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***“The market reaction to dividend change announcements:  
The Greek Case”***

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I hereby declare that the work submitted is mine and that where I have made use of another's work, I have attributed the source(s) according to the Regulations set in the Student's Handbook.

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Thessaloniki - Greece

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## **Abstract**

The fundamental aim of this study is to examine the stock market reaction to cash dividend announcements over the period between 2009 and 2014 employing a sample of listed firms on the Athens Stock Exchange. The Greek dividend environment differs from those of other developed countries. First, listed firms on the Athens Stock Exchange are required by the Greek Corporate Laws 2190/1920 and 148/1967 to distribute a minimum cash dividend. Second, cash dividends are distributed on a yearly basis compared to other markets. Third, the period under investigation of this study was characterized by dramatic changes in the Greek capital market where taxes on dividend income were imposed in 2009. Finally, a high ownership concentration characterizes the majority of Greek listed firms. The results of the study confirm the “dividend signaling hypothesis” proposing that the dividend policy of a firm and its shareholders’ wealth are related. More specifically, dividend increase announcements appear to bring about positive abnormal returns around the event day, while announcements of dividend decrease lead to negative abnormal returns around the announcement day. In cases where a constant dividend is announced, the market reaction is positive.

Keywords: Dividends changes, market reaction, abnormal returns, signaling effects

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## Chapter 1: Introduction

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The dividend policy of a company and its impact on the wealth of its shareholders has always been a matter of heated debate among academics and practitioners for several decades. The relevance between the dividend policy of a company and its value was initially studied by Lintner (1956) and developed further by Bhattacharya (1979), John and Williams (1985) and Miller and Rock (1985). Assuming that capital markets are not perfect, Lintner (1956) argued that any change in the dividend policy of a listed company can convey valuable new information to market participants about the current as well as the future financial position of a company. Consequently, a positive market reaction may be triggered by increases in the amount of dividend announced. Similarly, a negative market reaction may be generated after the announcement of a decrease in the payout policy. This point of view also known as “the information content hypothesis” can be attributed to the information asymmetry between managers and investors (Petit 1972; Healy and Palepu 1988; Ghosh and Woolridge 1991; Marsh 1993). In addition to Lintner’s theory, some researchers (Bhattacharya 1979; John and Williams 1985; Miller and Rock 1985) went a further step showing that under asymmetric information, better informed insiders take advantage of the firm’s dividend policy in order to signal its future prospects to less informed market participants out of the firm.

However, Miller and Modigliani (1961) argued with Lintner’s (1956) hypothesis regarding the relationship between dividend policy and a firm’s value. They proposed that in a perfect capital market characterized by certainty, no taxes and transaction costs, a firm’s wealth is independent of the dividend policy it follows. Instead, they stated that only changes in the investment policy and strategy could have an impact on the shareholders’ wealth. Finally, there is a group of researchers who, although they confirm and support the relationship between the dividend policy of a firm and its value, they argue that a dividend increase can generate a negative market reaction due to the existence of taxes imposed on dividends. In accordance with the study of Brennan and Thakor (1990) the majority of a firm’s shareholders prefer to receive cash dividend

when its amount is small. Conversely, in case of quite larger distributions, shareholders prefer tender offer stock repurchases than the cash dividend.

There is a plethora of previous studies that have examined the stock market response to dividend change announcements. The primary aim of this dissertation is the empirical estimation of the stock market reaction to changes in dividend policies of Greek listed firms. The Greek capital market differs significantly from other capital markets in several ways. First and foremost, there is only one stock market, the Athens Stock Exchange which is considered relatively small compared to those of the developed countries. In addition, the dividend distribution is mandatory in Greece and paid on an annual basis according to the Greek Corporate Laws 2190/1920 and 148/1967. Second, the period under investigation is characterized by dramatic changes in the Greek capital market where taxes on dividend income were imposed for the first time in 2009 and the majority of Greek listed firms experienced and still experience financial distress, thus limiting their dividend distribution and searching for alternative ways of paying out less costly money to their shareholders (i.e. return on capital). Third, information asymmetry between the management team of a firm and its shareholders may be weak due to the fact that main owners often hold managerial positions implying that they base less on dividend news to signal future prospects of their firm. Consequently, the particular idiosyncrasies of the Greek capital market make the investigation of the dividend policy interesting.

This study intends to examine the relationship between dividend change announcements of the Greek listed firms on the Athens Stock Exchange and the subsequent stock price reaction. Employing the classical event study methodology and using a sample of 248 events the aforementioned relationship is examined. To gauge market reaction to dividend announcements, we calculate abnormal returns using both the market model and market adjusted model whereas the dividend changes were defined based both on the naïve model and minimum dividend required by the law.

The results of the study propose a positive market reaction on the event day in the case of dividend increases and negative abnormal returns around the dividend announcement day in cases of dividend decreases. A surprising finding is the positive



market reaction to constant dividend announcement. This outcome is not consistent with prior studies. The regression results reveal that the dividend yield and the classification of firms based on whether they distributed a dividend above or below the minimum required by the law are the significant determinants of the market reaction to dividend announcements.

The remainder of the study is structured as follows: Section 2 provides a brief review of previous research with regard to the effect of dividend change announcements. Section 3 describes the Greek stock market environment on dividend distribution and offers a brief review of changes in dividend taxes over the period under investigation. Sections 4 and 5 present data included in the analysis and the methodology employed, respectively. The empirical results of market reactions to dividend change announcements as well as the main determinants of abnormal returns are presented in Section 6. Section 7 contains the conclusions of the study.



## Chapter 2: Literature Review

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### *2.1 Empirical Evidence from US*

There is a plethora of studies that investigate the stock price reaction to dividend announcements the majority of which confirming the relationship between changes in the dividend policy and market reaction. Retit (1972) was the first who pointed out this relationship, having used a sample of 625 firms listed on the New York Stock Exchange over the period between January 1964 and June 1968. Petit (1972) identified a strong positive relationship between dividend changes and stock price reactions. In particular, he proved that positive (negative) changes in dividend lead to positive (negative) abnormal returns and that the size of the dividend change determines the size of the stock price reaction. Watts (1973) argued the results of Petit (1972). In specific, Watts investigated the relationship between unexpected dividend changes and positive future earnings changes and induced the existence of a positive and trivial relationship.

Aharony and Swary (1980) examined both the stock price responses to quarterly dividend announcements of 149 industrial companies listed on the New York Stock Exchange over the decade 1963-1973 and the semi-strong form of Efficient Market Hypothesis. They proved that dividend increase (decrease) announcements can lead to positive (negative) abnormal returns around the dividend announcement days inferring that cash dividend distributions convey new information to the market regarding the management's perspective about the firm's future performance. Moreover, their findings supported the semi-strong form of EMH indicating that on average the market reacts in an efficient manner to new dividend information.

Asquith and Mullins (1983) investigated the market reaction to dividend payment announcements using a sample of 168 US companies that either distributed their first dividend or had started to distribute dividend again after a 10-year interruption. Asquith and Mullins (1983) found that the market reaction to dividend initiations was greater than the effect of dividend increases contributing to significant abnormal returns. Apart from the stock price reaction to dividend announcements Dhillon and

Johnson (1994) found that bond prices also react to dividend announcements. By examining a sample of large dividend changes, they observed bond prices to move in the opposite direction compared to those of stock prices.

The study of Dyl and Weigand (1998) confirmed the existence of dividend information content. In particular, they argued that the initiation of dividends not only leads to stock prices increases, but also are followed by a quick downward-shift in the total company's risk. Having observed a decrease in earnings' volatility in the financial years after the dividend initiations, they inferred that the decision of a company's management to initiate dividend distribution conveys new information to the market regarding the risk of the firm.

However, the study of Benartzi, Thaler and Michaely (1997) may be an exemption due to little empirical support found for information content of dividends. Benartzi et al. (1997) performed a regression analysis employing data for 1,025 US firms listed on either the New York Stock Exchange or the American Stock Exchange over the period 1979-1991. They did not confirm that dividend distributions signal the future performance and financial position of a company. They also argued that dividend changes mainly reflect the past performance of the company rather than its future performance.

Bessler and Nohel (1996) conducted a study employing data from the US banking sector. They used a sample of 81 dividend decreases by 56 commercial banks listed on the New York Stock Exchange, the American Stock Exchange and NASDAQ over the period between 1974 and 1991. They found negative abnormal returns equal to -8.02% and -11.46% for the two-day event window and for a two week period, respectively, confirming the negative information content of dividend decreases.

## ***2.2 Empirical Evidence outside US***

Beer (1993) was the first who studied the stock price reaction to dividend change announcements using data from a European country (Belgium). He used two samples of listed firms, one with companies that exhibited regular dividend distribution and one with companies that exhibited resumed dividend distribution after three

years without any distribution. Beer (1993) lent support for the information content of dividends only for the later group. Lonie et al. (1996) investigated the dividend signaling hypothesis using a sample of 620 UK listed firms (London Stock Exchange). Their results confirmed the impact of dividend and earnings announcements on the share price with earnings announcements affecting much more the share price than those of dividends.

Vieira and Raposo (2007) studied the dividend signaling hypothesis using a sample of dividend announcements from the Euronext Lisbon, Euronext Paris and London Stock Exchange between 1994 and 2002 for French and UK firms and between 1988 and 2002 for Portuguese firms. Their results did not confirm the positive relationship between the dividend change announcements and the stock price reaction for the French capital market and provided a weak support for the Portuguese and UK capital markets.

The dividend signaling hypothesis was confirmed by the study of McCluskey et al. (2006) who examined the Irish capital market. In particular, McCluskey et al. (2006) examined a sample of 50 firms listed in the Dublin Stock Exchange over the period between 1987 and 2001. Their results indicated that the existence of a significant market reaction on the announcement day. However, given that usually dividend and earnings are jointly disclosed to the public, earnings signals appear to be stronger than those of dividends.

The study of Gurgul et al. (2003) was the first that investigated both the market response and trading volume after dividend change announcements with respect to the Austrian capital market. Using a sample of 22 listed firms on the Austrian Traded Index over the decade 1992-2002, they induced that dividend information content is valid for the Austrian stock market identifying that announcements of higher (lower) dividends trigger an average increase (decrease) in stock prices. The results regarding the trading volume were similar to those of abnormal returns. More specifically, abnormal trading volume was positive in case of dividend increase as well as after the announcement of a constant dividend.

Aminhad and Murgia (1997) explored the German capital market using a sample of 200 most traded companies at the German capital market between 1992 and 2002. Aminhad and Murgia (1997) found support to the relationship between dividend announcement and abnormal returns. Their results indicated that dividend announcements can trigger significant market reaction and dividend policy changes may incorporate information beyond that earnings do.

Capstuff et al. (2004) examined the Norwegian capital market. The Norwegian capital market is distinguished by its corporate ownership structure that can reduce agency costs and increase information asymmetries which in turn motivate managers to use dividends as a signaling mechanism. Capstuff et al. examined the dividend information content using a sample of 64 listed firms in Oslo Stock Exchange for the period between 1993 and 1998. Their findings confirmed the dividend signaling hypothesis. Nevertheless, the evidence that dividend changes move in the same direction with future earnings was not strong enough.

Japanese firms listed on Tokyo Stock Exchange were employed by the study of Harada and Nguyen (2005) aiming to test the dividend signaling hypothesis for the Japanese capital market. Harada and Nguyen (2005) used a sample of Japanese industrial listed over the decade between 1992 and 2002. The authors stated that the dividend information content is associated with the conditions of the company under which the dividend change takes place. Under this framework, firms that announce a dividend increase in favorable conditions (e.g. increased earnings) experience higher returns compared to firms that announce a dividend increase and decreased earnings.

Hu Zuguang and Ahmed (2010) examined the impact of dividend announcements on the shareholders' wealth for the Shanghai Stock Exchange. Using a sample of listed firms on the Shanghai Stock Exchange 180 Index between January 2005 and December 2009, Hu Zuguang and Ahmed proved that on the event day of dividend increase announcements, a positive market reaction is observed causing market participants to gain positive abnormal returns. Regarding the dividend decrease announcements, no negative market response was detected implying that the market participants in the Shanghai Stock Exchange may not perceive dividend decreases as bad

news. They also found that a high increase in dividend distribution results in a proportional high abnormal return a fact that means that the magnitude of the dividend increase has a strong impact on the firm's stock price.

Evidence was provided by Al-Yahyuee, Pham and Walter (2011) who investigated the market reaction to dividend announcements of listed firms on the Muscat Securities Market in Oman between 1997 and 2005. Oman is considered an emerging market where no taxes are imposed on dividends or capital gains; there is a high concentration of share ownership as well as low corporate transparency. Al- Yahyuee et al. (2011) draw the conclusion that the announcements of dividend increase (decrease) generate positive (negative) market reaction in Oman capital market. Furthermore, their findings are at odds with tax-based signaling models which suggest that imposed taxes that are higher than those on capital gains are deemed necessary in order dividends to be informative.

Akron (2011) proceeded a step further by studying the relationship between business cycles and stock market reaction to dividend announcements of large-cap companies listed in Tel Aviv Stock Exchange. Using a dataset of 209 dividend announcements derived from 25 listed companies over the period 2001-2007, Akron (2011) observed a significant positive abnormal activity on the first day subsequent the announcement. In addition, Akron (2011) stated that the business cycle is a vital determinant in the investors' perspective of dividend announcements proposing that during periods when the economic growth decreases rapidly announcement of dividend distributions are perceived as strong and reliable signals about the financial state of the company in comparison to periods of normality.

Recent evidence from Thai capital market was offered by the study of Suwanna (2012) who investigated the impact of dividend announcements on stock prices of 60 Thai firms in the financial sector listed in the Stock Exchange of Thailand (SET) between 2005 and 2010. The findings of the study confirm the information content of dividend announcement. Suwanna (2012) found a positive market reaction the day subsequent the announcement and no significant abnormal activity precede the announcement.

The dividend signaling hypothesis in Bahrain capital market was tested by the study of Asiri (2014). Having used a sample of 40 firms listed in the Bahrain Bourse that resulted in 157 dividend announcements, Asiri proposed that investors' behavior in Bahrain stock market is highly affected by the dividend distribution announcements leading to abnormal activity. More specifically, Asiri (2014) found that investors gained a positive abnormal activity after the announcement of dividend distribution regardless the increase or decrease of the dividend announced. In cases of dividend increases, the market participants earned an abnormal activity of 0.46% while in cases of dividend decreases, investors gained an abnormal activity equal to 0.35%. Furthermore, Asiri (2014) found that the time lag varied among sectors.

Kadioglu et al (2015) examined the Turkish capital market employing a dataset consisted of 902 announcement made by 118 firms listed in Borsa Instabul during the period 2003-2015. The authors pointed out a significant negative abnormal activity that follows the announcement of dividend distribution. As a result, Turkish stock market perceives dividend distribution announcement as bad news mainly due to the fact that dividends are taxed at a higher rate than capital gains leading shareholders to sell their shares in an attempt to avoid higher taxation in the future. Furthermore, Kadioglu et al (2015) argued that the magnitude of the negative market response depends on the volume of the dividend payout.

### ***2.3 Empirical Evidence from Greece***

The research regarding the Greek capital market is considered quite limited. The study of Papaioannou et al. (2000) was one of the first attempts to investigate the dividend information content in the Greek capital market. Employing a sample of stocks traded on the main market of the Athens Stock Exchange over the period 1981-1994, the authors confirmed Modigliani and Miller's irrelevance theory. More specifically, no significant abnormal return was identified after the change in a firm's dividend policy.



Asimakopoulos et al. (2007) also tested the dividend signaling hypothesis using data from the Athens Stock Exchange market. They employed a sample that included firms that distributed the minimum required dividend determined by the law and firms that distributed a dividend above the minimum required. The results showed a negative market reaction when firms declare a dividend amount above the minimum required. This paradox was attributed to the fact that investors received this increase as unexpected. As a result, Asimakopoulos et al. (2007) implied that dividend increases are deemed unexpected convey negative news to the market participants. Nevertheless, this effect did not apply to firms that paid only the minimum required.

The study of Vazakidis and Athianos (2010) provided also support to the dividend information content in the Greek capital market. Vazakidis and Athianos (2010) examined a sample of listed firms quoted on the FTSE/ATHEX 20 and FTSE/ATHEX Mid 40 for the period 2004-2008. Their empirical findings indicated the existence of abnormal activity in the stock market both before and after the dividend declarations. More specifically, positive market reaction was observed during the prior-announcement period, while negative abnormal returns were tracked after the announcement period. However, on the event day the abnormal returns, on average, appeared to be statistically insignificant.

Dasilas and Leventis (2011) studied both the stock price and trading volume reaction to changes in the dividend policy of a sample of 231 listed firms on the Athens Stock Exchange for the period 2000-2004. Their results were consistent with the dividend signaling hypothesis indicating that stock prices and trading volume move in the same direction to the dividend change. Furthermore, the authors concluded that dividend yield and the percentage dividend change exert stronger impact on abnormal returns around dividend change announcements.

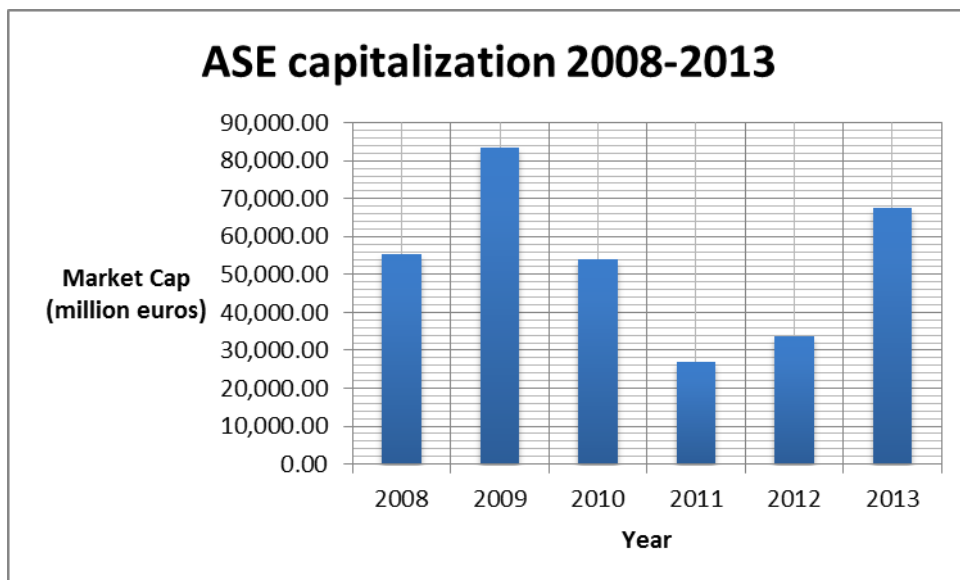
## Chapter 3: Greek Dividend Environment

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### 3.1 Athens Stock Exchange

The Greek stock exchange is considered small in terms of listed firms, market capitalization and value of traded shares. By the end of 2013, the number of listed firms did not exceed 240 and 14 in the main and alternative market respectively. The market capitalization appeared to fluctuate over the period under investigation reaching its highest value in 2009 with €83,443.94 million and its lowest value in 2011 with €26,784.48 million, while in the end of 2013 the market capitalization reached €67,437.86 million (Graph 1). The value of shares traded, on the other hand, appeared to follow a downward trend for the period 2008-2013. The level of €78.17 billion in 2008 plummeted rapidly the following years reaching the lowest level of €12.91 billion in 2012 (Graph 2). By the end of 2013, the value of shares traded experienced a 65% increase counting €21.30 billion (Graph 3).

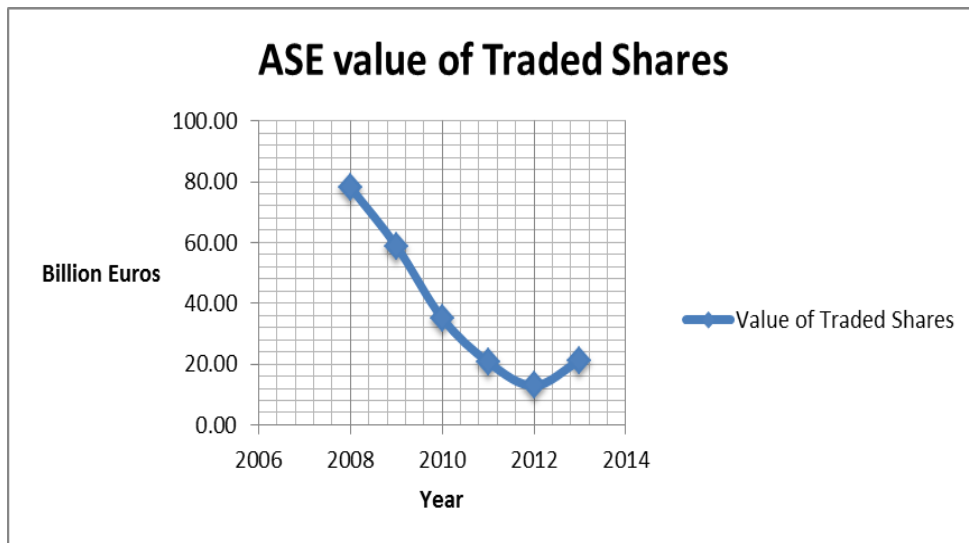
Graph 1: Capitalization of Athens Stock Exchange 2008-2013



Graph 2: Number of listed firms per market 2008-2013



Graph 3: Value of traded shares in Athens Stock Exchange 2008-2013



### 3.2 Greek Capital Market

The Greek capital market exhibits particular idiosyncrasies that are not observed in other developed capital markets a fact that make it an ideal laboratory for examining the market reaction to dividend announcements. First, in contrast to other developed capital markets such as those of the US and the UK, Greek firms pay dividends once a year while in the US and UK dividends are distributed per quarter and per semester, respectively. Second, according to Tzovas (2006) shareholders of the

Greek listed firms usually, apart from the ownership, hold managerial positions in the firm a fact that lead them to obtain access to inside information with regard to the future prospects of their firm.

A particular idiosyncrasy that distinguishes the Greek capital market from other capital markets is that, according to the Greek Corporate law 2190/1920 art.45 a minimum cash dividend distribution is compulsory. More specifically, Greek listed firms are required to distribute a least annual cash dividend equal to the 35% of their net income after meeting both taxation and regulatory reserves obligations. According to Corporate Law 2753/1999, with the agreement of 80% of voting rights, the company is able to avoid dividend distribution. The rest of net profits usually are distributed for the board of directors' remuneration, additional wages to employees, additional dividend as well as for the formation of extraordinary reserve.

Based on the legal environment described above, the distribution of regular dividend in the Greek capital market seems to be quite predictable. However, many firms prefer to omit dividend distribution for a series of years in an attempt to finance their investment strategies which are subject to approval from the shareholders' annual meeting. A common corporate practice in Greece is the acceptance of the proposal of the board of directors for retaining the profits and omits any dividend distribution. Such a practice is usually met among new listed companies that wish to fund their investment strategies aiming at growth.

The Greek tax system regarding dividends has undergone reformations and adjustments over the last years. The outbreak of the global financial crisis coupled with the debt crisis that followed had significantly affected the entire political and economic background in Greece. The period between 2008 and 2013 the Greek tax system experienced drastic changes and adjustments as a consequence of the general reformation of the Greek economy.

Before 2008, no personal taxes were imposed on dividends. According to law 2065/1992, corporate dividends are distributed by a company after deducting corporate taxes from its net income. Consequently, shareholders were not taxed on dividends they had received. Since 2008 the tax treatment of dividends changed. In ac-

cordance with the law 3697/2008 art.18, a flat tax equal to 10% of the dividend received was imposed. In 2010, the tax imposed on dividend income further increased to 25% according to the law 3842/2010. The tax treatment of dividends changed again in 2011 when the law 3943/2011 determined that the tax on dividend remains on the same level (25%), but the income generated by dividends was also subject to personal taxes. In 2012, the law 4038/2012 proposed that taxes on dividends remains 25% without any additional personal tax on dividend income. Finally, in 2013 the law 4110/2013 determined that the tax on dividends reduces to 10%. The law is valid for dividends announced after 01/01/2014 referring to financial year 2013.

The frequent changes in the taxation of dividends led many Greek companies to recourse to new cash distributions in an attempt to avoid the heavy taxation on dividends and simultaneously reward their shareholders. In particular, instead of dividend distribution many Greek listed companies proceed to partial capital return to their shareholders by reducing the company's share capital. This corporate practice becomes popular among listed companies after 2010 due to the flat taxation (10%) on capital returns without any additional personal tax. Consequently, capital return as a process of cash distribution in part outplaced cash dividend distributions. The relationship between the shift from cash dividend distribution towards the partial capital return and the changes in the taxation on dividends is supported by the study of Dasilas and Grose (2013) who used data over 2002-2012 and identified 84 cases of companies that prefer capital returns to their shareholders instead of cash dividend distributions. The majority of capital returns were identified during the period of heavy taxation on dividends.

## Chapter 4: Data

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This study examines the market response to dividend change announcements for the period between January 2008 and December 2014 employing a dataset from the Greek stock exchange. The entire sample includes 248 dividend announcements 92 of which are dividend increase announcements, 124 dividend decrease announcements and 32 no dividend changes (constant dividend).

Table 1: *Distribution of announcement events*

Year	Dividend Increase	Constant Dividend	Dividend Decrease
<b>2008</b>	21	12	52
<b>2009</b>	27	14	32
<b>2010</b>	10	4	21
<b>2011</b>	15	1	7
<b>2012</b>	9	1	9
<b>2013</b>	10	0	3
<b>Total</b>	<b>92</b>	<b>32</b>	<b>124</b>

Dividends per share for the years between 2008 and 2014 as well as dividend announcement dates were manually collected by scrutinizing daily financial press releases, corporate websites as well as the Athens Stock Exchange's website. Daily stock price data for the sample firms and the corresponding market portfolio (Athens Stock Exchange main Index) were culled from Bloomberg.

A company to be included in the final sample had to satisfy the following criteria:

1. The company is listed on the Athens Stock Exchange.
2. The company paid at least a cash dividend over the period under investigation.
3. The date of announcement as well as company's stock and financial data were available on the Athens Stock Exchange.

Following Gurgul et al. (2003) and Dasilas and Leventis (2011), the date of the announcement (day 0) was defined as the date of the first official reference to dividends that can be identified in press releases. Nevertheless, in cases that the dividend announcement released in non-trading hours the event day was considered the next day.

The event window that aims to capture the impact of the dividend announcement on the market value of the firm both before and subsequently the announcement day includes ten trading days prior to the event day, the event day (day 0) and ten trading days after the event day. As a result, a 21-day event window is employed by this study. Including trading days before the announcement day we are able to examine whether new information leaks into the market, while trading days after the event day allow us to measure how quickly and efficiently the market reacts to new information (efficient market hypothesis).

## Chapter 5: Methodology

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To test whether the Greek stock market reacts to dividend change announcements the event study methodology is employed.

The dividend change is initially defined according to the naïve model<sup>1</sup> which assumes that the expected dividend change is equal to zero as follows:

$$E[\Delta D_{i,t}] = E[D_{i,t}] - D_{i,t-1} = 0 \quad (1)$$

Where:

$E[\Delta D_{i,t}]$  denotes the expected dividend change of firm  $i$  for the year  $t$

$E[D_{i,t}]$  denotes the expected dividend payout of firm  $i$  for the year  $t$

$D_{i,t-1}$  denotes the dividend distributed of firm  $i$  for the previous year  $t$

A dividend change announcement is deemed favorable when  $D_{i,t-1} > E[\Delta D_{i,t}]$ , neutral when  $D_{i,t-1} = E[\Delta D_{i,t}]$  and a negative event when  $D_{i,t-1} < E[\Delta D_{i,t}]$ . According to Aharony and Swary (1980), companies change their dividend payout policies only when they anticipate an important change in their future prospects. Therefore, a dividend increase conveys good news and expectations about a company's future prospects, while a dividend decrease implies that the management's expectations for the future performance of the company may not be optimistic.

Moreover, taking into consideration one of the idiosyncrasies of the Greek capital market regarding dividend distribution which is the minimum mandatory dividend amount, the expected dividend change is redefined as the difference between the amount of the dividend declared and the minimum dividend that is required by the Greek Corporate Law 2190/1920. Consequently, an announced dividend higher than the minimum required by the law is considered as "dividend above the minimum

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<sup>1</sup> The naïve model is also used by Aharony and Swary (1980), Gurgul et al (2003), Vazakidis and Athianos (2010) and Dasilas and Leventis (2011).



mandated”, whereas a dividend less than the minimum required is deemed as “dividend below the minimum mandated” (Dasilas and Leventis 2011). According to the corporate finance literature, a company tends to decrease its payout rate distributing a dividend lower than the minimum required by the law when it plans to finance potential investments that aim at a future higher growth.

According to McKinlay (1997), the estimation of the event’s effect requires the calculation of abnormal returns. Abnormal returns are estimated employing both the market model and market-adjusted model. Market model assumes that abnormal returns arise as the difference between the actual return and the stock’s normal return that would be expected in the absence of the event. Therefore, the abnormal return on firm  $i$  on day  $t$  is computed as the following equation:

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

$AR_{i,t}$  denotes the abnormal return on firm  $i$  on day  $t$ .  $R_{i,t}$  denotes the actual ex post return of the share  $i$  on day  $t$ . In finance literature, logarithmic returns are mostly preferred than discrete returns given that returns are more correctly related over long time intervals. As a result, the actual ex post return of share  $i$  on day  $t$  is calculated as follows:

$$R_{i,t} = \ln(P_{i,t}) - \ln(P_{i,t-1}) \quad (3)$$

Where:

$P_{i,t}$  refers to the closing price of stock  $i$  on day  $t$

$P_{i,t-1}$  refers to the closing price of stock  $i$  on day  $t-1$

$E(R_{i,t})$  denotes the expected return on stock  $i$  on day  $t$ . For the formation of the expected return  $[E(R_{i,t})]$  the Market Model is employed. The Market Model is a statistical single-factor model which relates the return on the stock  $i$  to the return on the market portfolio assuming a stable linear relationship. Therefore, for the firm  $i$  the expected return is given by the Market Model as follows:

$$E(R_{i,t}) = \alpha_i + \beta_i \times R_{m,t} + \epsilon_{i,t} \quad (4)$$

Where:

$\alpha_i$  and  $\beta_i$  are the Market Model parameters estimated econometrically by an Ordinary Least Square (OLS) regression.

$R_{m,t}$  denotes the market portfolio return on day t. As market portfolio, the Athens Stock Exchange Index is employed.

$\varepsilon_{i,t}$  is the error term which is considered white noise with  $E(\varepsilon_{i,t})=0$  and  $\text{Var}(\varepsilon_{i,t})=\sigma_\varepsilon^2$ .

Market adjusted model, on the other side, proposes that abnormal returns are actually the difference between the actual return of the stock and the return of the market portfolio (Athens Stock Exchange Index) on the same day.

$$AR_{i,t} = R_{i,t} - R_{m,t} \quad (5)$$

As McKinlay (1997) stated “the Market Model represents a potential improvement over the constant mean return model. By removing the portion of the return that is related to variation in the market’s return, the variance of the abnormal return is reduced. This in turn can lead to increased ability to detect event effects. The benefit from using the market model will depend upon the  $R^2$  of the market regression. The higher the  $R^2$ , the greater is the variance reduction of the abnormal return and the larger is the gain.”

The estimation of the Market Model requires the identification of the event date as well as the event window and the estimation window. As it has already been stated at the Data Section, the event date is defined as the first official release of dividend distribution in public.

The event window includes a number of trading days before the event, the event day and a number of trading days after the event. McKinlay (1997) suggested the definition of an event window that is greater than the specific period of interest in order for a researcher to be able to capture the effect of the event both before and after the event date. In this study, the event window consists of ten trading days be-

fore the event, the event date and ten trading days after the event. As a result a 21-day event window is employed.

The estimation period is defined as the period over which market model parameters are estimated. Market Model parameters are estimated using 240 daily returns data prior the event window (-250, -11). McKinlay (1997) argued that having included event window in the estimation of the Market Model parameters, event returns may have significant influence on the estimation of normal returns in the event window.

Abnormal returns are averaged across portfolio of firms as follows:

$$\overline{AR}_t = \frac{1}{N} \sum_{i=1}^N AR_{i,t} \quad (6)$$

Subsequently, the average abnormal return is aggregated over the event window (-10, +10) as follows:

$$CAR_{-10,+10} = \sum_{t=-10}^{+10} \overline{AR}_t \quad (7)$$

Cumulative abnormal returns are considered useful for the statistical analysis and the conclusion whether there is an impact of the event on the share price of a firm. The null hypothesis of the study which assumes that abnormal returns are zero, namely, there is no significant impact of the dividend announcement on the share price is tested using the two-sided t-statistic test. The t-statistic is given by the following equation:

$$t\text{-statistic} = CAR_k / (\sigma_k \times \sqrt{N}) \quad (8)$$

Where:

$CAR_k$  denotes the cumulative abnormal return on the event window  $k$ .

$\sigma_k$  denotes the standard deviation of cumulative abnormal returns on the event window  $k$ .

$N$  refers to number of days included in the event window.

## Chapter 6: Empirical results

The main intention of the study is the examination of whether dividend distribution announcements have significant impact on stock prices. For this reason, both an event study and a regression analysis are used. In addition to daily abnormal returns around the event day, cumulative abnormal returns are also estimated. In this section the empirical results of the analysis are presented.

### 6.1 Event Study Results

Table 2 exhibits abnormal returns employing both market model and market-adjusted model around the dividend announcement day for the entire sample.

Table 2: Average daily abnormal returns and cumulative abnormal returns for the entire sample

Full Sample Days	Market Model		Market Adjusted	
	ARs%	t-Statistic	ARs%	t-Statistic
-10	0.14%	0.52	-0.14%	-0.54
-9	-0.29%	-1.10	-0.27%	-1.24
-8	-0.34%	-1.28	-0.05%	-0.21
-7	-0.50%	-1.90	-0.20%	-0.71
-6	0.06%	0.22	0.03%	0.16
-5	0.04%	0.16	-0.26%	-1.35
-4	0.28%	1.08	0.03%	0.14
-3	0.10%	0.37	-0.20%	-0.89
-2	0.21%	0.79	0.35%*	1.66
-1	-0.16%	-0.61	0.18%	0.68
0	0.83%***	3.18	1.10%***	3.71
1	0.24%	0.90	-0.01%	-0.02
2	0.06%	0.24	0.09%	0.28
3	0.16%	0.62	0.47%	2.18
4	-0.04%	-0.14	0.10%	0.41
5	0.03%	0.10	-0.13%	-0.61
6	0.13%	0.48	-0.39%*	-1.78
7	-0.14%	-0.53	-0.44%**	-1.98
8	-0.15%	-0.57	0.05%	0.21
9	0.07%	0.28	-0.21%	-1.02
10	0.17%	0.65	0.19%	0.81

Event Window	CARs%	Full Sample		
		t-Statistic	CARs%	t-Statistic
CAR (-10 -1)	-0.46%	-0.56	-0.52%	-0.81
CAR (+1+10)	0.53%	0.64	-0.27%	-0.30
CAR (-5 -1)	0.47%	0.80	0.10%	0.18
CAR (+1 +5)	0.45%	0.77	0.53%	1.06
CAR (-1 +1)	0.91%**	2.01	1.27%	1.24
CAR (-1 0)	0.68%*	1.82	1.28%	1.39

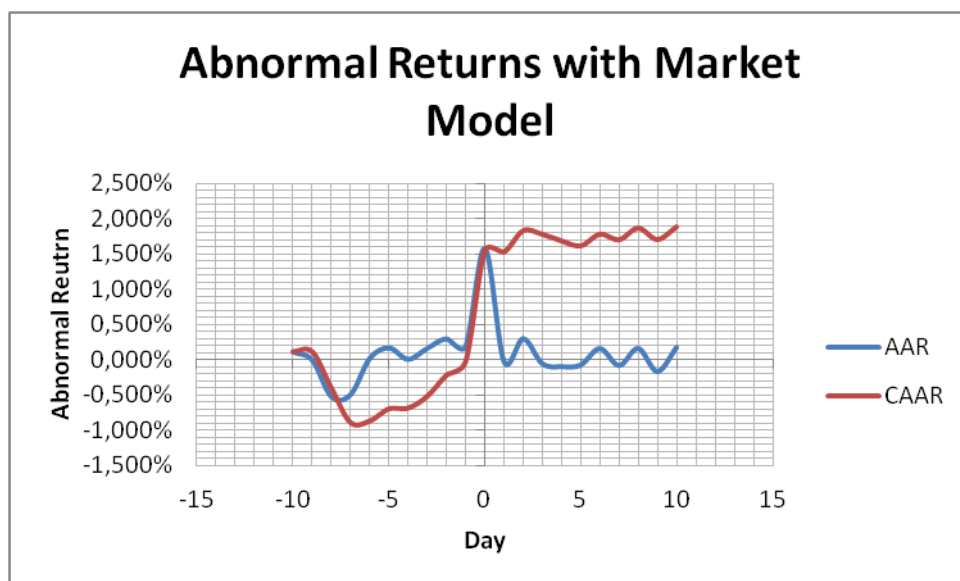
Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.

In particular, throughout the days that precede the dividend announcement, an abnormal activity is observed, however it seems to be statistically insignificant. Moreover, on the event day ( $t=0$ ) a positive market reaction of 0.83% statistically significant at the 1% level (3.18) is tracked. The positive market reaction on the announcement day is also confirmed by the market adjusted model which results in an abnormal return of 1.1% statistically significant at the 1% level. Subsequent to the announcement day, the observed abnormal activity appears to be statistically insignificant. With respect to cumulative abnormal returns, the cumulative abnormal activity between day -1 and +1 is equal to 0.91% significant at the 5% level. Consequently, the conclusion that is drawn is that on average the Greek stock market demonstrates a significant response to dividend announcements, a fact that is consistent with Dasilas and Leventis' findings (2011). Furthermore, by observing the how quick the stock price is adjusted to new information, it is easily induced that the market's response is considered immediate without any lags. More specifically, cumulative abnormal returns ( $CAR_{-10,-1}$  and  $CAR_{-5,-1}$ ) prior to the dividend announcement date does not provide any support to early price adjustment. Similarly, insignificant cumulative abnormal returns ( $CAR_{+1,+10}$  and  $CAR_{+1,+5}$ ) are also observed subsequent to the event day. As a result, the Greek stock market seems to react quickly and efficiently to the announcements of cash dividend distribution.

### 6.1.1 Dividend Increase

Table 3 exhibits the average and cumulative abnormal returns for the sample of 92 dividend increase announcements. According to the output, during the period precede and subsequent to the announcement day, abnormal returns appear mostly insignificant and random. On the other hand, the average abnormal returns on the announcement day appear significant at the 1% level (4.30) and equal to 1.58% based on market model and 1.15% statistically significant at the 5% level based on the market adjusted model which constitutes the highest return throughout the event window confirmed by both methods. Regarding the aggregate abnormal activity, the cumulative abnormal return for the three days and two days around the announcement day equals to 1.75% statistically significant at the 1% level and 1.77% statistically significant at the 1% level, respectively based on the market model. The Market adjusted model also confirmed the positive cumulative abnormal activity around the event day. In particular, the three-day and the two-day windows exhibit a cumulative abnormal return equal to 2.15% (significant at 1% level) and 1.50% (significant at the 5% level), respectively. These results clearly indicate that the distribution of a higher cash dividend compared to the previous financial year convey good news to the market leading to positive stock price reaction.

Graph 4: Average and aggregate abnormal returns with Market Model



Graph 5: Average and aggregate abnormal returns with Market Adjusted Model

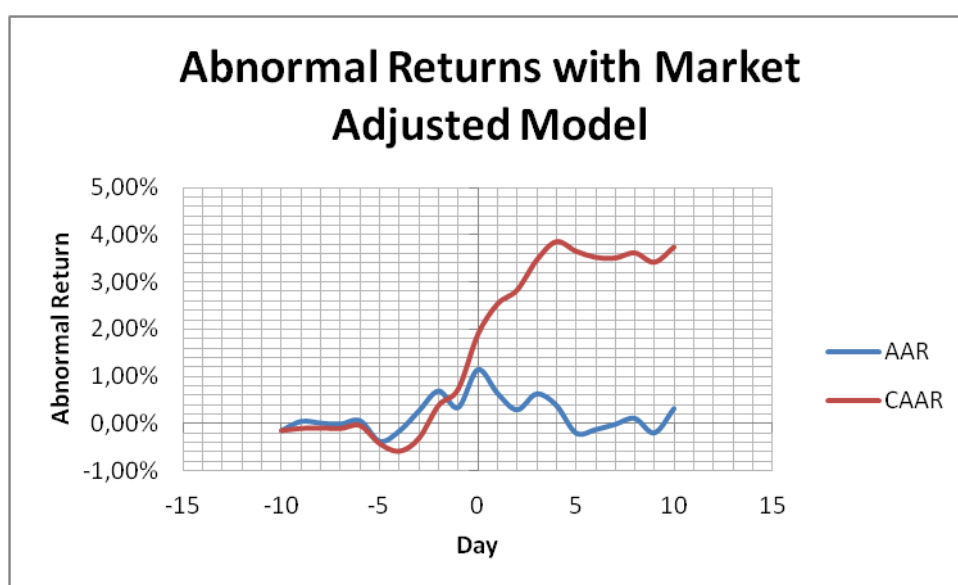


Table 3: Average daily abnormal returns and cumulative returns for the sample of dividend increase announcements

Dividend Increase Days	Market Model		Market-Adjusted	
	ARs%	t-Statistic	ARs%	t-Statistic
-10	0.11%	0.31	-0.15%	-0.35
-9	-0.003%	-0.01	0.05%	0.12
-8	-0.52%	-1.41	0.01%	0.02
-7	-0.49%	-1.33	-0.01%	-0.03
-6	0.02%	0.07	0.06%	0.19
-5	0.17%	0.47	-0.38%	-1.21
-4	0.01%	0.03	-0.16%	-0.38
-3	0.17%	0.45	0.27%	0.69
-2	0.30%	0.82	0.70%*	1.80
-1	0.19%	0.53	0.34%	0.69
0	1.58%***	4.30	1.15%**	2.45
1	-0.02%	-0.06	0.65%	0.97
2	0.30%	0.83	0.29%	0.51
3	-0.05%	-0.14	0.63%	1.65
4	-0.09%	-0.26	0.39%	0.96
5	-0.07%	-0.19	-0.20%	-0.58
6	0.16%	0.45	-0.13%	-0.35
7	-0.08%	-0.21	-0.02%	-0.04
8	0.17%	0.45	0.11%	0.26
9	-0.16%	-0.44	-0.20%	-0.62
10	0.18%	0.49	0.32%	0.79

Event Window	Dividend Increase			
	CARs%	t-Statistic	CARs%	t-Statistic
CAR (-10 -1)	-0.03%	-0.02	0.73%	0.76
CAR (+1 +10)	0.34%	0.29	1.86%*	1.82
CAR (-5 -1)	0.84%	1.03	0.77%	0.81
CAR (+1 +5)	0.07%	0.08	1.77%**	2.29
CAR (-1 +1)	1.75%***	2.75	2.15%***	3.04
CAR (-1 0)	1.77%***	3.42	1.50%*	1.85

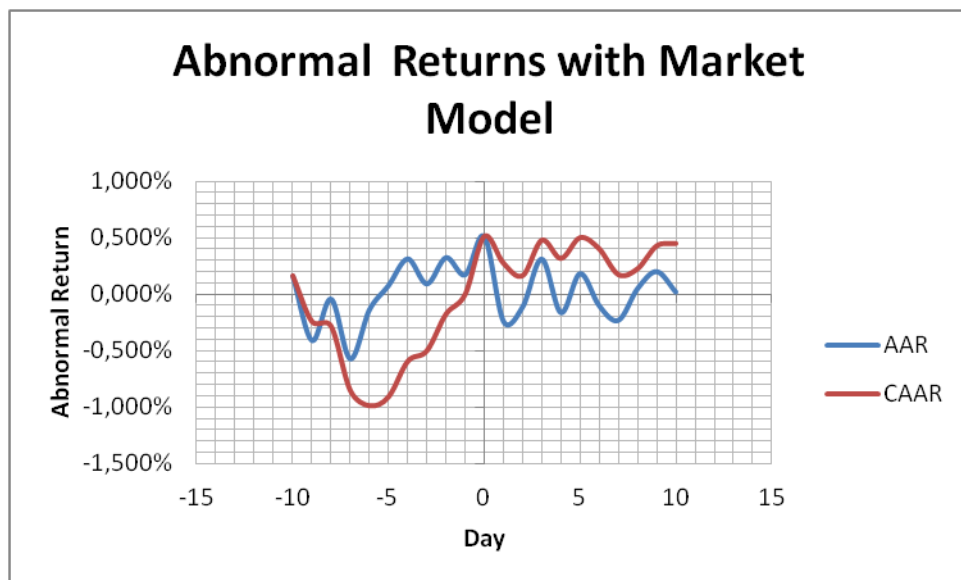
Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.



### 6.1.2 Dividend Decrease

Table 4 below presents the empirical results for the sample of 124 decrease announcements. According to the dividend signaling hypothesis, an announcement that contains a dividend decrease convey bad news to the market a fact that can trigger negative abnormal activity. In the sample under investigation, the abnormal activity precede the event announcement risen from both methods appears to be insignificant and random. On the announcement day, despite the insignificance of the abnormal activity, positive abnormal returns are noted. The expected negative abnormal activity is observed on the day after the announcement (day 1). In particular, according to the market adjusted model the market reaction is equal to -0.71% statistically significant at the 10% level. This implies that in dividend cut announcements the market underreacts to this information. The period after the dividend announcement exhibits insignificant and random abnormal activity.

Graph 6: Average and aggregate abnormal returns with Market Model



Graph 7: Average and aggregate abnormal returns with Market Adjusted Model

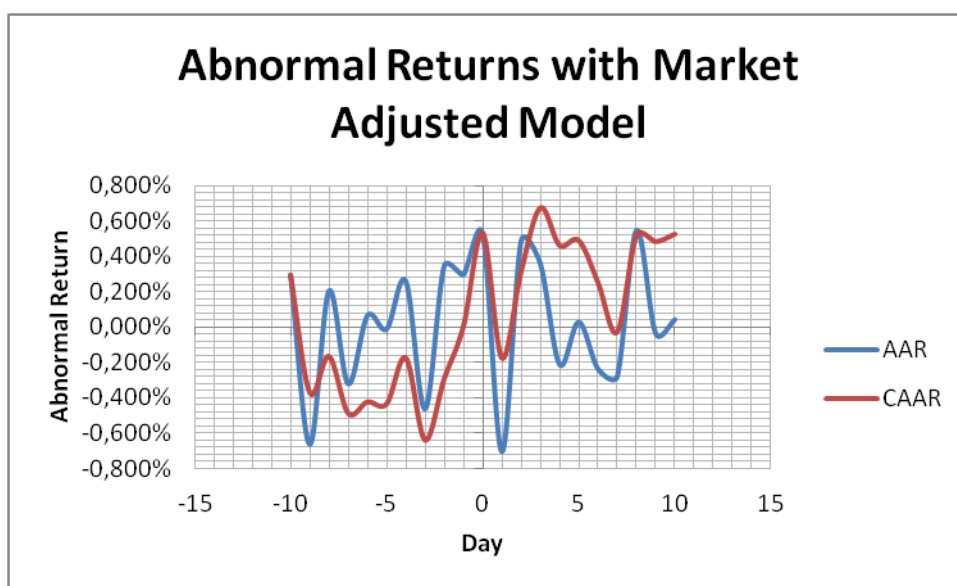


Table 4: Average daily abnormal returns and cumulative returns for the sample of dividend decrease announcements.

Dividend Decrease Days	Market Model		Market Adjusted	
	ARs%	t-Statistic	ARs%	t-Statistic
-10	0.16%	0.53	0.30%	0.87
-9	-0.41%	-1.32	-0.67%	-2.57
-8	-0.04%	-0.13	0.21%	0.79
-7	-0.57%*	-1.84	-0.32%	-1.10
-6	-0.14%	-0.44	0.06%	0.21
-5	0.08%	0.26	-0.01%	-0.04
-4	0.32%	1.02	0.26%	0.78
-3	0.09%	0.31	-0.47%	-1.55
-2	0.33%	1.05	0.35%	1.29
-1	0.18%	0.57	0.30%	1.05
0	0.51%	1.66	0.53%	0.89
1	-0.24%	-0.77	-0.71%*	-1.83
2	-0.11%	-0.35	0.49%	1.18
3	0.31%	1.01	0.36%	1.22
4	-0.16%	-0.52	-0.21%	-0.71
5	0.18%	0.60	0.03%	0.09
6	-0.10%	-0.32	-0.24%	-0.87
7	-0.23%	-0.74	-0.28%	-1.10
8	0.05%	0.17	0.55%*	1.68
9	0.20%	0.66	-0.04%	-0.12
10	0.02%	0.07	0.04%	0.15

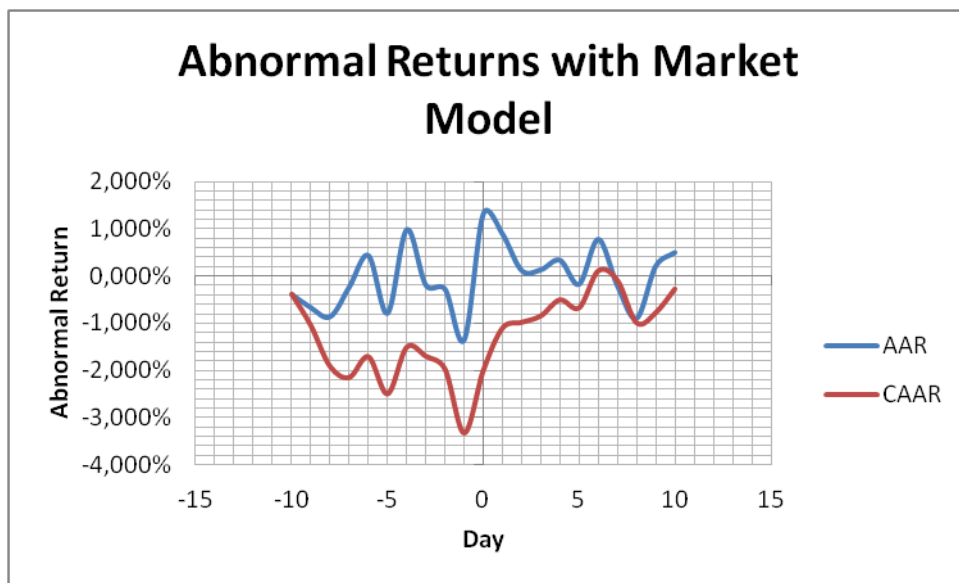
Event Window	Dividend Decrease			
	CARs%	t-Statistic	CARs%	t-Statistic
CAR (-10 -1)	-0.001%	-0.001	0.01%	0.004
CAR (+1 +10)	-0.06%	-0.06	-0.01%	-0.01
CAR (-5 -1)	0.99%	1.43	0.43%	0.57
CAR (+1 +5)	-0.01%	-0.02	-0.04%	-0.04
CAR (-1 +1)	0.45%	0.84	0.12%	0.14
CAR (-1 0)	0.69%	1.57	0.82%***	3.60

Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.

### 6.1.3 Constant dividend

According to the pertinent literature, a firm paying a dividend equal to those of the previous financial year does not signal new information to the market and thus abnormal returns are expected to be insignificant. Table 5 demonstrates average abnormal returns around the announcement day for the sample of firms that did not change their dividend payment between successive years. Abnormal returns in the period prior to the announcement are mostly insignificant and fluctuate randomly. A positive market response is observed on the announcement day equal to 1.33% statistically significant at the 10% level and 1.97% statistically significant at the 5% level based on the market model and market adjusted model, respectively. The period subsequent the announcement date does not exhibit any significant abnormal activity. The fact that the market responds positively to constant dividend payout policies is not consistent with prior studies. However, such a fact may imply that investors receive constant dividend policies as a token of stability and consistency for the firm, given that the period under investigation was characterized by financial turmoil, bankruptcies and decreased turnovers for the majority of Greek listed firms.

Graph 8: Average and aggregate abnormal returns with Market Model



Graph 9: Average and aggregate abnormal returns with Market Adjusted Model

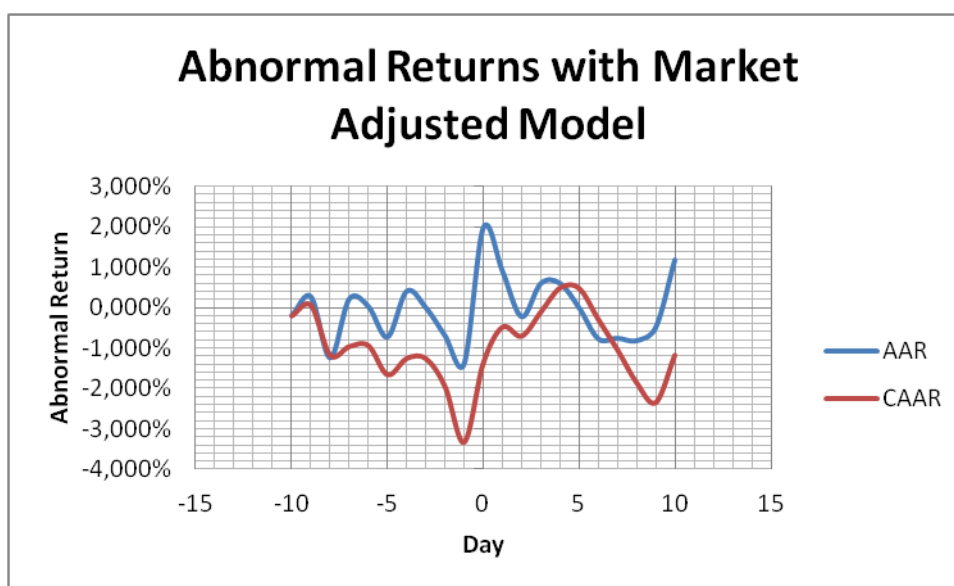


Table 5: Average daily abnormal returns and cumulative returns for the sample of constant dividend announcements

Constant Dividend Days	Market Model		Market-Adjusted	
	ARs%	t-Statistic	ARs%	t-Statistic
-10	-0.39%	-0.85	-0.20%	-0.39
-9	-0.67%	-1.46	0.27%	0.46
-8	-0.87%*	-1.88	-1.25%	-1.48
-7	-0.23%	-0.50	0.21%	0.27
-6	0.44%	0.96	0.03%	0.04
-5	-0.79%*	-1.72	-0.73%	-0.98
-4	0.99%**	2.16	0.41%	0.57
-3	-0.19%	-0.42	-0.01%	-0.01
-2	-0.28%	-0.60	-0.70%	-1.28
-1	-1.36%***	-2.96	-1.39%*	-1.70
0	1.33%***	2.90	1.97%**	2.56
1	0.90%*	1.96	0.90%	1.31
2	0.12%	0.27	-0.23%	-0.59
3	0.14%	0.30	0.60%	0.99
4	0.34%	0.74	0.60%	0.76
5	-0.17%	-0.37	-0.01%	-0.01
6	0.79%*	1.71	-0.77%	-1.11
7	-0.20%	-0.44	-0.76%	-1.07
8	-0.90%*	-1.96	-0.82%	-1.33
9	0.21%	0.46	-0.50%	-0.79
10	0.51%	1.10	1.18%	1.34

Event Window	CARs%	Constant Dividend		
		t-Statistic	CARs%	t-Statistic
CAR (-10 -1)	-3.34%**	-2.30	-3.35%	-1.65
CAR (+1 +10)	1.73%	1.19	0.20%	0.08
CAR (-5 -1)	-1.61%	-1.58	-2.41%	-1.55
CAR (+1 +5)	1.33%	1.29	1.87%*	1.78
CAR (-1 +1)	0.87%	1.10	1.49%	0.50
CAR (-1 0)	-0.03%	-0.04	0.59%	0.18

Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.

Taking into consideration that the Greek Corporate Law determines that a minimum dividend payment must be distributed, the market response to dividend announcements is re-examined dividing the entire sample into firms that paid a dividend above the minimum required and firms that distributed an amount below the minimum required. Having adopted this method, 142 events have been identified with a dividend above the minimum and 106 events with a dividend below the minimum required.

Table 6 demonstrates that firms announcing a dividend above the minimum required experience positive abnormal returns of 0.68% statistically significant at the 5% level (2.2). Furthermore, the cumulative abnormal returns around the dividend announcement day are also positive, but mostly insignificant. In comparison with dividend increases computed using the naïve model; it is observed that the reaction using the market-adjusted model is greater in magnitude and more significant than the reaction computed using the minimum benchmark. The period subsequent to the announcement day does not exhibit any significant response. The results of the sample of dividend above minimum are in line with those of Dasilas and Leventis (2011).

Table 6: Average daily returns and cumulative returns for the sample of dividends above the minimum required.

Higher than minimum Days	Market Model		Market-Adjusted	
	ARs%	t-Statistic	ARs%	t-Statistic
-10	0.22%	0.70	0.45%	1.41
-9	-0.42%	-1.34	-0.20%	-0.68
-8	-0.48%	-1.54	-0.31%	-0.93
-7	-0.43%	-1.37	0.19%	0.41
-6	0.20%	0.63	0.11%	0.36
-5	0.07%	0.23	-0.40%	-1.53
-4	0.10%	0.30	-0.13%	-0.36
-3	0.19%	0.60	-0.19%	-0.63
-2	0.26%	0.83	0.45%	1.60
-1	-0.27%	-0.86	-0.23%	-0.59
0	0.68%**	2.20	0.72%	1.61
1	0.08%	0.26	0.14%	0.28
2	0.17%	0.53	-0.28%	-0.52
3	0.09%	0.28	0.25%	0.78
4	-0.07%	-0.21	0.06%	0.17
5	-0.23%	-0.73	-0.32%	-1.10
6	0.16%	0.53	-0.27%	-0.10
7	0.06%	0.19	0.06%	0.18
8	0.03%	0.09	0.31%	0.90
9	-0.15%	-0.47	-0.29%	-1.05
10	0.15%	0.49	0.22%	0.68

Event Window	CARs%	t-Statistic	CARs%	t-Statistic
CAR (-10 -1)	-0.56%	-0.57	-0.27%	-0.28
CAR (+1 +10)	0.30%	0.31	-0.12%	-0.15
CAR (-5 -1)	0.34%	0.49	-0.50%	-0.70
CAR (+1 +5)	0.30%	0.31	-0.14%	-0.24
CAR (-1 +1)	0.50%	0.92	0.63%	0.77
CAR (-1 0)	0.42%	0.94	0.49%	0.52

Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.

Table 7 displays share price reaction of the sample of firms that announced a dividend distribution below the minimum required by the law. The results appeared to be quite surprising and different compared to the results risen using the naïve model. In particular, both the market model and market adjusted indicate that the market reacts positively on the announcement day providing an abnormal return equal to 1.02% and 1.49%, respectively both statistically significant at the 1% level (3.12 and 3.78, respectively). During the period before the event day, abnormal returns are mainly negative but most of the times insignificant and fluctuate randomly. The cumulative abnormal return for the two days around the event date (days -1 and 0) using both the market model and market adjusted demonstrates a positive stock price reaction of 1.01% statistically significant at the 5% level and 1.86% statistically significant at the 1% level, respectively. The cumulative abnormal return of three days around the announcement date is positive and equal to 1.46% statistically significant at the 1% level based on the market model and equal to 2.24% statistically significant at the 5% level based on the market adjusted model.

The results are not consistent with those using the naïve model. According to the naïve model, after the announcement of a dividend decreased compared to the previous financial year the market is expected to response negatively even if this response occurs the next day. However, the minimum dividend as a benchmark for splitting the entire sample may not provide us with similar results to those of the naïve model. Given that the identification of a dividend cut depends on the earnings and the share capital, a dividend distribution below the minimum required by the law may not be lower than those of the previous financial year and as a result this fact cannot be considered bad news for the market.



Table 7: Average daily returns and cumulative returns for the sample of dividends below the minimum required.

Lower than minimum Days	Market Model		Market Adjusted	
	ARs%	t-Statistic	ARs%	t-Statistic
-10	0.03%	0.10	-0.10%**	-2.38
-9	-0.11%	-0.35	-0.35%	-1.04
-8	-0.16%	-0.47	0.25%	0.81
-7	-0.62%*	-1.90	-0.51%	-1.33
-6	-0.10%	-0.30	-0.07%	-0.23
-5	0.01%	0.02	-0.07%	-0.25
-4	0.54%	1.64	0.29%	0.87
-3	-0.04%	-0.11	-0.21%	-0.62
-2	0.13%	0.38	0.18%	0.56
-1	-0.01%	-0.03	0.38%	1.28
0	1.02%***	3.12	1.49%***	3.78
1	0.45%	1.37	0.38%	1.02
2	-0.08%	-0.25	0.40%	0.97
3	0.29%	0.88	0.74%***	2.79
4	-0.001%	-0.004	0.12%	0.31
5	0.37%	1.13	0.13%	0.43
6	0.04%	0.11	-0.57%	-1.54
7	-0.40%	-1.23	-0.92%***	-2.93
8	-0.40%	-1.21	-0.29%	-0.76
9	0.37%	1.13	0.02%	0.05
10	0.20%	0.61	0.15%	0.43

Event Window	CARs%	t-Statistic	CARs%	t-Statistic
CAR (-10 -1)	-0.33%	-0.32	-1.10%	-0.82
CAR (+1 +10)	0.83%	0.80	0.15%	0.10
CAR (-5 -1)	0.62%	0.85	0.57%	1.03
CAR (+1 +5)	1.02%	1.40	1.76%***	3.07
CAR (-1 +1)	1.46%***	2.57	2.24%**	2.03
CAR (-1 0)	1.01%**	2.18	1.86%*	1.68

Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.

## 6.2 Regression Analysis

In order to identify the determinants of stock price reaction to dividend announcements, four cross-sectional regressions are run.

Similar to Dasilas and Leventis (2011) dependent variable is the cumulative abnormal returns on the three-day event period ( $CAR_{-1,+1}$ ). Subsequently, the independent variables are defined:

- The systematic risk of each firm measured by the Beta coefficient. The systematic risk was estimated using data in the estimation window period (-250, -11).
- Dividend Yield that is actually a component of the total return that an investor expects to receive from their investment. Dividend Yield is calculated as the ratio of the annual dividend over the closing stock price of the firm one day prior to the event day.
- The size of each company estimated by multiplying the number of shares outstanding with the closing stock price of the firm one day before the event day.
- The percentage change in dividend between the current dividend and the dividend of the previous financial year.
- A dummy variable that takes indicating whether the firm's dividend payment was above or below the minimum dividend required by the law.
- Additional five dummy variables were included aiming to capture possible year effects.

Consequently, the regression model is equal to:

$$CAR_{-1,+1} = c + a_1 Beta_i + a_2 Dividend Yield_i + a_3 Size_i + a_4 \% \Delta D_i + a_5 Dummy Variable_i + b Years_i + \epsilon_i \quad (9)$$

Table 8 below exhibits the output from the regression analysis. According to the regression output the most significant drivers of abnormal returns appeared the dividend Yield and the dividend Dummy variable. Dividend yield's coefficient is positive and statistically significant at the 1% level (2.81), while the coefficient of the dividend dummy variable is negative and statistically significant at the 1% level (-2.73) indicating that a dividend payment above or below the minimum required can trigger excess returns due to its information content. Consequently, Corporate Law 2190/1920 is deemed a crucial tool for the management team of a listed firm for the determination of the dividend strategy. The rest of variables appeared to

have no significant explanatory power. The results are similar and in line with those of Dasilas and Leventis (2011).

Table 8: *Regression Analysis of abnormal returns on dividend announcement dates.*

<b>Variable</b>	<b>Coefficients</b>	<b>t-Statistic</b>
Intercept	0.01	0.50
Beta	-0.004	-0.43
Dividend Yield	<b>0.14***</b>	<b>2.81</b>
Size	-0.004	-0.87
Percentage Dividend Change	0.002	0.72
Dividend Dummy Variable	<b>-0.02***</b>	<b>-2.73</b>
<b>Year Dummies</b>	Yes	
<b>Adjusted R-squared</b>	0.05	
<b>F-Statistic</b>	2.42**	
<b>Number of Observations</b>	248	

Note: \* indicates a significant difference from zero at the 10% level, \*\* indicates a significant difference from zero at the 5% level, \*\*\* indicates a significant difference from zero at the 1% level.

## Chapter 7: Conclusions

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In line with the dividend information content theory this study intended to investigate the market reaction to dividend change announcements for a sample of listed firms on the Athens Stock Exchange.

The total sample consisted of 248 dividend announcements that occurred between January 2009 and December 2014. The entire sample was further divided based on the classical naïve model into three main categories: dividend increase, dividend decrease and constant dividend. Subsequently, in addition to the naïve model, a particular approach adjusted to the idiosyncrasies of the Greek capital market was employed in order to identify dividend change announcements. Therefore, the entire sample was also divided based on the minimum required dividend distribution by the law into two categories: firms that announced a cash dividend above the minimum required and firms that announced a cash dividend distribution below the mandated by the law.

Using the standard event study methodology, abnormal returns around the dividend announcement day were estimated. The findings of the study propose that announcements of dividend changes convey valuable information to the market. More specifically, in line with prior literature, firms that declared an increase in their dividend payout policy had experienced positive and statistically significant abnormal returns. As a result, the null hypothesis on insignificant abnormal returns was rejected. Similarly, dividend decrease announcements brought about a significant negative stock price response mainly one day subsequent to the event day. Surprisingly, the results of the sample of constant dividend announcements appeared to elicit positive and significant abnormal returns around the announcement day. In particular, positive abnormal returns were observed on the announcement day indicating that investors perceive constant dividend policy as an indication of stability given the current unstable economic conditions of Greece.

The empirical evidence provided by this study may have significant practical implications for market participants in the Greek capital market. More specifically, the evidence that changes in the dividend policy of a firm trigger significant abnor-

mal returns is valuable for both investors who can take advantage of this information and trade around the dividend announcement dates and managers of Greek listed firms who decide upon the dividend policy of the firm.

During the research a number of limitations had to be overcome. The most significant was the lack of an official database that records the date of dividend announcements in Greece. Consequently, the dates of dividend announcements were manually collected by searching daily financial press releases from the Athens Stock Exchange's website. This resulted in missing data. In addition, given the absence of any reference in dividend distribution from a number of companies, the date of annual report release was arbitrarily defined as the event day, a fact that can give no robust results.

Further research should be directed to the examination of stock price reaction of listed firms that announced a capital return distribution to reward their shareholders instead of an ordinary cash dividend distribution. Furthermore, the relationship between the current dividend payout and future earnings performance merits new empirical investigation.

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