (2009). In this sense we divide the announcements sample into three categories: good news, bad news and no news.

- Good news: when the return for the stock i in the announcement day (event day $t=0$) is positive;
- Bad news: when the return for the stock i in the announcement day (event day $t=0$) is negative;
- No news: when the return for the stock i in the announcement day (event day $t=0$) is zero.

²⁸ See Appendix 2 for a sample description.

Table 9 – Sample description – good and bad news

	Good News	Bad News	No News	Total
Earnings Announcements				
Earnings events	226	196	38	460
Events Percentage	49.1%	42.6%	8.3%	
Dividend Announcements				
Dividend events	45	43	14	102
Events Percentage	44.1%	42.2%	13.7%	

4. METHODOLOGY

The main intent of this study is to investigate if the Portuguese stock market is semi-strong efficient with respect to financial information, so we will apply the event studies methodology used in the empirical literature regarding this issue.

As presented in section 2, this methodology is used to assess whether the price reflects, or not the information contained in the disclosure of a certain announcement / event. This methodology is based on the estimation of the abnormal return (AR) due to the disclosure, through the difference between the actual return and the estimated normal return.

Following MacKinlay (1997) “the appraisal of the event’s impact requires a measure of the abnormal return. The abnormal return is the actual ex post return of the security over the event window minus the normal return of the firm over the event window. The normal return is defined as the expected return without conditioning on the event taking place.”

Therefore, the abnormal return is defined as:

$$AR_{i,t} = R_{i,t} - E(R_{i,t}|X_t) \quad (1)$$

Where,

$AR_{i,t}$ - Abnormal return of the stock i for the period t.

$R_{i,t}$ - Actual return of the stock i for the period t.

$E(R_{i,t}|X_t)$ - Expected or normal return of the stock i for the period t conditioned by the information for the normal return model (X_t).

To model the expected or normal return several models can be used, namely the constant mean return model, factor models such as the market model and the market-adjusted return model and economic models such as the Capital Asset Pricing Model (CAPM) and the Arbitrage Pricing Theory (APT)²⁹. For our analysis we selected the market model, as “the market model approach is straight-forward and relatively easy to use”³⁰ and is also “potentially superior as it removes the portion of the return that is related to movement in the market (...) since the use of the market model generally improves the chances of being able to isolate the effects of specific events”.³¹

The market model, as stated by MacKinlay (1997) “relates the return of any given security to the return of the marker portfolio” is defined as:

²⁹ See MacKinlay (1997) for a detailed description of the advantages and disadvantages of each model.

³⁰ Binder (1998)

³¹ Beverley (2008)

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \quad (2)$$

Where,

$R_{i,t}$ - Actual return of the stock i for the period t .

$R_{m,t}$ - Actual return of the market portfolio for the period t .

α_i and β_i - The market model parameters of the stock i .

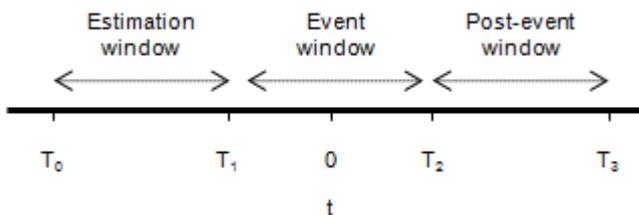
$\varepsilon_{i,t}$ - Zero mean disturbance term. Where $E(\varepsilon_{i,t}) = 0$ and $\text{Var}(\varepsilon_{i,t}) = \sigma_{\varepsilon_{i,t}}^2$.

With the aim of analysing the Portuguese stock market and considering that our data includes only companies listed on the PSI-20 stock index we decided to select the Portuguese Stock Index – PSI-20 as the market portfolio to estimate the market model.

4.1 – Time line of the event study

To measure and analyse the abnormal return is necessary to define the time line of the event.

Figure 1 – Time line for an event study



Source: MacKinlay (1997)

In order to choose the time line for our event study and given that there is no standard time line defined in the event studies literature we analysed the different time lines used in the Portuguese event studies and therefore decided to consider as the event period the 31 days around the dividend and earnings announcements, with $[-15; -1]$ as the pre-event window and $[+1, +15]$ as the post-event window in line with Vieira (2007), Romacho and Cidrais (2007) and Lourenço and Coelho (2008). For the estimation window we chose to consider all trading days excluding the event window days in line with Isidro (1997), Duque and Pinto (2004), Romacho and Cidrais (2007), Francisco and Gonçalves (2008) and Lourenço and Coelho (2008).

Table 10 - Time line of the Portuguese event studies

Author(s)	Pre-event window	Event window	Post-event window	Estimation window
Fernandes (1996)	[-30; -1]	[0]	[+1; +30]	All trading days excluding the event window days
Isidro (1997)	[-20; -1]	[0]	[+1; +30]	All trading days excluding the event window days
Wilton (2002)	[-5; -1]	[0]	[+1; +4]	[-10,-6] and [+5,+9]
Duque and Pinto (2004)	[-5; -1]	[0]	[+1; +5]	All trading days excluding the event window days
Alves and Santos (2005)	[-7; -1],	[0]	[+1; +3]	[-248,-10]
	[-5; -1]		[+1; +5]	[-124,-10[and]+10,+124],
	[-3; -1]		[+1; +7]	
Vieira (2007)	[-15; -1]	[0]	[+1; +15]	[-120,+120] excluding the 31 days around dividend announcements
Romacho and Cidrais (2007)	[-15; -1]	[0]	[+1; +10]	All trading days excluding the event window days
Francisco and Gonçalves (2008)	[-5; -1]	[0]	[+1; +5]	All trading days excluding the event window days
Lourenço and Coelho (2008)	[-15; -1]	[0]	[+1; +15]	All trading days excluding the event window days
Correia (2009)	[-20; -1]	[0]	[+1; +20]	[-250; -21]

4.2 – Stock price analysis

Once defined the model to estimate the expected or normal return and the time line for the study, the next stage is to calculate the abnormal return. Thereby, the abnormal return is defined as:

$$AR_{i,t} = R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t} \quad (3)$$

Where,

$\hat{\alpha}_i$ and $\hat{\beta}_i$ - Estimated market model parameters.

Under the null hypothesis, the abnormal return will be normally distributed with a zero conditional mean and conditional variance $R_{i,t}$.

Therefore:

$$AR_{i,t} \sim N(0, \sigma^2(AR_{i,t})) \quad (4)$$

Where:

$$\sigma^2(AR_{i,t}) = \sigma_{\varepsilon_i}^2 + \frac{1}{L} \left[1 + \frac{(R_{m,t} - \hat{\mu}_m)^2}{\sigma_m^2} \right] \quad (5)$$

Where,

$$\sigma_{\varepsilon_i}^2 = \frac{1}{L-2} \sum_{t=T_0+1}^{T_1} (R_{i,t} - \hat{\alpha}_i - \hat{\beta}_i R_{m,t})^2 - \text{Disturbance variance of the stock } i \text{ regression residuals.}$$

L – Estimation window.

$$\hat{\mu}_m = \frac{1}{L} \sum_{t=T_0+1}^{T_1} R_{m,t} - \text{Mean market return over the estimation window.}$$

σ_m^2 - Variance of the market return over the estimation window.

As the length of the estimation window (L) becomes larger, the second term approaches zero as the sampling error of the parameters vanish and the variance of the abnormal return will be $\sigma_{\varepsilon_i}^2$ and the abnormal return observations will become independent through time.

Therefore:

$$\sigma^2(AR_{i,t}) = \sigma_{\varepsilon_i}^2 \quad (6)$$

According to MacKinlay (1997) “the abnormal return observations must be aggregated in order to draw overall inferences for the event of interest.” This aggregation can be held both through time (time aggregation) and through securities (stock aggregation).

To aggregate the abnormal returns for the stock i through time is used the cumulative abnormal return (CAR).

The cumulative abnormal return from t_1 to t_2 , where $T_1 < t_1 \leq t_2 \leq T_2$ is defined as:

$$CAR_i = \sum_{t=t_1}^{t_2} AR_{i,t} \quad (7)$$

The distribution of the cumulative abnormal return, under the null hypothesis that the event has no impact on the behaviour of the returns is defined as:

$$CAR_i(t_1, t_2) \sim N(0, \sigma_i^2(t_1, t_2)) \quad (8)$$

Where:

$$\sigma_i^2(t_1, t_2) = (t_2 - t_1 + 1) \sigma_{\varepsilon_i}^2 \quad (9)$$

To aggregate the abnormal returns across securities is used the average abnormal returns (\overline{AR}).³²

Given N events, the aggregated abnormal return for the period t is defined as:

$$\overline{AR}_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t} \quad (10)$$

And its variance is defined as:

$$\text{Var}(\overline{AR}_t) = \frac{1}{N^2} \sum_{i=1}^N \sigma_{\varepsilon_i}^2 \quad (11)$$

Aggregating the average abnormal return over the event window, the cumulative average abnormal return for any interval in the event window is defined as:

$$\overline{CAR}(t_1, t_2) = \sum_{t=t_1}^{t_2} \overline{AR}_t \quad (12)$$

$$\text{Var}(\overline{CAR}(t_1, t_2)) = \sum_{t=t_1}^{t_2} \text{Var}(\overline{AR}_t) \quad (13)$$

The cumulative average abnormal return for any interval in the event window can also be defined as:

$$\overline{CAR}(t_1, t_2) = \frac{1}{N} \sum_{i=1}^N CAR_i(t_1, t_2) \quad (14)$$

$$\text{Var}(\overline{CAR}(t_1, t_2)) = \frac{1}{N^2} \sum_{i=1}^N \sigma_i^2(t_1, t_2) \quad (15)$$

To test the null hypothesis that the abnormal returns are zero inferences can be drawing using:

$$\overline{CAR}(t_1, t_2) \sim N(0, \text{Var}(\overline{CAR}(t_1, t_2))) \quad (16)$$

$$\theta_1 = \frac{\overline{AR}_t}{\text{var}(\overline{AR}_t)^{1/2}} \sim N(0,1) \quad (17)$$

$$\theta_2 = \frac{\overline{CAR}(t_1, t_2)}{\text{var}(\overline{CAR}(t_1, t_2))^{1/2}} \sim N(0,1) \quad (18)$$

³² To aggregate across securities it is assumed that there is no overlap in the event windows of the stocks analysed.

4.3 – Stock price relative range analysis

The stock price relative range (RR) may be an alternative method to analyse the stock price market response to earnings and dividend announcements. As it is defined as the difference between the maximum and minimum stock price values, the range allows us to perceive the behaviour of the stock price around the announcements, through the analysis of its' daily maximum and minimum variance.

Thus, we calculated the abnormal relative range (ARR) and the average abnormal relative range (\overline{ARR}) following a similar approach to the abnormal return analysis. Hence, the abnormal relative range (ARR) is defined as:

$$ARR_{i,t} = RR_{i,t} - E(RR_{i,t}|X_t) \quad (19)$$

Where,

$ARR_{i,t}$ - Abnormal relative range of the stock i for the period t.

$RR_{i,t}$ - Actual relative range of the stock i for the period t.

$$RR_{i,t} = \left[\frac{\text{Maximum stock price in day t for the stock i} - \text{Minimum stock price in day t for the stock i}}{\frac{\text{Maximum stock price} + \text{Minimum stock price}}{2}} \right] * 100 \quad (20)$$

$E(RR_{i,t}|X_t)$ - Expected or normal relative range of the stock i for the period t conditioned by the information model (X_t).

The model used to calculate the expected or normal relative range is the market model adopted to the stock price relative range. This model is defined as:

$$RR_{i,t} = \alpha_i + \beta_i RR_{m,t} + \varepsilon_{i,t} \quad (21)$$

Where,

$RR_{i,t}$ - Actual relative range of the stock i for the period t.

$RR_{m,t}$ - Actual relative range of the market portfolio (PSI-20 Index) for the period t.

α_i and β_i - The model parameters for the stock i.

$\varepsilon_{i,t}$ - Zero mean disturbance term. Where $E(\varepsilon_{i,t}) = 0$ and $\text{Var}(\varepsilon_{i,t}) = \sigma_{\varepsilon_{i,t}}^2$

The abnormal relative range is thus defined as:

$$ARR_{i,t} = RR_{i,t} - \hat{\alpha}_i - \hat{\beta}_i RR_{m,t} \quad (22)$$

Where,

$\hat{\alpha}_i$ and $\hat{\beta}_i$ - Estimated model parameters.

Given N events, the average abnormal relative range (\overline{ARR}) for the period t is defined as:

$$\overline{ARR}_t = \frac{1}{N} \sum_{i=1}^N ARR_{i,t} \quad (23)$$

To test for the presence of abnormal stock price relative range, inferences can be drawing using:

$$\theta_3 = \frac{\overline{ARR}_t}{\text{var}(\overline{ARR}_t)^{1/2}} \sim N(0,1) \quad (24)$$

4.4 – Trading volume analysis

To analyse the market reaction to earnings and dividend announcements we also tested the trading volume reaction over the event window.

Following a similar approach to the abnormal return and abnormal relative range calculated to analyse the price reaction to the selected announcements we also calculated the abnormal trading volume (AV) and the average abnormal trading volume (\overline{AV}) defined by Beaver (1986).

The abnormal trading volume (AV) used to analyse the announcement volume effect is defined as:

$$AV_{i,t} = V_{i,t} - E(V_{i,t}|X_t) \quad (25)$$

Where,

$AV_{i,t}$ - Abnormal trading volume of the stock i for the period t.

$V_{i,t}$ - Actual trading volume of the stock i for the period t.

$$V_{i,t} = \frac{\text{Number of shares traded in day t for the stock i}}{\text{Number of shares outstanding in day t for the stock i}} \quad (26)$$

$E(V_{i,t}|X_t)$ - Expected or normal trading volume of the stock i for the period t conditioned by the information model (X_t).

To calculate the expected trading volume we used the model proposed by Beaver (1986), which is analogous to the market model used to calculate the expected or normal stock return. This model is defined as:

$$V_{i,t} = \alpha_i + \beta_i V_{m,t} + \varepsilon_{i,t} \quad (27)$$

Where,

$V_{i,t}$ - Actual trading volume of the stock i for the period t .

$V_{m,t}$ - Actual trading volume of the market portfolio (PSI-20 Index) for the period t .

α_i and β_i - The model parameters for the stock i .

$\varepsilon_{i,t}$ - Zero mean disturbance term. Where $E(\varepsilon_{i,t}) = 0$ and $\text{Var}(\varepsilon_{i,t}) = \sigma_{\varepsilon_{i,t}}^2$

Therefore, the abnormal trading volume is defined as:

$$AV_{i,t} = V_{i,t} - \hat{\alpha}_i - \hat{\beta}_i V_{m,t} \quad (28)$$

Where,

$\hat{\alpha}_i$ and $\hat{\beta}_i$ - Estimated model parameters.

Analogously, given N events, the average abnormal trading volume (\overline{AV}) for the period t is defined as:

$$\overline{AV}_t = \frac{1}{N} \sum_{i=1}^N AV_{i,t} \quad (29)$$

To test the trading volume reaction hypothesis, the same tests used to calculate the price reaction can be estimated. Therefore, inferences can be drawing using:

$$\theta_4 = \frac{\overline{AV}_t}{\text{var}(\overline{AV}_t)^{1/2}} \sim N(0,1) \quad (30)$$

5. RESULTS

This section presents the results and the analysis of the empirical study. Firstly, we will present the empirical evidence on the market impact of earnings announcements, the stock price, the relative range and the trading volume analysis and secondly evidence on the market impact of dividend announcements, also the stock price, the relative range and the trading volume analysis based on the event studies methodology.

5.1 – Earnings announcements

5.1.1 – Stock price analysis

5.1.1.1 – All announcements

To investigate the Portuguese stock market semi-strong efficiency with respect to earnings announcements, we firstly estimated the market model for each one of the 25 Portuguese companies included in the initial sample.³³

Following Duque and Pinto (2004) and considering that α_i was not statistically significant at a significance level of 5% for all the companies included in the sample, we decided to adopt the following model:

$$R_{i,t} = \beta_i R_{m,t} + \varepsilon_{i,t} \quad (31)$$

For both models, the companies Grupo Media Capital, S.G.P.S., S.A. and Pararede, S.G.P.S., S.A. did not rejected the null hypothesis that the beta coefficient was zero at a significance level of 5%, so we decided to eliminate these companies from our analysis and the final sample used in the empirical study included a total of 23 companies who made 548 announcements (446 earnings announcements and 102 dividend announcements) during the sample period (2005 - 2010).

Table 11 - Descriptive statistics of the market model estimation – stock price analysis

	Average	Standard Deviation
Daily stock returns	0.0046%	1.9702%
Average (R_i^2)	0.3731	0.1296
Average (R_i^2)*	0.3718	0.1310
Average β_i	0.9638	0.2186
Average β_i *	0.9612	0.2226

* Model without α_i .

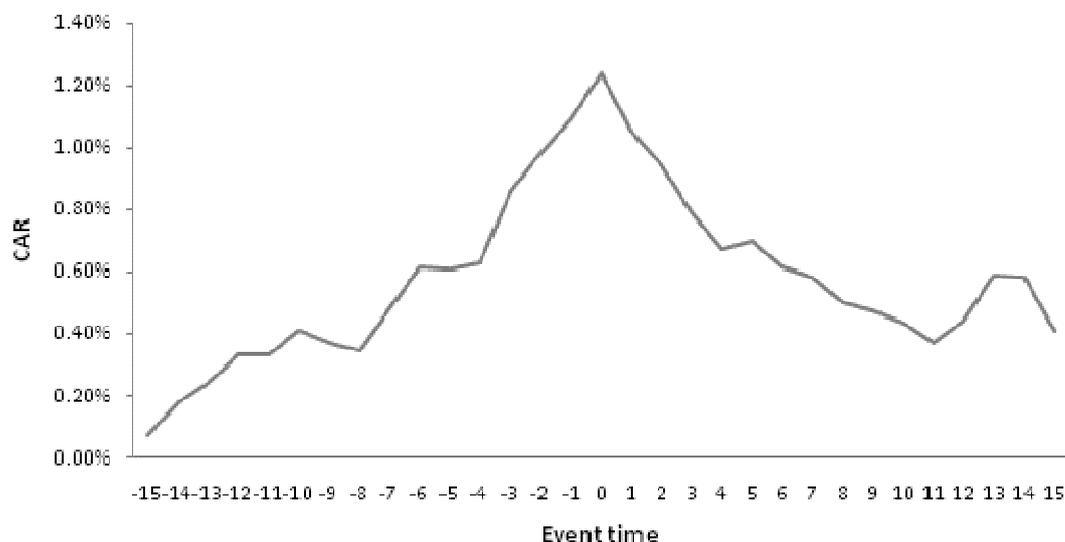
³³ See Appendix 6 for the discriminated estimation results.

For the 23 companies included in the final sample we obtained an average coefficient of determination of 0.3718, greater than the 0.12 average R^2 obtained by Duque and Pinto (2004) for their sample of 37 companies listed on the PSI Geral Index.

After estimating the expected or normal returns, we calculated the average abnormal returns and the cumulative average abnormal returns for all the earnings announcements included in the final sample.

Figure 2 presents the cumulative average abnormal returns and Table 12 the average abnormal returns, the cumulative average abnormal returns and the corresponding estimated statistics for all the 446 earnings announcements made between January 2005 to December 2010 by the companies included in the sample.

Figure 2 – All earnings announcements - cumulative average abnormal returns



Analysing the average abnormal returns for the 31-day event window around the earnings announcements made during the years of 2005 through 2010 we observe that, in general, investors perceive earnings announcements as a positive signal for the shareholder value, as the cumulative abnormal returns for all the event window period are positive.

As the results presented by the previous Portuguese studies (Isidro (1998), Duque and Pinto (2004) and Correia (2009)) our results also show the existence of a statistically significant average abnormal return in the event day (day 0), leading us to conclude that the null hypothesis that the event has no impact is rejected with a 95% confidence level. It is also noteworthy that the average abnormal return in the day after the event (day 1) is negative -0.19% (significant at a level of 5%). Theoretically, this day is when the market reacts to the announcement, as “the event day is the

date of the announcement of the event which should occur when the trading session is closed³⁴. Thereby, we can conclude that this result implies that the market reacts negatively to the financial disclosure, right after the formal announcement. These results may seem conflicting, as the stock market reacts positively in the announcement day and negatively in the day after the announcement, nevertheless this effect is consistent with an adjustment of the investors' portfolio. For the earnings announcements sample we also obtain evidence of statistically significant average abnormal returns in days -3, 3 and 15 (significant at least at a level of 5%), also consistent with adjustments of the investors' portfolio.

Analyzing the evolution of the cumulative average abnormal return we observe a positive and statistically significant $\overline{\text{CAR}}$ over the seven days preceding the announcement and the five days following the announcement day (day 0).

Table 12 – All earnings announcements - average abnormal returns and cumulative average abnormal returns results

Day	$\overline{\text{AR}}$	Test θ_1	$\overline{\text{CAR}}$	Test θ_2
-15	0.07%	1.0038	0.07%	1.0038
-14	0.10%	1.4261	0.18%	1.7182
-13	0.06%	0.8854	0.24%	1.9141
-12	0.09%	1.2253	0.33%	2.2703**
-11	0.00%	0.0106	0.33%	2.0354**
-10	0.08%	1.0340	0.41%	2.2801**
-9	-0.04%	-0.4834	0.37%	1.9283
-8	-0.03%	-0.4054	0.34%	1.6604
-7	0.14%	1.8710	0.48%	2.1891**
-6	0.14%	1.8549	0.62%	2.6634*
-5	-0.01%	-0.0831	0.61%	2.5144**
-4	0.02%	0.2216	0.63%	2.4713**
-3	0.23%	3.1752*	0.86%	3.2550*
-2	0.12%	1.6357	0.98%	3.5738*
-1	0.11%	1.5065	1.09%	3.8416*
0	0.15%	2.0043**	1.24%	4.2206*
1	-0.19%	-2.5444**	1.05%	3.4775*
2	-0.10%	-1.4251	0.95%	3.0436*
3	-0.15%	-2.0966**	0.79%	2.4815**
4	-0.12%	-1.6569	0.67%	2.0481**
5	0.03%	0.3597	0.70%	2.0773**
6	-0.08%	-1.1369	0.61%	1.7871
7	-0.03%	-0.4103	0.58%	1.6623
8	-0.08%	-1.1160	0.50%	1.3995
9	-0.03%	-0.3792	0.47%	1.2954
10	-0.04%	-0.5563	0.43%	1.1611
11	-0.06%	-0.8316	0.37%	0.9794
12	0.07%	0.9879	0.45%	1.1484
13	0.14%	1.9707	0.59%	1.4944
14	0.00%	-0.0417	0.59%	1.4617
15	-0.18%	-2.4087**	0.41%	1.0053

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

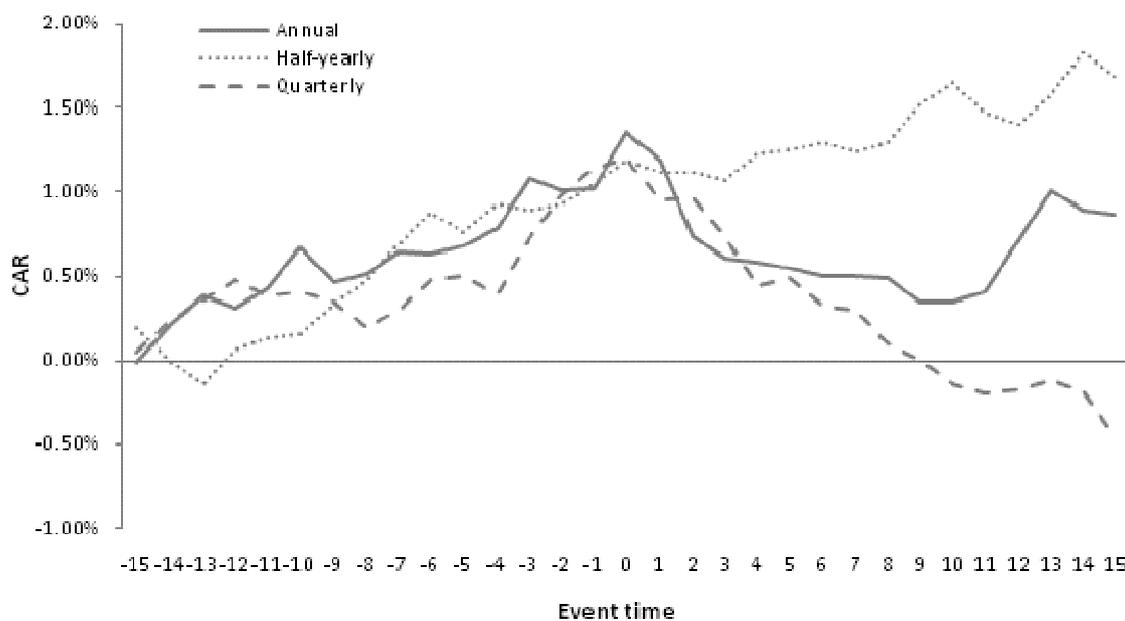
³⁴ Correia (2009)

5.1.1.2 – Annual and interim announcements

Following Alves and Santos (2005) we also attempted to analyse “whether the quarterly financial information announced has relevant information content that may affect investors’ decisions (...) try to discover if this impact occurs in all four earnings announcement quarters or if otherwise the information of the first and third quarters is nonessential.” In order to achieve this purpose we examined the stock market information content of 111 annual earnings announcements, 112 half-yearly earnings announcements and 223 quarterly earnings announcements.

Figure 3 presents the cumulative average abnormal returns and Table 13 the average abnormal returns, the cumulative average abnormal returns and the corresponding estimated statistics for annual, half-yearly and quarterly earnings announcements.

Figure 3 - Annual and interim earnings announcements – cumulative average abnormal returns results



The results presented in Figure 3 and Table 13 show that annual earnings announcements have, in fact, impact on the stock prices behaviour, once we reject the null hypothesis that the event has no impact (with a 95% confidence level). For interim earnings announcements, both half-yearly and quarterly announcements the overall sample shows that investors do not experience significant abnormal returns in the announcement day, therefore not rejecting the null hypothesis that the event has no impact.

For the quarterly earnings announcements sample, even though we found no evidence of a statistically significant abnormal stock return in day 0 we found abnormal returns in days -3, -2, 1,

3, 4 and 15. Furthermore, for the annual earnings announcements sample we also found statistically abnormal returns in days -3, 2, 12 and 13.

Although Alves and Santos (2005) found that "(...) quarterly earnings announcements have an impact and that this impact is no less in interim announcements than in annual announcements" we cannot support this hypothesis, as we only found evidence of a stock market impact for annual earnings announcements. Thereby, our findings suggest that for the Portuguese stock market the information content of interim announcements is slighter than the information content of annual announcements.

Table 13 - Annual and interim earnings announcements - average abnormal returns and cumulative average abnormal returns results

Day	Annual Announcements				Half-yearly Announcements				Quarterly Announcements			
	AR	Test θ_1	CAR	Test θ_2	AR	Test θ_1	CAR	Test θ_2	AR	Test θ_1	CAR	Test θ_2
-15	-0.01%	-0.0431	-0.01%	-0.0431	0.19%	1.2936	0.19%	1.2936	0.05%	0.5287	0.05%	0.5287
-14	0.23%	1.5648	0.22%	1.0760	-0.19%	-1.3078	0.00%	-0.0100	0.19%	1.8496	0.25%	1.6817
-13	0.16%	1.0906	0.38%	1.5082	-0.13%	-0.9096	-0.14%	-0.5333	0.12%	1.1343	0.36%	2.0280**
-12	-0.07%	-0.4802	0.31%	1.0660	0.20%	1.3466	0.06%	0.2114	0.12%	1.1117	0.48%	2.3122**
-11	0.12%	0.8381	0.43%	1.3283	0.08%	0.5217	0.14%	0.4224	-0.10%	-0.9458	0.38%	1.6451
-10	0.23%	1.5562	0.66%	1.8479	0.02%	0.1124	0.16%	0.4315	0.03%	0.2891	0.41%	1.6198
-9	-0.19%	-1.3023	0.47%	1.2186	0.18%	1.2297	0.34%	0.8642	-0.07%	-0.6448	0.34%	1.2559
-8	0.04%	0.2601	0.51%	1.2318	0.14%	0.9478	0.48%	1.1435	-0.15%	-1.4317	0.20%	0.6686
-7	0.14%	0.9241	0.64%	1.4694	0.21%	1.4444	0.69%	1.5596	0.10%	0.9685	0.30%	0.9532
-6	-0.02%	-0.1172	0.63%	1.3570	0.19%	1.2944	0.88%	1.8889	0.18%	1.7844	0.48%	1.4685
-5	0.05%	0.3506	0.68%	1.3995	-0.12%	-0.8234	0.76%	1.5528	0.02%	0.2226	0.50%	1.4673
-4	0.11%	0.7569	0.79%	1.5585	0.17%	1.1758	0.93%	1.8261	-0.11%	-1.0562	0.39%	1.1000
-3	0.30%	2.0182**	1.08%	2.0571**	-0.03%	-0.2231	0.90%	1.6925	0.33%	3.2328*	0.73%	1.9534
-2	-0.07%	-0.4835	1.01%	1.8530	0.03%	0.2156	0.93%	1.6886	0.26%	2.5005**	0.99%	2.5506**
-1	0.01%	0.0814	1.03%	1.8112	0.12%	0.8299	1.05%	1.8456	0.15%	1.4829	1.14%	2.8470*
0	0.33%	2.2394**	1.35%	2.3135**	0.13%	0.9144	1.18%	2.0156**	0.06%	0.6102	1.21%	2.9092*
1	-0.17%	-1.1410	1.19%	1.9677**	-0.07%	-0.4667	1.12%	1.8422	-0.26%	2.4654**	0.95%	2.2244**
2	-0.45%	-3.0645*	0.74%	1.1900	0.00%	-0.0215	1.11%	1.7852	0.02%	0.1530	0.97%	2.1978**
3	-0.13%	-0.8652	0.61%	0.9597	-0.04%	-0.2526	1.08%	1.6797	-0.23%	2.1782**	0.74%	1.6394
4	-0.03%	-0.1914	0.58%	0.8926	0.15%	1.0046	1.22%	1.8618	-0.30%	-2.9254*	0.44%	0.9438
5	-0.03%	-0.2233	0.55%	0.8224	0.03%	0.2051	1.25%	1.8617	0.05%	0.5197	0.49%	1.0345
6	-0.05%	-0.3451	0.50%	0.7299	0.05%	0.3267	1.30%	1.8885	-0.17%	-1.5986	0.33%	0.6698
7	0.00%	0.0155	0.50%	0.7171	-0.07%	-0.4644	1.23%	1.7502	-0.03%	-0.2606	0.30%	0.6008
8	-0.01%	-0.0534	0.50%	0.6911	0.07%	0.4641	1.30%	1.8081	-0.19%	-1.8721	0.10%	0.2060
9	-0.14%	-0.9889	0.35%	0.4793	0.22%	1.5070	1.52%	2.0729**	-0.09%	-0.9152	0.01%	0.0188
10	0.00%	-0.0248	0.35%	0.4651	0.13%	0.9011	1.66%	2.2094**	-0.15%	-1.4117	-0.14%	-0.2584
11	0.06%	0.3893	0.40%	0.5314	-0.18%	-1.2501	1.47%	1.9275	-0.06%	-0.5595	-0.19%	-0.3613
12	0.31%	2.1178**	0.71%	0.9220	-0.07%	-0.4771	1.40%	1.8026	0.03%	0.2492	-0.17%	-0.3077
13	0.30%	2.0334**	1.01%	1.2836	0.17%	1.1806	1.57%	1.9905**	0.05%	0.5178	-0.11%	-0.2062
14	-0.12%	-0.8407	0.89%	1.1085	0.26%	1.7635	1.83%	2.2790**	-0.08%	-0.7247	-0.19%	-0.3350
15	-0.01%	-0.0901	0.87%	1.0743	-0.15%	-1.0221	1.68%	2.0584**	-0.27%	-2.6163*	-0.46%	-0.7994

* Parameters statistically significant at 1% significance level.

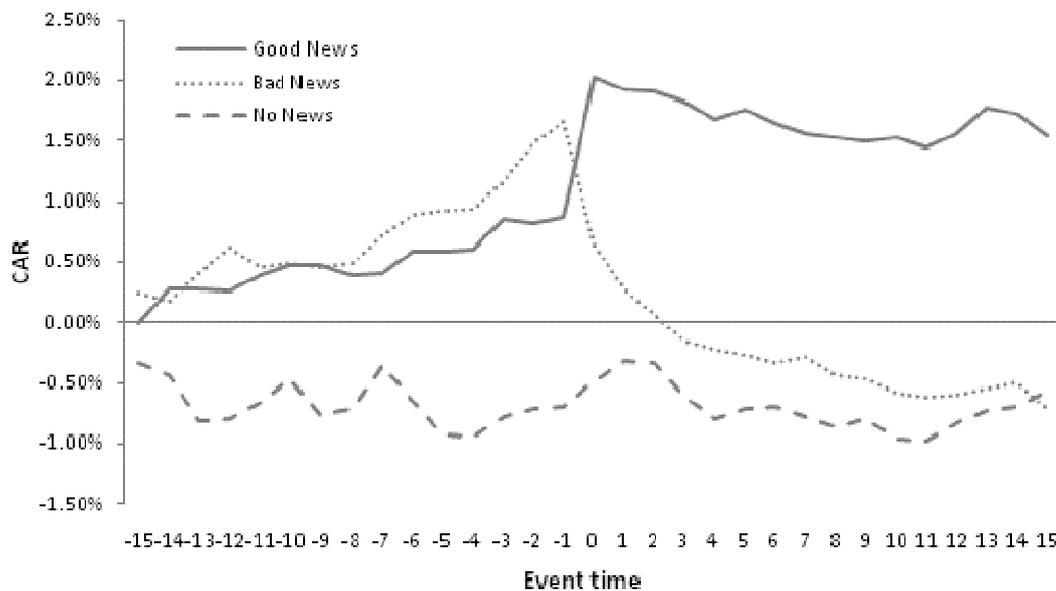
** Parameters statistically significant at 5% significance level.

5.1.1.3 – Good, bad and no news announcements

Following Duque and Pinto (2005) and Correia (2009) we also calculated the same statistics considering the good and bad news categorization. Therefore, we calculated the average abnormal returns and the cumulative average abnormal returns for all the 446 earnings announcements, 220 announcements considered good news, 191 announcements considered bad news and 35 announcements considered no news, as they do not convey any relevant new information to the stock market.

Figure 4 presents the cumulative average abnormal returns and Table 14 the average abnormal returns, the cumulative average abnormal returns and the corresponding estimated statistics for good, bad and no news earnings announcements.

Figure 4 – Good, bad and no news earnings announcements - cumulative average abnormal returns results



When separating the earnings announcements in good, bad or no news announcements we observe the existence of an average abnormal return in the event day (day 0), positive (1.16%) and statistically significant (at a level of 1%) for earnings announcements considered as good news and negative (-1.03%) and statistically significant (at a level of 1%) for earnings announcements considered as bad news. As expected, earnings announcements categorized as no news do not generate significant abnormal returns in the event day (day 0).

The statistically significant abnormal returns in the announcement day for earnings announcements categorized as good and bad news are consistent with the previous studies of Duque and Pinto (2004) and Correia (2009) and support the hypothesis that earnings announcements convey useful information for the determination of the stock prices. Since the announcement is normally made

after the market is closed, this evidence of an abnormal return in the announcement day supports the anticipation effect, as prices reflect some of the content of the announcements before the formal announcements.

For earnings announcements considered as bad news we also observe a negative and significant average abnormal return in the day after the event day, which is consistent with an adjustment of the investors' portfolio.

The cumulative average abnormal returns results show a positive statistically significant \overline{CAR} over the three days preceding the announcement day and the fifteen days following the announcement day for earnings announcements categorized as good news and a positive statistically significant \overline{CAR} over the seven days preceding the announcement for announcements categorized as bad news.

Table 14 – Good, bad and no news earnings announcements - average abnormal returns and cumulative average abnormal returns results

Day	Good News				Bad News				No News			
	\overline{AR}	Test θ_1	\overline{CAR}	Test θ_2	\overline{AR}	Test θ_1	\overline{CAR}	Test θ_2	\overline{AR}	Test θ_1	\overline{CAR}	Test θ_2
-15	0.00%	-0.0404	0.00%	-0.0404	0.24%	2.0763**	0.24%	2.0763**	-0.33%	-1.4143	-0.33%	-1.4143
-14	0.28%	2.7361*	0.28%	1.9061	-0.06%	-0.5580	0.17%	1.0736	-0.11%	-0.4628	-0.44%	-1.3273
-13	-0.01%	-0.0638	0.27%	1.5195	0.23%	2.0006**	0.40%	2.0316**	-0.38%	-1.6188	-0.82%	-2.0184
-12	-0.02%	-0.1610	0.26%	1.2354	0.23%	1.9684**	0.63%	2.7437*	0.02%	0.0894	-0.80%	-1.7032
-11	0.13%	1.2235	0.38%	1.6522	-0.17%	-1.4888	0.46%	1.7882	0.14%	0.5928	-0.66%	-1.2583
-10	0.09%	0.9107	0.48%	1.8800	0.03%	0.2877	0.49%	1.7499	0.19%	0.8119	-0.47%	-0.8172
-9	0.00%	0.0096	0.48%	1.7442	-0.03%	-0.2757	0.46%	1.5159	-0.29%	-1.2165	-0.76%	-1.2164
-8	-0.09%	-0.8913	0.39%	1.3164	0.03%	0.2704	0.49%	1.5136	0.04%	0.1507	-0.72%	-1.0846
-7	0.02%	0.2144	0.41%	1.3126	0.23%	1.9919**	0.72%	2.0910**	0.36%	1.5497	-0.36%	-0.5060
-6	0.18%	1.7341	0.59%	1.7936	0.16%	1.4372	0.88%	2.4381**	-0.30%	-1.2708	-0.65%	-0.8819
-5	0.00%	0.0243	0.59%	1.7174	0.03%	0.2957	0.92%	2.4138**	-0.28%	-1.1840	-0.93%	-1.1978
-4	0.01%	0.1364	0.61%	1.6837	0.02%	0.1979	0.94%	2.3682**	-0.01%	-0.0245	-0.94%	-1.1539
-3	0.24%	2.3414**	0.85%	2.2670**	0.23%	2.0488**	1.17%	2.8435*	0.16%	0.6631	-0.78%	-0.9247
-2	-0.03%	-0.3017	0.82%	2.1039**	0.30%	2.6665*	1.48%	3.4527*	0.06%	0.2576	-0.72%	-0.8222
-1	0.05%	0.5087	0.87%	2.1639**	0.19%	1.6775	1.67%	3.7688*	0.03%	0.1163	-0.69%	-0.7643
0	1.16%	11.1787*	2.03%	4.8899*	-1.03%	-9.0438*	0.63%	1.3882	0.21%	0.8866	-0.49%	-0.5184
1	-0.10%	-0.9712	1.93%	4.5083*	-0.35%	-3.0725*	0.28%	0.6015	0.18%	0.7517	-0.31%	-0.3206
2	-0.02%	-0.1809	1.91%	4.3387*	-0.22%	-1.8923	0.07%	0.1385	-0.03%	-0.1343	-0.34%	-0.3432
3	-0.08%	-0.8073	1.83%	4.0378*	-0.21%	-1.8648	-0.15%	-0.2930	-0.27%	-1.1339	-0.61%	-0.5942
4	-0.15%	-1.4212	1.68%	3.6177*	-0.08%	-0.6966	-0.23%	-0.4413	-0.18%	-0.7808	-0.79%	-0.7537
5	0.07%	0.7200	1.76%	3.6876*	-0.04%	-0.3514	-0.27%	-0.5074	0.08%	0.3601	-0.71%	-0.6570
6	-0.11%	-1.0562	1.65%	3.3777*	-0.07%	-0.6217	-0.34%	-0.6283	0.02%	0.0718	-0.69%	-0.6266
7	-0.09%	-0.8218	1.56%	3.1321*	0.04%	0.3913	-0.29%	-0.5329	-0.09%	-0.3839	-0.78%	-0.6929
8	-0.03%	-0.2755	1.53%	3.0099*	-0.14%	-1.2500	-0.44%	-0.7768	-0.08%	-0.3489	-0.86%	-0.7495
9	-0.04%	-0.3918	1.49%	2.8707*	-0.03%	-0.2498	-0.46%	-0.8111	0.06%	0.2468	-0.80%	-0.6850
10	0.04%	0.4280	1.54%	2.8989*	-0.12%	-1.0394	-0.58%	-0.9992	-0.15%	-0.6412	-0.95%	-0.7974
11	-0.10%	-0.9193	1.44%	2.6678*	-0.03%	-0.2485	-0.61%	-1.0283	-0.02%	-0.0874	-0.97%	-0.7993
12	0.12%	1.1216	1.56%	2.8317*	0.01%	0.0636	-0.60%	-0.9977	0.15%	0.6374	-0.83%	-0.6645
13	0.22%	2.1556**	1.78%	3.1827*	0.06%	0.5337	-0.54%	-0.8813	0.10%	0.4175	-0.73%	-0.5754
14	-0.05%	-0.4334	1.74%	3.0501*	0.04%	0.3437	-0.50%	-0.8037	0.03%	0.1274	-0.70%	-0.5425
15	-0.20%	-1.8923	1.54%	2.6606*	-0.21%	-1.8299	-0.71%	-1.1193	0.13%	0.5529	-0.57%	-0.4343

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

5.1.2 – Stock price relative range analysis

5.1.2.1 – All announcements

We firstly estimated the market model to determine the expected or normal relative range³⁵.

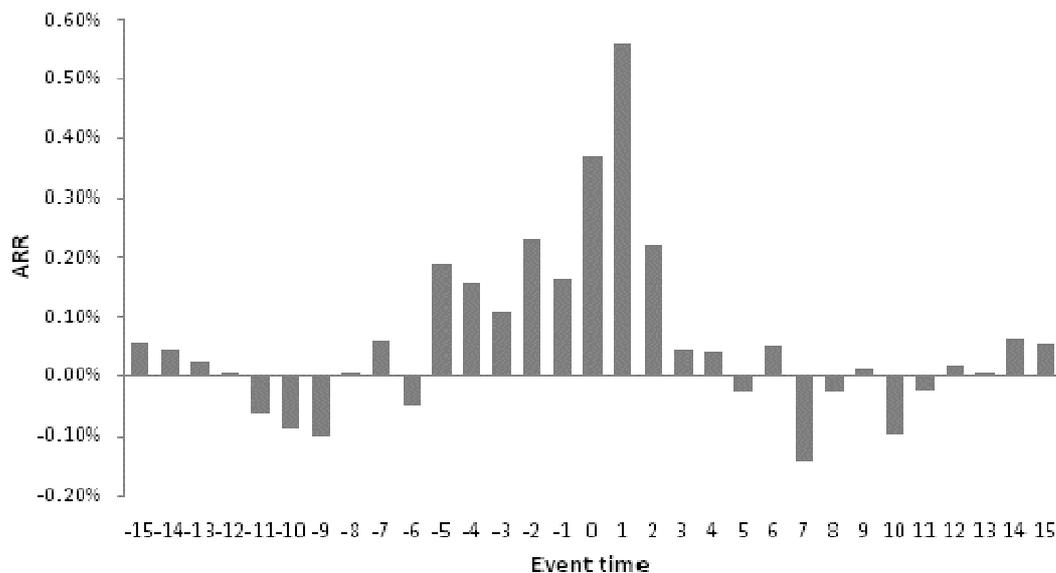
Table 15 - Descriptive statistics of the market model estimation – relative range analysis

	Average	Standard Deviation
Daily relative range	2.2754%	1.6833%
Average (R_i^2)	0.4071	0.1349
Average α_i	0.9138	0.4368
Average β_i	1.2080	0.2317

Comparatively to the average 0.3718 R^2 obtained for the stock price market model estimation, for the relative range market model we obtained an average coefficient of determination of 0.4071.

Figure 5 presents the average abnormal relative range and Table 16 the average abnormal relative range and the correspondent estimated statistics for all the earnings announcement sample.

Figure 5 – All earnings announcements - average abnormal relative range results



³⁵ See Appendix 7 for the discriminated estimation results.

Table 16 – All earnings announcements - average abnormal relative range results

Day	\bar{ARR}	Test θ_3
-15	0.06%	0.9134
-14	0.04%	0.6669
-13	0.02%	0.3683
-12	0.00%	0.0382
-11	-0.06%	-0.9605
-10	-0.09%	-1.3402
-9	-0.10%	-1.5352
-8	0.00%	0.0545
-7	0.06%	0.9374
-6	-0.05%	-0.7284
-5	0.19%	2.9117*
-4	0.16%	2.3821**
-3	0.11%	1.6898
-2	0.23%	3.5129*
-1	0.16%	2.5074**
0	0.37%	5.6862*
1	0.56%	8.5586*
2	0.22%	3.3884*
3	0.04%	0.6760
4	0.04%	0.6565
5	-0.02%	-0.3746
6	0.05%	0.7976
7	-0.14%	-2.1828**
8	-0.03%	-0.3870
9	0.01%	0.1540
10	-0.10%	-1.4531
11	-0.02%	-0.3585
12	0.02%	0.2979
13	0.00%	0.0411
14	0.07%	1.0120
15	0.06%	0.8641

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

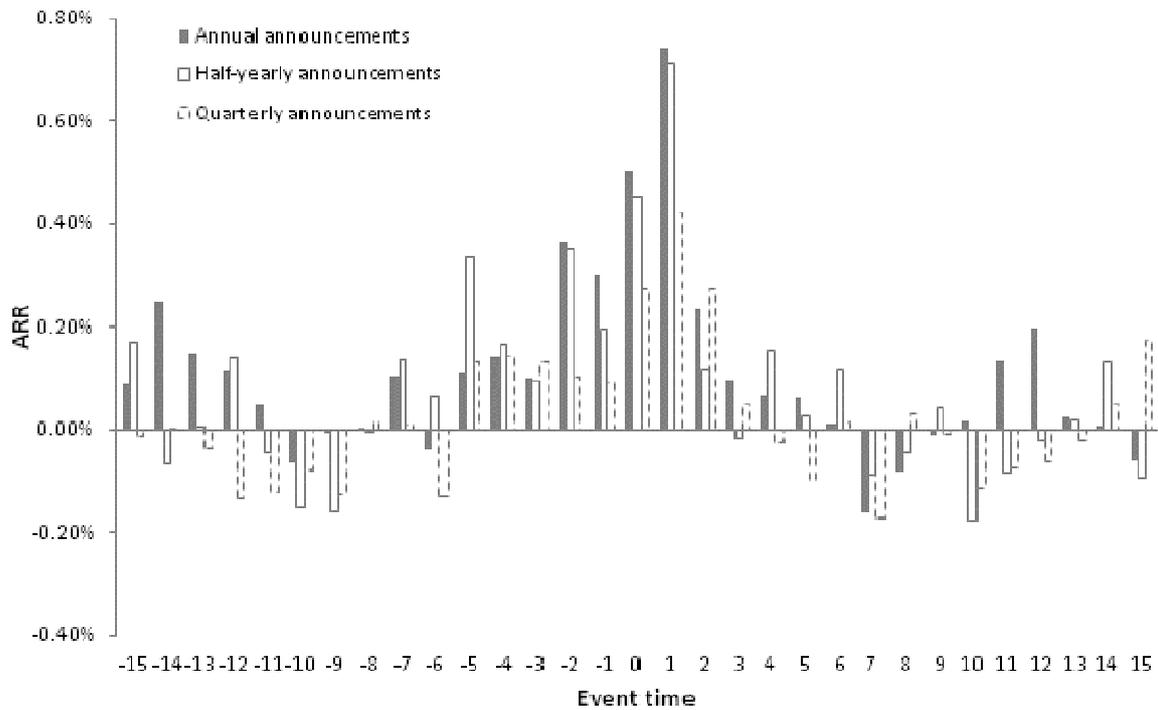
The evidence presented in Figure 5 and Table 16 reveals that earnings announcements lead to an increased level of maximum and minimum stock price variance, as we verify the presence of an abnormal stock price relative range around the announcement day. Hence, we found evidence of a statistically significant abnormal stock price relative range in days -5 and -4, -2 until 2 and 7 (at least at a level of 5%).

Furthermore, we also observe that the higher abnormal relative range occurs in day 1, the first trading day after the announcement. This result is consistent with the informational content of earnings, as verify that investors react to the announcement, leading to a consequent higher maximum and minimum stock price difference.

5.1.2.2 – Annual and interim announcements

Figure 6 presents the average abnormal relative range and Table 17 the average abnormal relative range and the correspondent estimated statistics for both annual and interim earnings announcements (half-yearly and quarterly).

Figure 6 – Annual and interim earnings announcements - average abnormal relative range results



The results obtained for the annual and interim earnings announcement sample show that for both annual, half-yearly and quarterly earnings announcements we verify the presence of an abnormal relative range. Therefore, for the annual earnings announcement sample we found statistically significant abnormal relative range in days -2, 0 and 1, for the half-yearly earnings announcement sample we found statistically significant abnormal relative range in days -5, -2, 0 and 1 and for the quarterly earnings announcement sample we found statistically significant abnormal relative range in days 0, 1 and 2.

Similarly to the results obtained for the overall earnings sample, we noticed that the higher abnormal relative range occurs in day 1 and that this effect is slightly higher for the annual earnings announcement sample than for interim announcements (both half-yearly and quarterly earnings announcements).

Table 17 - Annual and interim earnings announcements - average abnormal relative range results

Day	Annual Announcements		Half-yearly Announcements		Quarterly Announcements	
	ARR	Test θ_3	ARR	Test θ_3	ARR	Test θ_3
-15	0.09%	0.6824	0.17%	1.3021	-0.01%	-0.1349
-14	0.25%	1.9141	-0.06%	-0.4946	0.00%	0.0398
-13	0.15%	1.1342	0.01%	0.0598	-0.03%	-0.3726
-12	0.11%	0.8786	0.14%	1.0691	-0.13%	-1.4409
-11	0.05%	0.3698	-0.04%	-0.3330	-0.12%	-1.3271
-10	-0.07%	-0.5054	-0.15%	-1.1532	-0.08%	-0.8297
-9	-0.01%	-0.0612	-0.16%	-1.2160	-0.12%	-1.3408
-8	0.00%	0.0154	0.00%	-0.0298	0.02%	0.1718
-7	0.11%	0.8106	0.13%	1.0166	0.01%	0.1045
-6	-0.04%	-0.2763	0.06%	0.4903	-0.13%	-1.3859
-5	0.11%	0.8425	0.34%	2.5723**	0.13%	1.4136
-4	0.14%	1.0801	0.17%	1.2753	0.14%	1.5668
-3	0.10%	0.7737	0.10%	0.7409	0.13%	1.4183
-2	0.37%	2.7963*	0.35%	2.6955*	0.10%	1.1233
-1	0.30%	2.2889	0.20%	1.4960	0.09%	0.9845
0	0.50%	3.8382*	0.46%	3.4674*	0.27%	2.9620*
1	0.74%	5.7046*	0.71%	5.4203*	0.42%	4.5568*
2	0.23%	1.7873	0.12%	0.8888	0.28%	2.9933*
3	0.10%	0.7614	-0.02%	-0.1293	0.05%	0.5520
4	0.07%	0.5281	0.16%	1.1883	-0.02%	-0.2485
5	0.06%	0.4882	0.03%	0.2070	-0.10%	-1.0590
6	0.01%	0.1012	0.12%	0.8918	0.01%	0.1571
7	-0.16%	-1.2506	-0.09%	-0.6563	-0.17%	-1.8486
8	-0.08%	-0.6265	-0.04%	-0.3366	0.03%	0.3115
9	-0.01%	-0.0777	0.04%	0.3169	-0.01%	-0.0773
10	0.02%	0.1365	-0.17%	-1.3240	-0.11%	-1.2261
11	0.13%	1.0116	-0.08%	-0.6339	-0.08%	-0.8238
12	0.20%	1.5329	-0.02%	-0.1500	-0.06%	-0.6726
13	0.02%	0.1902	0.02%	0.1401	-0.02%	-0.2272
14	0.01%	0.0807	0.13%	0.9906	0.05%	0.5345
15	-0.06%	-0.4526	-0.10%	-0.7262	0.17%	1.8835

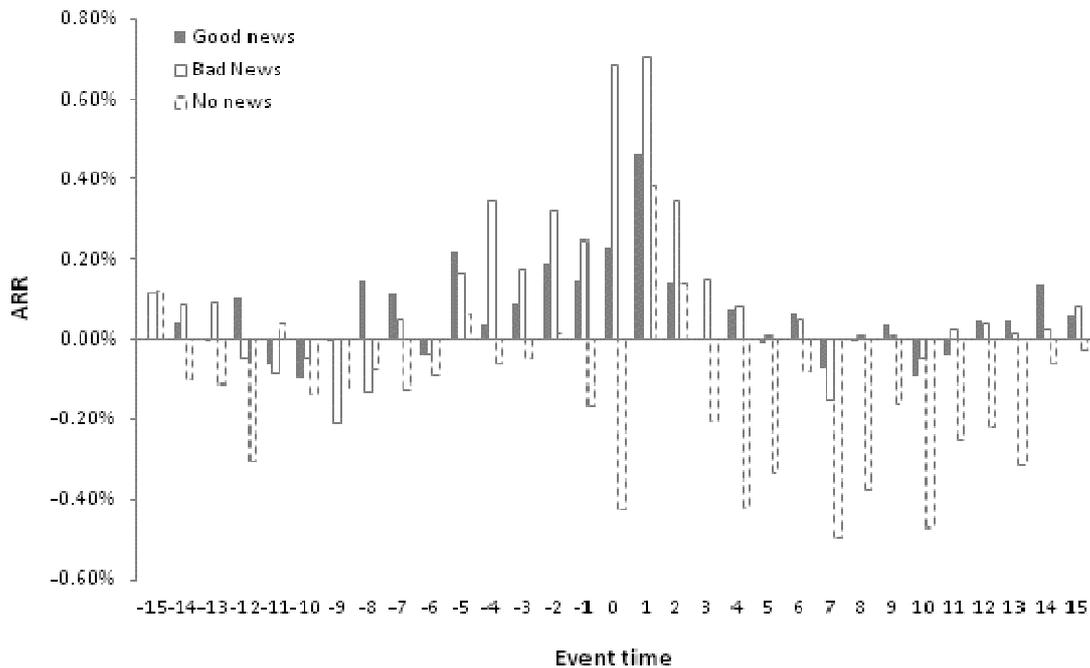
* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

5.1.2.3 – Good, bad and no news announcements

Figure 7 presents the average abnormal relative range and Table 18 the average abnormal relative range and the correspondent estimated statistics for the 220 announcements considered by the market as good news, 191 announcements considered as bad news and 35 announcements that convey no news.

Figure 7 – Good, bad and no news earnings announcements - average abnormal relative range results



When separating the earnings sample in good, bad or no news announcements we observe that for both announcements categorized as good and bad news the abnormal relative range obtained in the announcement day is positive and for announcements categorized as no news this abnormal relative range is negative. This effect is justified by the fact that, as earnings announcements categorized as no news do not convey any relevant information, the stock price remains uniform, therefore leading to a low relative range. On the other hand, as announcements categorized as good and bad news convey relevant market information we verify an increase/decrease in maximum/minimum stock prices, thereby increasing the relative range.

Contrarily to the results obtained for the abnormal return analysis, we observe that, in terms of relative range, the stock market reacts to announcements categorized as bad news more than to announcements categorized as good news, with the effect proving to be higher both in day 0 and day 1. Furthermore, for the good news sample we found abnormal relative range in days -5, -2, 0 and 1 and for the bad news sample we found abnormal relative range in days -9 and -2 until 2.

Table 18 – Good, bad and no news earnings announcements - average abnormal relative range results

Day	Good News		Bad News		No News	
	ARR	Test θ_3	ARR	Test θ_3	ARR	Test θ_3
-15	0.01%	0.0663	0.12%	1.1588	0.12%	0.5805
-14	0.04%	0.4219	0.09%	0.8553	-0.11%	-0.5061
-13	-0.01%	-0.0678	0.09%	0.8865	-0.11%	-0.5313
-12	0.10%	1.1157	-0.05%	-0.4872	-0.31%	-1.4852
-11	-0.07%	-0.7182	-0.09%	-0.8502	0.04%	0.1731
-10	-0.10%	-1.0721	-0.05%	-0.4838	-0.14%	-0.6677
-9	-0.01%	-0.0736	-0.21%	-2.0742	-0.12%	-0.5823
-8	0.15%	1.5747	-0.13%	-1.3208	-0.08%	-0.3675
-7	0.11%	1.2170	0.05%	0.4440	-0.13%	-0.6095
-6	-0.04%	-0.4167	-0.04%	-0.3948	-0.09%	-0.4559
-5	0.22%	2.3801**	0.16%	1.6004	0.06%	0.2894
-4	0.04%	0.3838	0.35%	3.3844*	-0.06%	-0.3022
-3	0.09%	0.9818	0.17%	1.6973	-0.05%	-0.2324
-2	0.19%	2.0564**	0.32%	3.1420*	0.01%	0.0561
-1	0.14%	1.5274	0.25%	2.4248**	-0.17%	-0.8168
0	0.23%	2.4633**	0.69%	6.7377*	-0.42%	-2.0471**
1	0.46%	4.9658*	0.70%	6.8997*	0.38%	1.8329
2	0.14%	1.4772	0.35%	3.3828*	0.13%	0.6493
3	0.01%	0.0658	0.14%	1.4149	-0.21%	-1.0046
4	0.07%	0.8058	0.08%	0.8010	-0.42%	-2.0308**
5	-0.01%	-0.1298	0.01%	0.0612	-0.34%	-1.6278
6	0.06%	0.6935	0.04%	0.4381	-0.09%	-0.4098
7	-0.08%	-0.8332	-0.15%	-1.4813	-0.50%	-2.4039**
8	-0.01%	-0.0783	0.01%	0.0814	-0.38%	-1.8082
9	0.03%	0.3747	0.00%	0.0387	-0.16%	-0.7917
10	-0.09%	-1.0034	-0.05%	-0.4628	-0.47%	-2.2798**
11	-0.04%	-0.4464	0.02%	0.1986	-0.25%	-1.2265
12	0.05%	0.4904	0.04%	0.3817	-0.22%	-1.0773
13	0.04%	0.4668	0.01%	0.1103	-0.32%	-1.5321
14	0.14%	1.4567	0.02%	0.2288	-0.06%	-0.2914
15	0.06%	0.6289	0.08%	0.7804	-0.03%	-0.1448

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

5.1.3 – Trading volume analysis

5.1.3.1 – All announcements

To analyse the trading volume reaction over the event window and following the methodology used in the price reaction and relative range analysis we firstly estimated the market model to determine the expected or normal trading volume³⁶.

Following Duque and Pinto (2004) we decided to maintain the trading volume market model although α_i was not statistically significant at a level of 5% for 10 of the 23 companies included in the final sample.

³⁶ See Appendix 8 for the discriminated estimation results.

Table 19 - Descriptive statistics of the market model estimation – trading volume analysis

	Average	Standard Deviation
Daily trading volume	0.4759%	0.2563%
Average (R_i^2)	0.1306	0.1275
Average α_i	0.1765	0.1335
Average β_i	0.7607	0.5048

For the trading volume market model estimation we obtained an average R^2 of 0.1306, which was inferior to the coefficients of determination estimated for the stock price market model and relative range market model. The R^2 estimated is slightly minor, as it is less reliable to estimate the trading volume based on the Portuguese stock index PSI-20 recorded trading volume.

Posteriorly, we calculated the average abnormal trading volume for all the 446 earnings announcements considered in the final sample.

Figure 8 presents the average abnormal trading volume and Table 20 the average abnormal trading volume and the correspondent estimated statistics.

Figure 8 – All earnings announcements - average abnormal trading volume results

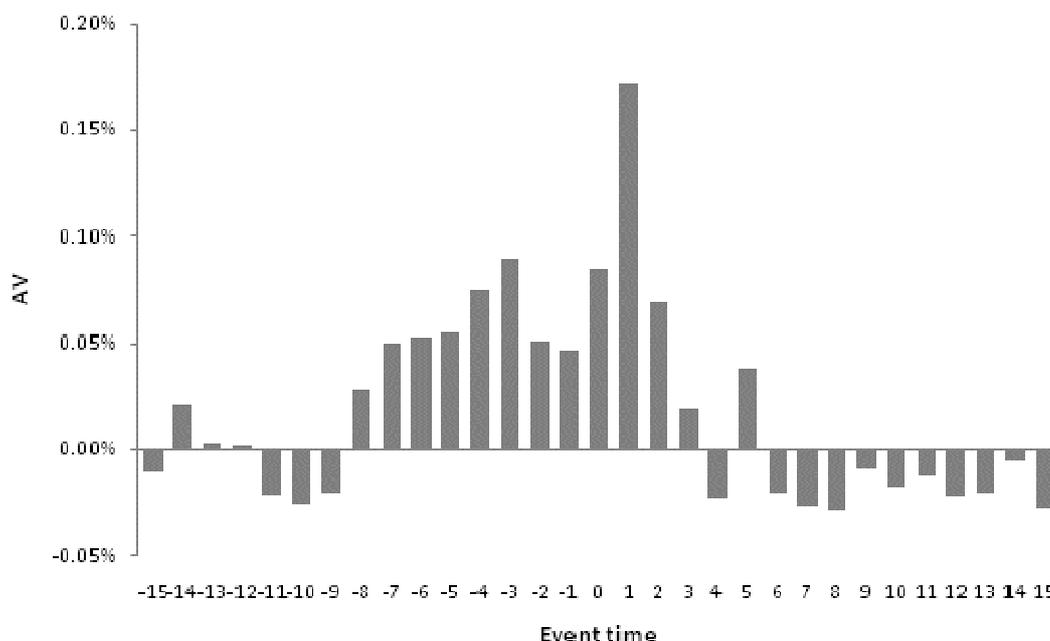


Figure 8 and Table 20 show an “excess of activity” around the announcement day with a positive and statistically significant (at least at a level of 5%) abnormal trading volume in the event day (day 0) and in the two days following the announcement, consistent with the results obtained by Duque and Pinto (2004), with the difference that we obtain a statistically significant \overline{AV} in days 0, 1 and 2 and Duque and Pinto (2004) obtained a statistically significant \overline{AV} in days 0, 1, 2 and 3. As Duque and Pinto (2004) the higher abnormal trading volume obtained occurs in day one, which is, in fact, the first trading day after the announcement.

Furthermore, these results highlight that the Portuguese stock market reacts, indeed, to accounting earnings at the trading volume level, as we found evidence of the presence of an abnormal trading volume in the period surrounding the announcements.

Table 20 – All earnings announcements - average abnormal trading volume results

Day	\overline{AV}	Test θ_4
-15	-0.01%	-0.3954
-14	0.02%	0.8064
-13	0.00%	0.1246
-12	0.00%	0.1092
-11	-0.02%	-0.7857
-10	-0.03%	-0.9926
-9	-0.02%	-0.7539
-8	0.03%	1.0849
-7	0.05%	1.9143
-6	0.05%	2.0147**
-5	0.05%	2.0936**
-4	0.08%	2.9072*
-3	0.09%	3.4435*
-2	0.05%	1.9550
-1	0.05%	1.7765
0	0.08%	3.2370*
1	0.17%	6.5689*
2	0.07%	2.6690*
3	0.02%	0.7334
4	-0.02%	-0.8671
5	0.04%	1.4589
6	-0.02%	-0.7783
7	-0.03%	-1.0320
8	-0.03%	-1.0800
9	-0.01%	-0.3235
10	-0.02%	-0.6705
11	-0.01%	-0.4779
12	-0.02%	-0.8260
13	-0.02%	-0.7833
14	-0.01%	-0.1954
15	-0.03%	-1.0500

* Parameters statistically significant at 1% significance level.

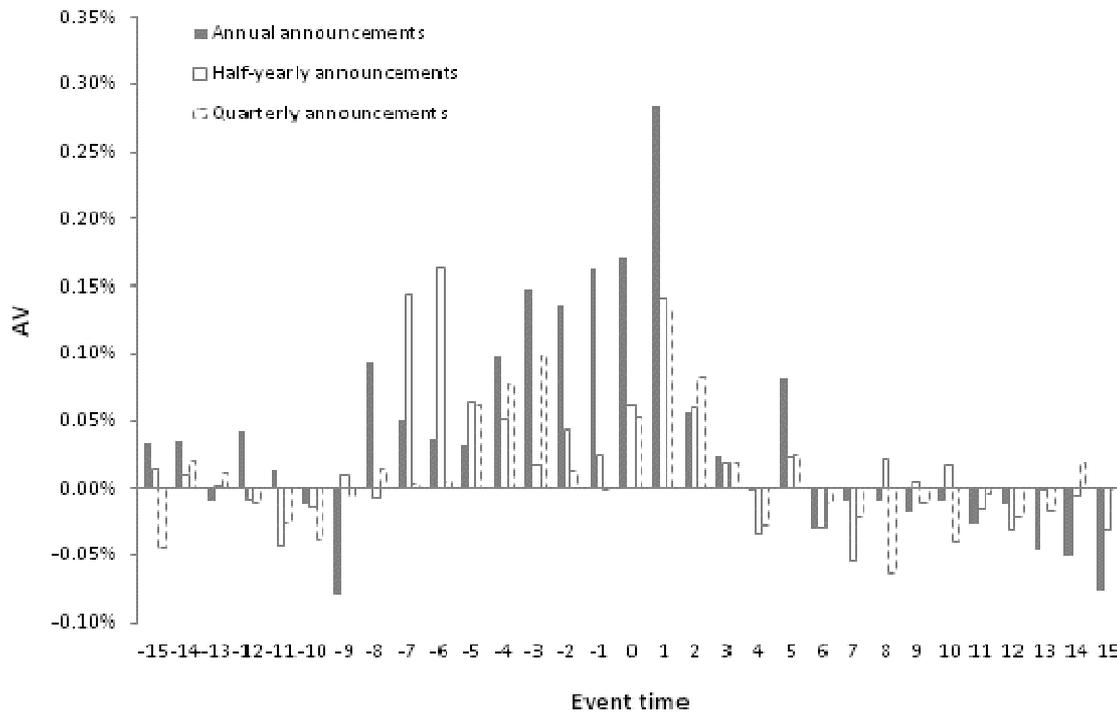
** Parameters statistically significant at 5% significance level.

5.1.3.2 – Annual and interim announcements

In order to assess the information content of annual and interim announcements, we also calculated the average abnormal trading volume for annual announcements, half-yearly announcements and quarterly earnings announcements.

Figure 9 presents the average abnormal trading volume and Table 21 the average abnormal trading volume and the correspondent estimated statistics.

Figure 9 – Annual and interim earnings announcements - average abnormal trading volume results



Analysing Figure 9 and Table 21 our results evidence that both annual and interim earnings announcements impact the stock market in terms of stock trading volume, as we found evidence of a statistically significant (at a level of 1%) abnormal trading volume in the first trading day after the formal announcement (day 1). Although all earnings announcements, in fact, impact the trading volume we can also conclude that the stock market reacts to annual earnings announcements more than to interim announcements (both half-yearly and quarterly announcements), with the effect proving to be significantly stronger.

In the annual earnings announcements sample we noticed that since the third trading day prior to the announcement until the first trading day after the announcement, all sessions experience a trading volume significantly higher than the average. These results highlight the anticipation effect, which may be explained by the earnings forecasts and by some information leakage.

It is also worth mentioning that the abnormal trading volume obtained in days -7 and -6 for the half-yearly earnings announcements sample is positive and statistically significant (at a level of 1%).

Table 21 - Annual and interim earnings announcements - average abnormal trading volume results

Day	Annual Announcements		Half-yearly Announcements		Quarterly Announcements	
	\bar{AV}	Test θ_4	\bar{AV}	Test θ_4	\bar{AV}	Test θ_4
-15	0.03%	0.6516	0.01%	0.2679	-0.04%	-1.1996
-14	0.03%	0.6734	0.01%	0.1887	0.02%	0.5340
-13	-0.01%	-0.1891	0.00%	0.0176	0.01%	0.2946
-12	0.04%	0.8232	-0.01%	-0.1584	-0.01%	-0.3067
-11	0.01%	0.2455	-0.04%	-0.8286	-0.03%	-0.6914
-10	-0.01%	-0.2393	-0.01%	-0.2762	-0.04%	-1.0363
-9	-0.08%	-1.5228	0.01%	0.1844	0.00%	-0.1333
-8	0.09%	1.8034	-0.01%	-0.1402	0.01%	0.3731
-7	0.05%	0.9665	0.14%	2.7479*	0.00%	0.0807
-6	0.04%	0.7091	0.16%	3.1247*	0.00%	0.1346
-5	0.03%	0.6117	0.06%	1.2319	0.06%	1.6521
-4	0.10%	1.8860	0.05%	0.9720	0.08%	2.0958**
-3	0.15%	2.8586*	0.02%	0.3119	0.10%	2.6417*
-2	0.14%	2.6190*	0.04%	0.8387	0.01%	0.3391
-1	0.16%	3.1346*	0.02%	0.4659	0.00%	-0.0071
0	0.17%	3.3133*	0.06%	1.1712	0.05%	1.4268
1	0.28%	5.4976*	0.14%	2.7096*	0.13%	3.5127*
2	0.06%	1.0836	0.06%	1.1481	0.08%	2.1937**
3	0.02%	0.4404	0.02%	0.3592	0.02%	0.4727
4	0.00%	-0.0252	-0.03%	-0.6435	-0.03%	-0.7486
5	0.08%	1.5648	0.02%	0.4233	0.02%	0.6672
6	-0.03%	-0.5776	-0.03%	-0.5587	-0.01%	-0.2994
7	-0.01%	-0.1901	-0.05%	-1.0326	-0.02%	-0.5911
8	-0.01%	-0.1764	0.02%	0.4118	-0.06%	-1.6898
9	-0.02%	-0.3356	0.01%	0.0997	-0.01%	-0.2928
10	-0.01%	-0.1724	0.02%	0.3168	-0.04%	-1.0486
11	-0.03%	-0.5154	-0.02%	-0.2925	0.00%	-0.1078
12	-0.01%	-0.2400	-0.03%	-0.5908	-0.02%	-0.5786
13	-0.05%	-0.8802	0.00%	-0.0280	-0.02%	-0.4713
14	-0.05%	-0.9891	-0.01%	-0.0984	0.02%	0.4823
15	-0.08%	-1.4669	-0.03%	-0.5984	0.00%	-0.0356

* Parameters statistically significant at 1% significance level.

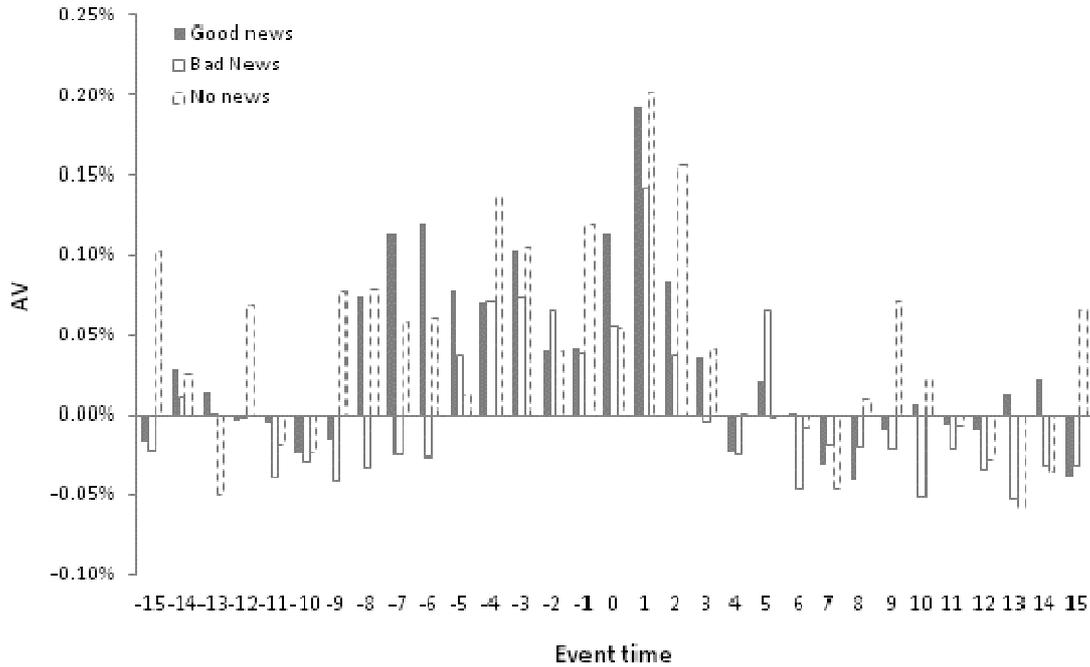
** Parameters statistically significant at 5% significance level.

5.1.3.3 – Good, bad and no news announcements

As a complement to the stock price analysis, we also analysed the behaviour of the trading volume around the announcements considering as good, bad and no news categorization.

Figure 10 presents the average abnormal trading volume and Table 22 the average abnormal trading volume and the correspondent estimated statistics for good, bad and no news earnings announcements.

Figure 10 – Good, bad and no news earnings announcements - average abnormal trading volume results



Similarly to the results obtained in the annual and interim earnings announcements, for both earnings announcements categorized as good news, bad news and no news we reject the hypothesis that the announcements have no trading volume impact at a significance level of 5% as we found evidence of an abnormal trading volume in day 1 for all the categories. Contrarily to the results obtained for the good news and bad news announcements categories, for the no news category in day 1 we obtain a statistically negative abnormal trading volume, which suggests that announcement categorized by the market as no news announcement often lead to a decrease in the number of transacted shares.

The results obtained for the good news sample show the presence of an abnormal trading volume both in the pre-event window (in days -8 until -5 and -3), in the event day (day 0) and in the post-event window (days 1 and 2).

Table 22 – Good, bad and no news earnings announcements - average abnormal trading volume results

Day	Good News		Bad News		No News	
	\bar{AV}	Test θ_4	\bar{AV}	Test θ_4	\bar{AV}	Test θ_4
-15	-0.02%	-0.4571	-0.02%	-0.5628	0.10%	1.4566
-14	0.03%	0.7864	0.01%	0.2580	0.03%	0.3618
-13	0.01%	0.3789	0.00%	0.0097	-0.05%	-0.7086
-12	0.00%	-0.1020	0.00%	-0.0356	0.07%	0.9719
-11	0.00%	-0.1157	-0.04%	-0.9602	-0.02%	-0.2633
-10	-0.02%	-0.6435	-0.03%	-0.6903	-0.02%	-0.3394
-9	-0.02%	-0.4318	-0.04%	-1.0092	0.08%	1.1018
-8	0.07%	1.9663**	-0.03%	-0.7995	0.08%	1.1138
-7	0.11%	3.0337*	-0.02%	-0.6019	0.06%	0.8378
-6	0.12%	3.2194*	-0.03%	-0.6568	0.06%	0.8671
-5	0.08%	2.0595**	0.04%	0.8923	0.01%	0.1687
-4	0.07%	1.8881	0.07%	1.7234	0.14%	1.9371
-3	0.10%	2.7367*	0.07%	1.7704	0.10%	1.4867
-2	0.04%	1.0869	0.07%	1.5814	0.04%	0.5636
-1	0.04%	1.1161	0.04%	0.9321	0.12%	1.6969
0	0.11%	3.0547*	0.06%	1.3517	0.06%	0.7837
1	0.19%	5.1514*	0.14%	3.4400*	0.20%	2.8671*
2	0.08%	2.2424**	0.04%	0.9120	0.16%	2.2181**
3	0.04%	0.9496	0.00%	-0.0901	0.04%	0.5831
4	-0.02%	-0.6396	-0.03%	-0.6151	0.00%	0.0015
5	0.02%	0.5686	0.06%	1.5726	0.00%	-0.0230
6	0.00%	0.0211	-0.05%	-1.1388	-0.01%	-0.1145
7	-0.03%	-0.8196	-0.02%	-0.4641	-0.05%	-0.6602
8	-0.04%	-1.1037	-0.02%	-0.4894	0.01%	0.1442
9	-0.01%	-0.2526	-0.02%	-0.5274	0.07%	0.9997
10	0.01%	0.1645	-0.05%	-1.2644	0.02%	0.3175
11	-0.01%	-0.1430	-0.02%	-0.5278	-0.01%	-0.0965
12	-0.01%	-0.2722	-0.03%	-0.8166	-0.03%	-0.3890
13	0.01%	0.3524	-0.05%	-1.2730	-0.06%	-0.8176
14	0.02%	0.5949	-0.03%	-0.7564	-0.03%	-0.4970
15	-0.04%	-1.0247	-0.03%	-0.7682	0.06%	0.9133

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

5.2 – Dividend announcements

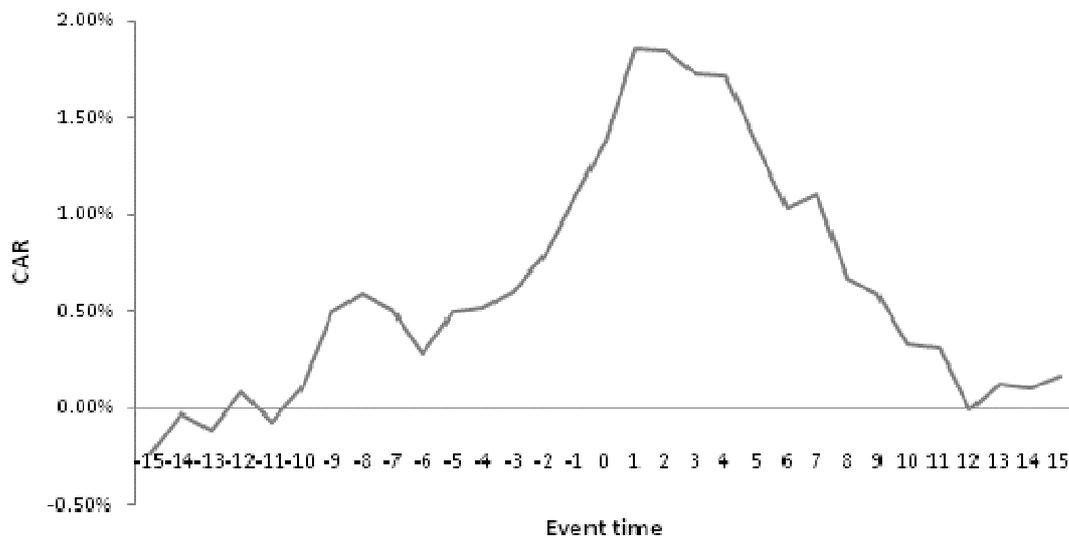
5.2.1 – Stock price analysis

5.2.1.1 – All announcements

After analysing the Portuguese stock market reaction to earnings announcements we also analysed the price and volume stock market reaction to dividend announcements. Following the same methodology we calculated the average abnormal returns and the cumulative abnormal returns for all the dividend announcements in the sample.

Figure 11 presents the cumulative average abnormal returns and Table 23 the average abnormal returns, the cumulative average abnormal returns and the correspondent estimated statistics.

Figure 11 – All dividend announcements - cumulative average abnormal returns results



Contrarily to the results obtained when analysing earnings announcements, our findings do not suggest the existence of a significant abnormal return in the announcement day (day 0) for dividend announcements. Nevertheless, our results show a positive and statistically significant excess return in the day after the announcement (day 1), which is, technically the first trading day after the announcement, thereby demonstrating that dividend announcements impact the stock market, as they lead to an abnormal return just after the announcement.

Furthermore, we also obtained statistically significant (at least at a level of 5%) abnormal returns in days -1, -9, 5, 6, 8 and 12. This evidence of abnormal returns both in the pre-event window and in

the post-event window implies that the stock market does not reacts to dividend announcements efficiently.

Analyzing the cumulative average abnormal returns we observe a positive and statistically significant $\overline{\text{CAR}}$ over the post-event period, since day 0 until day 5.

Table 23 – All dividend announcements - average abnormal returns and cumulative average abnormal returns results

Day	$\overline{\text{AR}}$	Test θ_1	$\overline{\text{CAR}}$	Test θ_2
-15	-0.23%	-1.5275	-0.23%	-1.5275
-14	0.20%	1.3356	-0.03%	-0.1356
-13	-0.08%	-0.5348	-0.11%	-0.4195
-12	0.19%	1.2694	0.08%	0.2714
-11	-0.15%	-0.9747	-0.06%	-0.1932
-10	0.17%	1.1250	0.10%	0.2829
-9	0.40%	2.6451*	0.50%	1.2617
-8	0.10%	0.6388	0.60%	1.4060
-7	-0.08%	-0.5582	0.51%	1.1396
-6	-0.24%	-1.5724	0.28%	0.5838
-5	0.22%	1.4996	0.50%	1.0088
-4	0.02%	0.1439	0.52%	1.0074
-3	0.08%	0.5498	0.61%	1.1204
-2	0.19%	1.2762	0.80%	1.4207
-1	0.30%	1.9709**	1.09%	1.8814
0	0.29%	1.9334	1.38%	2.3050**
1	0.48%	3.2036*	1.86%	3.0132*
2	-0.02%	-0.1140	1.84%	2.9014*
3	-0.12%	-0.7958	1.72%	2.6415*
4	-0.01%	-0.0864	1.71%	2.5553**
5	-0.35%	-2.3261**	1.36%	1.9861**
6	-0.33%	-2.1748**	1.04%	1.4768
7	0.07%	0.4757	1.11%	1.5435
8	-0.44%	-2.9374*	0.67%	0.9114
9	-0.08%	-0.5016	0.59%	0.7927
10	-0.26%	-1.7481	0.33%	0.4345
11	-0.02%	-0.1452	0.31%	0.3984
12	-0.32%	-2.1237**	-0.01%	-0.0101
13	0.13%	0.9003	0.13%	0.1572
14	-0.02%	-0.1597	0.10%	0.1254
15	0.06%	0.4304	0.17%	0.2007

* Parameters statistically significant at 1% significance level.

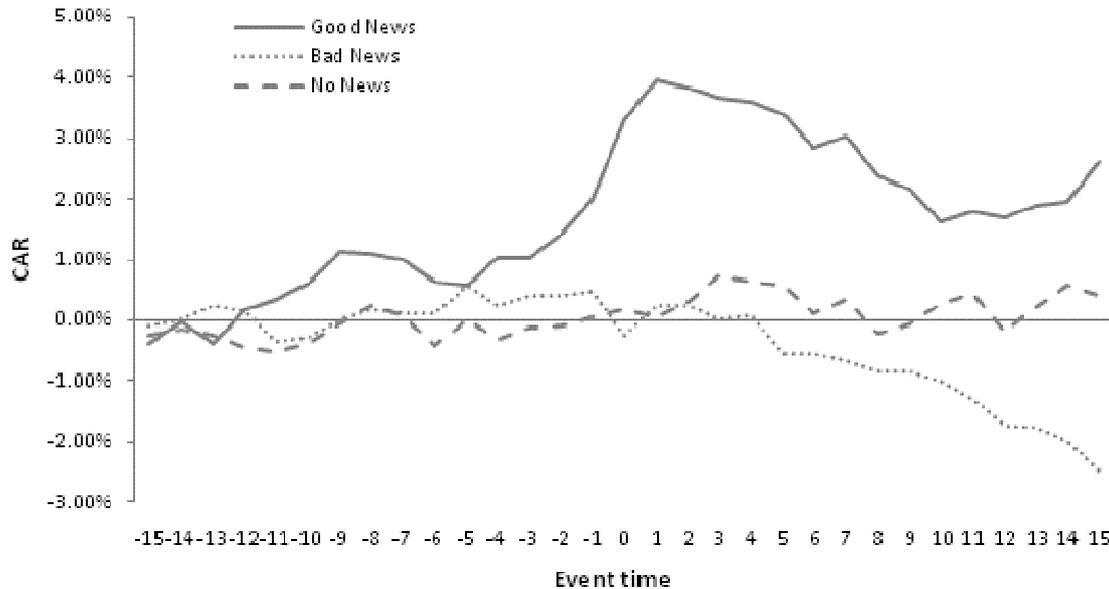
** Parameters statistically significant at 5% significance level.

5.2.1.2 – Good and bad news announcements

As in the earnings announcements analysis we also found the need to separate the effects and decided to adopt the news categorization used by Duque and Pinto (2005) and Correia (2009). Hence, we calculated the average and cumulative abnormal returns for all the 102 dividend announcements included in the final sample, 45 announcements considered as good news, 43 announcements considered as bad news and 14 announcements considered as no news.

Figure 12 presents the cumulative average abnormal returns and Table 24 the average abnormal returns, the cumulative average abnormal returns and the corresponding statistics estimation results both for good, bad and no news announcements.

Figure 12 - Good and bad news dividend announcements - cumulative average abnormal returns results



As in earnings announcements, when separating the dividend announcements in good, bad or no news announcements we observe the existence of an average abnormal return in the event day (day 0) positive and statistically significant (at a level of 1%) for announcements categorized as good news and negative and statistically significant (at a level of 1%) for announcements categorized as bad news. We also found abnormal returns in the good news dividend sample for the pre-event window (days -12, -9, -4 and -1) and for the post-event window (days 1, 6, 8, 10 and 15) and abnormal returns in the bad news dividend sample for the pre-event window (day -11) and for the post-event window (days 1, 5 and 15).

Analysing the cumulative average abnormal returns we found evidence of a positive and statistically significant \overline{CAR} for the good news dividend sample between days -1 until day 8.

Table 24 - Good and bad news dividend announcements - average abnormal returns and cumulative average abnormal returns results

	Good News				Bad News				No News			
	AR	Test θ_1	CAR	Test θ_2	AR	Test θ_1	CAR	Test θ_2	AR	Test θ_1	CAR	Test θ_2
-15	-0.37%	-1.5644	-	-1.5644	-0.08%	-0.3408	-0.08%	-0.3408	-0.25%	-0.6820	-0.25%	-0.6820
-14	0.34%	1.4373	-	-0.0898	0.09%	0.3844	0.01%	0.0308	0.10%	0.2861	-0.14%	-0.2800
-13	-0.36%	-1.5216	0.37%	-0.9519	0.22%	0.9752	0.23%	0.5882	-0.12%	-0.3232	-0.26%	-0.4152
-12	0.57%	2.4216**	0.39%	0.3865	-0.09%	-0.3810	0.15%	0.3189	-0.18%	-0.4831	-0.44%	-0.6011
-11	0.15%	0.6490	0.03%	0.6359	-0.48%	-2.1241**	-0.34%	-0.6647	-0.07%	-0.1862	-0.50%	-0.6209
-10	0.28%	1.1941	0.61%	1.0680	0.06%	0.2819	-0.27%	-0.4917	0.13%	0.3559	-0.38%	-0.4215
-9	0.53%	2.2484**	1.14%	1.8386	0.28%	1.2263	0.00%	0.0083	0.33%	0.9136	-0.04%	-0.0450
-8	-0.03%	-0.1296	1.11%	1.6740	0.16%	0.7230	0.17%	0.2633	0.29%	0.7955	0.25%	0.2392
-7	-0.09%	-0.4044	1.02%	1.4435	-0.05%	-0.2165	0.12%	0.1761	-0.15%	-0.4196	0.09%	0.0856
-6	-0.38%	-1.6311	0.63%	0.8536	0.01%	0.0223	0.13%	0.1741	-0.50%	-1.3770	-0.41%	-0.3542
-5	-0.05%	-0.1971	0.59%	0.7544	0.44%	1.9293	0.56%	0.7477	0.44%	1.1983	0.03%	0.0236
-4	0.46%	1.9800**	1.05%	1.2939	-0.32%	-1.4206	0.24%	0.3058	-0.34%	-0.9445	-0.31%	-0.2501
-3	-0.03%	-0.1173	1.02%	1.2106	0.16%	0.7199	0.41%	0.4935	0.19%	0.5089	-0.13%	-0.0991
-2	0.42%	1.7978	1.45%	1.6471	-0.01%	-0.0232	0.40%	0.4693	0.05%	0.1438	-0.08%	-0.0571
-1	0.54%	2.2903**	1.98%	2.1826**	0.09%	0.4147	0.49%	0.5605	0.13%	0.3642	0.05%	0.0389
0	1.32%	5.6019*	3.30%	3.5137*	-0.73%	-3.2086*	-0.24%	-0.2595	0.13%	0.3490	0.18%	0.1249
1	0.67%	2.8430*	3.97%	4.0983*	0.49%	2.1301**	0.25%	0.2649	-0.14%	-0.3829	0.04%	0.0283
2	-0.12%	-0.5081	3.85%	3.8631*	-0.01%	-0.0229	0.24%	0.2520	0.27%	0.7564	0.32%	0.2058
3	-0.19%	-0.8109	3.66%	3.5741*	-0.22%	-0.9763	0.02%	0.0213	0.43%	1.1725	0.74%	0.4693
4	-0.07%	-0.2980	3.59%	3.4169*	0.08%	0.3416	0.10%	0.0972	-0.11%	-0.2979	0.64%	0.3908
5	-0.17%	-0.7093	3.42%	3.1798*	-0.64%	-2.7983*	-0.54%	-0.5158	-0.05%	-0.1259	0.59%	0.3539
6	-0.58%	-2.4719**	2.84%	2.5797*	-0.01%	-0.0431	-0.55%	-0.5131	-0.48%	-1.3141	0.11%	0.0656
7	0.20%	0.8330	3.04%	2.6967*	-0.11%	-0.4890	-0.66%	-0.6038	0.23%	0.6395	0.34%	0.1975
8	-0.64%	-2.7453*	2.39%	2.0795**	-0.18%	-0.8112	-0.84%	-0.7567	-0.57%	-1.5581	-0.22%	-0.1247
9	-0.24%	-1.0040	2.16%	1.8367	0.01%	0.0444	-0.83%	-0.7325	0.18%	0.4930	-0.04%	-0.0236
10	-0.54%	-2.3116**	1.61%	1.3477	-0.16%	-0.7102	-1.00%	-0.8576	0.33%	0.9172	0.29%	0.1568
11	0.19%	0.8122	1.80%	1.4788	-0.30%	-1.3145	-1.30%	-1.0945	0.15%	0.4073	0.44%	0.2322
12	-0.12%	-0.5308	1.68%	1.3518	-0.42%	-1.8456	-1.72%	-1.4236	-0.63%	-1.7221	-0.19%	-0.0974
13	0.21%	0.9151	1.89%	1.4983	-0.03%	-0.1361	-1.75%	-1.4241	0.39%	1.0647	0.20%	0.1020
14	0.05%	0.2096	1.94%	1.5114	-0.23%	-1.0046	-1.98%	-1.5836	0.37%	1.0184	0.57%	0.2862
15	0.69%	2.9262*	2.63%	2.0123**	-0.51%	-2.2424**	-2.49%	-1.9606**	-0.17%	-0.4674	0.40%	0.1976

* Parameters statistically significant at 1% significance level.

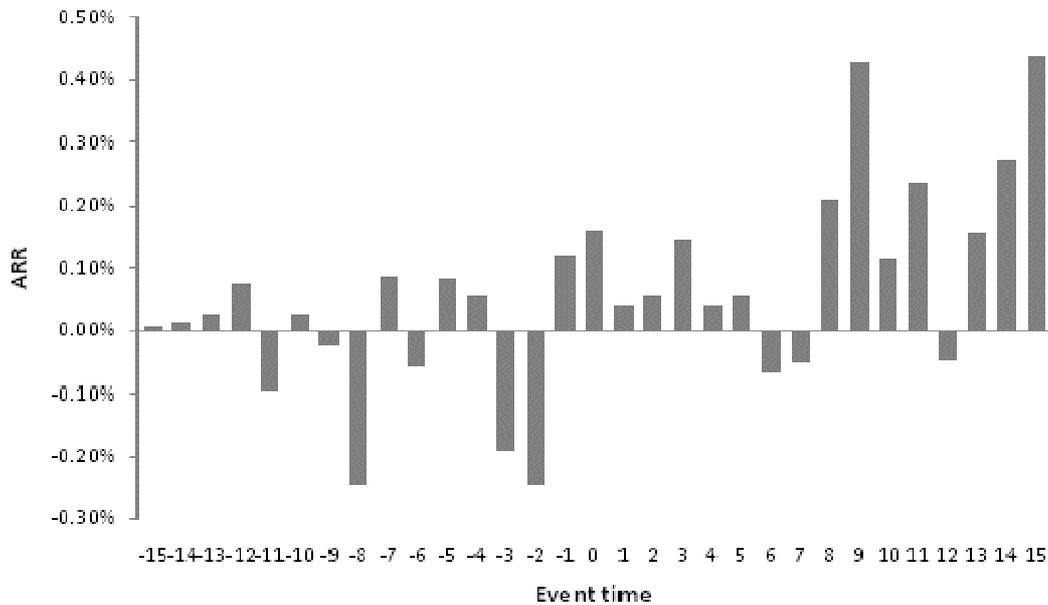
** Parameters statistically significant at 5% significance level.

5.2.2 – Stock price relative range analysis

5.2.2.1 – All announcements

Figure 13 presents the average abnormal relative range and Table 25 the average abnormal relative range and the correspondent estimated statistics for all the earnings announcements sample.

Figure 13 – All dividend announcements - average abnormal relative range results



Contrarily to the results obtained when analysing earnings announcements, the dividend announcements results do not show the persistence of an abnormal relative range in the period surrounding the announcements. Thus, we obtained average abnormal relative range only in days 9, 14 and 15.

Therefore, the results obtained for dividend announcements show us that the behaviour of the stock price around the announcements does not differ from the average, as we found no evidence of abnormal maximum and minimum relative difference in daily stock prices.

Table 25 – All dividend announcements - average abnormal relative range results

Day	ARR	Test θ_3
-15	0.01%	0.0515385
-14	0.01%	0.0996807
-13	0.03%	0.1923273
-12	0.07%	0.5702531
-11	-0.09%	-0.71215
-10	0.03%	0.2089799
-9	-0.02%	-0.164523
-8	-0.24%	-1.861486
-7	0.09%	0.6691464
-6	-0.06%	-0.431274
-5	0.08%	0.6444578
-4	0.06%	0.4459228
-3	-0.19%	-1.45788
-2	-0.24%	-1.852696
-1	0.12%	0.9213951
0	0.16%	1.2219058
1	0.04%	0.3197128
2	0.06%	0.4489771
3	0.14%	1.094919
4	0.04%	0.3256789
5	0.06%	0.4311025
6	-0.07%	-0.506158
7	-0.05%	-0.379792
8	0.21%	1.5977741
9	0.43%	3.2694795*
10	0.11%	0.8717142
11	0.24%	1.7955897
12	-0.05%	-0.352369
13	0.16%	1.1922513
14	0.28%	2.0965245**
15	0.44%	3.3432597*

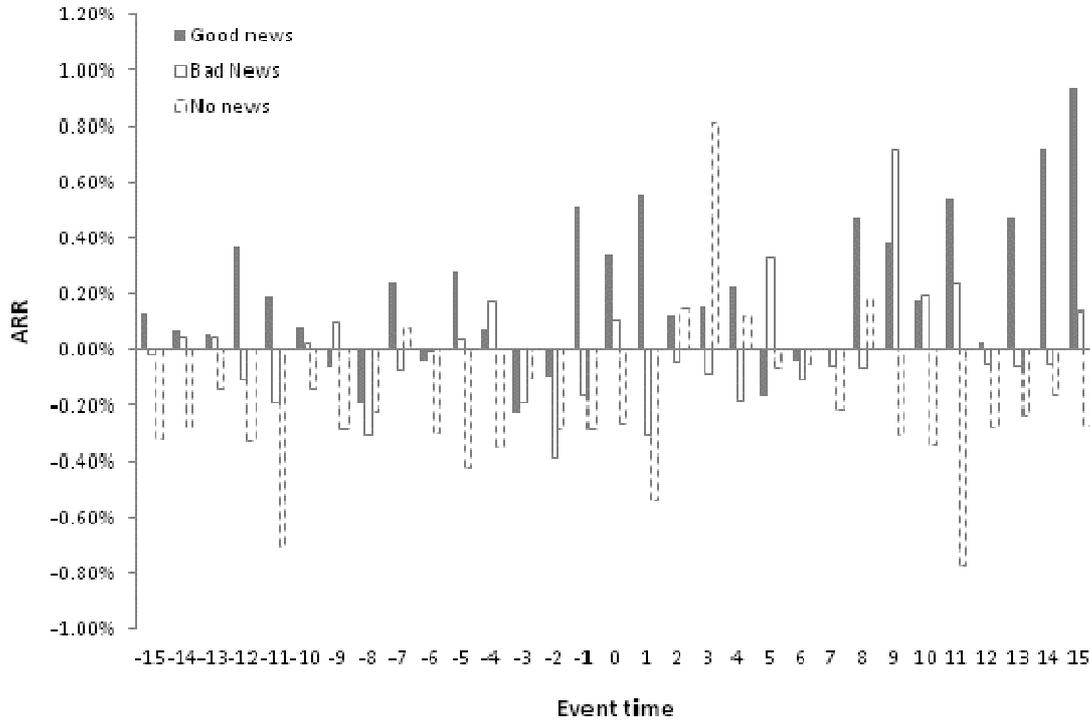
* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

5.2.2.2 – Good, bad and no news announcements

Figure 14 presents the average abnormal relative range and Table 26 the average abnormal relative range and the correspondent estimated statistics for good, bad and no news earnings announcements.

Figure 14 – Good, bad and no news dividend announcements - average abnormal relative range results



The dividend announcements categorization in good, bad or no news announcements allows us to perceive that the greatest relative difference between the maximum and minimum daily stock price in the days surrounding dividend announcements occurs in the good news dividend sample, as we found statistically significant abnormal relative range in days -1 and 1.

Although we found evidence of statistically significant abnormal relative range in the post-event window for both dividends categorized as good news, bad news and no news, we can also conclude that, overall, the stock price, in terms of relative range does not shows a strong reaction to the dividend information.

Table 26 – Good, bad and no news dividend announcements - average abnormal relative range results

Day	Good News		Bad News		No News	
	ARR	Test θ_3	ARR	Test θ_3	ARR	Test θ_3
-15	0.14%	0.6568	-0.02%	-0.1109	-0.32%	-1.0151
-14	0.07%	0.3487	0.04%	0.2232	-0.27%	-0.8712
-13	0.06%	0.2753	0.05%	0.2339	-0.14%	-0.4539
-12	0.37%	1.8017	-0.10%	-0.5209	-0.33%	-1.0505
-11	0.19%	0.9137	-0.19%	-0.9448	-0.71%	-2.2555**
-10	0.08%	0.4023	0.02%	0.1207	-0.14%	-0.4499
-9	-0.06%	-0.2857	0.10%	0.5127	-0.28%	-0.9028
-8	-0.19%	-0.9389	-0.30%	-1.5253	-0.22%	-0.7061
-7	0.24%	1.1626	-0.07%	-0.3472	0.08%	0.2635
-6	-0.04%	-0.1708	0.00%	-0.0025	-0.30%	-0.9505
-5	0.28%	1.3748	0.04%	0.2039	-0.42%	-1.3415
-4	0.08%	0.3656	0.17%	0.8603	-0.34%	-1.0989
-3	-0.22%	-1.0778	-0.19%	-0.9437	-0.10%	-0.3202
-2	-0.09%	-0.4544	-0.39%	-1.9333	-0.28%	-0.9048
-1	0.52%	2.5042**	-0.16%	-0.8122	-0.28%	-0.8939
0	0.34%	1.6426	0.11%	0.5581	-0.26%	-0.8394
1	0.56%	2.6940*	-0.31%	-1.5314	-0.54%	-1.7226
2	0.13%	0.6199	-0.04%	-0.2069	0.15%	0.4645
3	0.15%	0.7405	-0.09%	-0.4286	0.82%	2.6161*
4	0.23%	1.1196	-0.18%	-0.8998	0.12%	0.3893
5	-0.17%	-0.8076	0.33%	1.6439	-0.06%	-0.1976
6	-0.04%	-0.1787	-0.10%	-0.5158	-0.05%	-0.1560
7	0.00%	0.0115	-0.05%	-0.2646	-0.21%	-0.6653
8	0.48%	2.3248**	-0.06%	-0.3197	0.18%	0.5854
9	0.38%	1.8486	0.72%	3.5968*	-0.31%	-0.9813
10	0.18%	0.8542	0.20%	0.9900	-0.34%	-1.0869
11	0.55%	2.6445*	0.24%	1.1918	-0.77%	-2.4507**
12	0.03%	0.1444	-0.05%	-0.2497	-0.28%	-0.8920
13	0.48%	2.3287**	-0.06%	-0.2828	-0.23%	-0.7336
14	0.72%	3.4978*	-0.05%	-0.2474	-0.16%	-0.5161
15	0.94%	4.5790*	0.14%	0.6986	-0.27%	-0.8522

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

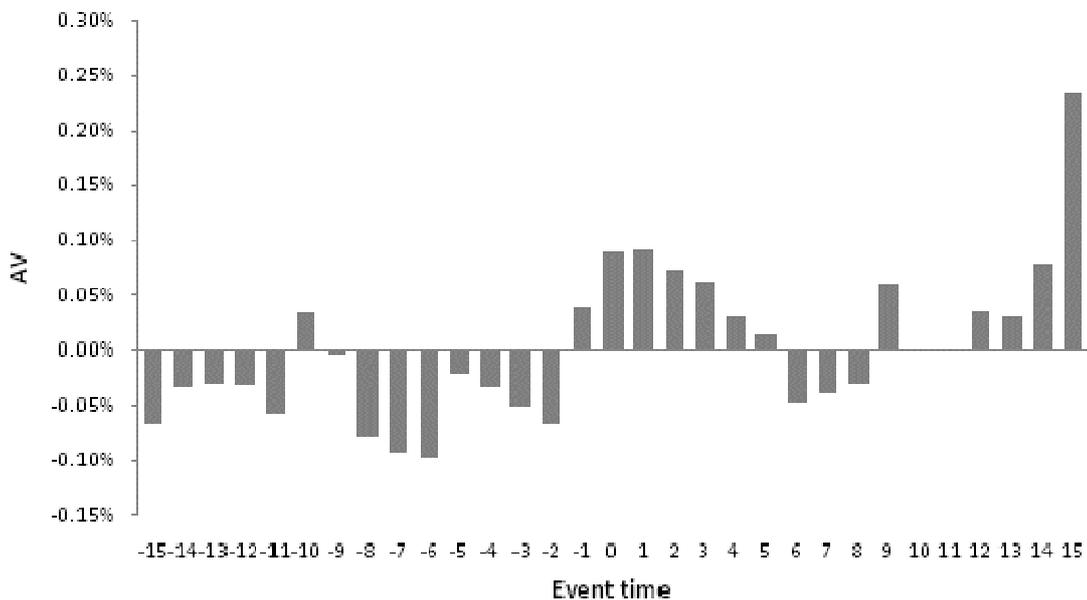
5.2.3 – Trading volume analysis

5.2.3.1 – All announcements

Following the methodology used in the earnings announcements analysis we also calculated the average abnormal trading volume for all the 102 dividend announcements considered in the final sample.

Figure 15 presents the average abnormal trading volume and Table 27 the average abnormal trading volume and the correspondent estimated statistics.

Figure 15 – All dividend announcements - average abnormal trading volume results



Contrarily to the “excess of activity” around the announcement day obtained for earnings announcements, for dividend announcements we do not find any statistically significant abnormal trading volume around the event day (day 0). Furthermore, we only found evidence of a statistically significant average abnormal volume in day 15.

These results lead us to conclude that dividend announcements do not convey significant market activity increase during the event window, which can evidence that the stock market does not react to the dividend announcements, at least at the trading volume level.

Table 27 – All dividend announcements - average abnormal trading volume results

Day	AV	Test θ_4
-15	-0.07%	-1.2315
-14	-0.03%	-0.6157
-13	-0.03%	-0.5647
-12	-0.03%	-0.6028
-11	-0.06%	-1.0702
-10	0.03%	0.6357
-9	0.00%	-0.0582
-8	-0.08%	-1.4842
-7	-0.09%	-1.6987
-6	-0.10%	-1.7950
-5	-0.02%	-0.3871
-4	-0.03%	-0.6230
-3	-0.05%	-0.9300
-2	-0.07%	-1.2437
-1	0.04%	0.7639
0	0.09%	1.6580
1	0.09%	1.6853
2	0.07%	1.3439
3	0.06%	1.1604
4	0.03%	0.5871
5	0.01%	0.2632
6	-0.05%	-0.8813
7	-0.04%	-0.7471
8	-0.03%	-0.5484
9	0.06%	1.1153
10	0.00%	-0.0305
11	0.00%	-0.0007
12	0.04%	0.6897
13	0.03%	0.5868
14	0.08%	1.4446
15	0.24%	4.3749*

* Parameters statistically significant at 1% significance level.

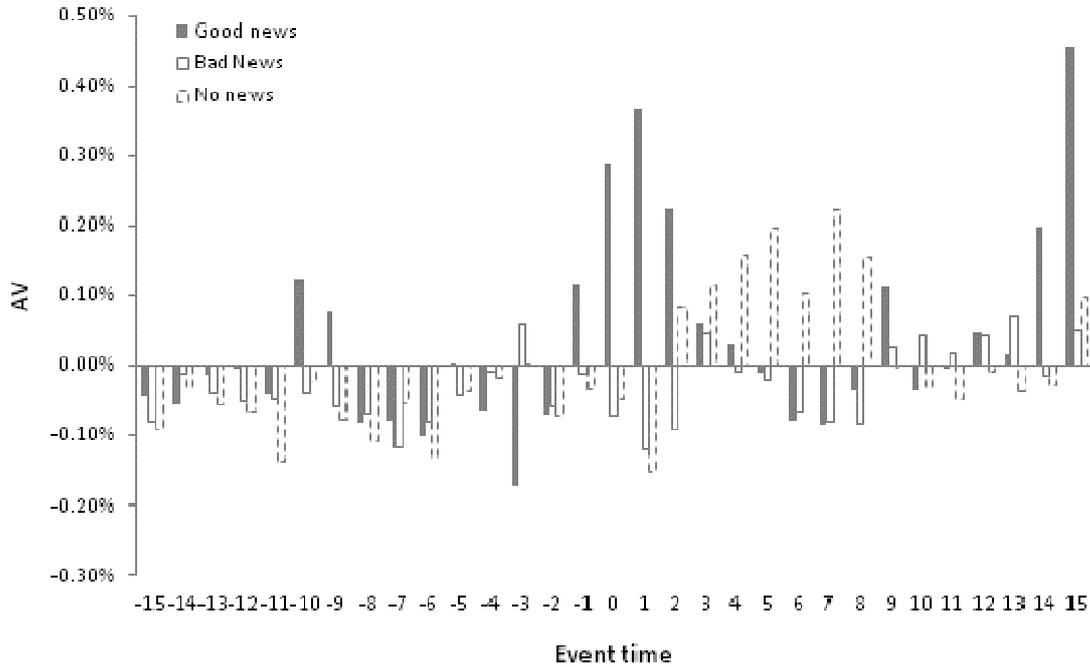
** Parameters statistically significant at 5% significance level.

5.2.3.2 – Good and bad news announcements

Following the stock price analysis, we also decided to analyse the dividend announcements trading volume reaction considering the news categorization adopted. Therefore, we calculated the average abnormal trading volume for 45 dividend announcements categorized as good news, 43 announcements categorized as bad news and 14 announcements categorized as no news.

Figure 16 presents the average abnormal trading volume and Table 28 the average abnormal trading volume and the correspondent estimated statistics for good, bad and no news dividend announcements.

Figure 16 – Good, bad and no news dividend announcements - average abnormal trading volume results



Regarding dividend announcements categorized as good news, bad news and no news we found evidence of a statistically significant abnormal activity around dividend announcements categorized as good news, although the same is not verified for the bad news and no news samples. Thereby, following the results obtained in the stock price analysis, we found that, at the trading volume level, the stock market reacts to dividend announcements categorized as good more than to dividend announcements categorized as bad or no news.

Furthermore, for the good news dividend sample we found an abnormal trading volume in days -3, 0, 1, 2, 13 and 15 which implies that dividend announcements categorized by the market as conveying good news have an effect on the number of shares traded in the periods before and after the formal announcement.

Table 28 - Good, bad and no news dividend announcements - average abnormal trading volume results

Day	Good News		Bad News		No News	
	\bar{AV}	Test θ_4	\bar{AV}	Test θ_4	\bar{AV}	Test θ_4
-15	-0.04%	-0.5280	-0.08%	-0.9987	-0.09%	-0.6798
-14	-0.05%	-0.6434	-0.01%	-0.1383	-0.03%	-0.2350
-13	-0.01%	-0.1574	-0.04%	-0.4903	-0.06%	-0.4231
-12	0.00%	-0.0573	-0.05%	-0.6244	-0.07%	-0.4901
-11	-0.04%	-0.4837	-0.05%	-0.6092	-0.14%	-1.0118
-10	0.12%	1.4485	-0.04%	-0.4951	-0.02%	-0.1718
-9	0.08%	0.8854	-0.06%	-0.7544	-0.08%	-0.5737
-8	-0.08%	-0.9603	-0.07%	-0.8600	-0.11%	-0.7941
-7	-0.08%	-0.9372	-0.12%	-1.4377	-0.06%	-0.4085
-6	-0.10%	-1.2015	-0.08%	-0.9966	-0.13%	-0.9590
-5	0.00%	0.0531	-0.04%	-0.5180	-0.04%	-0.2824
-4	-0.06%	-0.7502	-0.01%	-0.0897	-0.02%	-0.1301
-3	-0.17%	-2.0223**	0.06%	0.7508	0.00%	0.0085
-2	-0.07%	-0.8383	-0.06%	-0.7559	-0.07%	-0.5335
-1	0.11%	1.3516	-0.01%	-0.1398	-0.03%	-0.2534
0	0.29%	3.3722*	-0.07%	-0.8933	-0.05%	-0.3574
1	0.37%	4.3157*	-0.12%	-1.4735	-0.15%	-1.1180
2	0.23%	2.6539*	-0.09%	-1.1304	0.08%	0.6102
3	0.06%	0.7242	0.05%	0.5805	0.11%	0.8417
4	0.03%	0.3696	-0.01%	-0.1110	0.16%	1.1564
5	-0.01%	-0.1265	-0.02%	-0.2348	0.20%	1.4426
6	-0.08%	-0.9210	-0.06%	-0.7992	0.10%	0.7589
7	-0.08%	-0.9964	-0.08%	-0.9870	0.22%	1.6403
8	-0.03%	-0.4118	-0.08%	-1.0391	0.15%	1.1348
9	0.11%	1.3323	0.02%	0.3052	0.00%	-0.0095
10	-0.03%	-0.4055	0.04%	0.5306	-0.03%	-0.2395
11	0.00%	-0.0201	0.02%	0.2142	-0.05%	-0.3518
12	0.05%	0.5397	0.04%	0.5291	-0.01%	-0.0544
13	0.02%	0.1864	0.07%	0.8768	-0.04%	-0.2754
14	0.20%	2.3289**	-0.01%	-0.1608	-0.03%	-0.2117
15	0.45%	5.3604*	0.05%	0.6316	0.10%	0.7233

* Parameters statistically significant at 1% significance level.

** Parameters statistically significant at 5% significance level.

6. CONCLUSIONS

The stock market efficiency assumes a crucial importance in finance, as investors who understand the market behaviour and possess information can explore opportunities in the periods surrounding certain events. Because of this, researchers tend to understand which factors influence the stock market behaviour and to study the market efficiency with respect to several different events such as earnings announcements, accounting statements, annual reports, stock splits, dividend announcements, new issues of stock announcements, general business related information, capital structure related information and announcements of macroeconomic variables.

The information content of earnings and dividend announcements, as they are two of the most important signalling devices available has been shown to influence the stock market performance, as prices adjust efficiently to the information in the announcements. In an efficient market, if the announcements contain relevant information to investors, we would expect that prices adjust quickly and fully to the new information. Moreover, we also expect the major portion of the adjustments to the information conveyed in the announcements to occur before and right after the official announcement and price adjustments in the post-event period to be close to zero.

In this sense, the literature review presented in section 2 enables us to conclude that both earnings and dividend convey relevant information to the market and that more developed capital markets seem to be more efficiently, as they incorporate more quickly the information in the announcements and that emerging capital markets react less efficiently to the announcements or even show no reaction to the financial information.

The main aim of this thesis is to determine the Portuguese stock market semi-strong efficiency with respect to earnings and dividend announcements. In this sense we analysed the announcements made by 23 companies listed on the main Portuguese stock index (PSI-20) during the period of 2005 through 2010. To pursue our aim we applied the traditional event studies methodology and tested for the existence of an abnormal stock return, abnormal relative range and abnormal trading volume around the 31 days surrounding the announcements. Following Duque and Pinto (2004) and Correia (2009) we also categorized our announcements in good, bad or no news announcements in order to perceive if these announcements convey differentiated relevant information to the stock market. Thus, we analysed the stock price, the relative range and the trading volume reaction regarding 446 earnings announcements, 220 categorized as good news, 191 categorized as bad news and 35 categorized as no news and 102 dividend announcements, 45 categorized as good news, 43 categorized as bad news and 14 categorized as no news announcements. Our findings are limited by the event studies methodology adopted and by the model used to determine the normal or expected returns and trading volumes.

Overall, our empirical evidence supports the hypothesis that the Portuguese stock market reacts to the financial information (earnings and dividend announcements) although it also supports the

rejection of the semi-strong form efficiency considering both earnings and dividend announcements. These results are partially in line with the previous research, as we found evidence of the information content of earnings and evidence, notwithstanding less significant of the information content of dividends. Nevertheless, contrarily to some previous evidence we can not support the semi-strong form efficiency for the Portuguese stock evidence.

Empirical evidence on the stock price reaction suggests that both earnings and dividends convey relevant information to the market, as we found statistically significant abnormal returns in the announcement day (at a level of 5% for the overall earnings announcements sample and at a level of 10% for the overall dividend announcements sample). Furthermore, the relative range results show us that earnings announcements induce greater stock price range variation, as we found evidence of an abnormal relative range in the period surrounding the announcements. On the other hand the results from the trading volume analysis lead us to conclude that earnings announcements have a significant impact in terms of trading volume, as we found evidence of an average abnormal trading volume around the announcement day (from day 0 until the second day after the announcement) although around dividend announcements we found no activity excess. Therefore, empirical results point out that earnings announcements convey more useful information to investors than dividend announcements as we found the abnormal returns in the announcement day and the abnormal trading volume to be positively higher for the overall earnings announcements sample. On the other hand our results also show statistically significant abnormal returns both in the pre-event window and post-event window, which is not consistent with the semi-strong form efficiency, both for earnings and dividend announcements.

With respect to annual and interim earnings announcements our results show that investors experience statistically significant abnormal returns in the announcement day for annual earnings announcements, which does not verifies for both half-yearly and quarterly announcements. As such, results reveal that the Portuguese stock market reacts to annual earnings announcements more than to interim earnings announcements both in terms of stock return and trading volume. Moreover, the trading volume analysis indicates that both annual and interim announcements lead to an abnormal trading volume in the day after the announcement.

When categorizing earnings and dividends as good, bad and no news announcements our results show that announcements of earnings and dividends categorized as good news are associated with positive excess returns and announcements categorized as bad news are associated with negative excess returns in the announcement day. Nevertheless, both the stock price analysis and the trading volume analysis show that earnings and dividend announcements categorized by the Portuguese stock market as good news lead to a statistically stronger market reaction, as we found that investors experience highest abnormal returns and the market registers a higher abnormal trading volume.

For ending, the results from the earnings and dividend announcements made during the period of 2005 through 2010 by Portuguese companies listed on the PSI-20 stock index conditioned by the event studies methodology limitations lead us to conclude that the Portuguese stock market is not semi-strong form efficient regarding the disclosure of financial information (both dividends and earnings), as the stock market does not adjust quickly and fully to the new information present in the announcements, however it is clear that the announcements convey new and valuable information to the market, as they origin significant market reaction, both in terms of share prices and trading volume. These results obtained for the Portuguese stock market are in line with the results obtained for markets considered as emerging, as in a developed stock market we would expect the financial disclosure to have informational value and the market to react rapidly and efficiently to the announcements.

Notwithstanding the rejection of the market hypothesis obtained based on the Portuguese stock market reaction to earnings and dividend announcements, there is still a debate on the efficient market hypothesis, as the empirical evidence on this issue is somehow discordant. In this thesis we addressed this important topic, as we investigated recent data and attempted to differentiate the market response, assessing not only the stock price and trading volume reaction but also the relative range, in order to perceive the maximum and minimum stock price difference variation over the event period.

At this closing point it is now possible to present some suggestions for future research. Since this study analysis announcements made by companies listed on the Portuguese stock index PSI-20, which includes the listings with the largest market capitalisation it would be interesting to analyse all the companies listed on the PSI Geral in order to perceive if companies with different capitalisation suggest different market efficiency results. Another possible trend of future research would be to categorize the announcements in good, bad or no news announcements considering the market expectations. In this sense, considering the earnings and dividend figures with the market expectations would be a better measure, as it would enable a better recognition of the market reaction, also enabling to perceive if the market really responds to the information conveyed in the announcements taking into account the investors' expectations.

7. REFERENCES

- Abeyratna, G. (1994) "An empirical investigation of UK stock market reaction to dividend announcements in a complex signalling setting", Doctoral Thesis, University of Dundee.
- Adelegan, O. J. (2009) "Price Reactions to Dividend Announcements on The Nigerian Stock Market", African Economic Research Consortium Research Paper 188.
- Aharony, Joseph and Swary, Itzhak (1980) "Quarterly Dividend and Earnings Announcements and Stockholders' Returns: An Empirical Analysis", *Journal of Finance*, March, Volume 35 (1).
- Ahmed, Abdullahi, Hussin, Baharuddin M. and Ying, Teoh C. (2010) "Semi-Strong Form Efficiency: Market Reaction to Dividend and Earnings Announcements in Malaysian Stock Exchange", *IUP Journal of Applied Finance*, Volume 16 (5).
- Akbar, Muhammad and Baig, Humayun Habib (2010) "The Reaction of Stock Prices to Dividend Announcements and Market Efficiency in Pakistan", *Second International Conference on Business, Technology and Engineering*.
- Altioek-Yilmaz, Ayse and Akben-Selcuk, Elif (2010) "Information Content of Dividends: Evidence from Istanbul Stock Exchange", *International Business Research*, Volume 3 (3).
- Alves, Carlos and Santos, F. Teixeira dos (2005) "The Informativeness of Quarterly Financial Reporting: The Portuguese Case", *Faculdade de Economia do Porto Working Papers* 177.
- Alves, Carlos and Santos, F. Teixeira dos (2008) "Do First and Third Quarter Unaudited Financial Reports Matter? The Portuguese Case", *European Accounting Review*, Volume 17 (2).
- Amihud, Y. and Murgia, M. (1997) "Dividends, Taxes and Signaling: Evidence from Germany", *Journal of Finance*, Volume 52 (1).
- Ariff, M. and Finn, F. J. (1989) "Announcement Effects and Market Efficiency in a Thin Market: Na Empirical Application to the Singapore Equity Market", *Asia Pacific Journal of Management*, Volume 6 (3).
- Asamoah, Gordon Newlove and Nkrumah, Kwame (2010) "The Impact Of Dividend Announcement On Share Price Behaviour In Ghana", *Journal of Business & Economics Research*, Volume 8 (4).

- Ashley, John W. (1962) "Stock Prices and Changes in Earnings and Dividends: Some Empirical Results", *The Journal of Political Economy*, Volume 70 (1).
- Atiase, R. (1985) "Predisclosure information, firm capitalization, and security price behavior around earnings announcements", *Journal of Accounting Research*, Volume 23.
- Atiase, R. K., Supattarakul, S. Li, H. and Tse, S. (2005) "Market Reaction to Multiple Contemporaneous Earnings Signals: Earnings Announcements and Future Earnings Guidance", *Review of Accounting Studies*, Volume 10.
- Bachelier, Louis (1900) "Theory of Speculation" (Paris: Gauthier-Villars, 1900), and reprinted in English in Cootner, Paul (1964) (ed.) "The Random Character of Stock Market Prices", MIT Press.
- Ball, R. (1989) "What Do We Know About Stock Market 'Efficiency'?" in Guimaraes, R. M. C., Kingsman, B. G. and S. J. Taylor (eds.), "A Reappraisal of the Efficiency of Financial Markets", Berlin: Springer-Verlag.
- Ball, R. and Kothari, S. (1991) "Security returns around earnings announcement", *The Accounting Review*, Volume 66.
- Ball, Ray and Brown, Phillip (1968) "An empirical evaluation of accounting income numbers", *Journal of Accounting Research*, Volume 6 (2).
- Ball, Ray and Shivakumar, Lakshmanan (2008) "How Much New Information is There in Earnings?", *Journal of Accounting Research*, Volume 46.
- Bamber, Linda Smith (1986) "The Information Content of Annual Earnings Releases: A Trading Volume Approach", *Journal of Accounting Research*, Volume 24 (1).
- Bamber, Linda Smith (1987) "Unexpected Earnings, Firm Size, and Trading Volume around Quarterly Earnings Announcements", *The Accounting Review*, Volume 62 (3).
- Barker, C. Austin (1956) "Effective Stock Splits", *Harvard Business Review*, Volume 34 (1).
- Barker, C. Austin (1957) "Stock Splits in a Bull Market", *Harvard Business Review*, Volume 35 (3).
- Barker, C. Austin (1958) "Evaluation of Stock Dividends", *Harvard Business Review*, Volume 36 (4).
- Beaver, William H. (1968) "The Information Content of Annual Earnings Announcements", *Journal of Accounting Research*, Volume 6, *Empirical Research in Accounting: Selected Studies*.

- Beaver, William H. (1981) "Market Efficiency", *The Accounting Review*, Volume 56 (1).
- Benston, George J. (1967) "Published Corporate Accounting Data and Stock Price", *Empirical Research in Accounting: Selected Studies*, 196, Supplement to *Journal of Accounting Research* Volume 5.
- Berezovskis, Pāvels and Visnapuu, Veiko (2010) "Post-Earnings Announcement Drifts on the Baltic Stock Exchanges", Working paper, Stockholm School of Economic.
- Beverley, L. (2008) "Stock Market Event Studies and Competition Commission Inquiries", Center for Competition Policy, Discussion Paper 08-16, University of East Anglia.
- Bhana N. (1995) "The share market reaction to earnings announcements - a test of the efficiency of the Johannesburg Stock Exchange", *Investment Analysts Journal*, Volume 42.
- Bhana, N. (1997) "Price adjustments on the JSE for announcements of share (stock) dividends", *The Investment Analysts Journal*, Volume 46.
- Bhana, N. (1998) "The share price reaction on the Johannesburg Stock Exchange for special (extra) dividend announcements", *The Investment Analysts Journal*, Volume 47.
- Binder, J. (1998) "The event studies methodology since 1969", *Review of Quantitative Finance and Accounting*, Volume 11.
- Black, F. (1976) "The dividend puzzle", *Journal of Portfolio Management* Volume 2.
- Black, F. and Scholes, M. (1970) "Dividend Yields and Common Stock Returns: A New Methodology", Working paper No. 488-70,, Sloan School of Management, Massachusetts Institute of Technology.
- Borch, Beate Nilsen (2008) "Market efficiency theory and the earnings announcement premium at the Oslo Stock Exchange", Master Thesis, Norwegian School of Economics and Business Administration.
- Borges, M. (2004) "Short-term trading around dividend distributions: An empirical application to the Lisbon stock market", *Proceedings of European Applied Business Research Conference – EABR*, Edinburgh Scotland.
- Brown, Philip (1970) "The impact of the annual net profit report on the stock market", *Australian Accountant*, Volume 40 (3).
- Brown, Philip and Kennelly, John W. (1972) "The Informational Content of Quarterly Earnings: An Extension and Some Further Evidence", *The Journal of Business*, Volume 45 (3).

- Brown, Philip, Finn, Frank J. and Hancock, Phillip (1977) "Dividend Changes, Earning Reports, and Shares Prices: Some Australian Findings", Australian Journal of Management, Volume 2.
- Brown, Stewart (1978) "Earnings changes, stock prices, and market efficiency", Journal of Finance, Volume 33 (1).
- Brown, S. and Warner, J. (1985) "Using daily stock returns: The case of event studies", Journal of Financial Economics, J. Volume 14 (1).
- Bruni, A. L., Firmino, Adilson, Gama, Alex and Famá, R. (2003) "O Anúncio Da Distribuição De Dividendos E Seu Efeito Sobre Os Preços Das Ações: Um Estudo Empírico No Brasil", III Congresso USP de Controladoria e Contabilidade (Faculdade de Economia, Administração e Contabilidade da Universidade de São Paulo), Volume 1.
- Campbell, John Y., Lo, Andrew W. and MacKinlay, A. Craig (1997) "The Econometrics of Financial Markets", Princeton University Press, Princeton, NJ.
- Campbell, Kevin and Ohuocha, Chijioke (2011) "The stock market reaction to stock dividends in Nigeria and their information content", Managerial Finance, Volume 37 (3).
- Chambers, Anne E. and Penman, Stephen H. (1984) "Timeliness of Reporting and the Stock Price Reaction to Earnings Announcements", Journal of Accounting Research, Volume 22 (1).
- Chan, Howard, Faff, Robert and Ramsay, Alan (2005) "Firm Size and the Information Content of Annual Earnings Announcements: Australian Evidence", Journal of Business Finance & Accounting, Volume 32 (1 and 2).
- Chang S. J. and Chen S. N. (1991) "Information effects of earnings and dividend announcements on common stock returns: Are they interactive?", Journal of Economics and Business, Volume 43 (2).
- Charest, Guy (1978) "Dividend Information, Stock Returns and Market Efficiency-II", Journal of Financial Economics, Volume 6 (2 and 3).
- Chari, V., Jagannathan, Ravi and Ofer, Aharon R. (1987) "Seasonality in security returns: The case of earnings announcements", No 110, Staff Report, Federal Reserve Bank of Minneapolis.
- Cheng, Louis, Fung, Hung-Gay and Leung, Tak (2007) "Information effects of dividends: Evidence from the Hong Kong market", Review of Quantitative Finance and Accounting, Volume 28 (1).

- Conroy, Robert M., Eades, Kenneth M. And Harris, Robert S. (2000) "A Test of the Relative Pricing Effects of Dividends and Earnings: Evidence from Simultaneous Announcements in Japan", *Journal of Finance*, Volume 40 (3).
- Cootner, Paul (ed.) (1964) "The Random Character of Stock Market Prices", MIT Press.
- Correia, Ricardo Emanuel Sarmiento (2009) "Testing information efficiency in the Portuguese stock market", Master Thesis, Instituto Superior de Ciências do Trabalho e da Empresa.
- Cotter, John (1997) "Irish event studies: earnings announcements, turn of the year and size effects", Open Access publications from University College Dublin, University College Dublin.
- Cowles, Alfred (1933) "Can Stock Market Forecasters Forecast?", *Econometrica*, Volume 1 (3).
- Cowles, Alfred and Jones, Herbert E. (1937) "Some A Posteriori Probabilities in Stock Market Action", *Econometrica*, Volume 5 (3).
- Das, Santu, Pattanayak, J. K. and Pathak, Pramod (2008) "The Effect of Quarterly Earnings Announcements on Sensex: A Case with Clustering of Events", *The IUP Journal of Accounting Research and Audit Practices*, VII (4).
- Dasilas, Apostolos (2007) "Stock market reaction to dividend announcements: Evidence from the Greek Stock Market", Working Paper, available at SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=981885.
- Dasilas, Apostolos and Leventis, Stergios (2011) "Stock market reaction to dividend announcements: Evidence from the Greek stock market", *International Review of Economics & Finance*, Volume 20 (2).
- Denis, David J. and Sarin, Atulya (2001) "Is the Market Surprised by Poor Earnings Realizations Following Seasoned Equity Offerings?", *The Journal of Financial and Quantitative Analysis*, Volume 36 (2).
- Dimson, Elroy and Mussavian, Massoud (1998) "A Brief History of Market Efficiency and Stock Market Anomalies", *European Financial Management*, Volume 4 (1).
- Dielman, Terry E. and Oppenheimer, Henry R. (1984) "The Information Content of Large Dividend Changes", *Financial Review*, Volume 19 (3).

- Dolley, James C. (1933) "Characteristics and Procedures of Common Stock Split-Ups" Harvard Business Review, Volume 11 (3).
- Dumontier, P. and Raffournier, B. (2002) "Accounting and capital markets: a survey of the European evidence", European Accounting Review, Volume 11 (1).
- Duque, João and Pinto, Inês (2004) "How sensitive are price sensitive events?", Instituto Superior de Economia e Gestão – Departamento de Gestão Working papers series nº 4.
- Duque, João and Pinto, Inês (2005) "O impacto da divulgação dos factos relevantes no mercado de capitais português", Cadernos do Mercado de Valores Mobiliários, Volume 22.
- Eades, Ken (1982) "Empirical evidence on dividends as a signal of firm value", Journal of Financial and Quantitative Analysis", Volume 17.
- Eades, Ken, Hess, Pat and Kim, Han E. (1984) "On Interpreting Security Returns During the Ex-dividend Period," Journal of Financial Economics, Volume 13.
- Easton, S. (1991) "Earnings and dividends: is there an interaction effect?", Journal of business, finance and accounting, Volume 18.
- Emanuel, David M. (1984) "The Information Content of Sign and Size of Earnings Announcements: New Zealand Evidence", Accounting & Finance, Volume 24 (2).
- Fama, Eugene F. (1965) "The Behavior of Stock-Market Prices", The Journal of Business, Volume 38(1).
- Fama, Eugene F. (1970) "Efficient Capital Markets: A Review of Theory and Empirical Work", Journal of Finance, Volume 25 (2).
- Fama, Eugene F. (1976), "Efficient Capital Markets: Reply", Journal of Finance, American Finance Association, Volume 31 (1).
- Fama, Eugene F. (1991) "Efficient Capital Markets: II", Journal of Finance, American Finance Association, Volume 46 (5).
- Fama, Eugene F., Fisher, Lawrence, Jensen, Michael C. and Roll, Richard (1969) "The Adjustment of Stock Prices to New Information", International Economic Review, Volume 10 (1).
- Farinha, J., and Soro, M. (2006) "Ex-dividend pricing, taxes and arbitrage opportunities: The case of the Portuguese stock exchange", Presentation at the 2006 Portuguese Finance Network Conference.

- Fernandes, P. (1996) “Lucros Inesperados e Rendibilidade no Mercado de Capitais Português”, Tese de Mestrado, Instituto Superior de Economia e Gestão.
- Firth, Michael (1981) “The Relative Information Content of the Release of Financial Results Data by Firms”, *Journal of Accounting Research*, Volume 19 (2).
- Foster, G., Olsen, C., Shevlin, T. (1984) “Earnings releases, anomalies and the behavior of security returns”, *The Accounting Review*” Volume 59.
- Francisco, Paulo and Gonçalves, Telma (2008) “Que tipo de Informação conduz a Rendibilidades Anormais Extremas? Evidência Empírica do Mercado Euronext Lisbon”, *Cadernos do Mercado de Valores Mobiliários*, Volume 31.
- Frost, Carol A. and Pownall, Grace (1994) “A Comparison Of The Stock Price Response To Earnings Disclosures In The United States And The United Kingdom”, *Contemporary Accounting Research* Volume 11.
- Ganguli, Santanu K. (2010) “EMH and Post-Earning Announcement Drift: An Insight from Event studies of Turnaround Companies in India”, Working Paper, available at SSRN: <http://ssrn.com/abstract=1545647>.
- Griffin, John M., Kelly, Patrick J. and Nadari, Federico (2006) “Measurement and determinants of international stock market efficiency”, Working paper, University of Texas at Austin.
- Griffin, John, Hirschey, Nicholas H. and Kelly, Patrick (2008) “Why does the Reaction to News Announcements Vary across Countries?”, University of Texas at Austin Working Paper.
- Griffin, P. (1976) “Competitive information in the stock market: An empirical study of earnings, dividends, and analysts forecasts”, *Journal of Finance*, Volume 31.
- Grossman, Sanford J. and Stiglitz, Joseph E. (1980) "On the Impossibility of Informationally Efficient Markets", *American Economic Review*, American Economic Association, Volume 70 (3).
- Gurgul, H., Mestel, R. and Schleicher, C. (2003) “Stock Market Reactions to Dividend Announcements: Empirical Evidence from the Austrian Stock Market”, *Financial Markets and Portfolio Management*, Volume 17 (3).
- Harris, L. and Gurel, E. (1986) “Price and volume effects associated with changes in the S&P 500: new evidence for the existence of price pressure”, *Journal of Finance* Volume 41.

- Haw, I., Qaqing, D., Wu. W. (2000) "Timeliness of annual report releases and market reaction to earnings announcements in an emerging capital market: The case of China", *Journal of International Financial Management and Accounting*, Volume 11.
- Hussin, Baharuddin M., Ahmed, Abdullahi D. and Ying, Teoh C. (2010) "Semi-Strong Form Efficiency: Market Reaction to Dividend and Earnings Announcements in Malaysian Stock Exchange", *IUP Journal of Applied Finance*, Volume 16 (5).
- Isidro, Helena (1997) "O preço dos Títulos e o Anúncio dos Resultados no Mercado Accionista Português", Master Thesis, Instituto Superior de Ciências do Trabalho e da Empresa.
- Jais, Mohamad, Karim, Abdul Bakri, Funaoka, Kenta, Abidin, Zainol, Azlan (2009) "Dividend Announcements and Stock Market Reaction", MPRA Paper 19779, University Library of Munich
- Jensen, Michael C. (1978) "Some Anomalous Evidence Regarding Market Efficiency", *Journal of Financial Economics*, Volume 6 (2/3).
- Jermakowicz, Eva K. and Tomaszewski, Sylwia Gornik (1998) "Informational Content of Earnings in the Emerging Capital Market: Evidence from the Warsaw Stock Exchange", *Multinational Finance Journal*, Volume 2 (4).
- John, Kose and Williams, Joseph (1985) "Dividends, Dilution, and Taxes: A Signalling Equilibrium", *The Journal of Finance*, Volume 40 (4).
- Jones, C. and Litzenberger, R. (1970) "Quarterly earnings reports and intermediate stock price trends", *Journal of Finance*, Volume 25 (1).
- Joy, O. Maurice, Litzenberger, Robert H. and McEnally, Richard W. (1977) "The adjustment of stock prices to announcements of unanticipated changes in quarterly earnings", *Journal of Accounting Research* Volume 15 (2).
- Kalay. Avner and Loewenstein, U. (1986) "The Informational Content of the Timing of Dividend Announcements", *Journal of Financial Economics*, Volume 15 (3).
- Kallunki, Juha-Pekka (1996) "Stock returns and earnings announcements in Finland", *The European Accounting Review*, Volume 5 (2).
- Kane, A., Lee, Y. K. and Marcus, A. (1984) "Earnings and Dividend Announcements: Is there a Corroboration Effect?", *Journal of Finance*, Volume 39.

- Kendall, M. G. (1953) "The Analysis of Economic Time-Series—Part I: Prices", Journal of the Royal Statistical Society. Series A (General), Volume 116 (1).
- Kong, Shuhong and Taghavi, Majid (2006) "The Effect of Annual Earnings Announcements on the Chinese Stock Markets", International Advances in Economic Research, Volume 12 (3).
- Kothari, S.P. (2001) "Capital markets research in accounting", Journal of Accounting and Economics", Volume 31.
- Kothari, S. P. and Warner, J.B. (2006) "Econometrics of event studies", Working paper, Center for Corporate Finance, Tuck School of Business.
- Kwan, Clarence C. Y. (1981) "Efficient Market Tests of the Informational Content of Dividend Announcements: Critique and Extension", Journal of Financial and Quantitative Analysis, Cambridge University Press, Volume 16 (02).
- Landsman, W. and Maydew, E. (2001) "Beaver (1968) revisited: Has the information content of annual earnings announcements declined in the past three decades?", Working paper, University of North Carolina.
- Lang, Larry H. P. and Litzenberger, Robert H. (1989) "Dividend announcements: Cash flow signalling vs. free cash flow hypothesis?", Journal of Financial Economics, Volume 24 (1).
- Laurent, M. (2000) "The effect of earnings release for Belgian listed companies", Working Paper WP-CEB: N° 03/005, Université Libre de Bruxelles.
- LeRoy, Stephen F. (1976) "Efficient Capital Markets: Comment", Journal of Finance, American Finance Association, Volume 31 (1).
- LeRoy, Stephen F. (1989) "Efficient Capital Markets and Martingales", Journal of Economic Literature, American Economic Association, Volume 27(4).
- Lintner, J. (1956) "Distribution of incomes of corporations among dividends, retained earnings and taxes", American Economic Review, Volume 46.
- Litzenberger, Robert and Ramaswamy, Krishna (1982) "The Effects of Dividends on Common Stock Prices: Tax Effects or Information Effects?", Journal of Finance, Volume 37.

- Lonie, A. A., Abeyratna, G., Power, D. M. and Sinclair, C. D. (1996) "The stock market reaction to dividend announcements: A UK study of complex market signals", *Journal of Economic Studies*, Volume 23 (1).
- Lourenço, António Morão and Coelho, Maria Manuela Sarmiento (2008) "Conteúdo informativo do resultado anual na Euronext Lisbon", *Proelium*, ISSN 1645-8826, No. 10
- MacKinlay, A. Craig (1997) "Event Studies in Economics and Finance", *Journal of Economic Literature*, American Economic Association, Volume 35 (1).
- Maditinos, Dimitrios I., Šević, Željko, Chatzoglou, Prodromos and Theriou, Georgios N. (2007) "Earnings as an Explanatory Tool in Explaining Stock Market Returns and the Use of Easton and Harris (1991) Model: The Case of Greece", University of Belgrade, International Scientific Conference, Contemporary Challenges of Theory and Practice in Economics.
- Maingot, Michael (1984) "The Information Content of UK Earnings Announcements: A Note", *Accounting & Finance*, Volume 24 (1).
- Mallikarjunappa, T. and Manjunatha, T. (2009) "Stock Price Reactions to Dividend Announcements", *Journal of Management & Public Policy*, Volume 1 (1).
- May, Robert G. (1971) "The Influence of Quarterly Earnings Announcements on Investor Decisions as Reflected in Common Stock Price Changes", *Empirical Research in Accounting: Selected Studies, 1971*, Supplement to Volume 9, *Journal of Accounting Research*.
- McCluskey, B T., Burton, M., Power, D. M., Sinclair, C. D. (2006) "Evidence on the Irish stock market's reaction to dividend announcements", *Applied Financial Economics*, Volume 16 (8).
- Mehndiratta, Neetu and Gupta, Shuchi (2010) "Impact of Dividend Announcement Stock Prices", *International Journal of Information Technology and Knowledge Management*, Volume 2 (2).
- Michaely, Roni, Thaler, Richard and Womack, Kent (1995) "Price reactions to dividend initiations and omissions: Overreaction or drift?", *Journal of Finance* Volume 50.
- Miller, M. and Modigliani, F. (1961) "Dividend policy, growth, and the valuation of shares", *Journal of Business*, Volume 34
- Miller, M. and Rock, K. (1985) "Dividend policy under asymmetric information", *Journal of Finance*, Volume 40.

- Modigliani, Franco and Miller, Merton H. (1958) "The Cost of Capital, Corporation Finance and the Theory of Investment", *The American Economic Review*, Volume 48 (3).
- Myers, John H. and Bakay, Archie J. (1948) "Influence of Stock Split-ups on. Market Price", *Harvard Business Review*, Volume 26 (2).
- Opong, K.K. (1995) "The Information Content of Interim Financial Reports: UK Evidence", *Journal of Business Finance and Accounting*, Volume 22 (2).
- Osbourne, M. F. M. (1962) "Periodic Structure in the Brownian Motion of Stock Prices", *Operations Research*, Volume 10 (3).
- Osbourne, M. F. M. (1959) "Brownian Motion in the Stock Market", *Operations Research*, Volume 7 (2).
- Osei, K. A. (2002) "Assert Pricing and Informational Efficiency of the Ghana Stock Market", AERC Research Paper 115, Nairobi Kenya: African Economic Research Consortium.
- Otagawa, K. (2003) "Market liquidity around quarterly earnings announcements: Evidence from Japan", Working Paper, Kobe University.
- Papaioannou, G.J., Travlos, N.G. and Tsangarakis, N.V. (2000) "Valuation Effects of Greek Stock Dividend Distributions", *European Financial Management*, Volume 6 (4).
- Patell, J. (1976) "Corporate forecasts of earnings per share and stock price behavior: empirical tests", *Journal of Accounting Research*, Volume 14.
- Pathirawasam, Chandrapala (2009) "The information content of stock dividend announcements: Evidence from Sri Lanka", Technical University of Ostrava, ER-CEREI, Volume 12 (3).
- Pellicer, M. and Rees, W. (1999) "Regularities in the equity price response to earnings announcements in Spain", *European Accounting Review*, Volume 8 (4).
- Penman, Stephen H. (1984) "Abnormal returns to investment strategies based on the timing of earnings reports," *Journal of Accounting and Economics*, Elsevier, Volume 6 (3).
- Pettit, R. (1972) "Dividend announcements, security performance, and capital market efficiency", *Journal of Finance*, Volume 27.
- Pettit, R. (1976) "The Impact of Dividend and Earnings Announcement: A Reconciliation", *Journal of Business*, Volume 49.

- Pinto, Inês Ferreira da Fonseca (2003) "O impacto da divulgação dos factos relevantes no mercado de capitais português", Dissertação de Mestrado, Instituto Superior de Ciências do Trabalho e Empresa.
- Pope, P. and Inyangete, C. G. (1992) "Differential Information, the Variability of the UK Stock Returns, and Earnings Announcements", *Journal of Business Finance & Accounting*, Volume 19.
- Roberts, Harry, V. (1959) "Stock-Market "Patterns" and Financial Analysis: Methodological Suggestions", *Journal of Finance*, Volume 14 (1).
- Romacho, João and Cidrais, Vânia (2007) "A eficiência do mercado de capitais português e o anúncio dos resultados contabilísticos", *Tékhnē – Polytechnical Studies Review*, Volume 4 (7).
- Romon, F. (2000) "Contribution of dividend policy stability to the measurement of Dividend announcement and ex-dividend effects on the French Market", Working paper, Larime, I.A.E. Valenciennes.
- Salminen, Joni (2008) "Abnormal Returns of Dividend Announcements during a Boom and a Recession. Empirical Evidence from U.S. from the years of 2000 - 2002 and 2005 - 2007, including Finnish Extra Dividends", Lappeenranta University of Technology.
- Samuelson, Paul A. (1965) "Proof that properly anticipated prices fluctuate randomly", *Industrial Management Review*, Volume 6.
- Scarpin, J. E., Pinto, J. and Boff, M. L. (2007) "A relevância da informação contábil e o mercado de capitais: uma análise empírica das empresas listadas no índice Brasil", 7º Congresso de Controladoria e Contabilidade da USP, available at <http://www.congressousp.fipecafi.org/artigos72007/140.pdf>.
- Serra, Ana Paula (2002) "Event studies tests: A brief survey", Working Paper FEP 117, University of Porto.
- Sponholtz, C. (2005) "Separating the Stock Market's Reaction to Simultaneous Dividend and Earnings Announcements", Working Paper Series, N. 212, Aarhus University.
- Sponholtz, C. (2005) "The information content of earnings announcements in Denmark", Working paper, Centre for Analytical Finance, University of Aarhus.
- Travlos, Nickolaos, Trigeorgis, Lenos and Vafeas, Nikos (2001) "Share-holder Wealth Effects of Dividend Policy Changes in an Emerging Stock Market: The Case of Cyprus", *Multinational Finance Journal* Volume 5 (2).

- Van Huffer, G., Joos, P. and Ooghe, H. (1996) "Semi-annual earnings announcements and market reaction: Some recent findings for a small capital market", *The European Accounting Review* Volume 5.
- Vieira, E. and Raposo, C. R. (2007) "The Effect of Firm-Specific Factors on the Market Reaction to Dividend Change Announcements: New Evidence from Europe", Working Paper, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=955779.
- Vieira, Elisabete Fátima Simões (2007) "Signalling with Dividends? New Evidence from Europe", Doctoral Thesis, Instituto Superior de Ciências do Trabalho e da Empresa.
- Vieru, M. (2002) "The impact of interim earnings announcements on the permanent price effects of trades on the Helsinki stock exchange", *Journal of Multinational Financial Management*, Volume 12.
- Wael, L. (2004) "Market reaction to annual earnings announcements: the case of euronext Paris", Working paper, Université de Perpignan.
- Watts, Ross (1973) "The information content of dividends", *Journal of Business*, Volume 46.
- Wilton, P. (2002) "Impacto da Divulgação de Resultados na Negociação em Mercado de Bolsa", *Cadernos do Mercado de Valores Mobiliários - CMVM*, Volume 15.
- Wooldridge, J. R. (1982) "The information content of dividend changes", *Journal of Finance Research*, Volume 5.
- Working, Holbrook (1934) "A Random-Difference Series for Use in the Analysis of Time Series", *Journal of the American Statistical Association*, Volume 29 (185).

8. ANNEXES

Appendix 1 – Companies included in the initial sample

Altri, S.G.P.S., S.A.

Banco Comercial Português, S.A.

Banco Espírito Santo, S.A.

Banco Português de Investimento, S.G.P.S., S.A.

Brisa - Auto-Estradas de Portugal, S.A.

Cimpor - Cimentos de Portugal, S.G.P.S., S.A.

Cofina, S.G.P.S., S.A.

EDP - Electricidade de Portugal, S.A.

EDP Renováveis, S.A.

Galp Energia, S.G.P.S., S.A.

Impresa, S.G.P.S., S.A.

Jerónimo Martins, S.G.P.S., S.A.

Grupo Media Capital, S.G.P.S., S.A. *

Mota-Engil, S.G.P.S., S.A.

Novabase, S.G.P.S., S.A.

Portugal Telecom, S.A.

Pararede, S.G.P.S., S.A. *

Portucel, S.A.

Redes Energéticas Nacionais, S.G.P.S., S.A.

Semapa - Sociedade de Investimento e Gestão, S.G.P.S., S.A.

Sonae, S.G.P.S., S.A.

Sonae Indústria, S.G.P.S., S.A.

Sonae.com, S.G.P.S., S.A.

Teixeira Duarte, S.A.

ZON Multimédia, S.G.P.S., S.A.

* Company excluded from the final sample.

Appendix 2 – Earnings and dividend announcements made by the companies included in the initial sample

	Earnings announcements	Dividend announcements
Altri, S.G.P.S., S.A.	22	3
Banco Comercial Português, S.A.	24	8
Banco Espírito Santo, S.A.	24	6
Banco Português de Investimento, S.G.P.S., S.A.	24	6
Brisa - Auto-Estradas de Portugal, S.A.	24	6
Cimpor - Cimentos de Portugal, S.G.P.S., S.A.	24	6
Cofina, S.G.P.S., S.A.	10	4
EDP - Electricidade de Portugal, S.A.	24	6
EDP Renováveis, S.A.	10	0
Galp Energia, S.G.P.S., S.A.	17	8
Impresa, S.G.P.S., S.A.	12	0
Jerónimo Martins, S.G.P.S., S.A.	24	8
Grupo Media Capital, S.G.P.S., S.A. *	6	0
Mota-Engil, S.G.P.S., S.A.	22	5
Novabase, S.G.P.S., S.A.	10	0
Portugal Telecom, S.A.	24	7
Pararede, S.G.P.S., S.A. *	8	0
Portucel, S.A.	16	5
Redes Energéticas Nacionais, S.G.P.S., S.A.	13	3
Semapa - Sociedade de Investimento e Gestão, S.G.P.S., S.A.	24	7
Sonae, S.G.P.S., S.A.	24	5
Sonae Industria, S.G.P.S., S.A.	18	1
Sonae.com, S.G.P.S., S.A.	24	0
Teixeira Duarte, S.A.	8	2
ZON Multimédia, SGPS, S.A.	24	6
Total	460	102

* Company excluded from the final sample.

Appendix 3 – Daily stock returns descriptive statistics

	Average	Standard Deviation
Altri	0.10%	2.4730%
BCP	-0.05%	1.9670%
BES	-0.05%	1.5167%
BPI	0.03%	2.0850%
Brisa	0.03%	1.5443%
Cimpor	0.06%	2.0938%
Cofina	0.04%	1.3124%
EDP	0.03%	1.6940%
EDPR	0.03%	2.4407%
GALP	0.03%	2.2078%
Impresa	-0.07%	1.7245%
JM	0.11%	2.1238%
Media Capital *	0.08%	1.0377%
Mota Engil	-0.07%	2.2033%
Nova Base	-0.03%	1.0441%
PT	0.01%	1.6884%
Pararede *	0.04%	2.7195%
Portucel	-0.11%	1.7451%
REN	-0.03%	1.6348%
Semapa	0.06%	1.4383%
Sonae	-0.04%	2.2144%
Sonae Indústria	-0.07%	2.4088%
Sonae.com	0.05%	2.1290%
Teixeira Duarte	0.09%	3.9159%
ZON	-0.03%	1.7096%

* Company excluded from the final sample.

Appendix 4 – Daily stock relative range descriptive statistics

	Average	Standard Deviation
Altri	2.81%	2.3065%
BCP	2.43%	1.6663%
BES	2.01%	1.5197%
BPI	2.30%	1.8285%
Brisa	2.02%	1.4367%
Cimpor	2.43%	2.0299%
Cofina	1.70%	1.3186%
EDP	1.95%	1.4244%
EDPR	3.02%	2.0060%
GALP	2.71%	1.7862%
Impresa	2.20%	1.7754%
JM	2.53%	2.0729%
Media Capital *	1.32%	1.1004%
Mota Engil	2.91%	2.0809%
Nova Base	1.26%	0.9554%
PT	1.94%	1.5073%
Pararede *	4.21%	1.8661%
Portucel	2.37%	1.4584%
REN	2.00%	1.3349%
Semapa	2.12%	1.3889%
Sonae	2.52%	2.0868%
Sonae Indústria	3.02%	2.2942%
Sonae.com	2.76%	2.0562%
Teixeira Duarte	4.83%	3.2428%
ZON	2.22%	1.8611%

* Company excluded from the final sample.

Appendix 5 – Daily transaction volume descriptive statistics

	Average	Standard Deviation
Altri	1.10%	1.2236%
BCP	0.55%	0.4219%
BES	0.18%	0.1700%
BPI	0.24%	0.3414%
Brisa	0.27%	0.1940%
Cimpor	0.31%	0.6322%
Cofina	0.43%	0.6410%
EDP	0.50%	0.4475%
EDPR	0.50%	0.2893%
GALP	1.21%	1.1654%
Impresa	0.68%	0.8194%
JM	0.47%	0.4101%
Media Capital *	0.30%	0.2313%
Mota Engil	0.41%	0.4057%
Nova Base	0.52%	0.6177%
PT	0.24%	0.3319%
Pararede *	0.19%	0.1998%
Portucel	0.39%	0.5134%
REN	0.54%	0.6303%
Semapa	0.45%	0.4559%
Sonae	0.43%	0.7190%
Sonae Indústria	0.69%	0.8010%
Sonae.com	0.34%	0.4681%
Teixeira Duarte	1.10%	1.2236%
ZON	0.55%	0.4219%

* Company excluded from the final sample.

Appendix 6 – Market Model Estimation Results – Stock price analysis

	α_i	β_i	R ²	N
Altri	0.064041 (0.4035)	1.098165 (0.0000)	0.323752	706
BCP	-0.023689 (0.6563)	1.168571 (0.0000)	0.513626	666
BES	-0.062641 (0.1372)	0.908779 (0.0000)	0.467058	693
BPI	0.008277 (0.8922)	1.105911 (0.0000)	0.323916	789
Brisa	0.023185 (0.6023)	0.846505 (0.0000)	0.399475	725
Cimpor	0.032035 (0.5770)	1.036522 (0.0000)	0.441518	744
Cofina	-0.038542 (0.5513)	0.86735 (0.0000)	0.207459	333
EDP	0.000336 (0.9935)	1.037088 (0.0000)	0.577132	709
EDPR	-0.019488 (0.8329)	1.150766 (0.0000)	0.525455	333
GALP	0.090530 (0.2900)	1.152007 (0.0000)	0.403549	400
Impresa	-0.127394 (0.0942)	0.828398 (0.0000)	0.156551	439
JM	0.109054 (0.1159)	0.901067 (0.0000)	0.247612	708
Media Capital *	0.069104 (0.3589)	0.111951 (0.3537)	0.004391	198
Mota Engil	-0.035185 (0.573)	1.169432 (0.0000)	0.461445	671
Nova Base	-0.100258 (0.0798)	0.480321 (0.0000)	0.076507	327
PT	0.022207 (0.6388)	0.885947 (0.0000)	0.454245	697
Pararede *	-0.007494 (0.9633)	0.425022 (0.1235)	0.008247	289
Portucel	-0.039118 (0.5519)	0.791387 (0.0000)	0.407035	421
REN	-0.000874 (0.9850)	0.584009 (0.0000)	0.315552	422
Semapa	0.064182 (0.1726)	0.615970 (0.0000)	0.252121	701
Sonae	-0.009780 (0.8596)	1.262319 (0.0000)	0.531561	753
Sonae Indústria	-0.090098 (0.2018)	1.275109 (0.0000)	0.4972	588
Sonae.com	0.016924 (0.7948)	0.952408 (0.0000)	0.259342	795
Teixeira Duarte	0.164917 (0.4064)	1.213524 (0.0000)	0.364865	249
ZON	-0.029118 (0.5598)	0.836543 (0.0000)	0.373629	736

P-value is presented in parentheses below the regression coefficients and test whether they differ from zero.

* Company excluded from the final sample.

	β_i	R^2	N
Altri	1.099422 (0.0000)	0.32308	706
BCP	1.168899 (0.0000)	0.51348	666
BES	0.907954 (0.0000)	0.46535	693
BPI	1.106030 (0.0000)	0.3239	789
Brisa	0.846729 (0.0000)	0.399249	725
Cimpor	1.036958 (0.0000)	0.441283	744
Cofina	0.860433 (0.0000)	0.206607	333
EDP	1.037095 (0.0000)	0.577132	709
EDPR	1.150443 (0.0000)	0.525391	333
GALP	1.148770 (0.0000)	0.401867	400
Impresa	0.815056 (0.0000)	0.151122	439
JM	0.901175 (0.0000)	0.244972	708
Media Capital *	0.13298 (0.2618)	0.000095	198
Mota Engil	1.170058 (0.0000)	0.46119	671
Nova Base	0.44346 (0.0000)	0.067734	327
PT	0.885705 (0.0000)	0.454072	697
Pararede *	0.422524 (0.1177)	0.00824	289
Portucel	0.793173 (0.0000)	0.406533	421
REN	0.584027 (0.0000)	0.315552	422
Semapa	0.615990 (0.0000)	0.250127	701
Sonae	1.262461 (0.0000)	0.531542	753
Sonae Indústria	1.274350 (0.0000)	0.495799	588
Sonae.com	0.952802 (0.0000)	0.259279	795
Teixeira Duarte	1.210781 (0.0000)	0.363086	249
ZON	0.836670 (0.0000)	0.373338	736

P-value is presented in parentheses below the regression coefficients and test whether they differ from zero.

* Company excluded from the final sample.

Appendix 7 – Market Model Estimation Results – Relative range analysis

	α_i	β_i	R ²	N
Altri	1.126831 (0.0000)	1.298687 (0.0000)	0.342783	707
BCP	0.776562 (0.0000)	1.34024 (0.0000)	0.504199	667
BES	0.364559 (0.0000)	1.382876 (0.0000)	0.563446	694
BPI	0.526427 (0.0000)	1.521065 (0.0000)	0.390467	790
Brisa	0.582746 (0.0000)	1.193816 (0.0000)	0.534726	726
Cimpor	0.656106 (0.0000)	1.360316 (0.0000)	0.556128	745
Cofina	0.632404 (0.0000)	1.33269 (0.0000)	0.199193	334
EDP	0.580307 (0.0000)	1.098100 (0.0000)	0.62565	710
EDPR	1.154696 (0.0000)	1.167693 (0.0000)	0.45209	334
GALP	1.047037 (0.0000)	1.199999 (0.0000)	0.390511	401
Impresa	0.946207 (0.0000)	1.390668 (0.0000)	0.261314	440
JM	0.743819 (0.0000)	1.454344 (0.0000)	0.438568	709
Media Capital *	1.555638 (0.0000)	-0.300981 (0.2622)	0.006378	199
Mota Engil	1.181861 (0.0000)	1.323435 (0.0000)	0.482854	672
Nova Base	0.693979 (0.0000)	0.756449 (0.0000)	0.063048	328
PT	0.744768 (0.0000)	0.953167 (0.0000)	0.465547	698
Pararede *	3.801856 (0.0000)	0.570105 (0.0632)	0.011936	290
Portucel	1.097018 (0.0000)	0.849725 (0.0000)	0.379532	422
REN	0.888222 (0.0000)	0.725002 (0.0000)	0.297118	423
Semapa	1.069259 (0.0000)	0.861248 (0.0000)	0.346345	702
Sonae	0.690353 (0.0000)	1.454042 (0.0000)	0.58462	754
Sonae Indústria	1.119707 (0.0000)	1.412355 (0.0000)	0.431689	589
Sonae.com	1.174893 (0.0000)	1.317633 (0.0000)	0.318541	796
Teixeira Duarte	2.52705 (0.0000)	1.169066 (0.0000)	0.266047	250
ZON	0.691879 (0.0000)	1.220575 (0.0000)	0.469277	737

P-value is presented in parentheses below the regression coefficients and test whether they differ from zero.

* Company excluded from the final sample.

Appendix 8 – Market Model Estimation Results – Trading volume analysis

	α_i	β_i	R^2	N
Altri	0.770998 (0.0000)	0.717049 (0.0005)	0.017317	707
BCP	-0.094968 (0.0003)	1.459266 (0.0000)	0.530817	667
BES	0.072689 (0.0000)	0.249823 (0.0000)	0.09887	694
BPI	0.021960 (0.4054)	0.482802 (0.0000)	0.093303	790
Brisa	0.126681 (0.0000)	0.324817 (0.0000)	0.122035	726
Cimpor	0.052089 (0.2973)	0.55943 (0.0000)	0.043379	745
Cofina	0.237578 (0.0010)	0.441441 (0.0029)	0.02647	334
EDP	-0.067650 (0.0206)	1.264347 (0.0000)	0.403814	710
EDPR	0.271799 (0.0000)	0.547304 (0.0000)	0.122001	334
GALP	0.324562 (0.0201)	1.892479 (0.0000)	0.107813	401
Impresa	0.496743 (0.0000)	0.410564 (0.0151)	0.013398	440
JM	0.262730 (0.0000)	0.469900 (0.0000)	0.063286	709
Media Capital *	0.345125 (0.0001)	-0.416494 (0.0352)	0.022326	199
Mota Engil	0.143572 (0.0000)	0.340943 (0.0000)	0.111218	672
Nova Base	0.291429 (0.0000)	0.281433 (0.0032)	0.026388	328
PT	-0.060206 (0.1957)	1.291015 (0.0000)	0.21745	698
Pararede *	0.23612 (0.1249)	0.988373 (0.0063)	0.02559	290
Portucel	0.04458 (0.2508)	0.394604 (0.0000)	0.065526	422
REN	0.112534 (0.0000)	0.167227 (0.0000)	0.032648	423
Semapa	0.133002 (0.0014)	0.602866 (0.0000)	0.065176	702
Sonae	-0.070799 (0.0829)	1.329321 (0.0000)	0.276853	754
Sonae Indústria	0.067673 (0.1272)	0.822405 (0.0000)	0.131784	589
Sonae.com	0.061158 (0.2586)	0.826504 (0.0000)	0.070404	796
Teixeira Duarte	-0.170220 (0.1296)	1.822046 (0.0000)	0.219144	250
ZON	-0.018161 (0.6107)	0.798875 (0.0000)	0.144645	737

P-value is presented in parentheses below the regression coefficients and test whether they differ from zero.

* Company excluded from the final sample.

Appendix 9 – Literature review summarized

9.1 - Earnings Announcements

Author(s)	Objectives	Methodology	Data	Results
Ball and Brown (1968)	"An empirical evaluation of accounting income numbers requires agreement as to what real-world outcome constitutes an appropriate test of usefulness. Because net income is a number of particular interest to investors, the outcome we use as a predictive criterion is the investment decision as it is reflected in security prices. Both the content and the timing of existing annual net income numbers will be evaluated since usefulness could be impaired by deficiencies in either. (...) The initial objective was to assess the usefulness of existing accounting income numbers by examining their information content and timeliness."	Abnormal Performance Index	"Three classes of data are of interest: the contents of income reports; the dates of the report announcements; and the movements of security prices around the announcement dates. (...) 261 US firms for the period of 1957 - 1965"	"Of all the information about an individual firm which becomes available during a year, one-half or more is captured in that year's income number. Its content is therefore considerable. However, the annual income report does not rate highly as a timely medium, since most of its content (about 85 to 90 per cent) is captured by more prompt media which perhaps include interim reports. Since the efficiency of the capital market is largely determined by the adequacy of its data sources, we do not find it disconcerting that the market has turned to other sources which can be acted upon more promptly than annual net income."
Beaver (1968)	"This paper empirically examines the extent to which common stock investors perceive earnings to possess informational value. The study directs its attention to investor reaction to earnings announcements, as reflected in the volume and price movements of common stocks in the weeks surrounding the announcement date."	Abnormal trading volume (AVOL) and abnormal stock price volatility (AVAR)	"The study is based upon a sample of annual earnings announcements released by 143 firms during the years 1961 through 1965. Six criteria were used in the selection of the sample firms"	"The dramatic price and volume reaction indicates that investors do look directly at reported earnings and do not use other variables to the exclusion of reported earnings. The evidence also indicates that news announcements occurring prior to the earnings report do not entirely preempt the information content of reported earnings. Given these findings, one of the first extensions of the study will be to explore the possibility of constructing expectations models that will permit a prediction of the direction and magnitude of the price residual."

Author(s)	Objectives	Methodology	Data	Results
Jones and Litzenberger (1970)	"We postulate that changes in the beliefs of market professionals concerning the intrinsic worth of an equity would cause gradual price adjustments over time, thereby generating intermediate stock price trends. These price adjustments would be gradual over time rather than instantaneous since changes in the beliefs of market professionals concerning the fundamental value of a security would be gradually disseminated to the general investing public through advisory services, stock brokers, etc."	Treynor and Sharp	"Two samples of stocks were available for the purpose of this study. Both were created from the Quarterly Compustat tapes, and represent all the companies available from these tapes which had a complete set of data for the entire period. The first sample of 510 companies covers the period 1962-1965, and the second sample of 618 companies is for the years 1964-1967."	"Our empirical results lend support to the hypothesis that the stock market is not as perfect as some proponents of the random walk theory have claimed. That is, the market may not adjust instantaneously and correctly for every item of information that becomes available. Information available to the public in the form of quarterly earnings reports does not seem to be fully discounted by the market at the time it becomes available. If it were, stock selection techniques based on available quarterly earnings reports should not produce, on the average and over time, results significantly different than the market."
May (1971)	"The purpose of this study is to provide information and motivation to accountants and managers who have to make decisions affecting the resources devoted to improving quarterly accounting measurements by attempting to answer the following two empirical research questions: 1. Do quarterly accounting data, in the form of public earnings announcements, have a significant effect on investor decisions as reflected in market price changes? 2. Does there appear to be a significant difference between the influence on investors of quarterly and annual earnings announcements? Does the difference, if any, reflect investor awareness of the lesser quality of measurement widely attributed to measurements of quarterly income?"	Fama et al. (1969)	"The period selected for this study extends roughly from July 1964 through time 1968. A sample of 105 firms was selected from among all firms whose common stocks were listed on the American Stock Exchange in the fourth calendar quarter of 1965."	"A conclusion that there is significant demand for quarterly accounting data to be used by investors in actual decisions seems to be justified by the first finding of the study, i.e., that price changes in the weeks of quarterly earnings announcements are greater than average price changes. But the second finding of the study, that relative price-change responses to quarterly earnings are not significantly less than responses to annual earnings, leads to the conclusion that investors may be unaware of, or unable to take account of, the difference in quality (reliability) of quarterly and annual accounting data."

Author(s)	Objectives	Methodology	Data	Results
Brown and Kennelly (1972)	"The usefulness of quarterly earnings per share (EPS) data is subject to some debate.' Our intent in this paper is to extend empirical knowledge of current reporting in one sense."	"Our experimental design follows closely that of Ball and Brown."	"Data are for ninety-four of the 100 Compustat firms referred to by Brown and Niederhoffer. (1951-1967)"	"There are just two major conclusions: (1) The information contained in quarterly EPS reports is useful in that it can be used to predict aggregate abnormal rates of return on the securities to which the EPS numbers relate. (2) Disaggregation of annual EPS into its quarterly components improves the predictive ability of the EPS series by at least 30 to 40 percent."
Griffin (1976)	"This study assesses the joint and individual effects of published earnings-per share numbers, dividend-per-share numbers and analysts' forecasts of earnings-per share on security returns. (...) Two hypotheses are studied concerning the effects of new information which may alter expected security return. Relative risk is assumed constant (for estimation purposes) throughout the analysis.' The first hypothesis (H 1) states that there is no difference in the association between each informational variable and security returns. Hypothesis two (H2) states that there is no difference in the joint effect of information which is unambiguous for the assessment of security returns and the joint effect of information which is ambiguous."	"An abnormal security performance metric is used. The metric is defined as a 'cumulative average residual"	"One hundred and sixty-two firms were selected from those listed on the New York Stock Exchange." (1968-1973)	"The behavior of the cumulative average residual (CAR-the information content metric) suggests that the joint effect of earnings per- share, dividends-per-share and forecasts of earnings-per-share on the assessment of expected return is significant. The aggregate capital market appears to anticipate and respond to information conveyed by the announcement of earnings per-share, and the disclosure of dividend-per-share and forecasts of earnings-per share at the same time as the announcement of annual earnings. (...) Further, there appears to be unique information contained in dividends (particularly dividend decreases) that is not contained in earnings-per-share and analysts' forecasts of earnings-per-share."

Author(s)	Objectives	Methodology	Data	Results
Brown et al. (1977)	"The effect of changes in a firm's dividend policy on its share price has been debated in the finance literature for many years. Most of the debate has centered on whether the firm's market value depends upon the proportion of the earnings paid out in dividends; that is, the firm's dividend payout rate. This aspect of the debate is referred to as the "dividend payout per se" issue. Our paper is concerned with a related issue, frequently coined the "information content of dividends" hypothesis, which states that dividend payments inform the share market about management's views of the future prospects of the firm. Changes in dividend payments contain information which enables market participants to revise their predictions of future works, and consequently to adjust share prices when the changes are announced."	"We report the cumulative average rate of return, after removing market effects, for each profit-dividend category."	"All firms selected in the study had to satisfy a basic criterion of being in the N=61 version of the price relative data file compiled by Brown.(...) The file initially extended over the period January, 1958 to December, 1970. It has recently been updated to December 1973."	"In Australia, dividend and profit reports are normally announced simultaneously, and have an immediate impact on share prices. There have been interactive informational effects, whereby dividend and profit changes have tended to reinforce one another. When dividend and profit signals have been <i>prima facie</i> in conflict, their joint impact on share prices has been considerably lessened. Although it appears that the larger the change in dividend or profit, the greater has been the associated change in share price, there has been a tendency for dividend and profit changes to be positively related. It may also be true that profit and dividend have been proxies for more fundamental information effects of either dividend or profit may well prove pointless."
Joy et al. (1977)	"The present study presents evidence that, over the period studied, the information contained in quarterly earnings was not fully impounded into stock prices at the time of announcement. The adjustment of common stock prices to the announcement of unanticipated changes in quarterly earnings (and to other announcements as well) is an empirical question. The purpose of this present study is to reexamine the adjustment of stock prices to announcements of presumed unanticipated changes in quarterly earnings."	"In empirically examining the adjustment of common stock prices to the informational content of quarterly earnings reports, the Ball and Brown [1968] and Fama et al. [1969] method of residual analysis is used."	"A random sample of 102 firms was chosen from all non regulated industrial companies that were continuously listed on the New York Stock Exchange over the period 1963 through 1968. Six firms were subsequently deleted, either because of uneven length reporting quarters or because they reported only semi annually throughout the six year study period."	"Unanticipated favorable quarterly earnings announcements are shown to have had a statistically significant association with abnormal price changes over the subsequent twenty-six weeks. Also, the percentage deviation of reported earnings from expected earnings is shown to have had a significant association with the magnitude of the subsequent price adjustment. This evidence suggests that, over the period covered by the present study, above average risk adjusted rates of return (gross of any transaction costs and opportunity costs associated with monitoring quarterly earnings reports) could have been obtained firm evaluating information contained in quarterly earnings announcements. (...) This study suggests that price adjustments to the information concerning security valuations that are contained in unexpected "highly favorable" quarterly earnings reports are gradual, rather than instantaneous."

Author(s)	Objectives	Methodology	Data	Results
Brown (1978)	"Different types of public information have been examined and considerable research energy expended in attempts to confirm or deny the Efficient Markets Hypothesis (EMH). Because Earnings Per Share (EPS) information is central to the valuation of equity securities, the determination of market efficiency in assimilating EPS information is especially important, but is yet unsettled. The purpose of this paper is to present further information which will help to resolve the issue."	"Three different (but similar) indexes were constructed (...) These were the Cumulative Average Residual (CAR) (see Fama et al.), the Pettit Performance Index (PPI) (see Pettit), and the Abnormal Performance Index (API) (see Ball and Brown)"	The final sample consisted of 158 firms." (1963 to 1971)	"Based on the sample of securities chosen, results indicate that the announcement of unusual EPS significantly affects stock prices, that the prices do not adjust instantaneously, and that an abnormal return in excess of transaction costs could be earned by using the forecast models. (...) The above results and analyses indicate that market inefficiencies existed for the securities in the sample over the time periods considered. The statistically significant trend in the sample CAR indicates that the market failed to adjust instantaneously to the new EPS information, so that the excess returns could have been earned by acting on the EPS information as it appeared in The Wall Street Journal."
Aharony and Swary (1980)	"The main purpose of this study is to ascertain whether quarterly dividend changes provide information beyond that already provided by quarterly earnings numbers. The study uses a methodology different from any used in previous studies, and provides evidence on the usefulness of both quarterly dividend and earnings announcements as signals of changes in future prospects of the firm."	"To examine empirically the adjustment of common stock prices to quarterly dividend announcements, a measure of unexpected change in dividends first must be derived. The expectation model used in this study is a naive model. Measurement of Abnormal Performance - CAR"	"A sample of 149 industrial firms was selected from those listed on the New York Stock Exchange. In addition, the daily closing Standard and Poor's Industrial Common Stock Price Index was obtained from the annual issues of Standard and Poor's Trade and Securities Statistics-Security Price Index Record, for the period 1/1/63- 12/31/76."	"Findings about capital market reaction to the dividend announcements studied strongly support the hypothesis that changes in quarterly cash dividends provide useful information beyond that provided by corresponding quarterly earnings numbers. In addition, the results also support the semi-strong form of the efficient capital market hypothesis; that is, on the average, the stock market adjusts in an efficient manner to new quarterly dividend information."

Author(s)	Objectives	Methodology	Data	Results
Firth (1981)	"The purpose of this paper is to add to the accounting-capital markets literature by examining the information content (defined as abnormal security returns and share dealing activity) of the release of a company's annual financial results, in its different stages, in the U.K. The research will give some indication of the incremental "information" contained in the second stage (ARA) of releasing annual financial results data. In addition to examining the PA, ARA, and AGM, the information content of half-yearly interim results (IR) is also examined."	"For the purpose of this study, "information content" is defined as abnormal movements in security returns (ignoring the sign of the residual) and changes in the volume of shares traded and the number of deals transacted."	" (...) This comparison was carried out over the three years 1976, 1977, and 1978. (...) The sample firms used in this study consisted of 120 randomly chosen firms."	"The results indicate that, on average, the week of the preliminary announcement gives the highest weekly level of "information." Although earnings announcements are anticipated to a large extent by the stock market, the actual release of the figures still results in substantial additional information being given. This result is consistent with research in the United States (Beaver [1968], Brown [1978], Foster [1973], Grant [1980], and Hagerman [1973]). The release of the annual report and accounts and the release of the interim results also has high levels of information content and these are substantially greater than that of the average week. (...) In contrast, the annual general meeting, which usually takes place about three or four weeks subsequent to the release of the ARA, does not appear to give an above-average level of information. The interim report also seems to give substantial information, which is consistent with research into the impact of quarterly earnings figures in the U.S. (...) The results are consistent with the efficient markets theory, in that the abnormal returns and abnormal share-dealing behaviour associated with the information are confined to the week of its release."
Chambers and Penman (1984)	"In this paper, we provide descriptive evidence on the relationship between timeliness of earnings reports and stock price behavior surrounding their release."	Cumulative Abnormal Return	"Our analyses were conducted on interim and annual earnings announcements of 100 randomly selected New York Stock Exchange firms over the seven years, 1970-76."	"There appears to be some relationship between reporting lag time and return variability at report date for reports of relatively small firms bearing good news. Timely interim reports of small firms which bring good news are associated with higher price reactions than are those with longer lag times. This is not observed for reports revealing bad news or reports for relatively large firms. When reports are published earlier than expected, they tend to have larger price effects than when they are published on time or later than expected. Further, unexpectedly early reports are characterized by good news, whereas unexpectedly late reports tend to bear bad news. When firms miss their expected reporting dates, the market interprets this as bad news. Abnormal price variability is not restricted to the day of the report, given that the report has a significant effect on prices on its release date. The size of the abnormal post report price variability is positively related to the size of the price reaction to the report, and positively related to reporting lag time. It is also higher following a bad news report than a good news report. When a report has little effect on prices upon its announcement, there is little abnormal post report price variability. Abnormal post report price variability is associated with unexpectedly early reports which convey good news, but not with those which convey bad news."

Author(s)	Objectives	Methodology	Data	Results
Foster et al. (1984)	"A common finding in the literature is that systematic post-announcement drifts in security returns are associated with the sign or magnitude of unexpected earnings changes. This paper examines proposed explanations for these drifts."	CAR	2053 companies for the period of 1974-1981	"The paper also documents that the systematic drifts in security returns are found for only a subset of earnings expectations models. For a class of expectations models based on the time series of reported quarterly earnings, variables coding (1) the sign and magnitude of the earnings forecast error and (2) firm size independently explain 81 percent and 61 percent, respectively, of the variation in post-announcement drifts. The joint explanatory power of (1) and (2) is 85 percent, indicating that the effect of these two variables is highly collinear. The drifts are a persistent phenomenon over 1974 to 1981 period with no evidence of being concentrated in a specific subperiod."
Kane et al. (1984)	"We examine abnormal stock returns surrounding contemporaneous earnings and dividend announcements in order to determine whether investors evaluate the two announcements in relation to each other."	"Dividend Expectation Model Aharony and Swary demonstrate that a simple dividend forecasting model can successfully predict abnormal stock performance. Measurement of Abnormal Stock Price Performance CAR."	"Our sample consists of 352 observations of quarterly earnings and dividend announcements between the fourth quarter of 1979 and the second quarter of 1981."	"We find that there is a statistically significant interaction effect. The abnormal return corresponding to any earnings or dividend announcement depends upon the value of the other announcement. This evidence suggests the existence of a corroborative relationship between the two announcements. Investors give more credence to unanticipated dividend increases or decreases when earnings are also above or below expectations, and vice versa. (...) We first demonstrated that our sample is similar to those of earlier researchers, who found that unexpected dividend and earnings announcements appear in and of themselves to be able to induce abnormal stock returns. However, once a more general specification that allowed for interaction effects between the two announcements was estimated, empirical results indicated that the announcements are indeed interpreted in relationship to each other. This interaction or corroborative effect was statistically significant."

Author(s)	Objectives	Methodology	Data	Results
Atiase (1985)	"Crosssectional differences in the security price reactions to earnings announcements of firms which are associated with specific firm characteristics that lead to differential amounts of predisclosure information. This study focuses on firm size (capitalization) as one such characteristic."	"Regression analysis was used to test the hypothesis that the degree of a firm's security's price revaluation in response to its earnings announcement was inversely related to the firm's capitalization."	"The study covered the four-year period, 1969 through 1972, with weekly security price revaluations examined in response to second-quarter earnings reports of 200 sampled firms in 1971 and 1972"	"The findings reported in this study strongly support the hypothesis that the degree of unexpected security price changes in response to earnings reports is inversely related to the capitalized value (size) of firms."
Bamber (1987)	"This study identifies, at the aggregate market level, factors that appear to be systematically associated with investors' use of accounting disclosures to make trading decisions. In particular, this study hypothesizes that unexpected earnings (UE, hereafter) and firm size are related to both magnitude and duration of trading volume reaction around quarterly earnings announcements."	Unexpected Earnings analysis	"The data include approximately 900 first, second, and third quarter earnings announcements by 195 firms between January 3, 1997 and March 30, 1981."	"This study suggests that the duration of volume adjustment to quarterly earnings disclosures is an increasing function of unexpected earnings magnitude (even when firm size is controlled), and a decreasing function of firm size. (...) Results presented here document an analogous systematic inverse relation between firm size and trading volume around quarterly earnings announcements. "

Author(s)	Objectives	Methodology	Data	Results
Chari et al. (1987)	"The propose of this paper is to examine the empirical magnitude of the effect of the resolution of uncertainty on rates of return in the U.S. stock market. We focus on the information contained in the quarterly earnings reports of firms."	"To test whether the expected returns are higher around quarterly earnings announcement dates, we examine the OLS market (OLSM) model excess returns on days around quarterly earnings announcement dates, using the event studies methodology."	"Here we examine the average excess return around quarterly earnings announcement dates for 2.527 firms during the nine years from 1976 to 1984."	"We find date only the stocks of relatively small firms show large, positive abnormal returns around earning announcements dates. For the smallest 10 percent of the firms, 16 percent of the average annual return occurs on eight days in a year, days corresponding to a two day window surrounding each quarterly announcement date. We also find that the variability of returns around earnings announcement dates is significantly different for small and large firms. For all firms the variance increases around these dates, but the increase is greatest for the smallest firms."
Arrif and Finn (1989)	"This paper reports the findings of a study of price responses of thinly-traded shares in the Singapore equity market. (...)This paper reports the preliminary findings on information effects on the SES of public announcements of (a) earnings, (b) cash dividends and (c) bonus and rights issues (capitalisation changes)."	"Event method research design"	"The data for this study came from a continuing study into the stock price behaviour in the SES. The study covered the period July 1973 to December 1982, and included monthly price relatives data relating to 329 shares which were listed at any time during this period. Information on a total of about 5400 earnings announcements were collected, and carefully screened to exclude errors. The number of dividends announcements was 3100. A total of 371 bonus issue and 149 rights issue announcements were available."	"The results suggest that there are statistically significant abnormal returns during the months up to and including the month of announcement. With some minor exceptions, there appears to be no significant abnormal returns during the months after the announcements: semi-strong form efficiency is thus observed. These results' are consistent with prior findings in the developed capital markets. (...) Research into the announcement effects of earnings, dividends and capitalisation changes in developed capital markets has suggested that (a) these announcements contain information relevant to market participants in reassessing share prices of the announcing firms; (b) the major portion of the price adjustments to these announcements takes place prior to the announcement itself, that is, the market makes advance forecasts of the information contained in the announcements; and (c) price adjustments after the announcements are close to zero. The market is efficient in that prices adjust quickly and fully to new information in these announcements."

Author(s)	Objectives	Methodology	Data	Results
Ball and Kothari (1991)	"We examine risk, return, and abnormal return behavior in the days around quarterly earnings announcements, using a research design that allows risk to vary daily in event time. We test several hypotheses concerning the effect on security prices per se (i.e., ignoring both the sign and the magnitude of earnings)."	Cumulative abnormal returns	"The sample is selected from all NYSE-AMEX firms on both the COMPUSTAT Quarterly tape in any quarter q from the first quarter of 1980 to the first quarter of 1988 and the Centre for Research in Security Prices (CRSP) daily returns tape. The 51,178 selected firm-quarters (...)"	"We examine the existence and pattern of positive abnormal returns around earnings announcements. These estimated abnormal returns could indicate: market inefficiency; inadequacy of CAPM or of the index of security returns (Ball 1978); risk changes that are not captured by our research design; tax effects (including capital gain taxes); a variation of Keim's (1989) trading-mechanism bias due to trading behavior around earnings announcements; and a change result that, during the sample period, on average, more good news than bad news was released via earnings announcements for firms in general and for small firms in particular."
Pope and Inyangete (1992)	"To explain the crosssectional variability in conditional returns volatility. This is a central objective of this paper. The second main contribution of the present paper is to attempt to test the differential information hypothesis more directly than in previous work by selecting proxies that we believe to be prima facie associated with incentives for market participants to invest in information collection. Following previous US research we also examine for the possibility that the market within which stocks are traded is itself a significant factor in explaining earnings announcement-related returns volatility. This question is examined by considering a sample of Unlisted Securities Market (USM) firms alongside a sample comprising both 'large' and 'small' firms with full listings on the London Stock Exchange."	"The starting point for empirical test of the hypotheses is the estimation of market model residual returns. These are derived by estimating the Sharpe (1963) market model by OLS regression and employing the Scholes-Williams (1977) adjustment to correct for non-synchronous trading bias. The first hypothesis we test is a standard test of information content following May (1971) and Patell (1976)"	"In this paper we seek to extend the literature in two directions. First, we present new evidence based on a large sample of 3541 UK corporate earnings announcements for 1329 firms over the period 1985—1987."	"We find sharp evidence that the variability of returns in announcement weeks is significantly higher than in the preannouncement period, and this result is robust to various significance test procedures. Second, the variability increase is sharpest for small firms and USM quoted firms, and less pronounced for large firms. Third, cross-sectional modelling of the earnings-related volatility suggests that differential information proxies contain explanatory power not captured by firm size alone."

Author(s)	Objectives	Methodology	Data	Results
Frost and Pownall (1994)	"In this study, we measure and compare the stock price response to annual and interim earnings disclosures released in United States and United Kingdom capital markets. (...) The purpose of this study is to measure and compare the U.S. and U.K. stock price responses to annual and interim earnings disclosures released by firms listed in both jurisdictions (cross-listed firms). We first address whether stock price responses to the same information event are different in the two markets or are different for foreign and domestic firms in the same market."	"Our stock price tests compare abnormal returns during short windows around EA dates to benchmark returns to determine the significance of stock price responses to EA events in each country. We measured abnormal returns using a squared, standardized residual method similar to that used by Chari, Jagannathan, and Ofer (1988)."	"Our sample consists of 110 firms from the United States, the United Kingdom, and 12 other countries that were listed in both the United States and the United Kingdom (cross-listed) during January 1988 to December 1990."	"We find that the stock price response to earnings disclosures is significantly greater in the United States than in the United Kingdom. We also examine the effect of market microstructure factors that vary across firms and between jurisdictions. Our results are consistent with the expectation that liquidity is positively correlated with the stock price response to earnings disclosures and that liquidity is greater in the United States than in the United Kingdom."
Bhana (1995)	"The purpose of this paper is to determine whether or not the investors on the Johannesburg Stock Exchange (JSE) respond rationally to share prices of listed companies reporting positive and negative earnings. Based on the empirical evidence, an investment strategy which might enable investors to exploit the irrationality implied by the "overreaction to earnings" hypothesis will be recommended."	"The methodological approach used in this study is similar to that of Ettredge and Fuller (1991) who investigated the negative earnings effect for companies listed on the NYSE."	"Random samples of 200 companies reporting negative earnings and 200 companies reporting positive earnings during the period 1975-1989."	"An analysis of the abnormal share returns cumulated over twelve-month periods following annual earnings announcements reveal that a strategy of buying shares of companies that announced negative earnings and holding this shares over the next twelve months, would generate positive abnormal returns of about 12,5% before transaction costs. The overreaction to current earnings announcements for companies reporting negative leads to an excessive discounting of their shares prices. Market inefficiency associated with overreaction to company specific negative earnings announcements."

Author(s)	Objectives	Methodology	Data	Results
Opong (1995)	"It is to fulfil the need for more precise evidence on the information content of UK interim reports that this study is undertaken. The study attempts the following contributions. First, it replicates on a different sample and over a different time period the study of Firth (1981). Second, it provides more precise evidence as to the speed of adjustment of prices to the release of interim financial reports. Third, it makes a contribution to methodology by the introduction of a multinomial test designed to identify the time period in which the information in interim reports is incorporated into market prices. The major findings of the study are that (1) interim financial reports contain price sensitive information and (2) the impact of this information mainly occurs on the day such reports are released."	"A variance methodology is employed in this study. Such a methodology has been used in a number of studies as a measure of the information contained in accounting data (Beaver, 1968; May, 1971; Hagerman, 1973; Patell, 1976; Opong, 1976; Atiase, 1980; and Maingot, 1984)."	"January 2, 1983 to January 2, 1987; The firms that met the sample selection criteria totalled 734 and a random selection of 100 out of the 734 commercial and industrial firms were selected for the study due to cost considerations. The minitab statistical package was used to randomly select the 100 firms. From these 100 randomly selected firms, 237 interim report release dates are identified."	"The results of the study, however, provide evidence to the contrary and show that interim financial reports contain information of investment value on the day they are released. The results are consistent with those of Firth (1981). Perhaps, accounting policy makers should pay increasing attention to interim reporting issues. They will, in o doing, be providing economic benefits to investors. There could be an argument also that it is time to provide quarterly reports, if, perhaps initially, only for larger firms. As with any other study, there are limitations to the validity of the conclusions that can be drawn from the analysis."
Kallunki (1996)	"This paper investigates the abnormal stock return behaviour around the earnings announcement day in Finland using alternative risk estimating approaches. Finnish data are used in the context of an event studies because of the special features of the microstructure of the Finnish stock market and the Finnish financial reporting system. Different methods for risk estimation are applied since the market-based risk estimation is especially problematic in thinly traded markets like the Finnish stock market. The abnormal returns are determined using the traditional market model as well as the accounting-based risk estimation approach."	"Different methods for risk estimation are applied since the market-based risk estimation is especially problematic in thinly traded markets like the Finnish stock market. The abnormal returns are determined using the traditional market model as well as the accounting-based risk estimation approach."	"The research period from which the annual earnings announcements are collected covers the period from 1990 to 1993. (...) This yields ninety-two firm-year observations in the final sample."	"The results indicate that there is a greater delay in the stock market's reaction to the negative information concerning the firms' earnings than to that of the positive information. The conclusion can be drawn regardless of the risk estimation method applied. This indicates that there may exist so-called informed traders in the market who have better estimates of the future earnings (see, for instance, Affleck-Graves et al., 1994 and Grossman and Stiglitz, 1976). These traders can take an advantage of the good news in their investment decisions, but they cannot utilize the bad news because of the short-selling restriction of the Finnish stock market. The results of comparing the alternative risk estimation methods indicate that the magnitude of the drift in returns is weaker in the case of long cumulation windows if the accounting-based risk adjusting method is applied. It therefore seems that the accounting-based methods may produce more correctly measured abnormal returns, but the market's reaction near the announcement day is so strong that it is significant irrespective of what risk adjusting method is applied."

Author(s)	Objectives	Methodology	Data	Results
van Huffel et al. (1996)	"This paper tries, first, to document the returns response of stocks to unexpected semi-annual earnings after the announcement of these earnings in a small capital market, i.e. the Brussels Stock Exchange (hereafter BSE), and second, to assess the explanations and empirical problems found in the literature concerning the post earnings announcement drift."	"An earnings based expectations model is used to forecast earnings, while the market model and the size-adjusted returns model are applied to estimate expected returns."	"The total population of this study consists of Belgian firms which are listed on the Brussels Spot Market during the period [Jan. 1990, Dec. 1993]. (...) The final sample contains 30 firms and represents 72% of the total market capitalization in 1991."	"A systematic post-earnings announcement drift is found neither for the market model nor for the size-adjusted returns model. An investment strategy (long position in the portfolio of 20% most positive expected earnings and a short position in the portfolio of the 20% most negative earnings) based on SUE seems to be never profitable. For the size-adjusted returns model we originally found a similar CAR pattern as in the market model, but when we distinguish large and small firms we discover a CAR pattern for the large firms consistent with the results reported in the literature, i.e. low (high) SUE portfolios lead to negative (positive) CARs."
Cotter (1997)	"This paper takes a dynamic approach to traditional event studies methodology and provides an event analysis of twenty two companies listed on the Irish Stock Exchange. Two events are assessed: earnings announcements and 'the turn of the year' effect."	"The most common event studies methodology applies the Market Model to calculate abnormal returns. This is followed in the present event studies with two additional indicator of performance around an event: an equity's rate of return, and its corresponding standard deviation."	"31 March 1989 - 31 March 1996 22 companies listed on the Irish Stock Exchange."	"The evidence reveals that abnormal returns generally are positive and unaffected by firm size. The findings of significant CARs and returns for the event time could indicate that the Irish stock market is inefficient."
Jermakowicz and Tomaszewski (1998)	"This article investigates the association between stock returns and the annual earnings, derived from the new accounting and reporting standards, of firms listed on the Warsaw Stock Exchange between 1995 and 1997."	"This article is based on a theoretical model which expresses price as a multiple of earnings. This framework is generally used to prompt empirical tests of the relationship between securities returns and change in earnings or between abnormal returns and unexpected earnings."	"52 firms traded during the 1995-97 time period resulting in 139 observations."	"The findings provide evidence that the annual earnings reported according to new accounting rules by firms listed on the WSE are an important element of the valuation process. The findings compare closely with the results found in more mature capital markets."

Author(s)	Objectives	Methodology	Data	Results	
Pellicer and Rees (1999)	"This paper studies the market's reaction to 660 earnings announcements made during the period 1991-95 in Spain."	Cumulative Returns	Abnormal	"660 earnings announcements made during the period 1991-95 in Spain. 223 cases referred to the disclosure of annual earnings and 437 to the disclosure of interim results. 310 cases referred to firms that were constituents of the IBEX35 index whereas the remaining 350 were not."	"In Spain earnings announcements are accompanied by an increase in share price volatility which persists for a few days. The evidence presented in this paper suggests that volatility is abnormally high for the four days following the announcement as well as the announcement day itself and the day preceding the announcement. At first sight the evidence that earnings announcements are, on average, accompanied by positive returns is more surprising. If we assume that investors have rational expectations of earnings the actual earnings are as likely to be bad news as good news - in which case negative returns are as likely as positive returns. Indeed, given the evidence that analysts are normally optimistic in their forecasts, bad news might be expected to dominate. For the full sample our results suggest that both unexpected and expected earnings are associated with abnormal returns but this is almost entirely driven by the results for the smaller firms in the sample."
Haw et al. (2000)	"The objective of this paper is to examine the relationship between firms' operating and market performance and the timing of annual report releases by listed Chinese firms. This study documents empirical regularities in anticipating the type of earnings news (good or bad) based on the timing pattern of disclosure (early or late) in the emerging market of China."	"Our analysis is based on the well documented timing pattern of earnings announcements in mature markets such as the US and Australia that firms accelerate the release of good news and delay the disclosure of bad news."	"Our sample consists of 1,890 annual report releases by listed A-share Chinese firms and a subsample of 288 annual report releases by A-share firms which also issued B- or H-shares for 1994-1997."	"The market reacts to the annual report releases (earnings announcements). The earnings coefficients of the two groups are similar and positively significant at the conventional levels, which suggests that good (bad) earnings news is associated with positive (negative) returns."	

Author(s)	Objectives	Methodology	Data	Results
Laurent (2000)	"The purpose of this article is to examine whether the legal obligation for Belgian listed companies to release annually their earnings is still useful in markets where the quantity of information already present is important."	"Brown and Warner (1985) have shown that alternative measures of abnormal return, as the one used here, present a similar ability to detect abnormal performance."	"A sample of 108 earnings releases between January 1997 and June 1999 by Belgian companies listed on the First Market of the Brussels Stock Exchange has been analysed."	"The empirical analysis has been divided into two parts: the existence of a significant market reaction and the link between observed reaction and earnings surprise. The first part of the study has shown the presence of a significant reaction at the earnings announcement date. It seems consequently that the announcement implies a change of future investors' expectations. There is thus an incorporation of this new information in stock prices. This attests an informational content of earnings announcement. The second part of the study underscores a behavioural difference of portfolios created on the basis of earnings surprises. It thus seems that markets' reaction can be at least partially explained by the level of the earnings surprise: a good surprise implies a positive price reaction and inversely."
Landsman and Maydew (2001)	"In this paper we examine changes over the past thirty years in the information content of earnings using the two metrics from Beaver (1968): abnormal trading volume and volatility. (...) In this study, we examine changes over time in the information content of quarterly earnings using the two metrics in Beaver (1968), abnormal trading volume (AVOL) and abnormal stock price volatility (AVAR), for the three-day earnings announcement event window, over the period 1972- 998."	"Abnormal trading volume (AVOL) and abnormal stock price volatility (AVAR)"	"The sample consists of firm-quarter observations from a random sample of 1,000 firms each year during the period 1972-1998."	"Using a random sample of Compustat firms, we find that the regression of AVOL and AVAR on time indicates that each is significantly increasing over the sample period. This finding holds true for both the fourth quarter and interim quarter announcements as well as for firms with December 31 and non-December 31 fiscal year ends, although the time trend is less pronounced for December 31 firms. In contrast to the conventional wisdom, we find no evidence of a decline in the informativeness of accounting information over the past thirty years, as measured by both abnormal trading volume and return volatility around quarterly earnings announcements. If anything, our results suggest an increase over time in the informativeness of quarterly earnings announcements."

Author(s)	Objectives	Methodology	Data	Results	
Osei (2002)	"The objectives of this study are: To assess the asset pricing characteristics of the Ghana Stock Market; To analyse the response of the Ghana Stock Market to listed firms' annual financial earnings information releases to the market (semi-strong form market efficiency); To draw policy recommendations for improving upon the performance of the GSM."	Event methodology	studies	"The study uses mainly secondary data obtained from the Ghana Stock Market. Information on stock prices, stock trading volumes, and end of financial year earnings figures and announcement dates were collected. Although there are currently 21 listed companies on the GSM, only 16 were used in the study. The remaining five stocks were rejected because either they had been listed for less than two years and did not have enough data points or they had stopped trading at some point in time and therefore had data gaps." 1992–1997	"On the market response to earnings information, the analysis of CAR shows that the market learns about the impending annual earnings announcements. The market drifts up for good news and down for bad news over the period before the event announcement date. The study establishes that the market continues drifting up or down beyond the announcement week, i.e., week zero. This is inconsistent with the efficient market hypothesis (EMH). The conclusion is that the Ghana Stock Market is inefficient with respect to annual earnings information releases by the companies listed on the exchange."
Vieru (2002)	"This study examines whether the permanent price effects of individual trades are greater before or after an interim earnings announcement on the Helsinki Stock Exchange. If the permanent price effects are greater before the announcement this would suggest that investors believe that some traders are better informed before the interim earnings announcement than after. (...) The primary goal of this paper is to study whether the price impact of trades differs around an interim earnings announcement."	"To assess whether there is differential trading activity between large and small traders around interim earnings announcements a buy–sell ratio analysis was employed. ¹⁵ This measure was used as described by Lee (1992) and Booth et al. (1997)."	"During this period (1993–1997) there were 432 interim earnings announcements released by HSE firms which were accepted in the sample. This resulted in a total of 767 interim earnings announcement events."	"The preliminary findings in this paper suggest that the information content of interim earnings announcements differs between small and large investors. Small traders in particular are reluctant to buy after a negative earnings surprise. This suggests that small traders regard earnings announcements as more informative than large traders do, which further suggests that small investors' dependency on historic trading prices is reduced after an announcement. as compared to before the announcement. (...) The results, based on interim earnings releases for the years 1993–1997 by HSE firms, support the existence of a shift in the permanent price effects of large trades. This suggests that large trades resulting in a price change (especially uptick trades) before an announcement signal more to other investors than similar trades after an announcement."	

Author(s)	Objectives	Methodology	Data	Results
Otogawa (2003)	"In Japan there has recently been a rapid increase in the number of firms disclosing quarterly earnings. I investigate the information asymmetry and market liquidity around the quarterly earnings announcements, by focusing on the bid-ask spreads and quoted depths. The purpose of this study is to examine the effectiveness of quarterly financial reporting, which has rapidly been becoming pervasive in the Japanese stock market."	"In this study, I investigate the information symmetry and market liquidity around quarterly earnings announcements, measured by the percentage bid-ask spreads and quoted depths. To test the changes in information asymmetry and market liquidity around the quarterly earnings announcements, I compute the abnormal spread and depth using a standard event studies methodology."	"Transaction data of 121 firms that have implemented quarterly earnings reporting during 2001. the final sample consists of 385 quarterly earnings announcements."	"During the announcement period, the findings that there are significant decreases in bid-ask spreads and moderate increases in quoted depths contradict the hypothesis that excellent information processing by some traders deteriorates information asymmetry and market liquidity. Over the period just before an earnings announcement, I find that the spreads lower significantly, and that the depths decrease somewhat. The former finding provides no support for the hypothesis that information asymmetry and market liquidity are exacerbated by some traders' private information search activities, but the latter provides very weak support for it."
Wael (2004)	"The aim of this work is to study both the informational role of accounting numbers and the intraday speed of adjustment of stock prices to new information. Our analysis is composed of two parts. The first part is an examination of asymmetric information around earnings announcements. The second part of the paper deals with an examination of the speed at which the new information is incorporated into security prices."	"To test these hypothesis, we use the bid-ask spread as a proxy of asymmetric information level. To examine market behaviour around earnings announcements, we will use event studies methodology."	"Our sample is composed of 117 overnight announcements published among Reuters monitors during the period 2001-2003. January 2001 and March 2003"	"We find that price reaction to earnings disclosures begins very quickly. Moreover, Several results are obtained. First, Spread widens around the times of annual earnings announcements. The reaction is more pronounced for bad news and persist short time following unanticipated earnings release. increase in information asymmetry just after information disclosure is due to the fact that investors differ in their ability to process the earnings announcements. Second, we offer evidence that Euronext Paris is efficient according to the semi-strong form as defined by Fama. Indeed, abnormal returns earned by sophisticated investors dissipate within fifteen minutes. However, Prices converge to equilibrium more quickly for good news than for bad news."

Author(s)	Objectives	Methodology	Data	Results
Atiase et al. (2005)	"We examine market reactions to contemporaneous announcements of current earnings and future earnings guidance for evidence on how investors trade off relevance and reliability"		"Our sample includes firms with management earnings guidance in the First Call/ Thomson Financial Historical Database (hereafter Thomson Financial) for the years 1994–2003. 3329 firm-quarter observations for the period 1994–2003 (the initial sample)."	"We find that current earnings are more strongly associated with announcement-period returns than concurrently disclosed future earnings guidance, consistent with investors' relative preference for reliability. We find similar return reactions to stand-alone earnings and to earnings released with guidance. In contrast, return reactions are lower for guidance announced simultaneously with current earnings than for stand-alone guidance."
Chan et al. (2005)	"In this paper we provide new evidence on the relation between earnings announcements and abnormal returns. Specifically, we investigate the effect of firm size on the share market's short-term response to annual earnings announcements on a broad sample of Australian firms. We measure abnormal returns over three and twenty-one day periods centred on the earnings announcement date. As such, our study is a short-window information content event studies, as distinct from a longer window association study (Kothari, 2001, p. 116)."	"Our research design involves regressions of unexpected earnings against unexpected returns. Non-linearity in the returns-earnings relationship is incorporated and other factors known to affect the response to earnings announcements are controlled for."	"(...) 1,725 firm/year observations covering a five-year period. We collected daily price and other data from 1 January, 1994 to 30 June, 2001."	"Consistent with prior research, we find that annual earnings announcements in Australia are associated with significant unexpected returns. (...) We reject H1, the null hypothesis of no association between earnings variables and unexpected returns around annual earnings announcements.(...) An interesting result of our non-contextual analysis is that the nature of the share market's response to earnings variables around annual earnings announcements appears to differ between the immediate, three-day response (unexpected returns positively related to earnings level) and the 'more considered' twenty-one day response (unexpected returns positively related to earnings changes). We interpret this as indicating that the investors' initial reaction is to the size of reported earnings, not the change in reported earnings from the previous year."
Sponholtz (2005)	"In this paper, we analyze Danish EAs. First, we examine whether the Danish stock market reacts to EAs in an efficient manner that is consistent with the EAs containing relevant information. We then attempt to explain the market's reaction using the level of predisclosure information and amount of surprise contained in the EA."	"The methodology used in this study is the standard event studies methodology, see for example Campbell, Lo and MacKinlay (1997)."	"The sample is constructed from firms listed on the CSE on April 17, 2002. 1998-2002"	"In summary, our results have shown that the Danish stock market reacts slowly to EAs. Additionally, Danish EAs are associated with significantly positive abnormal returns. We interpret these two results as indicating that this small stock market reacts inefficiently to EAs. As in the larger stock markets, we find that Danish EAs have information content, indicating that they bring relevant new information to the Danish stock market. However, our evidence indicates that the information environment of this small stock market is such that the market is slow to incorporate new information from the EAs into stock prices. Adding to this evidence of inefficiency we also find significant positive average abnormal returns, indicating that the market's average expectations of the EAs are unrealistic. These findings are found to be robust with regards to variations in trading frequency restrictions, return allocation procedures, treatment of concurrent disclosures and nonparametric tests."

Author(s)	Objectives	Methodology	Data	Results
Kong and Taghavi (2006)	"This paper examines the annual earnings announcement effect of the stock markets in China. We intend to discover the precise quantitative relationship between the earnings and the yield shift."	M-EGARCH model	"The data includes annual earnings announcement in Shanghai and Shenzhen Stock Markets, and the daily stock price returns for each stock where there has been an announcement. In the year chosen there were 1,224 listed companies altogether, 698 in Shanghai and 526 in Shenzhen. There were also 3,672 observations on the earnings and losses announcement days and 23,680 observations on daily stock price returns in the period around the announcement day."	"It is found that a higher than expected earnings announcement leads to a rise in the conditional mean of stock returns on days before the news announcement and a fall afterwards. The conditional volatility of the changes are significantly reduced by bigger absolute values of reported earnings before the news announcement and increased afterwards, supporting the rejection of semi-strong-form efficiency."
Maditinos et al. (2007)	"The purpose of this paper is to investigate whether the level of EPS and EPS changes, the level of return on investment (ROI) and ROI changes, and the level of return on Equity (ROE) and ROE changes, divided by stock price at the beginning of the stock market period (nine months prior to fiscal year end) are relevant to explain stock market returns in Greece."	"Easton and Harris (1991) formal valuation model"	"The sample period spans 10 years, from 1992 to 2001. There are 163 companies in the sample with different numbers of participating years for each of them. These companies gave a total of 984 year observations, while after excluding the outliers the final sample consisted of 977 year-observations."	"Revealed results provided evidence that there is an association between EPS and stock market returns (although low explanatory power) while results concerning ROI and ROE are not encouraging. In incremental information content approach we tested the three regression models(4-6) using only the pooled cross-sectional and intertemporal (all years) sample. Revealed results showed that the combination of EPS and ROI best explains stock market returns in Greece, compared to the results provided by the combinations of EPS and ROE, and ROI and ROE"

Author(s)	Objectives	Methodology	Data	Results
Scarpin et al. (2007)	"To answer the research question, we present this work, whose propose is to verify empirically the relevance of the accounting reports disclosure in the Brazilian capital market, considering the general hypothesis that the date of publication of financial statements does not impact the behavior of the Brazilian capital market."	Abnormal returns	"Study of the financial statements published in the year 2005 of all firms listed on the Stock IBrX Paulo Stock Exchange (Bovespa)" 62 companies	"(...) rejected the hypothesis that the date of financial statements publication does not impact the behavior of the Brazilian capital market, since the number of days of statements publication, along with financial variables made an impact on stock price and number of trades. However, the number of days of the publication in isolation had an impact also in stock returns."
Ball and Shivakumar (2008)	"We quantify the relative importance of earnings announcements in providing new information to the share market, using the r-squared in a regression of securities' calendar year returns on their four quarterly earnings announcement "window" returns."	"We propose a simple but robust method of quantifying the relative importance of earnings announcements in providing new information to the share market. The method provides a measure of the proportion of the total information incorporated in share prices over a year that is associated with its four quarterly earnings announcements."	"Our sample consists of all firm-years with data available on the quarterly COMPUSTAT and daily CRSP return files from January 1972 to December 2005."	"We conclude that the average quarterly announcement is associated with approximately one to two percent of total annual information and one quarter of one percent of annual trading volume, thus providing only a modest amount of incremental information to the market. The results are consistent with the view that the primary economic role of accounting earnings is not to provide timely new information to the share market"

Author(s)	Objectives	Methodology	Data	Results
Borch (2008)	"In this thesis, I test if various trading strategies, similar to the earnings announcement premium strategy of Lamont and Frazzini (2007), generates excess returns over the Norwegian Government three month Treasury bill at the Oslo Stock Exchange over the sample period between 1999 and 2007."	"The chosen methodology is, except from some additional tests which are properly described further down in this section, otherwise similar to the methodology applied by Lamont and Frazzini (2007)."	01.01.1998 and 31.12.2007	"There is no sign of an earnings announcement premium at the Oslo Stock Exchange in the sample period between 1999 and 2007. In other words, I find no results that can reject that the Oslo Stock Exchange is weak form efficient."
Das et al. (2008)	"This study investigates the impact of quarterly earnings announcements on the stock price movement of the firms constituting the BSE-Sensex. (...) The main objective of the study is to investigate the impact of quarterly earnings announcements on stocks constituting the Sensex. (...) The study also investigates whether stocks manifest price drift over a period of time corresponding to 'good' and 'bad' announcements."	"The study adopted event studies methodology of MacKinlay to examine the impact of quarterly earnings announcements on stock returns and applied Markowitz Model to calculate the variance of abnormal returns of securities included in the portfolio."	"This study empirically investigates the impact of quarterly earning announcements made by 30 companies constituting the BSE-Sensex on stock price movement. (...) The announcements made by these large firms correspond to the quarterly earnings from the first quarter to the last quarter of the financial year 2006-07.(...) This study has been made by using 118 quarterly earnings announcements of the 30 companies comprising the Sensex."	"No evidence of significant abnormal returns could be found in both these sub-samples. Further, it could not be established that the share prices drift positively in the case of good announcements and drift negatively in the case of bad announcements. The reason for such an observation could be that most of the prior studies were based on samples constituting both large as well as small firms; whereas the present study comprised large firms only. Large firms are subjected to greater attention by the market participants and, therefore, fundamental information is quickly incorporated into prices, leaving no scope for systematically earning superior returns. This implies that quarterly earnings announcements do not have any pre-return or post-return effect on the firms included in the Sensex. It may also be inferred that these announcements carry little information value for investors."
Griffin et al. (2008)	"This paper examines the market reaction to common events around the world. We believe such a study is useful for deepening our understanding of the information environment around the world using an approach that is extremely systematic across countries. Our study reveals that stock market reactions to news do vary widely around the world and they seem to vary mainly due to the timing of when news is incorporated into prices."	"We regress our average normalized event volatility ratio on variables reflecting aspects of accounting quality, the information environment, trading activity, insider trading law and practice, laws regarding investor protection and trade, the level of economic and market development, and trading costs."	"Our combined sample of earnings news event dates from January 2, 2001 to October 12, 2007 consists of 54,336 earnings announcements in developed markets (excluding the U.S.) and 13,884 emerging markets."	"This paper finds that stock market reactions to news events vary widely around the world, with most developed markets exhibiting large reactions to news and some emerging markets exhibiting only miniscule reactions. We examine possible explanations including poor accounting quality, inattentive investors, poor news dissemination, public pre-announcement trading, and insider trading. In countries with low event reactions, prices move strongly with earnings over annual horizons. Returns move in the same direction as the earnings surprise both prior to the earnings announcement and afterward. This is strong evidence that it is not poor earnings quality driving the lack of event reactions in some markets. The post-announcement drift in the same direction of the earnings announcement is consistent with inattentive investors or poor news dissemination. Preannouncement trading is consistent with early news dissemination either through public or private information sources."

Author(s)	Objectives	Methodology	Data	Results
Berezovskis and Visnapuu (2010)	"The thesis examines the phenomena of post-earnings announcement drifts (PEAD) on the NASDAQ OMX Baltic stock exchanges during 10 years from 2000 to 2009 by using regression analysis and a portfolio-based trading strategy approach."	"For the purpose of answering our research question we will use event studies methodology, trying to follow recommendations by MacKinlay (1997)."	"The data set of the study includes all companies that were listed in the Baltics in December 2009 from 2000 to 2009, the longest time-frame possible. The geographical scope of our study includes three neighbouring Baltic countries: Estonia, Latvia and Lithuania. This includes 90 stocks - 2,668 earnings."	"It was found that PEAD exists on the Baltic stock exchanges for trading strategies with holding periods of 5, 20, 60 and 120 days with the majority of the significant abnormal returns (...) Most of the significant abnormal returns were negative, while 18 strategies yielded significant positive average abnormal returns. (...). conclude that there is weak evidence that the post-earnings announcement drifts are present on the NASDAQ OMX Baltic stock exchanges; however, no formal rejection of the Efficient Markets Hypothesis is done, because there is hardly any viable profiting strategy from the drifts. Even though the result means that Baltic markets are fairly developed and efficient as no clear profiting strategy was found, there is still room for development, since significant drifts existed over the studied period."
Ganguli (2010)	"The present study was originally undertaken to find out whether the market participants of the Indian stock market can forecast profit, i.e. positive earning made by a hitherto loss making companies."	Event studies methodology	"49 turnaround companies spanning over a period of 5 years and 6 months (1st April, 2004 to 30th September 2009)"	"First, the results show weak form of market efficiency in respect of the first time reporting of positive earning by the turnaround companies as price adjustment takes place subsequent to announcement. (...) Second our empirical findings for turnaround companies based on event studies mechanism are consistent with the aforesaid results for the short period of 15 days post announcement. (...) Third, we observe possibility of some degree of insiders trading just prior to announcement of results."
Hussin et al. (2010)	"This study focuses on the announcement effect of both dividend and corporate earnings on stock prices to examine evidence of semi-strong form efficiency in Malaysian Stock Exchange."	"We adopted event studies methodology to test the semi strong-form efficiency. A test of this nature was introduced by Ball and Brown (1968) and Fama et al. (1969) and is considered the most relevant test of semi-strong form efficiency to conclude that the market is able to respond to public information in a sufficiently rapid manner (Brown and Warner, 1980)."	"120 companies listed on the Main Board of Bursa Malaysia that announced the final dividends in their fourth financial quarter was selected covering a time period from January 1, 2006 to November 30, 2006."	"This study concludes that both dividends and earnings play a significant role as signalling effects of the future prospects of the firm, with the dividends effect proving to be significantly stronger than the earnings effect. The results provide some evidence of semi-strong form efficiency in the Malaysian stock market, where stock prices adjust in an efficient manner to dividend and earnings announcements."

9.2 - Dividend Announcements

Author(s)	Objectives	Methodology	Data	Results
Lintner (1956)	"This paper will present some of the more generally important results of our studies on corporate dividend policy which have a relatively direct bearing on cyclical fluctuations and longer term growth trends in the economy."		"28 companies, seven years, 1947-1953"	"It was equally clear that these elements of inertia and conservatism -and the belief on the part of many managements that most stockholders prefer a reasonably stable rate and that the market puts a premium on stability or gradual growth in rate- were strong enough that most managements sought to avoid making changes in their dividend rates that might have to be reversed within a year or so."
Black and Scholes (1970)	"The prime concern of this paper is to offer an alternative approach to testing whether or not the dividend policy of a firm effects the valuation of its shares. The approach taken in the paper will be to use time-series analysis."	Time-series analysis	"Dividends, month end prices and monthly return data were obtained from the tape prepared by the Centre for Research in Security Prices of the University of Chicago for every security listed on the New York Stock Exchange at any time in the period January 1926 to March 1966."	"The main conclusion of our analysis is that a dollar of dividends has the same value as a dollar of capital gains in the market. (...) In many different time periods, with changing economic conditions and payouts the dividend factor was insignificant in explaining security returns."
Pettit (1972)	"The primary purpose of this paper will be to offer further evidence about the validity of the efficient market's hypothesis by estimating the speed and accuracy with which market prices react to announcements of changes in the level of dividend payments. In addition, the nature of the investigation is such that it provides evidence on the hypothesis that changes in dividend levels convey important information to market participants."	"The results of the empirical tests of the hypotheses are presented in two ways. First, the abnormal performance value, (...) Second, an index of performance is calculated (API)."	"The announcement dates of all dividend changes for a set of 625 New York Stock Exchange firms for the period January 1964 through June 1968 were collected from the Wall Street Journal Index. There were approximately 1000 dividend changes announced by these firms over this period, exclusive of extra or special dividends that may have been paid."	"The results of this investigation clearly support the proposition that the market makes use of announcements of changes in dividend payments in assessing the value of a security. (...) Most of the information implicit in the announcement is reflected in the securities' prices as of the end of the announcement period (the largest change, in most categories, occurring in the announcement period). This lends support to the proposition that the market is reasonably efficient on both a monthly and daily basis. The rather large anticipation effect evident in the monthly date could be the result of either the use of insider information (an inefficient market) or the result of announcements related to the dividend change (an efficient market). The small anticipation effect in the daily data, however, when correlated announcements were not a large factor, implies that the use of insider information is not a major factor affecting short run returns."

Author(s)	Objectives	Methodology	Data	Results
Watts (1973)	"The objective of this study is to test the hypothesis that dividends contain information about the future earnings of the firm. Specifically, the objective is to test the hypothesis that knowledge of current and past dividends enables a better prediction of future earnings than is possible with current and past earnings alone."	"Lintner model; Fisher's 'Arithmetic Investment Performance Index'"	"The criteria resulted in a sample of 310 firms. For these firms, monthly price relatives for the 23-year period, June 1945 to June 1968, were obtained from the CRSP tapes."	"All of the tests suggest that on average the relationship between future earnings changes and current unexpected dividend changes is positive and therefore consistent with the information hypothesis. (...) Further, an examination of the relationship between unexpected dividend changes and stock prices indicates that even if the future earnings changes associated with unexpected dividend changes convey information to market participants, that information is trivial. It is trivial because the return from monopolistic possession of the information does not exceed transactions cost. This is the main conclusion of the study -that, in general, the information content of dividends can only be trivial. (...) Another conclusion is that any inside information management may use in determining dividends is lost in the noise in the dividend model. The effect of the information on future earnings is modified by both the rate at which the firm adjusts actual dividends to desired dividends and the firm's target dividends payout rate. This modification reduces the effect of the information on the dividends to such a level that it cannot be distinguished from the noise in the dividend model."
Aharony and Swary (1980)	"The main purpose of this study is to ascertain whether quarterly dividend changes provide information beyond that already provided by quarterly earnings numbers. The study uses a methodology different from any used in previous studies, and provides evidence on the usefulness of both quarterly dividend and earnings announcements as signals of changes in future prospects of the firm."	"To examine empirically the adjustment of common stock prices to quarterly dividend announcements, a measure of unexpected change in dividends first must be derived. The expectation model used in this study is a naive model. Measurement of Abnormal Performance - CAR."	"A sample of 149 industrial firms ³ was selected from those listed on the New York Stock Exchange. In addition, the daily closing Standard and Poor's Industrial Common Stock Price Index was obtained from the annual issues of Standard and Poor's Trade and Securities Statistics-Security Price Index Record, for the period 1/1/63-12/31/76."	"Findings about capital market reaction to the dividend announcements studied strongly support the hypothesis that changes in quarterly cash dividends provide useful information beyond that provided by corresponding quarterly earnings numbers. In addition, the results also support the semi-strong form of the efficient capital market hypothesis; that is, on the average, the stock market adjusts in an efficient manner to new quarterly dividend information."

Author(s)	Objectives	Methodology	Data	Results
Kwan (1981)	<p>"In recent years a major controversy has formed in the finance literature regarding the empirical evidence of the informational content of dividends. Despite considerable support for the position of dividend nontriviality by various studies, the work by Watts [13] represents a formidable challenge. Because of the close proximity of the firm's earnings and dividend announcement dates, the major issue of the dispute has centred on the identification and control of contemporaneous earnings information. In an attempt to settle this controversy, the present study evaluates and extends Watts' methodology."</p>	<p>"Three methodological issues are considered here. First, the standard Lintner and Fama-Babiak annual dividend models (...) Second, the potential problem of misclassification of information due to the inherent noise of empirical models (...) Third, this study emphasizes an aspect ignored in Watts' methodology, namely, the isolation of dividend information from the firm's other publicly available sources of information, including earnings information."</p>	<p>"Firms included in the sample were restricted to those reported in Moody's Handbook of Common Stocks and listed on the New York Stock Exchange (NYSE). The announcements collected from the WSJI included regular dividend changes and extra dividends declared during the period 1973-1977."</p>	<p>"The empirical evidence in this study was shown to be consistent with the widely held position of dividend nontriviality (...) Upon examining the degree of market reaction to announcements of dividend changes, this study observed that, notwithstanding the inherent noise problem, some revised Lintner and Fama-Babiak models are able to portray adequately market expectations of dividend changes. Thus, with the appropriate caveats, these empirical models are useful for identifying potential dividend information."</p>
Eades (1982)	<p>"The first objective of this work is to both replicate and add to these hypotheses by using a dividend signaling model which effectively represents a "hybrid" of Ross's [39] debt signaling model and Bhattacharya's dividend signaling model. The second objective is to empirically test these hypotheses as simply and directly as possible."</p>	<p>Dividend Regressions, Tests of the Relative Signaling Strength Hypothesis, The Information Content Test, The Relative Signaling Strength Methodology</p>	<p>Yield Tests of the market model beta) it was convenient to use a "sample of firms common to the 20-year annual COMPUSTAT files (1960-1979) and the monthly stock return files by the Center for Research in Security Prices (CRSP) ."</p>	<p>"First, it was shown that dividend yield (DY) and a firm's own variance (OV) should be inversely related, and then the relative signalling strength (RSS) hypothesis was derived which postulated that the information content of dividend changes should be a positive function of OV. Significant empirical support was found for the negative relationship between DY and OV as well as for dividend announcements having information content."</p>

Author(s)	Objectives	Methodology	Data	Results
Litzenberg and Ramaswamy (1982)	"There has been considerable controversy concerning the effect of dividend yields on common stock returns. The controversy centres on whether or not the positive association between common stock returns and dividend yields reported in a number of empirical studies can be attributed entirely to information effects. The purpose of this paper is to provide a brief critique of the theory and of the available empirical evidence (Section II), and to present some new empirical results (Section III)."	Brennan (1970) and Litzenberger and Ramaswamy (1979)	"Common stock return data were obtained from the monthly returns tape file provided by the Center for Research in Security Prices (CRSP) at the University of Chicago. The data on dividend distributions, the announcement dates and ex-dates, together with other relevant data are also provided on the master file by CRSP. The same service also provides the return series on a value weighted index of all NYSE stocks."	"It is shown that there is a positive and non-linear relationship between common stock returns and expected dividend yield. The prediction rule for expected dividends is based solely on information that would have been available to the investor ex-ante. These results cannot, therefore, be attributed to the favourable or unfavourable information that would be present in a proxy for expected dividend yield that anticipates the occurrence (or lack thereof) of a dividend."
Wooldridge (1982)	"This paper analyzes the effect of unexpected dividend changes on the values of common stock, preferred stock, and bonds. Two potential effects are identified: a wealth transfer effect and a signalling effect."	To test for statistically significant security price movement around dividend changes, the Comparison Period Return Approach (CPRA) is employed (see Masulis).	"The announcements of cash dividend changes for 225 randomly selected NYSE firms over the 1970-77 period were initially included in the sample. (...) This information screen reduced the sample from 1017 to 411."	"In this study, the dividend change common stock price relationship was corroborated and it was demonstrated that unexpected dividend increases (decreases) are associated with positive (negative) debt and preferred stock returns. Overall, these results indicate that signalling is the primary factor influencing security prices around dividend change announcements. Although wealth transfer and/or confounding effects cannot be ruled out, it is obvious that the predominate effect is signalling."
Eades et al. (1984)	"In this paper we examine the ex-dividend day returns of several taxable and non-taxable distributions."	Elton and Gruber (1970)	"Our most comprehensive sample consists of all taxable distributions by New York Stock Exchange (N.Y.S.E.) common stocks during the period July 2, 1962 to December 31, 1980."	"(...) the ex-dividend day returns of preferred stocks suggest that preferred dividends are taxed at a lower rate than capital gains; non-taxable stock dividends and splits are priced on ex-dividend days as if they are fully taxable; and non-taxable cash distributions are priced as if investors receive a tax rebate with them. We also find that each of these distributions exhibits abnormal return behaviour for several days surrounding the ex-dividend day."

Author(s)	Objectives	Methodology	Data	Results
Kane, Lee and Marcus (1984)	"We examine abnormal stock returns surrounding contemporaneous earnings and dividend announcements in order to determine whether investors evaluate the two announcements in relation to each other."	"In order to measure unanticipated dividends and earnings, models of expectation formation are required. Rather than building our own models of such expectations, we rely on models that have been tested elsewhere."	"Our sample consists of 352 observations of quarterly earnings and dividend announcements between the fourth quarter of 1979 and the second quarter of 1981. The two announcements occurred within 10 days of each other."	"We first demonstrated that our sample is similar to those of earlier researchers, who found that unexpected dividend and earnings announcements appear in and of themselves to be able to induce abnormal stock returns. However, once a more general specification that allowed for interaction effects between the two announcements was estimated, empirical results indicated that the announcements are indeed interpreted in relationship to each other. This interaction or corroborative effect was statistically significant."
John and Williams (1985)	"A satisfactory theory of signalling with dividends must also have empirical content. In particular, such a theory should provide empirically testable propositions detailing the effects of announced dividends on stock prices, cross-sectional connections between dividends and market values, and any resulting relationships between payout ratios and rates of return on stocks. In addition, the theory should help to explain other empirical phenomena, such as connections between dividends and clienteles of investors and the well-documented smoothing of dividends relative to cash inflows. Finally, a comprehensive theory might also have implications for relationships reported in the traditional literature, e.g., the purported negative correlations between dividends and both investment opportunities and risks. Hopefully, this paper helps in small part to resolve some of these issues."	"By design, the model provides an extremely adverse environment for signalling with dividends. Here, taxes are paid only on dividends; no transaction costs are incurred when issuing, retiring, or trading shares; and all sources and uses of firms' funds are fully observed by outsiders through costless public audits."		"In this paper, a signalling equilibrium with taxable dividends is identified, and its properties are developed. In equilibrium, insiders in firms with truly more valuable future cash inflows distribute larger dividends and receive higher prices for their stock whenever the demand for cash by both their firm and its current stockholders exceeds its internal supply of cash. Thus, many firms distribute dissipative dividends, rather than repurchasing shares, while others distribute dividends and simultaneously sell new shares. Also, other things equal, firms which pay dividends have clienteles of stockholders who demand current cash, such as widows, senior citizens, and financial institutions. For this signalling equilibrium, both the announcement effect and the relationship between dividends and cum-dividend market values are derived explicitly."

Author(s)	Objectives	Methodology	Data	Results
Lang and Litzenberger (1989)	"We test the cash flow signalling and free cash flow/overinvestment explanations of the impact of dividend announcements on stock prices."	Tobin's Q ratios	"Our sample includes dividend-change announcements that meet two criteria: (1) the absolute dividend changes by more than 10% and (2) we are able to calculate the average Q's for the firm announcing the change. (...) The final sample consists of 429 dividend change announcements from 1979 to 1984."	"The average return associated with announcements of large dividend changes is significantly larger for firms with Q's less than unity than for other firms. This evidence, the results of further tests involving a finer partition of the data, and an analysis of changes in analysts' earning forecasts surrounding dividend announcements support the overinvestment hypothesis over the cash flow signalling hypothesis."
Abeyratna (1994)	"This dissertation examines the impact of the dividend announcement on the share prices of a large sample of UK firms within a multiple signal setting. The dividend announcement is viewed as simply one among many signals which are emitted by firms to convey new information about company performance to outside investors."	"The investigation uses a battery of tests which included (a) an event study test based on abnormal returns, (b) a regression-based test which directly examines the data for evidence of interaction between the dividends and earnings news, (c) an analysis of variance (...) and (d) a simultaneous -equation approach (...)"	"620 companies which announced their annual dividends in the Financial Times during the six month period from January 1991 to June 1991."	"The main findings indicate that (i) investors appear to react as though dividends convey useful information to the market, (ii) the market reaction is strongest when the dividends and earnings signals corroborate one another, (iii) the different dividend-earnings groups in the sample exhibit distinctive patterns in their financial accounting profiles in the years before the dividend announcement and (iv) the firms in the sample do not seem to choose their dividend policy independently of all other strategic decisions but instead appear to take account of their investment needs and fund-raising potential when deciding what dividend to pay."
Michaely et al. (1995)	"When a firm initiates the payment of a cash dividend, or omits such a payment, the firm is making an extremely visible and qualitative change in corporate policy. What effect do such abrupt changes have on returns? We investigate both the immediate (three day) reaction to initiation or omission announcements and the long-term post-announcement price performance."	"To evaluate the performance of the firms in our initiation and omission samples before, during, and after the events (initiation or omission), we calculate the returns from a buy-and-hold strategy. (...) Our methodology has been strongly influenced by Ritter (1991) and Loughrana and Ritter (1995)."	"561 cash dividend initiation event during 1964 to 1988"	"(...) we find that the short-run price impact of dividend omissions is negative and that of initiations is positive, Initiation reactions are about one-half the magnitude of the market reaction to a dividend omission announcement. We show that the market reaction to a dividend omission announcement is no greater than to an initiation for a given change in yield."

Author(s)	Objectives	Methodology	Data	Results
Lonie et al. (1996)	"This article examines capital market reactions to a variety of combinations of simultaneous dividend and earnings announcements by UK companies. These announcements are treated as signals which are emitted by the managers of companies in an uncertain economic environment characterized by informational asymmetry and interpreted as best they can by investors."	"The first section of this article employs a conventional event-study methodology when examining the stock market reaction to the firm-specific event of a dividend announcement"	"620 annual dividend announcements during the period 1 January to 30 June 1991"	"(...) we found that current earnings constituted the dominant signal to the capital market and the dividend announcement a partial, and often inferior, substitute signalling mechanism for managers to convey to investors their views about the future performance of their firms."
Amihud and Murgia (1997)	"We now examine whether dividends are informative in Germany given that the necessary conditions for a tax-based dividend signalling equilibrium do not apply. Since the tax based signalling models in Germany cannot serve as a credible signal, if dividend changes induce a reaction in stock prices, there must be reasons other than the higher taxes (as is the case in the United States) that make dividends informative."	Event studies methodology	"We examine dividend announcements made during 1988 through 1992 by the 200 companies whose stocks were most actively traded on the Frankfurter Borse (in 1991 DM volume)."	"The results show that dividend changes induce a significant positive reaction in stock prices, beyond the effect of the information contained in earnings changes. It should be noted that the weaker effect of earnings does not imply that earnings are less informative, since this test pertains to the dividend announcement days, while earnings announcements are made a little earlier."
Bhana (1997)	"In this paper, the signalling aspects of share dividends declared by companies listed on the Johannesburg Stock Exchange (JSE) are examined both theoretically and empirically."	"To determine if share dividend announcements by companies listed on the JSE convey information to investors, several refinements are made here in the Foster-Vichery and Grinblatt-Masullis-Titman studies. CPRA - Comparison period returns approach."	All share distributions by companies listed on the JSE during the 10-year period 1986-95 were considered by inclusion in the sample. A random sample of 250 companies announcing share dividends during the period 1986-95 was selected."	"In terms of the EMH criterion, the JSE appears to be inefficient in reacting to the public announcement of share dividends. These results do not support the semi-strong form EMH since the market reaction to share dividend announcements continue for a period up to 20 trading days after the event."

Author(s)	Objectives	Methodology	Data	Results
Bhana (1998)	"Several South American studies have investigated the impact of regular dividend announcements on share prices behaviour. However the reaction on the Johannesburg Stock Exchange (JSE) to special dividend announcements has been a neglect field of study. The purpose of this article is to examine investor behaviour around special dividend announcement dates for securities listed on the JSE."	Ball and Brown (1980)	"All special dividend distributions by companies listed on the JSE during the 20 - year period 1975-1994 were considered for inclusion in the sample. A random sample of 100 companies announcing 338 special dividends during the period 1975-1994 was selected to provide empirical evidence."	Consistent with the finds in Brickley (1983), the share prices on the JSE tend to react positively to the announcement of special dividends. This suggests that the announcement of special dividends convey value-increasing information to the market and the gains from this positive information accrue to shareholders."
Papaioannou et al. (2000)	"The goal of this study is twofold: (a) to investigate the stock market reaction to announcements of dividends in Greece, both on the announcement day, as well as on the ex-dividend day, and (b) to compare earnings per share, dividends per share and trading volume between the pre- and post-announcement years."	"We follow the event type methodology (as described by Brown and Warner, 1980, 1985)."	"The sample includes all cases of stock dividends undertaken by firms traded in the Athens Stock Exchange (ASE), declared in the period 1981 - 94, which were not announced concurrently with equity increases through cash. 140 stock dividends."	"The market reaction tests showed no statistically significant adjustment of prices over and beyond what one would expect as a result of the stock dividend. That is, excess returns were not statistically different from zero around the announcement day, or the ex-dividend day. (...) There is evidence of a statistically significant decline of the trading volume in the post-stock dividend period. (...) there is no evidence of significant market reaction at the announcement day."
Romon (2000)	"The objective of our study is to add to the understanding of stock price reactions at the dividend announcement and at the ex-dividend day by introducing the dividend policy stability criterion in event studies."	"The characteristics of our studies are the selection of stable dividend policy firms. So, we used the dividend yield variable."	"For our two studies, our initial sample is made of 203 industrial and commercial French companies quoted on the Parisian stock exchange, distributing a regular dividend each year4 between 1991 and 1995. Among those 203 companies, only 127 companies (442 events) and 152 companies (648 events) were chosen respectively in the studies at dividend announcement and at ex-dividend day."	"At the informational level, the selection of firms for those the market knows the dividend yield policy allows us to reinforce the informational effect tests of an increased dividend. But, the most interesting results are obtained around the ex-dividend days. As a matter of fact, when the market knows the dividend yield policy (low, medium or high) and when there is no surprise, dividend yield clientele effect seems to be extremely limited. (...) On the other hand, for firms changing their dividend yield policy, we observe abnormal stock price reactions at exdividend days. Is it only due to dividend clientele effect or others considerations? It seems to be questionable because at the same date, those firms have changed their dividend yield policy. So, other elements may certainly disturb the market evaluation."

Author(s)	Objectives	Methodology	Data	Results
Travlos et al. (2001)	The purpose of this study is to evaluate the role of cash and stock dividends (bonuses) in an emerging stock market. The Cyprus stock market is an interesting choice of an emerging market in assessing dividend policy changes because it differs from developed markets in several notable dimensions."	"The shareholder wealth effect for the dividend announcements was determined using standard event-study methodology based on the single-factor market model (using risk adjusted returns), as well as the market-adjusted model (assuming a beta of 1 for all firms)."	"(1985-1995) A total of 181 cash dividend announcements by 31 different firms took place during the period under study. Of these, 41 announcements of cash dividends represented an increase over prior period cash dividends and comprise the cash dividends sample employed in this study. Further, 39 announcements of stock dividends by 30 different firms took place in the sample period and comprise the stock dividends sample."	"The test results reveal significantly positive stock market returns for firms announcing increases in cash and in stock dividends in line with our expectations. Additional tests, however, are unable to provide convincing evidence about the validity of alternative explanations for dividend policy. These results may be driven by methodological considerations such as imperfect empirical constructs and small sample sizes, or naïve investors that are unable to distinguish between information, agency, and liquidity considerations in a small emerging market."
Bruni et al. (2003)	"This paper analyzes whether the announcement of the distribution of dividends and capital interests affects the value of the shares traded on stock exchanges, analysing the efficient market hypothesis, which assumes that the share prices reflect all relevant information."	Event studies methodology (MacKinlay 1997)	"27 shares listed on Ibovespa for the period of 01 Jan 2002 to 31 Dec 2002"	"The analysis of the prices of 120 days around the event does not allow showing significant findings. From these results we can establish that the market anticipates the information, or that the information of the dividend announcements is not relevant. In both cases, we accept the hypothesis of market efficiency."
Gurgul et al. (2003)	"Our study is the first to quantify the reaction of stock prices and trading volume on changing dividends for the Austrian market."	Event studies methodology	"Our sample contains 22 companies listed on the Austrian stock market. The companies have been quoted in the Austrian Traded Index (ATX) between January 1992 and April 2002, although not all firms have been listed on the stock market for the whole period. (...) 164 dividend announcements."	"Our results for the reaction of stock prices are similar to those of other markets in the sense that announced higher dividends induce an average increase in stock prices, whereas announcements of shrinking dividends stride along with average decreasing prices. In case of the announcement of unchanged dividend payouts, we report no significant price reaction. (...) However, since we analyze not only price but also trading volume reactions, our empirical findings, rather, reject this hypothesis. We find average abnormal trading volume on the day of announcements not only in the clusters of dividend increases and decreases, but also in the cluster of constant dividends. (...) In addition, our findings provide evidence that the Austrian stock market digests news on dividends into stock prices rather quickly, at least within one day. We also find that the price reactions on the announcement days are mostly unbiased since there are no subsequent abnormal price changes after that day. "

Author(s)	Objectives	Methodology	Data	Results
Sponholtz (2005)	We analyze simultaneous announcements of current dividends, current earnings and management forecasts of next year's earnings.	The methodology used in this study is the standard event studies methodology, see for example Campbell, Lo & MacKinlay (1997).	" (...) period of interest, 1999-2004"	"Our results indicate that the stock market reacts to the component of surprise in dividend announcements and management's forecast of next year's earnings. There is no indication of a reaction to the surprise component in announcements of current earnings. Analyzing these results further, we find that the market mainly reacts to the surprise component in management's forecast of next year's earnings. In addition to this, there are three instances where dividend announcements induce a market reaction. First, in general, a positive dividend surprise results in a positive market reaction. This result is supported by both the signalling models and the free cash flow hypothesis. Second, when the firm is investing optimally, there is a significantly negative reaction to a negative dividend surprise accompanied by no surprise in management's forecast of next year's earnings. Thus, when the latter contains no information, the dividend seems to function as a signal of future cash flows. This result supports the signalling model explanation of dividends. Finally, for firms that are overinvesting, there is a significant negative reaction to no dividend surprise measured as an unchanged dividend, regardless of whether it is accompanied by a positive or negative surprise in management's forecast of next year's earnings."
McCluskey et al. (2006)	"This study investigates the manner in which the Irish stock market responds to company announcements about dividend payments. In particular, the paper examines whether the predictions of the signalling hypothesis hold or if more recent findings (which suggest that there is little value-relevant information contained in dividend changes) better characterize the Irish market. "	"Daily return data were used to detect the presence or absence of abnormal share performance in a 41-day event window surrounding day t, the dividend announcement day."	"50 companies whose shares were traded on the Dublin Stock Exchange from 1987 to 2001"	"The results suggest that dividend announcements are important for Irish investors, but earnings signals appear to have a stronger impact on equity values."

Author(s)	Objectives	Methodology	Data	Results
Cheng et al. (2007)	"Our study examines the relative price effects of earnings and dividend announcements in the Hong Kong market, where there are several important features to make the research interesting."	"We use an event studies methodology to evaluate share price performance upon earnings and dividend announcements."	"The study sample period covers 14 years from 1986 through 1999 and includes in 1,564 contemporaneous announcements."	"In Hong Kong, firms release earnings and dividend information to the market on the same day. Simultaneous announcements like this let us test the simultaneous effects of unexpected earnings and dividends. When we partition the entire sample into different groups using ex ante earnings and dividend changes, we can see the market reacts more significantly to the unambiguous signals ("double" good news or "double" bad news) than to signals conveying inconsistent messages (pairing of good news in earnings and bad news in dividends, or the converse). Most previous research documents that earnings dominate dividends in explaining share price movements. Our results provide some striking evidence that dividends appear to be more influential in pricing than earnings. In an informationally asymmetric market environment like Hong Kong with highly concentrated shareholdings under the control of large families and limited disclosure of information for investors, dividends may be the one important source of information that allows market participants to evaluate management expectations and confidence as to the future performance of a firm. And that dividends in Hong Kong are not taxed does not appear to reduce their power as an information source. Our results indicate that dividends play a dominant role over earnings."
Jais et al. (2009)	"This paper examines the stock market reactions to announcements of dividend increases and decreases in Kuala Lumpur Stock Exchange."	Event studies approach,	"853 dividend increase announcements and 376 dividend decrease announcements from 2001 to 2005."	"The evidence in this study indicates that the stock market welcomes announcements of a dividend increase. (...) On the dividend decrease announcements, the immediate buy and hold abnormal return shows the expected sign but not statistically significant. There are some evidences that suggest investors react negatively prior to the announcements."

Author(s)	Objectives	Methodology	Data	Results
Adelegan (2009)	<p>"The overall objective of the study, which is to investigate whether the Nigerian stock market reacts efficiently to dividend announcements in terms of price adjustments, may be broken down into the following specific objectives:</p> <ul style="list-style-type: none"> • To assess the speed with which share prices adjust to the information contained in dividend announcements in the Nigerian stock market; • To investigate market reactions to announced changes in dividend policies by Nigerian companies and determine whether there is an overreaction or a drift; • To determine whether the reactions (both short and long run) are proportional to the change in dividend; • To investigate whether the market treats announcements of dividend initiations (good news) and omissions (bad news) symmetrically or whether price reactions to omissions are greater than for initiations." 	<p>"The methodology is strongly influenced by Michaely et al. (1995) and Loughran and Ritter (1995). To evaluate the performance of the firms in our samples before, during and after the events, the study calculates the returns from a buy-and-hold strategy."</p>	<p>"A total of 990 firms were examined covering the period from 1991 to 1999. Of the sample, 694 firms gave quarterly financial reports, 786 gave biannual announcements, and 718 firms gave annual announcements between 1991 and 1999. Only 596 firms made dividend announcements during this period."</p>	<p>"The study also shows that for 30 days from the date of the announcement, the CERs are positive and significant for dividend paying firms, but are negative and statistically significant for dividend omitting firms. The CERs for all the five sub-samples (increase in dividend, reduction, no change, initiation and omission of dividend) are also significant before and after the day of the announcement. This points to the fact that dividend policy matters and share prices do react to dividend announcements. However, one cannot completely rule out the possibility of insider trading on the Nigerian stock market. Moreover, since the price is still drifting 30 days after the announcement, one can say that the Nigerian stock market is not semi-strong efficient. The findings support semi-strong market inefficiencies found by Olowe (1998) and Oludoyi (1999) from stock splits and earnings announcements, respectively."</p>
Mallikarjunappa and Manjunatha (2009)	<p>"Therefore, this study is conducted with the following objectives: (a) to empirically test whether the semi-strong form of EMH holds in the Indian stock market, and (b) to test how the share prices in the Indian market react to dividend announcements."</p>	<p>"Event studies methodology is used to assess the average returns (AR), average abnormal returns (AAR) and cumulative average abnormal returns (CAAR) around the dividend announcement day (the event-day)."</p>	<p>"The companies selected for this study are those which form part of the Stock Exchange, Mumbai (the BSE), index consisting of 200 companies which are called BSE-200 index. Since the objective of the study is to study how fast the value-changing information contents of the dividends are incorporated into the security prices, only those companies which have declared dividends, both interim and final, during the year 2002 have been selected (...) 149 companies. There were 170 dividend declarations from these companies in the year 2002."</p>	<p>"The values of average abnormal returns (AARs) and the cumulative average abnormal returns (CAARs) computed and analysed in this study show that positive abnormal returns persist several days after the dividend announcements by the companies. The analysis also shows that the number of days on which positive returns are earned is more than the number of days on which negative returns are recorded. The trend of positive returns is more pronounced after the event-day. The positive returns can be earned even after 30 trading days from the dividend announcement day. The analysis of the t-test values also shows that the positive CAARs can be earned by buying the stocks after the dividend announcements. The whole analysis in this study shows that there is no statistical evidence to accept the semi-strong form of market efficiency in the Indian market. However the behaviour of the CAAR before the event-day exhibits some of the features of efficient market which are not sustained after the event-day."</p>

Author(s)	Objectives	Methodology	Data	Results
Pathirawasam (2009)	"This paper extends the current literature by investigating the impact of Sri Lankan company stock dividend announcements on share prices around announcement dates using daily return data for the period from January 1998 to December 2007."	"In order to examine the market reaction to the stock dividend announcements, average abnormal returns and cumulative average abnormal returns are computed for selected periods before and after the announcement date."	"100 stock dividend announcements for companies listed in the Colombo Stock Exchange from 1998 to 2007."	"Overall, it can be concluded that this study strongly support the information signalling hypothesis consistent with the findings in other developed markets. However, price reaction of Sri Lankan companies is much higher than the other countries on the date of the stock dividend announcement. Finally, the study reveals that CSE supports the semi-strong form of efficient market hypothesis."
Akbar and Baig (2010)	"The study aims to investigate the semi-strong form of market efficiency by exploring the reaction by stock prices to dividend announcements. The announcements are of cash dividend only, stock dividend only and simultaneous cash and stock dividends. Therefore, the study investigates the reaction of stock prices to all three types of dividend announcements and derives conclusion upon the level of market efficiency in the semi-strong form."	Event studies methodology	"For this study we use sample companies from the KSE-100 index (i.e. companies that were included in the KSE100 index companies during the sample period) and have paid-out cash dividend or bonus stock or both at least once in the period from July 1, 2004 to June 29, 2007. A total of 79 companies out of KSE 100 index is selected on the having 193 dividend announcements during the sample period. The dividend announcements include 129 cash, 24 stock and 40 simultaneous cash and stock dividend announcements."	"We found that the reaction of stock prices to cash dividend announcements is statistically insignificant. However, the returns are mostly negative for the 41 day window which might be attributed to the tax effect of cash dividend. However, the negative returns are partly compensated by the cash dividends to investors which were not included in the calculations of the returns. Further the average abnormal and cumulative abnormal returns for stock dividend announcement are statistically significant which suggest a positive reaction. (...) Hence stock dividends are perceived favourably by investors in KSE. This finding suggests that the KSE is not efficient in the semi-strong form of market efficiency."
Altioek-Yilmaz and Akben-Selcuk (2010)	"This study contributes to the existing literature by testing the information content of dividends hypothesis for an emerging market, namely the Istanbul Stock Exchange (ISE)."	"To accomplish this objective, an event studies is conducted to measure whether any abnormal returns are earned by security holders around dividend announcements."	"This study covers the period 2005 to 2008, and investigates 184 dividend announcements made by 46 selected companies."	"When a three-day (1 day prior to the event day and 1 day after the event day) event window was used, the results showed that the market reacted positively to dividend increases, negatively to dividend decreases and did not react when dividends were not changed. Therefore, the results were consistent with the signalling hypothesis. However, cumulative abnormal returns were insignificant when longer event windows were used. Also, the results showed pre-event information leakage for the decreasing dividends sample. Besides providing additional evidence consistent with the information content hypothesis, these results have important implications for companies. Specifically, firms should be careful when announcing changes in their dividend policies since such announcements have an impact on stock prices."

Author(s)	Objectives	Methodology	Data	Results
Asamoah and Nkrumah (2010)	"The objective of the study was to establish whether there is any statistically significant instantaneous increase in share price resulting from dividend announcement to support conclusion that the GSE was semi-strong efficient."	"The main methodology for this study was event studies."	"Dividend announcements made in 2005, three companies selected for study performed badly on Ghana Stock Exchange (GSE)."	"Despite the dividend announcements, abnormal returns for the three companies averaged -6.26 per cent. In an efficient market dividends which were higher than expected were characterized by a preponderance of high positive abnormal returns at the event time zero. The abnormal returns table however did not exhibit this trend confirming the null hypothesis that dividend announcement did not have any impact on share price behaviour. Following the dividend announcement, it was expected that the average abnormal return would be close to zero without exhibiting any detectable trend to conform to the requirement of market efficiency. In an efficient market there was an instantaneous reaction at the announcement date to the unanticipated component of the information and no subsequent drift in the average abnormal returns was expected. On the contrary, the table exhibited a discernible pattern where the average abnormal return instead of getting closer to zero after the announcement date rather increased from -6.26 per cent to 2.49 per cent at event time +6."
Hussin et al. (2010)	"This study focuses on the announcement effect of both dividend and corporate earnings on stock prices to examine evidence of semi-strong form efficiency in Malaysian Stock Exchange."	"We adopted event studies methodology to test the semi strong-form efficiency. A test of this nature was introduced by Ball and Brown (1968) and Fama et al. (1969) and is considered the most relevant test of semi-strong form efficiency to conclude that the market is able to respond to public information in a sufficiently rapid manner (Brown and Warner, 1980)."	"120 companies listed on the Main Board of Bursa Malaysia that announced the final dividends in their fourth financial quarter was selected covering a time period from January 1, 2006 to November 30, 2006."	"This study concludes that both dividends and earnings play a significant role as signalling effects of the future prospects of the firm, with the dividends effect proving to be significantly stronger than the earnings effect. The results provide some evidence of semi-strong form efficiency in the Malaysian stock market, where stock prices adjust in an efficient manner to dividend and earnings announcements."

Author(s)	Objectives	Methodology	Data	Results
Mehndiratta and Gupta (2010)	"In this paper an attempt is on the stock market reaction to dividend announcements in India in the light of various previous studies conducted in various developed countries of the world such as the USA, the UK, Australia, etc."	"In this paper two-stage approach is used to test the stock price responses to dividend announcement. The first stage consists of estimation of parameter like beta based on the ex-post returns on stocks and market index, and expected returns on each of the stocks based on the market model. In the second stage these estimated parameters are used to calculate abnormal returns around the event day."	"15 most actively traded companies during the year 2009 have been selected on random basis. These companies have announced their dividend during the year 2009. Companies that have any price sensitive information during the event window (-30 days to +30 days) are eliminated."	"Using an event studies methodology paper find that despite of investors do not gain significant value in the period preceding as well as on the dividend announcement day, yet they can gain value in the post announcement period. Investors do shift their security positions at the time of dividend announcement, which indicate that in post announcement period there is a possibility of information content in dividend announcement in NSE. The evidence nevertheless shows that dividend increases lead more positive abnormal returns, supporting the Efficient Market Hypothesis."
Campbell and Ohuocha 2011	"The purpose of this paper is to examine whether stock dividend announcements create value for companies traded on the Nigerian stock market and to ascertain the nature of the information such announcements convey."	"A standard event studies methodology, employing the market model, is applied to determine the abnormal returns both on and surrounding the stock dividend announcement date."	"All listed companies that announced stock dividends during this period and which had a stock exchange listing for at least 12 months before and after the announcement were included in our sample. (...) final sample of 99 stock dividend announcements from 60 companies."	"The findings suggest that companies that choose their own announcement date outside the Nigerian stock exchange announcement window experience positive abnormal returns if their stock is more frequently traded and negative abnormal returns if their stock is less frequently traded. In addition, support is found for both the cash substitution hypothesis and the signalling hypothesis as explanations for the information stock dividends convey to shareholders."

Author(s)	Objectives	Methodology	Data	Results
Dasilas and Leventis (2011)	"This study investigates the market reaction to cash dividend announcements for the period 2000 – 2004 employing data from the Athens Stock Exchange (ASE). In particular, the paper examines both the stock price and trading volume response to dividend distribution announcements."	"The methodology employed is the standard event studies methodology."	"Daily closing prices and trading volume data were obtained for all firms listed in the ASE between 1 January 2000 and 31 December 2004. Both closing prices and trading volume data were adjusted by changes in the number of shares resulting from stock splits, right issues, stock dividends, stock options, etc."	"Our results indicate that there is a statistically significant market reaction on the dividend announcement day. In line with the tenor of prior literature, we find support for the dividend signalling hypothesis. Hence, dividend increases induce a significant positive stock price reaction, whereas dividend decreases bring about a significant negative stock price reaction. Constant dividends leave stock prices unaltered. In addition, we report evidence that the market incorporates dividend news in an efficient manner. Moreover, the trading volume behaviour displays positive reaction to dividend change announcements. As with stock prices, the trading volume moves in the same direction as the dividend change signals. (...) Overall, our results are consistent with those found in the USA, the UK and other developed markets."

9.3 – Simultaneous dividend and earnings announcements

Author(s)	Objectives	Methodology	Data	Results
Kane, Lee and Marcus (1984)	"We examine abnormal stock returns surrounding contemporaneous earnings and dividend announcements in order to determine whether investors evaluate the two announcements in relation to each other."	"In order to measure unanticipated dividends and earnings, models of expectation formation are required. Rather than building our own models of such expectations, we rely on models that have been tested elsewhere. (...) We follow Pettit in testing the earning and dividend interactions in a nonparametric framework."	"Our sample consists of 352 observations of quarterly earnings and dividend announcements between the fourth quarter of 1979 and the second quarter of 1981."	"We first demonstrated that our sample is similar to those of earlier researchers, who found that unexpected dividend and earnings announcements appear in and of themselves to be able to induce abnormal stock returns. However, once a more general specification that allowed for interaction effects between the two announcements was estimated, empirical results indicated that the announcements are indeed interpreted in relationship to each other. This interaction or corroborative effect was statistically significant."
Easton (1991)	"In Australia, as in the UK, earnings and dividend announcements are almost always announced simultaneously. Therefore, even when management may not believe that the earnings and dividend announcements are interrelated, or that their simultaneous release may minimize any negative impact on returns, they will still be announced simultaneously. Consequently, an investigation of possible interaction effects in Australia enables not only a test for the existence of these effects in a different market, but also a test of whether they are sensitive to discretion in the relative timing of the earnings and dividend announcements."	Abnormal returns	"The sample period is from the second half of 1978 to the second half of 1980. The final sample consists of 896 half-yearly reports for 339 industrial companies. It includes 525 first half-yearly reports and 371 second half-yearly reports."	"In Australia, earnings and dividend announcements are virtually always announced simultaneously. Therefore, an investigation of possible interaction effects in Australia enables a test not only for the existence of these effects in a different market, but also a test of whether they are sensitive to discretion in the relative timing of the earnings and dividend announcements. The results clearly support the existence of interaction effects, and suggest that the analysis is not sensitive to discretion in the relative timing of the announcements. This suggests that studies of earnings and dividend announcements would be improved if interaction effects were factored into the experimental design."

Author(s)	Objectives	Methodology	Data	Results
Lonie, Abeyratna, Power & Sinclair (1996)	"This article examines capital market reactions to a variety of combinations of simultaneous dividend and earnings announcements by UK companies. These announcements are treated as signals which are emitted by the managers of companies in an uncertain economic environment characterized by informational asymmetry and interpreted as best they can by investors."	"The first section of this article employs a conventional event-study methodology when examining the stock market reaction to the firm-specific event of a dividend announcement (Brown and Warner, 1985; Strong, 1992)."	"This study examines dividend announcements from 620 companies. These companies were selected on the basis of certain minimum informational requirements: they announced their annual dividend per share in the Financial Times during the six months January to June 1991 and they satisfied the requirement that all share price data were available from Datastream and earnings per share data were available from EXTEL cards."	"The results of the interaction tests were significant, indicating that both signals jointly influenced the level of abnormal returns earned by the companies in our sample. These significant findings conform to the results of earlier investigations by Kane et al. (1984) and Easton (1991) whose US and Australian studies respectively employed a similar methodology. However, according to our results, and unlike the findings of the other two studies, the magnitude, as well as the sign, of the earnings signal remains important. Again, in contrast to the findings of the Kane et al. and Easton studies but consistent with the De Angelo et al. (1992) study, we found that current earnings constituted the dominant signal to the capital market and the dividend announcement a partial, and often inferior, substitute signalling mechanism for managers to convey to investors their views about the future performance of their firms."
Conroy et al. (2000)	"We use the unique circumstances of how earnings and dividends are announced in Japan to construct a straightforward test of the relative pricing effects of dividend and earnings information. Three features provide for a much stronger test than has been available to date from U.S. and other studies."	"To measure new information, we compute the difference between management's announced value and analysts' forecast. To avoid giving undue weight to extreme values, we transform this continuous surprise variable into a grouped surprise variable."	"We study Japanese companies listed on the first section of the TSE with fiscal years ending in February, March, and April, over the period 1988 to 1993. The first section has about 85 percent of the trading volume and total market value of the TSE (see Schwartz and Ziemba 1991) and contains the largest and best-known Japanese firms. In 1993, about 85 percent of first section TSE stocks have a February, March, or April fiscal year end, with March 31 being by far the most common."	"Our findings suggest that, at least in Japan, earnings variables dominate dividends in their ability to explain share price movements. In particular, we find that the current dividend effect is never significantly related to announcement returns and management's forecast of next year's dividend has a small but significant effect on stock price. Our results are robust to a wide range of sensitivity tests. We find the insignificant pricing effect of current dividends to be particularly notable. At a minimum, this result stresses the importance of constructing empirical tests with proper control variables."

Author(s)	Objectives	Methodology	Data	Results
Sponholtz (2005)	"The objective of this study is therefore to utilize the Danish information environment around dividend announcements to disentangle the informational and real effects of dividend changes without the influence of the unique Japanese corporate governance issues that may have clouded the results of Conroy et al. (2000)."	"Event studies methodology to calculate abnormal returns around the announcements. We then regress these abnormal returns on the surprise component in earnings, dividends, and management's forecast of next year's earnings."	"Simultaneous announcements for Danish firms in the period from 1999 to 2004"	"We find that the stock market reacts to the component of surprise in dividend announcements and management's forecast of next year's earnings. However, the surprise component of current earnings seems to carry no information, since we find no indication of a reaction to the announcement of current earnings when controlling for the other announcements. These results are robust to various sensitivity analyses. At a minimum, these results can be interpreted as indicating that dividend surprises contain an informational effect above and beyond that contained in management's forecast of next year's earnings. If it is assumed that management's forecasts of next year's earnings adequately control for any informational effect, the results can be interpreted as evidence that there is a real effect of dividends. Such an interpretation would contradict the dividend irrelevancy proposition in general. Our findings of a stock market reaction to current dividend surprises are in sharp contrast to the findings in Conroy et al. (2000). This indicates that their findings should be interpreted more as a result of the unique Japanese corporate governance environment than as evidence supporting the dividend irrelevancy proposition."

9.4 – Portuguese studies

Author(s)	Objectives	Methodology	Data	Results
Fernandes (1996)	"The present event study evaluates the relation between unexpected profits and short-term average residual returns, for the Portuguese companies listed on the official quotation segment of the Lisbon Stock Exchange from 1991 to 1995."	Event studies methodology - API	16 Portuguese companies listed on the Lisbon Stock Exchange from 1991 to 1995	"The most important ones are that stock prices reaction to profits occurred in the weeks before publication in the Diário Económico newspaper, that profits are very low in information content (most of which was anticipated by the market), and that clear semi-strong efficiency was exhibited, with very likely systematic information leakage before public announcements of net results. Average residuals found in association with unexpected profits reached a maximum of about 10%."
Isidro (1997)	"This study examines the price response of the securities listed on the Official Quotations Market of the Lisbon Stock Exchange to the announcement of annual accountings for the period of January 1993 to June 1997. The aim is to determine if the Portuguese capital market assigns value to the net profit accounting information and if subsists the possibility of making gains, based on this information, that is, it is performed an hypothesis test on the Portuguese stock market semi-strong efficiency. "	Event studies methodology - CAR, SRV and GSR	51 Portuguese companies listed on the Official Quotations Market of the Lisbon Stock Exchange from January 1993 to June 1997	"The results of this study suggest that for a set of securities, characterized with high liquidity, the accounting earnings contain useful market information and it is not possible to obtain abnormal gains after the earnings announcement, as evidenced by the semi-strong efficiency hypothesis. However, these results are not generalized to all the securities listed on the market over that period. There was also a higher variability of abnormal returns in the period before the announcement, suggesting that the market anticipates some of the information contained in the earnings announcement, probably due to rumours and created expectations about the accounting earnings."
Wilton (2002)	"This study examines the impact of the financial earnings disclosure by companies with shares admitted to trading on the official quotation market of Euronext Lisbon, to assess the fairness of differential treatment at the normative level of this information against the information on the relevant facts alluded in the Article 248 of the Portuguese Securities Code. Specifically, seeks to examine whether, statistically, the dissemination of financial earnings modify significantly the pattern of trading of those shares, which would justify a particular care in the way and timing of its disclosure."	"For the firms in analysis, we held a series of statistical hypotheses tests comparing the periods close to the financial earnings disclosure with contiguous periods. The tests focused on three variables of trading: trading volume, number of trades and the logarithm of changes in closing prices."	"Were collected data on the trading of 20 companies included in the index PSI 20 and 10 other companies, in dates close to the date of earnings announcement for the year 2002."	"The results of the hypotheses tests suggest - subject to the assumptions of the study - that the trading volume variable is little sensitive to the earnings disclosure, the number of trades is only marginally sensitive to such disclosure, but that the variability of prices has, in aggregate, few sensitivity to the earnings announcements. 17 hypotheses tests of a total of 80 tests over 20 PSI 20 companies (21.25% of total) recorded significant changes in price variability. The same applies to 17 of a total of 38 tests on the remaining 10 companies analyzed (44.7% of total). The highest incidence in this second series of companies is most likely due to its lower liquidity in trading. (...)Significant changes in the variability of prices do not have a high percentage, it is likely that even in these situations, these changes are due to other events that occurred during the same period."

Author(s)	Objectives	Methodology	Data	Results
Borges (2004)	"More specifically, through the analysis of the transactions volume behaviour, we will test the existence of a positive abnormal volume during the dividend period, which will constitute evidence of the presence of short term traders in the market, alert to the profit opportunities that come linked to the dividend distribution event."	"Event time and calendar time methods - Brown and Warner (1980) event studies."	"The construction of the database began by taking all the quoted firms in the Lisbon stock exchange, in the period from 1990 to 1999."	"The transactions volume behaviour in the dividend period as shown evidence of a positive abnormal volume, although not very strong. Specifically, in the sample excluding outliers, that is, observations in which at least in one of the days in the dividend period, the abnormal transacted volume exceeded more than ten times the standard deviation of the normal volume, we found statistical evidence of a positive abnormal volume in days -2, -1, and +4. In the other days, the abnormal volume is not statistically significant."
Alves and Santos (2005)	"The aim of this paper is to establish whether the quarterly financial information announced has relevant information content that may affect investors' decisions. Furthermore, we will try to discover if this impact occurs in all four earnings announcement quarters or if otherwise the information of the first and third quarters is nonessential."	"The methodology followed is that of the study of the impact of events, where these events are the quarterly earnings announcements. The main impact measures used are the variation of price volatility and the abnormal trading volumes as a result of the earnings announcements, as proposed by Beaver (1968) and recently refined by Landsman e Maydew (2002)"	"Using a sample of 1751 earnings announcement (...) the sample takes into account a 10.5 year-period (from January 1994 to June 2004) and includes a period in which only half-year and annual reporting (up until the end of 1998) were compulsory and another period (as from 1999) in which compulsory reporting is extended to the other two quarters."	"The results obtained indicate that overall financial reporting has a significant impact on the 3, 5 and 7 trading days following the earnings announcements. This happens both when changes in price volatility are involved and when the analysis centres on abnormal volumes. (...) With regard to the different earnings announcement quarters (Q1, Q2, Q3 and Q4) and in relation to their impact on price volatility, the output obtained upholds the fact that there is an increase in volatility following earnings announcements, irrespective of the manner in which the normal return is defined, if the control period is defined well before the event date. (...)With regard to the impact of the earnings announcement (Q1, Q2, Q3 and Q4) on the trading volume, the results reveal that volatility increases after the earnings announcement, irrespective of the manner in which the normal volumes are defined and irrespective of the manner in which the control period is defined. (...) In relation to the comparison of the impact for the first and third quarters versus the impact for the second and fourth quarters, the regression analysis, in line with the statistical analysis, confirmed that the results of quarters one (Q1) and three (Q3) have a lower information content (in terms of prices) than that seen in quarters two (Q2) and four (Q4), irrespective of the metrics used to quantify the effect on the trading volume.(...) Our results, therefore, both as regards the volatility of prices and the abnormal trading volume, support the thesis that quarterly earnings announcements have an impact and that this impact is no less in interim announcements than in annual announcements. (...) In sum, the results obtained support the idea that the information reported in the first and third quarters has information content and that statistically this content is not inferior to that of the second and fourth quarters, there being no reason to believe that this information will be disregarded by investors in their decision-making processes, both in terms of prices and trading."

Author(s)	Objectives	Methodology	Data	Results
Duque and Pinto (2005)	"This study aims to find out how price sensitive these revealed price sensitive event how timely the market reaction to their disclosure is. (...) Using these supposed "price sensitive events" that are elected by issuing companies to be disclosed through the CMVM website, this study has two related objectives: first to study how sensitive are "price sensitive" events and, secondly, how efficient and timely has this process been."	"Traditional event studies methodology McKinlay (1997) not only concerning stock prices, but also the trading volume (number of traded shares)"	"1828 events that were considered significant from 01/1/2000 to 31/12/2002"	"We can therefore conclude that the disclosure of price sensitive events classified as such contain useful market information, and that this information is incorporated in an efficient way in the share price formation process. However, the release of information seems to be done in a delayed way in comparison to what we would expect. (...) we can conclude that the disclosure of price sensitive events possesses informational value and that the market is efficient in its semi-strong form. Nevertheless, considering that announcements are made after the close of trade in the exchange, the adjustment in prices seems prior to the disclosure, which may indicate that in several cases the announcements are mere rectifications or simple validations of rumours already spreading around."
Farinha and Soro (2006)	"This paper provides an additional empirical contribution on the way taxes influence ex-dividend pricing and on the potential existence of tax-induced arbitrage opportunities by analyzing the uniqueness of the 1993-2002 Portuguese setting characterized not only by a rich set of different investor tax profiles but also by a number of major tax changes."	Elton and Gruber's (1970) model	"140 observations for 40 firms, gathered between 04/01/1993 and 12/06/2002."	"Our initial results show that the changes in prices at the ex-dividend day are consistent with the argument that it is indeed the tax effect the dominant force behind ex-dividend pricing in the Portuguese market, in accordance to Elton and Gruber (1970). (...) Our methodology and results also allowed us to conclude that the behaviour of ex-dividend pricing in the Portuguese market is not consistent with market microstructure arguments such as that of Bali and Hite (1998). (...) To test such possibility, we estimated abnormal returns on the ex-dividend day according to several different methodologies taking into account not just tax effects but also bid-ask spread costs. Our results are consistent with market efficiency as we find that not a single investor category is able to earn abnormal returns when all the relevant costs are considered."
Romacho and Cidrais (2007)	"The purpose of this paper is to test the efficient market hypothesis of the Portuguese capital market in the semi-strong form, selecting as relevant information the announcement of the accounting earnings."	"We applied the event studies methodology, using the Security Returns Variability (SRV) measure"	"Sample composed of 10 shares belonging to the Portuguese index PSI-20 for the period of 4th January 1999 over 30th September 2004."	"The results obtained suggest that, for the generality of the set of stocks, the market is efficient, which is reflected in a fast adjustment of the stock prices when the accounting earnings are announced and even beforehand. These results are consistent with other studies that have investigated the efficiency of the Portuguese stock market in the semi-strong form."

Author(s)	Objectives	Methodology	Data	Results
Vieira (2007)	"In this thesis we investigate the impact of dividend change announcements in the firm value and future performance of three European countries: France, Portugal and the UK. Ahead of the analysis of market reaction to dividend change announcements and of firms' future profitability, we wish to test the maturity hypothesis and the "windowdressing" phenomenon. In particular, we intend to carefully analyse the cases in which dividend changes and share prices move in opposite directions, trying to find possible explanations for these occurrences, which might be related with firms-specific factors."	"To measure the market reaction to dividend change announcements we opt to consider three approaches to determine the abnormal returns. Using various alternative event specifications we test the robustness of our results. Firstly, we use the standard CAPM. Secondly, we consider the abnormal returns calculated from a buy-and-hold strategy, denominated by buy-and-hold abnormal returns (BHARs). Finally, we estimate abnormal returns as market-adjusted returns to test the robustness of our results. The first two approaches will be used according to the market considered and the last one is used for the three markets."	"The sample is drawn from dividend announcements of firms listed on the Euronext Lisbon (EL), Euronext Paris (EP) and LSE. For the French and UK markets, we consider the dividend announcements between 1994/61 and 2002. (...) For the Portuguese market we consider the dividend announcements between 1988 and 2002."	"In what concerns the Portuguese sample, we can see that (Panel B) for the event period and the dividend no change announcements, we find a non-significant buy-and-hold abnormal return. This supports the hypothesis that firms that leave their dividends unchanged communicate no significant new information to the market. In what concerns dividend change announcements, although dividend increases and decreases show, respectively, a positive and a negative return on the announcement period - which is the expected signal - the returns are only statistically significant for the case of dividend decreases, at a 10% level. The result concerning dividend decrease announcements suggest that they convey relevant information to the market. However, the lack of reaction when dividend increases are announced can be due to the market illiquidity or to the concentration of the corporate ownership, which makes dividend announcements less relevant. These results suggest that dividend increase announcements contain less relevant information than do dividend decrease announcements. (...) The abnormal returns for the three-day announcement period only support the dividend content hypothesis for the dividend increase events in the UK market. In the Portuguese and in the French markets we find no significant market reaction to dividend change announcements, which do not support the hypothesis that dividend changes communicate significant new information to the market. This is in agreement with the expected results that the need to use dividends as a signalling device must be less pronounced in France and in Portugal than in the UK, namely by the effect of concentrated corporate ownership, firm's financing and level of protection of corporate shareholders."
Francisco and Gonçalves (2008)	"The aim of this study is to verify what type of information is likely to serve as justification for the extreme abnormal returns found in a period of two years (2006 to 2007), grouping them into homogeneous groups. Thus, this study allows verifying if the information considered by the regulator as price sensitive, in accordance with Article 248 of the Securities Code is, in fact price sensitive and in what extent."	Ryan and Taffler (2004) methodology	"667 announcements for 19 companies listed in the PSI-20 index and 6 listed in Eurolist, Euronext for the period of 15-11-2005 to 14-11-2007"	"In this analysis it was found that the types of information that most often justify extreme positive returns ("Good News") were (i) the restructuring of enterprises and (ii) the investment recommendations. With respect to the magnitude of the impact of different types of information we concluded that there is no significant difference, which shows that all categories of information in a non review contribute in the formation of distinct abnormal returns extreme absence of a single type with greater degree of impact than the others."

Author(s)	Objectives	Methodology	Data	Results
Lourenço and Coelho (2008)	"In this research paper we seek to explain the abnormal variation of stock returns observed around the announcement of annual earnings, and thus determine if those are helpful in evaluating the stock market. The aim is thus to verify the persistence of reported earnings and the impact on future results."	Event methodology	studies "41 companies listed in the Euronext Lisbon market for the period of 1992 to 2002"	"The study findings highlight that positive and negative annual earnings are strongly associated with the abnormal return of the stocks. The positive earnings are related to the abnormal returns at the level of variation while the negative earnings are associated with the level of earning reported and their variation. (...) We conclude that the earnings disclosure possess information content, although the regression results show clearly that the context factors affect, certainly, the response to the announcements."
Correia (2009)	"This study attempts to discuss information efficiency based on empirical evidence about the Portuguese stock market. We examine the abnormal returns surrounding earnings announcements for all available data on I/B/E/S for the Portuguese stock market"	"Since the major intent of this study is to investigate informational market efficiency based on event studies methodology we will follow the conventional methodology adopted in the empirical literature about market efficiency."	"The sample consists of all available data relative to earnings analysts' forecasts reported on Institutional Brokers Estimate System (I/B/E/S) for Portugal, namely the Earnings Per Share (EPS) series, and the price and volumes series are collected from Bloomberg. The initial sample period of firms' yearly earnings announcements goes from 1990 to 2008, which represents all available data about earnings announcements in the Portuguese market on an annual basis."	"(...) conclude that the evidence partly support the previous studies. Furthermore, our results show persistence of the abnormal returns in the pre-event window and on day zero (i.e. one trading day before the announcement was made public), two anomalies that were previously documented. This fact lead us to argue that the Portuguese stock market is not informational efficient. (...) We examine the observed earnings abnormal returns for the Portuguese market and conclude that the evidence partly supports the previous studies. We argue the stock market in Portugal is not informational efficient, but we also believe that it is very difficult to create a trading rule and thereby it is exaggerated to assume that the market is not efficient in the weak form."