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THESIS

A STUDY ON THE INFORMATION CONTENT OF DIVIDENDS
IN THE UNIQUE GREEK REGIME

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ABSTRACT

The purpose of this thesis is to examine, in the case of Greek firms of the Athens Stock Exchange (ASE), the information content of dividends in the unique Greek environment. In an effort to study the above mentioned issue an initial sample of 220 firms of the Athens Stock Exchange over the period 2002-2012 has been studied regarding the effect of dividend announcements on the firms' stocks returns in the context of an event study. Results are presented based on three main categories of dividend announcements, above mandatory, mandatory and below mandatory dividend announcements for two periods 2002-2007 and 2008-2012. Furthermore results are also presented for the aforementioned periods regarding firms' ownership structure, by examining the dividend announcement effect on stock returns in the case of firms exhibiting high ownership concentration by individuals.

An introduction of the thesis is elaborated in the first part.

The second part refers to a review of the existing literature regarding dividend policy, the agency problem, asymmetric information, signaling and event studies.

The third part consists of an analysis of the data and the methodology used in the event study on the effect of the dividend payout announcements on the stocks returns.

The results, based on the data and methodology, are included in the fourth part.

Finally in the fifth part the conclusions of the thesis are presented.

Contents

1. Introduction	4
2. Literature review	7
3. Data and Methodology of the Event Study	24
3.1. Data	24
3.2. Methodology of measuring the reaction of the dividend announcement on stock returns – Market Model	26
3.3. Methodology of measuring the reaction of the dividend announcement on stock returns – Mean-Adjusted-Return Approach	29
3.4. Significant Tests	30
3.5. Segment Definitions	32
4. Results	34
4.1. Results for the period 2002-2007	39
4.2. Results for the period 2008-2012	42
4.3. Results related to ownership structure	45
5. Conclusions	52
References	54
Tables	56
Charts	70

1. Introduction

Dividend policy effects on stockholder's wealth and the quest for an optimal dividend corporate policy have been main issues for financial researchers and economists.

The firm's decision for a dividend payout is based on the fact that the firm has excess cash that is not needed for future investments in positive NPV projects, thus it can be returned to the stakeholders as dividends. However the decision of a dividend payout is a challenging issue as many different factors affect the final decision one of them being that different investors have different preferences on present cash dividends and future capital gains.

The question of why companies pay dividends when the latter are often taxed more than capital gains puzzled researchers and a number of theories tried to give a satisfactory answer.

Miller and Modigliani (1961), stated the irrelevance theory, thus that dividends do not affect the firm value under perfect capital markets, under certain strong prerequisites as a certain market process, an efficient market and the absence of taxes bankruptcy, agency costs and asymmetric information.

An explanation of the decision to distribute dividends is based on market imperfection due to information asymmetries. According to the "dividend signaling hypothesis" managers having superior information about the current and future assets and investment opportunities, thus the financial position of the firm in general, use dividends to signal information about firms' future earnings. Dividend changes convey valuable information about future prospects of firms, positive regarding dividend increase and negative regarding dividend decrease. Consequently a dividend increase (decrease) is accompanied by a rise (fall) in stock prices.

A second explanation for dividend distribution regarding and the agency problem was provided by Jensen (1986). Jensen argued that managers in a firm with significant free cash flows might exploit their power to accept negative net present value investments to promote their own interests. In this case the dividends can be used by

shareholders as a tool to constrain the free cash flows and mitigate the agency problem. This argument is referred as the “free cash flow hypothesis”.

Another theory about the dividends distribution is the “Bird in the hand Theory”. Dividends (a bird in the hand) is considered better than retained earnings (a bird in the bush), because the latter might never materialize as future dividends (can fly away).

The impact of dividend announcements on stock prices has been studied by numerous researchers in the last decades but still remains a subject of intense debate. The empirical results of various studies often lead to controversy results supporting opposite theories. The key contribution of this study is that the effort to shed additional light to the effect of the dividend announcement, positive or negative on the stocks return in the case of Greece.

The Greece institutional setting demonstrates important differences from those of other developed markets. A main difference is the existence of a mandatory minimum amount of dividend distribution from the taxed corporate profits according to the law.

In addition until 2008 no taxes were imposed on dividends on an individual level beside the taxes imposed directly the company profits. After 2008 the taxation of the dividends on a personal level has changed from an initial 10% in 2009-2010, to 21% in 2011, 25% in 2012 and back to 10% in 2013. Last dividends cash dividends are paid in an annual basis unlike the USA and the UK where dividends are paid on quarterly and semi-annually basis respectively. From the initial sample of 220 firms and 1.196 announcements there were only 44 announcements of interim dividend performed by 10 companies.

Regarding the taxation of stockholders profits originating from stocks sales, until 2010 stock sales were virtually free of taxes, as only a tax of 0.15% was imposed only at the time of the sale, regardless of profit or losses due to the sale. In 2011 there was a change in taxation, as profits from stock sales were free of taxes if the sell was performed a trimester or a year after the initial acquisition date. If the sell was

performed within the trimester or the year since the acquisition date the tax imposed was 20% or 10% respectively.

In the case of Greece it is mandatory for profitable firms to distribute a minimum mandatory dividend in the form of cash dividend according to the Greek laws 2190/1920, 148/1967 and 3604/2007. During the period investigated 2002 – 2012 there was a change in the calculation of the mandatory dividend. Until 2007 Greek firms were obligated to distribute cash dividend equal to the higher of the following two : (a) 6 % of their common equity (b) 35% of the net income minus tactical reserves. In 2007 there was an amendment of the previous law in the new law 3604/2007 and the minimum mandatory dividend was calculated as 35% of the net income minus tactical reserves. In order to pay a smaller amount of dividend than the mandatory the majority of 65% of the voting right is needed, while in order for no dividend to be distributed the agreement the majority of 70% of the voting rights is required.

2. Literature review

There is a large dispute of whether the amount that is paid as dividend by firms affects the firm value. Furthermore, there are different studies with controversy results about the way that the dividend affects the stock price of the firms, positively, negatively or not at all.

Litner (1956) claimed that changes in the dividend policy may convey information about the firm's current and future financial position, as due to asymmetric information managers are considered to know more than outside investors about the firm's earnings and prospects. Litner suggested that an increase of the amount of dividend lead to positive market reaction, while a decrease leads to a negative market reaction. As a result, when earnings vary, firms adjust their dividend slowly over time and choose to spread these variations of earnings over a number of time periods.

Gordon (1959 and 1963) and Litner (1962) supported the dividend relevance theory and suggested that there is a direct relationship between the firm's dividend policy and its market value. A known fundamental argument of this theory was the "Bird in the hand" argument, which suggests that investors prefer current dividend to riskier future dividends or capital gains. Dividends (a bird in the hand) is considered better than retained earnings (a bird in the bush), because the latter might never materialize as future dividends (can fly away). Gordon and Litner argued that lower payouts result in higher costs of capital and indicated that the higher capital gains to dividend ratio is, the larger total return (due growth) is required by investors due to increased risk.

Miller and Modigliani (1961) stated the dividend irrelevance proposition, that the value of the firm is not affected by the dividend policy, under certain prerequisites as a certain market process, an efficient market and the absence of taxes bankruptcy, agency costs and asymmetric information. Instead they argued that only investment policy can affect corporate value. Following this proposition, lies the question why do

firms pay the cost of dividend payouts if the latter do not affect the value of the firms. The irrelevance theory states that investors are indifferent whether their returns deriving from their ownership of a stock arise from dividend or capital gains. Miller and Modigliani results are controversy to Gordon and Litner and criticized the “Bird in the hand theory” referring to it as the “Bird in the hand fallacy”.

Bhattacharya (1979) developed a model in which cash dividends functioned as a signal of future cash flows of firms. The setting was that of imperfect information where agents were imperfectly informed about the profitability of the firms’ assets. Dividends were taxed at the ordinary tax rate while capital gains were taxed at a lower rate and that was the signaling cost that made dividends function as signals. Only firms anticipating high earnings would use these costly way of signaling their prospects to the stock market. The structuring of the model was done in a way to ensure that projects were continued from finite-lived investors to succeeding investors, thus resulting to a comparative static result relating the equilibrium level of dividend payout to the length of investors’ planning horizons. The ownership of the productive assets in which an agent invested initially, is transferred after to the succeeding agents, so the life of the assets exceeds the time period of ownership by the agents.

The first essential contribution of Bhattacharya’s model is the development of a tax-based signaling cost structure based on the observation that even in the cases of small signaling cost elements negatively related to true expected cash flows, there is still a possible signaling equilibrium.

The second essential contribution is that the model is developed in intertemporal setting that allows the comparison of the benefits, meaning the increase in the firms’ value, and the costs of signaling with dividends. An interesting suggestion deriving from this model is that the equilibrium proportion of dividends to expected earnings is higher when the horizons over which shareholders have to realize their wealth are shorter. This argument is valid due to the initial imperfect information setting of the model, and linked with the “bird in the hand” argument that does not apply in a

perfectly informed, competitive financial market even under uncertainty, Miller and Modigliani (1961).

Regarding the analysis there are two major simplifications adopted. The first one is the assumption that the valuation of the cash flow streams is performed in a risk neutral world. The second one is that the “urgency” of the agents ‘need to realize their wealth is parameterized by the length of the planning horizons, without any detailed consideration of the asset disposal.

In Bhattacharya analysis the setting of imperfect information and use of dividends in signaling information about the firm’s value are justified with the following arguments. The outside investors cannot obtain the correct information about the productive assets held by a cross section the firms. The existing shareholders are influenced by the outside investors estimation of the firm’s value, as the planning horizon they have to realize their wealth is shorter in comparison to the time period needed for cash to be generated by the exploitation of the firm’s assets. Other sources of information, as accountant reports, are not considered to contribute to the amount of information provided to outside investors because of the moral hazard involved in communicating profitability. This potential problem is also mentioned by La Porta (2000) in his analysis of two main payout ratios of dividends, the dividend to earnings and dividend to cash flow, as having “the potential problem of being easily manipulated by accounting tricks”.

In Bhattacharya analysis firms are assumed to have sufficient investment opportunities in which cash flow from existing projects or assets can be reinvested, so the dividend payout is a choice the firms make and not a lack of investment opportunities. The fact that dividends are taxed at the ordinary tax rate while capital gains were taxed at a lower rate creates the signaling cost that make dividends function as signals. Hence finally the signaling benefit of a dividend payout stems from the rise in liquidation value caused by that dividend payment.

Bhattacharya overcame the agency problem in his analysis by assuming that the shareholders ‘agents (insiders or managers) optimize the after-tax gain of the

shareholders, because their own compensation is tied to the same criterion. The insiders are the only people who truly are aware of the firm's projects cash flow distribution.

With extra external financing assumed to be unavailable the cost of creating a cash-flow deficit is more than the benefit of a cash flow surplus of the same size. This is in line with the common market convention that a firm should be able to meet its commitment for a usual amount of dividend payout without the need of extra financing, the selling of assets or the postponement of positive net present value projects.

Miller and Rock (1985) replaced the standard finance model of optimal investment/ financing /dividend decisions for the firm, which assumed, among other things that outside investors and inside managers have the same information with a more plausible model. In the model proposed managers know more than outside investors about the true state of the firm's current earnings. Miller and Rock showed that under asymmetric information and the trading of stocks, consistent information signaling equilibrium exists that restores the time consistency of investment policy, but leads to lower levels of investment than the optimum achieved under full information or no trading. Miller and Rock suggest that adverse selection is related to distortion in the firm's investment decision. Furthermore they thoroughly documented evidence of dividend-announcement effects, which clearly imply asymmetries of information between the investing public and the firm's decision makers. Miller and Rock highlighted the inability of the full information model especially in the case of trading shares rather than owning them, as in the previous valuation models used. In that case the decision rules for investment and dividends to solve the effects of announcements imply lower level of investments and higher levels of dividends than under the standard full information optimum. The price for restoring a consistency between dividend and investment policies, under asymmetric information, appears to be under investment relative to the optimal achievable.

Rather the acceptance of this waste of investment opportunities Miller and Rock suggests as a solution the effort to eliminate asymmetries and temptations leading to this problem.

Jensen (1986) pointed the conflict between the interests and incentives of managers and shareholders over the payment of cash to shareholders. These conflicts were severe in firms with large cash flows, firms having more cash flows than profitable investments. The theory developed by Jensen explained, among other issues, the benefits of debt in reducing agency costs of free cash flows and how debt can substitute for dividends.

Jensen referred to the conflict interests in the relationship between shareholders and their agents, meaning the corporate managers. The payout of cash to shareholders creates a major conflict as the latter reduces the resources under the managers control, hence reducing their power and increases the probability of incurring the monitoring of capital markets, which occurs when the firm will have to obtain new capital. Internal financing of projects is a way to avoid the latter monitoring and probable unavailability or high cost pricing of external funds. Managers also have an incentive to create growth beyond the optimal size for their firm, as the latter is usually associated with their compensation through the growth in sales. The practice of the firms rewarding the middle managers through promotion rather than year to year bonuses contributes to the above mentioned issue of excessive growth, as through the growth practice the creation of new positions required is accomplished.

In the case of firms generating substantial cash flows, the problem lies in how to motivate managers to disgorge the cash rather than investing it at below the cost of capital on organization inefficiencies. Jensen suggests that debt creation enables managers to effectively bond their promise to pay out future cash flows, thus making debt a substitute for dividends, in a way that cannot be accomplished by simple dividend increases and also setting up incentives for managers. Debt reduces the agency costs of free cash flows but also the increased leverage has costs as the cost of bankruptcy. The control hypothesis of debt is more important in organizations having low prospects and generating large cash flows, as the hazard of wasting cash by investing to unprofitable projects is more severe in the case of such firms.

According to Jensen free cash flow theory predicts that, except for firms with profitable investment projects, prices will rise with unexpected increases in payouts to shareholders and on the contrary will fall with decreases in payouts or new requests for funds. Jensen study in oil industry takeovers suggests a positive market response consistent with the idea that additional debt increases efficiency by forcing organizations, having low prospects and generating large cash flows, to disgorge cash to investors and prevents wasting resources on inefficient projects.

La Porta et al. (2000) examined two agency models of dividends on a cross section of 4,000 companies from 33 countries with different levels of minority shareholder rights. The first model was the “outcome model”, which argues that minority shareholders force insiders to disgorge cash. The second model was the “substitute” model, which states that insiders interested in issuing equity in the future pay dividends to establish a reputation for decent treatment of minority shareholders.

Unfortunately, Greece was not included in the sample of the countries under examination because of the existence of the law for mandatory dividends. The fact that a mandatory dividend rule exists and regulators choose to force companies to pay dividends is evidence in favor of the importance of the agency problem existence. The support of the agency problem by the existence of a mandatory dividend by law stems from the fact that a plausible reason for a mandatory dividend policy is that outside investors might be expropriated in the absence of such a law. The mandatory dividend law protects the outsider investors and provides them an incentive in order to participate in the equity market.

An important result of La Porta et al. study was that firms in common law countries, where investor protection is considered better, make higher dividend payouts than those performed by firms in civil law countries. Furthermore, in common law countries, high growth firms make lower dividend payouts than low growth firms. The above mentioned results support the version of the agency theory in which investors in well protected countries, from a legal point of view, use their legal rights to extract dividends when reinvestment opportunities are poor.

In his study of the outcome theory, where dividend payout is the outcome of legal protection of shareholders, La Porta refers to the importance of the firm's growth opportunities regarding the dividend payout. Considering the case of two firms in the same legal environment, the first having good investment opportunities and growth prospect and another one with poor opportunities, argues that the shareholders reactions will be different respectively. Shareholders, feeling protected, would be more willing to accept a low dividend payout, knowing that the investments in a high growth firm would pay off and hence they would extract higher dividends. In the other hand, shareholders in a mature and low growth firm will not be allowed to invest unprofitably. As a result, in the above mentioned well legal protected environment, high growth companies should have lower dividend payouts than low growth companies. On the contrary on a low legal protection environment the latter described relationship between payouts and growth will not be applied, since shareholders may try to get whatever profit they can immediately.

La Porta also refers to the tax issue in his study. The effect of taxes on the valuation of dividends is an issue dividing economists and researches. Tax is considered a deterrent to paying out dividends rather than retained earnings, especially in the case of heavy taxation at both corporate and personal levels, as in the United States. There are some objections to the fore mentioned view. The first objection had to do with the argument that investors are capable of using some strategies to avoid taxes on dividends, as Miller and Scholes (1978) argued. A second argument is that dividends have to be paid in some time in the future so there is no real way of avoiding the taxation. Furthermore current payout of dividends might cost less for the shareholders than the delayed payout taxes. According to this theory taxes do not deter dividend payments.

The final conclusions of La Porta's study were that there was consistent support of the outcome model, hence firms operating in countries with high legal protection of minority shareholders pay higher dividends. Furthermore fast growth firms pay lower dividends than low growth firms, consistent with the argument that shareholders are willing to wait in order to gain more future profits. On the contrary low protected shareholders seem to take whatever dividend they can. No conclusive

evidence was found on the effect of taxes on dividend payout. The quality of legal protection of investors is an important factor for dividend policies.

Thanatawee (2012) examined the relationship between ownership structure, firm characteristics and dividend policy in Thailand over the period 2002-2010. Thanatawee analyzed the dividend policy of Thailand firms in two steps:

1. Decision to pay or not to pay
2. How much to pay

To examine the relationship Thanatawee used a regression model with dividend payout ratio as the dependent variable and control variables of both ownership structure and firm's characteristics. The ownership variables were the percent of shares held by the largest and top 5 shareholders, the institutional and individual shareholders overall and also spitted in two categories domestic and foreign and the percent of shares held by foreign shareholders. The firms' characteristics control variables were the return on assets, free cash flows, firm size, market to book ratio, leverage, retained earnings to equity and finally firm's age.

The results regarding firm's characteristics highlighted a positive effect regarding profitability, firm size and the ratio of retained earnings to book equity on a firm's decision to pay as well as the amount of dividend to pay. Furthermore, the amount of dividend payout is positively related to growth opportunities but negative related to financial leverage.

Thailand, according to La Porta et al. (2000), is characterized as a country with low shareholder protection and high ownership concentration. In addition Thai firms are mostly owned by individual, families and related, facts that contributes to the increase of the agency costs of free cash flows. Partners, thus shareholders are more likely to use dividend payouts as a way to constrain the agency problem. Thanatawee argued that firms with higher ownership concentration were more likely to pay dividends. This finding is consistent with Schleifer and Vishny's (1986) which argued that ownership concentration is a condition for large shareholders to provide

monitoring roles. Thus large shareholders use dividend payouts to restrict managerial opportunism. In addition, in the case of Thailand firms were more likely to pay less dividends when they had higher individual holding, especially in the case of domestic ownership. The latter argument suggests that powerful institutional shareholders, especially domestic ones, take advantage of their power to expropriate minority shareholders by lowering the dividend payout likelihood and amount. This is broadly consistent with Gugler (2003) who argued that family controlled firms in Austria are more likely than state controlled firms to reduce dividends. Large shareholders could use dividends as a way to mitigate the agency problem by constraining cash flows, but could also influence managers to set low dividend payouts to consume private benefits in the expense of priority shareholders.

Thanatawee also examined the impact of institutional holding on dividend policy. Jensen's (1986) free cash flow hypothesis suggests that institutional investors contribute to the more effective monitoring of the firm's activities, hence forcing managers to distribute dividends from the firm's free cash flows, or dividends can be used as a compensation for institutional investors for their effective monitoring role. The latter argument is consistent with the work of Shleifer and Vishny (1986).

The results of Thanatawee's study showed that compared to a firm with an individual as the largest shareholder, a firm with an institution as the largest shareholder is more likely to pay dividends and in addition pays higher dividends. Furthermore, ownership concentration has a positive effect on firms likelihood to pay dividends. The results showed that higher institutional (individual) holdings are associated with higher (lower) likelihood that firms pay dividends and moreover higher (lower) dividend payouts. The fore mentioned results were mostly driven by domestic rather than foreign ownership. Overall the findings of Thanatawee study were consistent with the agency theories of Jensen (1986) and Shleifer and Vishny (1986).

Several studies have been conducted regarding dividend announcements and the effect on stock prices. In USA extensive empirical studies have been completed, such

as of Dyl and Weigand (1998), Nissim and Ziv (2001) and Lie (2005) and are all consistent with the dividend signaling hypothesis.

Beer (1993) examined the market reaction to dividend change in the case of Belgium, using two groups of firms, one consisting of firms with regular dividend distribution and another including firms with resumed dividend distributions after a non dividend period of three years. The results supported dividend information content only for the second group.

Lonie et al. (1996) studied the market reaction to the joint events of dividends and earnings announcements by UK firms for a sample of 620 annual dividend announcements for a six months period January to June 1991. An event study methodology was used to identify abnormal returns regarding dividends and earnings and announcements were examined cross-sectional. In addition regression models were used to determine the interaction effect between unexpected dividends and unexpected earnings. The results were consistent with the signaling hypothesis, hence good news companies with increase in both dividends and earnings earned large positive abnormal returns, while bad news companies, decreased dividends and decreased earnings had the largest negative abnormal returns. In addition the results suggested that both signals, dividends and earnings, jointly influenced the returns of the sample stocks with the earnings being the dominant signal, while the dividends signal is considered an inferior signaling mechanism to convey information by managers to investors for the current and future prospects of the firm.

There are mixed findings concerning the information content of dividend payouts and their positive or negative effect. Gunasekerage and Power (2002 and 2006) investigated the information content of dividends with the use of data of UK and confirmed Lonie et al.'s findings (1996). For the Tokyo Stock exchange there is mixed also mixed evidence on the information content as while Conroy et al. (2000) results suggested the absence of information content, Harada and Nguyen (2005) found empirical support, measuring both short term and long term reactions.

On the contrary Pertinently, Benartzi, Michaely and Thaler (1997), studied US firms for the period 1979-1991 and did not find any relationship between dividends

and future earnings. Similarly, Grullon, Michaely and Swaminathan (2002) used a similar sample and a longer period 1963-1993 and suggested that a dividend increase does not signal an increase in profitability.

Brav et al. (2005) studied the key factors driving dividend policy with the use of an extensive questionnaire on executive MBA students and including a range of topics from Litner type questions (e.g., are dividends smoothed from year to year) to questions tied to specific theories (e.g., do firms pay dividends to separate themselves from competitors?). Brav et al. presents evidence that managers consider dividend payouts to convey information about the mean and/or riskiness of future earnings but strongly reject the notion that they pay dividends as a costly signal to convey their firm's worth, neither believe that dividend policy can be used to separate them from competition. Many managers regret their firm's dividend level and view the current dividend level as an undesired anchor that prevents their firm from having the desired level of intertemporal flexibility in cash payout.

This evidence was based on an extensive questionnaire on executive MBA students and including a range of topics from Litner type questions (e.g., are dividends smoothed from year to year) to questions tied to specific theories (e.g., do firms pay dividends to separate themselves from competitors?).

Asimakopoulou et al. (2007) explored, in the context of an event study, the effect of dividend announcements on stock market returns. The sample under examination consisted of firms paying the minimum required dividend and firms paying above the minimum dividend for the period 2000-2004.

During the period of investigation tax wise dividends were treated equally to capital gains. Major shareholders control corporate management to a high degree. Thus the case of Greek firms should not be consistent with Bhattacharya's costly signaling theory nor John and Williams (1985) hypothesis which is based on extra taxation.

The theory in place could be Miller's and Rock (1985) signaling theory which is based on investment opportunities. Tirole (2006) proposes a model of dividend announcements being a positive sign associating with positive stock price reaction, as it is interpreted as a sign of firm's good assets in place. Considering that the management has the insight of the value of the projects of the firm, the latter will not pay dividends if the project is bad, because the firm will need cash next year, hence the firm will pay dividends only if the project is good.

Based on Tirole (2006), a model was developed in which an announcement of an unexpected dividend increase - unexpected equals higher dividend than mandatory - is associated with a negative price reaction, as this is a signal of lack of profitable investments opportunities. Furthermore a mandatory dividend, in the case of high expectations from investors about the investment prospects of the firm, would have little or no impact on the stock's price. A model was used to point out the fore mentioned arguments and control moral hazard and imbalanced incentives.

There are certain methodologies to determine an unexpected dividend, the definition of Asimakopoulos et al. study was that a dividend announcement was considered unexpected if it differs from the previous years dividend by at least ± 1 standard deviation of the average dividend of the three previous years. As far as the methodology used that was the standard event study methodology with the use of a "market adjusted" model regarding the calculation of abnormal stocks returns. The estimation period consisted of 150 days and the event period of 51 days, 20 days before and 20 days after the announcement date (event).

The sample in the study of Asimakopoulos was restricted to firms distributing dividends every year of the period 1997-2004, leading to a final sample of 63 firms and 315 dividend announcements respectively.

The results from this study of Asimakopoulos et al. confirmed the existence of the information context of dividend and furthermore suggested that, with known assets in place and asymmetric information on investment projects, unexpected dividend increases result in negative price reactions, controlling for managerial moral

hazard and the degree of back and frontloading managerial compensation scheme. This result is opposite to the results of Dasilas and Leventis (2009) for the same period of announcements regarding Greek firms of Athens Stock Exchange that suggested that the share price reaction is positive in the case of a dividend increase. Also Asimakopoulos et al. results suggested that announcement of minimum dividend had no signaling effect even for unexpected increases.

Dasilas and Leventis (2009) investigated the market reaction to cash dividend announcements for the period 2000-2004 employing data from the Athens Stock Exchange (ASE). In particular both the stock price and trading volume reaction to dividend distribution announcements were examined. Dividend change announcement were classified with the naïve model suggesting that the current dividend is expected to be equal to the previous dividend and the expected dividend change is equal to zero and also another categorization was used based on the mandatory dividend. There were two groups of dividend change announcement based on the level of distributed dividend being either higher or lower than the minimum required, supplementing the classification of dividend change announcements. Only dividend announcements were used occurring with no other significant corporate announcements, within 10 days before or after the announcement, which might influence the occurrence of abnormal returns. Due to possible deviation between the observed announcement date and the actual announcement date a three-day period around the announcement day was considered the dividend announcement period (event). The results of this study suggest that the share price reaction is positive in the case of a dividend increase and negative in the case of average decreases in share prices. Last in the case of no dividend change there was a trivial stock price reaction.

The purpose of Travlos et al. study (2001) was to evaluate the role of cash and stock dividends (bonuses) in an emerging stock market. To that direction Cyprus stock market is selected in assessing dividend policy changes. The reason behind this choice is:

- i) the differentiation of Cyprus market from developed markets in several dimensions such as the high concentrated ownership structures of the firms that may render standard free-cash-flow explanation for dividend policy changes less likely
- ii) the lacked transparency, potentially allowing for exploitation of smaller shareholders by larger ones; such exploitation may be mitigated by dividend increases and the lack of fixed transaction costs and
- iii) round-lot restrictions in trading in this market which suggests that there is limited use for an optimal trading range for share prices.

The methodology used was based on an analysis of a total of 181 cash dividend announcements by 31 different firms that took place during the period under study. It should be noted that all firms in the Cyprus Stock Exchange have highly concentrated ownership structures. Therefore, the sample firms' ownership structure is proxied well by the wider ownership characteristics of the population.

For the completion of this study an electronic database with daily stock returns of all firms traded in the Cyprus stock market during the period 1985-1995 developed by one of the authors and his associates. Given the lack of liquidity for the period examined, in certain days no trading took place for some of the stocks.

Two adjustment techniques were used: The Scholes and Williams (1988) technique, where one lead and one lag beta factor are added to the standard market model, and the Dimson (1988) technique where three lagged or three lead beta factors are added to the standard market model.

The results reveal significantly positive stock market returns for firms announcing increases in cash and in stock dividends in line with the expectations. Specifically, one interpretation of the results is that the positive impact of dividend increases may reflect apparently effective attempts by Cyprus-listed firms to bridge the information asymmetry gap with investors via their dividend payout policy. The understanding of such efforts may be enhanced through an examination of the signaling value of alternative financial policy decisions, such as the corporate issue of equity and debt.

An alternative interpretation of the positive impact of dividend increases may be that they serve to reduce potential exploitation of smaller shareholders by larger ones, with different policy implications regarding the need to enhance transparency (both at the corporate and market levels) and public confidence. Similarly, liquidity explanations of stock dividends cannot presently be ruled out. This study should best be seen as an attempt toward understanding the importance of corporate financial policies in emerging markets.

Event studies examine the behavior of firms' stocks around corporate events. A large number of event studies have been conducted by numerous researchers and academics over the last decades establishing event studies as an important part of financial economics. Prior to that time "there was little evidence on the central issues of corporate finance. Now we are overwhelmed with results, mostly from event studies" (Fama, 1991, p. 1600).

The usefulness of events studies is that focusing on a short horizon around a corporate event and spotting abnormal returns around the event provide evidence for understanding corporate policy decision as well as a measure of the impact of this type of event on the wealth of the firms' claimholders. Furthermore, event studies are used to test and measure the market's efficiency, by measuring the persistence of abnormal returns around an event.

While event study methods have evolved over time, there seems to be little controversy about the statistical properties of event study methods and the conditions under which the latter provide information and permit reliable results are well-understood.

Kothari and Warner (2007) in an effort to quantify the enormity of the event study literature registered the event studies published over the period 1974 through 2000 in the following five leading journals:

- The Journal of Business (JB)
- Journal of Finance (JF)

- Journal of Financial Economics (JFE)
- Journal of Financial and Quantitative Analysis (JFQA)
- Review of Financial Studies (RFS)

Over the time period since 1974 through 2000 the total numbers of reporting event studies is 565. This is only a lower bound regarding the use of event studies as many academic journals are excluded. The number of papers increased in the 1980s and the flow of papers has since been stable. The peak years were 1983, 1990 and 2000 with about 37 papers using event studies.

Although event study methods have evolved over time, the basic statistical format of event study has not changed and is still based on the table layout in the classic stock split event study of Fama et al. (1969). The main process consists of measuring the sample's mean and cumulative mean abnormal return around the event of study. Two main changes have been established in the methodology, that is the use of daily rather than monthly return data and the use of more sophisticated methods to estimate abnormal returns and their statistical significance.

Event studies can be separated into long term and short term. Short horizon methods are considered relatively straight forward and trouble free, hence we can be considered to produce more reliable results than those of long horizon studies. Short – horizon test represent the “cleanest evidence we have on efficiency” (Fama, 1991, p. 1602). Long–horizon tests require more caution as there are certain concerns, regarding the caution needed to conduct them and their reliability. Such concerns have been reported by Kothari and Warner (1997), Lyon, Barber and Tsai (1999), Brown and Warner (1980).

Kothari and Warner (2007) highlighted some properties of event studies, in qualitative terms. Such a property is the horizon specification, with short horizon event studies being generally well specified, while long horizon being sometimes poorly specified. Another property is the concentration of abnormal performance in the event window, which increases the power of short horizon methods. Furthermore, with short horizon methods the test statistic specification is not highly sensitive to the

benchmark model of normal returns or assumptions about the cross-sectional or time-series dependence of abnormal returns. The power on the event studies is higher with increasing sample and also depends on the characteristics of firms, such as size and industry. Size and industry are relevant characteristics as individual security variances (and abnormal return variance) exhibit an inverse relation to firm size and can vary by industry. Kothari and Warner also provided quantitative results regarding volatility, sample size and cross sectional tests.

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ

3. Data and Methodology of the Event Study

3.1. Data

The first step in order to perform an event study on the abnormal returns concentrated around an announcement of dividend payout was the gathering and record of the announcement dates of dividend payouts. The source of data to perform this task was Bloomberg. Due to the lack of database field regarding the date of announcement, the method to retrieve the information needed was the data entry of the Dividend menu (DVD) information into an excel file. Additional information and crosscheck of a sample was performed with the available dividend announcements in the daily financial press and Athens Stock Exchange (ASE) publications.

The initial sample consisted of 220 firms of Athens Stock Exchange and 1.196 announcements of cash dividend payouts, for which ownership information was also available for the period 2002-2012. The following exclusions have been performed:

- Announcements of repurchases
- Announcements with both intermediate and final dividend

The above exclusions led finally to 186 companies and 1.089 announcements.

The second essential information needed for the event study was the returns of the companies' stocks for a period of total 311 days, as well as the return of the Athens Stock Exchange Index for the same time period based on the announcement date of the dividend payout as described in the next paragraph. The historical returns data was retrieved from Bloomberg.

The 311 days consist of 280 days before the announcement, the announcement day and 20 days after the announcement day. The estimation period consists of the 260 first days while the event period consists of the 41 days remaining days , starting

at 20 days before the event day , includes the event day and 20 days after the event day. With the use of access database and visual basic a window of 341 daily returns was created where the return on the announcement date was in the center of this window meaning the 281st return.

After excluding cases of announcements of companies which had less than the total of 311 return dates needed the final sample was limited to 176 companies and 1.012 announcements.

A basic calculation needed in this step was the estimation of the normal or abnormal returns for a period of 20 days around the announcement date. To differentiate the return of a company as abnormal the market model was used initially to estimate the expected return. The abnormal returns were calculated as the difference between the real return and the expected return.

The third basic step of the event study had to do with the dividend payouts that needed to split into three main categories. Dividend payouts equal to the mandatory dividend payout, dividends around the mandatory dividend and dividends above the mandatory dividend. For the purpose of this calculation historical data from the Data Stream database, including World Scope were used.

Finally the fourth data set of information needed was the ownership structure of the companies. For this purpose historical data from Amadeus database was used , containing data from BvDEP Ownership data of the Bureau Van Dijk electronic publishing. In some years that the information needed was not sufficient supplementary information was used regarding the historical data of voting rights of companies through the Athens Stock Exchange (ASE) publications.

The final overall data used, due to the segmentation in all categories consists of 926 announcements for dividend announcements of the period 2002-2012.

3.2. Methodology of measuring the reaction of the dividend announcement on stock returns – Market Model

The observed change of the stock price of a company during the week of the dividend payout announcement cannot only be linked to the dividend announcement as there are many other different factors affecting the stock's price. In order to measure the effect of the dividend announcement on the stock's price we must first isolate the changes in the price due to other factors. This task will be performed with the use of a cross-sectional average that neutralizes firm-specific price variations not related to the announcement of dividend, the event we are studying.

We define R_{it} the realized (observed) return of stock i during day t and $E(R_{it})$ the expected return of stock i during the day t . The expected return is the return we expected for the stock, given that the announcement of the dividend was not performed.

We call the difference between the expected return and the realized return as the unexpected (or abnormal) return u_{it} of stock i during day t .

$$u_{it} = R_{it} - E(R_{it}) \quad (1)$$

In order to calculate u_{it} we must estimate first the $E(R_{it})$, the expected return on stock i the day t .

We will use the market model (Fama et al. (1969) and Fama (1976)) to estimate the expected return. Hence the returns of the stock are generated as following:

$$R_{it} = \alpha_i + \beta_i R_{mt} + u_{it} \quad (2)$$

where

$i=1, \dots, n$,

$t=1, \dots, d$,

R_{it} = rate of return of stock i over day t ,

R_{mt} = rate of return on the Athens Stock Exchange Index over day t

$\beta_i = \text{cov}(R_{it}, R_{mt}) / \text{var}(R_{mt})$,

$\alpha_i = E(R_{it}) - \beta_i E(R_{mt})$,

u_{it} = the stochastic disturbance term of stock i in day t , normally distributed with a zero mean, and serially and contemporaneously uncorrelated with constant variance (σ^2) .

$\text{cov}(u_{it}, u_{js})=0$, for all $i \neq j$ and $t \neq s$,

$\text{cov}(u_{it}, R_{mt})=0$, for all t .

In practice we use the ASE index that is a value-weighted index of all stocks. The beta coefficient β_i of stock i is a measure of sensitivity of the stock i to the general market movements, defined as the covariance of stock's i returns with those of the market divided by the variance of the market returns.

Running an Ordinary Least Squares regression of R_{it} on R_{mt} we can estimate the parameters α_i and β_i for each stock in the sample. The regression period is the first 260 days of returns ending 21 days before the announcement day, thus the event period is not included in the estimation.

Using these estimations $\hat{\alpha}_i$ and $\hat{\beta}_i$ equation (2) can be rewritten as follows:

$$u_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{mt}) \quad (3)$$

Thus, the unexpected (or abnormal) return u_{it} is equal to the realized return minus the expected return which equals $(\hat{\alpha}_i + \hat{\beta}_i R_{mt})$. Notice that in equation (2) the expected return consists of the sum of the two main factors affecting a stock price , firm specific factor- events causing a change in the price (u_{it}) , and the general

market movements ($\alpha_i + \beta_i R_{mt}$), integrated in the model with the use of the market return and the sensitivity of the stock to the general market movements (β_i).

Deducting ($\hat{\alpha}_i + \hat{\beta}_i R_{mt}$) from R_{it} we have managed to neutralize the effect of the market movements but not the effect from other firm specific events apart from the dividend announcement.

As mentioned in the beginning to isolate the effect of the dividend announcement on the stock price we will take the cross-sectional average of the unexpected returns for the stocks in the sample for the 41 days that make the event period centered on the announcement day (20 days before the announcement, which is day 0, and 20 days after).

Hence we manage to neutralize firm-specific price variations caused by other events than the event of the dividend announcement as the event does not occur in the same point in time for the n stocks in the sample.

$$AR_t = \bar{u}_t = \frac{1}{n} \sum_{i=1}^n u_{it} \quad (4)$$

$t=-20,-19,-18,\dots,0,\dots,19,20$

where AR_t is the sample average abnormal return during day t and n is the number of stocks in the sample

The last step in the analysis requires the calculation of the cumulative abnormal returns (CAR's) from day t_1 to day t_2 within the event period ($t=-20,-19,-18,\dots,0,\dots,19,20$)

The cumulative abnormal returns for the n stocks from day t_1 to day t_2 is calculated as follows:

$$CAR[t_1, t_2] = \sum_{t=t_1}^{t_2} AR_t \quad (5)$$

3.3. Methodology of measuring the reaction of the dividend announcement on stock returns – Mean-Adjusted-Return Approach

In this approach the difference compared to the market model is that we use for the estimation of the expected returns the historical mean return of stock i over the 260 first days ending 21 days before the announcement day.

$$u_{it} = R_{it} - \bar{R}_i \quad (6)$$

Where

$$R_{it} = \sum_{-170}^{-21} AR_t / 260 \quad (7)$$

As mentioned in the beginning to isolate the effect of the dividend announcement on the stock price we will take the cross-sectional average of the unexpected returns for the stocks in the sample for the 41 days that make the event period centered on the announcement day (20 days before the announcement, which is day 0, and 20 days after).

Hence we manage to neutralize firm-specific price variations caused by other events than the event of the dividend announcement as the event does not occur in the same point in time for the n stocks in the sample.

$$AR_t = \bar{u}_t = \frac{1}{n} \sum_{i=1}^n u_{it} \quad (8)$$

$t=-20,-19,-18,\dots,0,\dots,19,20$

where AR_t is the sample average abnormal return during day t and n is the number of stocks in the sample

The last step in the analysis requires the calculation of the cumulative abnormal returns (CAR's) from day t_1 to day t_2 within the event period ($t=-20,-19,-18,\dots,0,\dots,19,20$)

The cumulative abnormal returns for the n stocks from day t_1 to day t_2 is calculated as follows:

$$CAR[t_1, t_2] = \sum_{t=t_1}^{t_2} AR_t \quad (9)$$

3.4. Significant Tests

True, unobservable mean returns are zero, although estimated mean return may be different than zero. In order to test whether the sample estimated mean returns are significantly different from zero, for a particular level of significance, we perform the following statistical tests using the t -statistic.

We calculate for each stock and for each week a standardized abnormal return SR_{it} as follows:

$$SR_{it} = \frac{u_{it}}{\sigma_i} \approx t(259) \quad (10)$$

Where σ_i is the estimated standard deviation of the returns of stock i calculated over the 260 days estimation period.

It is assumed that SR_{it} are identical distributed independent random variables, each following a t -distribution with 259 degrees of freedom.

We calculate the cross-sectional average standardized abnormal return ASR_t

$$ASR_t = \frac{1}{n} \sum_{i=1}^n SR_{it} \quad (11)$$

$$t=-20,-19,-18,\dots,0,\dots,19,20$$

Assuming u_{it} to be independent across time t and normally distributed, hence ASR_t follows a t-distribution and the t-statistic is Q

$$t\text{-stat} = \sqrt{n} \cdot ASR_t \quad (12)$$

We use the t-stat to test the hypothesis whether the average abnormal returns (AR_t) are significantly different from zero, for a particular level of significance.

In order to test the hypothesis whether the cumulative average abnormal returns $CAR[t_1, t_2]$ are significantly different from zero, for a particular level of significance, we use the following t-statistic:

$$t\text{-stat} = \sqrt{\frac{n}{t_2 - t_1 + 1}} \cdot \sum_{t=t_1}^{t_2} ASR_t \quad (131)$$

where t_1 is the first day and t_2 is the last day of the period over which returns are cumulated.

3.5. Segment Definitions

In the case of Greece it is mandatory for profitable firms to distribute a minimum mandatory dividend in the form of cash dividend according to the Greek laws 2190/1920, 148/1967 and 3604/2007. During the period investigated 2002 – 2012 there was a change in the calculation of the mandatory dividend. Until 2007 Greek firms were obligated to distribute cash dividend equal to the higher of the following two: (a) 6 % of their common equity (b) 35% of the net income minus tactical reserves. In 2007 there was an amendment of the previous law in the new law 3604/2007 and the minimum mandatory dividend was calculated as 35% of the net income minus tactical reserves. In order to pay smaller amount of dividend than the mandatory the majority of 65% of the voting right is needed, while in order for no dividend to be distributed the agreement the majority of 70% of the voting rights is required.

In order to examine the effect of dividend announcements on the stock prices the samples formed were based on the following categories:

- Above mandatory
- Mandatory
- Below Mandatory

Above mandatory was defined a dividend where the difference in the payout ratio to the payout ratio of the mandatory dividend was above 5%.

Mandatory was defined a dividend where the difference in the payout ratio to the payout ratio of the mandatory dividend was between - 5% and +5%.

Below mandatory was defined a dividend where the difference in the payout ratio to the payout ratio of the mandatory dividend was below -5%.

For the investigation of ownership in relation to the precious category of dividend payouts the following three categories were established:

- HOIC
- NOT HOIC

HOIC refers to firms with high ownership concentration by individuals, consisting of firms without institutional shareholders (e.g banks, funds) and also having in their five top shareholders individuals with an aggregated voting right of above 50%.

NOT HOIC refers to all other firms where the HOIC definition is not valid.

4. Results

Table 1 describing the historical change regarding dividend payouts and losses was created through the calculation of the mandatory dividend by balance sheet and announcement data and the categorizing of dividend payouts to the three main segmentations, hence above mandatory, mandatory, below mandatory.

There are some interesting facts that stem from this table and should be highlighted. The years in the fore mentioned table 1 are the years that the announcements were made and not the years that the results of the firms refer. First, there is a worrying increase of the firms with losses in the Athens Stock Exchange starting from 20% in 2002 and increasing gradually through the years (with the exception of 2004) to a 70% in 2012 referring to the results of 2011 (Chart1). Results from the first semester of 2013 performed in a sample of 216 companies by BETA, a Greek financial institution, indicated 78 companies with profits (36%) and 138 companies with losses (64%). An incredible increase of 13% in the percent of losses from 29% in announcement year 2008 to 42% the consecutive year 2009, referring to the firms results of 2008, is expected as 2008 was the year that the crisis started. The following years there is a 6% increase in firms with losses from 42% in 2009 to 48% in 2010, a peak of 16% increase from 48% in 2010 to 64% in 2011 and an increase of 6% from 64% in 2010 to 70% in 2011. Overall for the period 2002-2007 there was a 26% of firms with losses while the period 2008-2012 there was a 50% of firms with losses.

Due to the fore mentioned percent of firms with losses, there was an overall decrease in the announcement of dividends in the five year period 2008-2012, where there were only 364 announcements while in the five year period 2003-2007 there were 913 announcements, a total decrease in announcements of approximately 60%. In 2007 the percent of above mandatory dividends is 24% while in 2012 the percent has dropped to 4%, the percent of mandatory announcements is 8% in 2007 and dropped to 3% in 2012, while the consequent percent for below mandatory is 20% in 2007 and 3% in 2012. There seems to be a significant decrease of above minimum and below minimum announcements during the crisis period while the middle mandatory

category is severe but in a smaller degree affected. The decrease of the below mandatory dividends could be explained by the hypothesis that firms paying below the minimum dividend might not have essential cash flows to support a minimum dividend and gradually appear into the increasing category of losses or in the no announcements category of cash dividends as other forms of payment to shareholders might be adopted. A decreased supply of credit provided by banks during a crisis period could contribute to such a hypothesis. The decrease of above requirement firms and the smaller decrease of mandatory dividend announcements could be explained by the fact that in time of a crisis in an effort to have sufficient cash, since the overall supply of credit by banks is decreasing, and in order to avoid bankruptcy firms might choose to pay the mandatory dividend instead of the previous above mandatory. During the period of crisis this could be considered as the wise decision, and such a decision might not be considered a bad signal as some signaling theories suggest.

Table 2 depicts the above mentioned changes in the percents of the three main dividend categories in a more efficient way since firms with losses are excluded from the picture and the percent of each category refers to a total of cash announcements and no announcements. The above dividend category seems to have decreased from 34% in 2007 to 12% in 2012, similarly to the below mandatory category from 28% to 9% in 2012, while the mandatory category seems more stable remaining at 10%. In any case to examine the flows of companies between the different categories a was-is cross table analysis should be performed and the underlying reasons demands a more extensive study. The percentage of each dividend category within the total of dividend cash announcements is depicted in graph 2.

The Greece institutional setting demonstrates important differences from those of other developed markets. A main difference is the existence of a mandatory minimum amount of dividend distribution from the taxed corporate profits according to the law.

Furthermore the current study uses announcements from the period 2002-2012 where a number of significant changes occurred beside the major crisis that started in 2008 which one impact was clearly depicted by the increasing firms with losses in the

previous section. Before 2007 no taxes were imposed on dividends on an individual level beside the taxes imposed directly on the company profits. After 2008 the taxation of the dividends on a personal level has changed from an initial 10% in 2009-2010, to 21% in 2011, 25% in 2012 and back to 10% in 2013. Last dividends cash dividends are paid in an annual basis unlike the USA and the UK where dividends are paid on quarterly and semi-annually basis respectively. From the initial sample of 220 firms and 1.196 announcements there were only 44 announcements of interim dividend performed by 10 companies.

Regarding the taxation of stockholders profits originating from stocks sales, until 2010 stock sales were virtually free of taxes, as only a tax of 0.15% was imposed only at the time of the sale, regardless of profit or losses due to the sale. In 2011 there was a change in taxation, as profits from stock sales were free of taxes if the sell was performed a trimester or a year after the initial acquisition date. If the sell was performed within the trimester or the year since the acquisition date the tax imposed was 20% or 10% respectively.

Another change was that of the calculation of the mandatory dividend. In the case of Greece it is mandatory for profitable firms to distribute a minimum mandatory dividend in the form of cash dividend according to the Greek laws 2190/1920, 148/1967 and 3604/2007. During the period investigated 2002 – 2012 there was a change in the calculation of the mandatory dividend. Until 2007 Greek firms were obligated to distribute cash dividend equal to the higher of the following two: (a) 6 % of their common equity (b) 35% of the net income minus tactical reserves. In 2007 there was an amendment of the previous law in the new law 3604/2007 and the minimum mandatory dividend was calculated as 35% of the net income minus tactical reserves. In order to pay a smaller amount of dividend than the mandatory the majority of 65% of the voting right is needed, while in order for no dividend to be distributed the agreement the majority of 70% of the voting rights is required.

Due to the fore mentioned changes during the period under investigation the study was separated into two periods 2002-2007 and 2008-2012, based on the announcement years.

A key element used in the studies of many researchers regarding the effect of dividend announcements to the returns of firms stock is the definition of unexpected dividend. Some researchers use simple compared the dividend of the previous year to the dividend of the consecutive year Travlos et al. (2001), Fuller et al. (2002) and Gurgul et al., (2003). Dasilas and Leventis used both the fore mentioned naïve model and also used a second definition of unexpected dividend as the difference between the announced and the mandatory. Other researchers consider a dividend change as unexpected if there was a constant dividend for a certain number of continuous years that changed the following year. Still others define unexpected in terms of a minimum percentage change from the dividend of the previous year. Asimakopoulos et al consider a dividend unexpected if the announced dividend D_0 differs from the previous year dividend D_{-1} by a ± 1 standard deviation of average dividends of the three previous years. (D_{-1} to D_{-3}).

In the current study considering the unique Greek Stock Market setting where a mandatory minimum dividend amount exists, the difference between the announced and the mandatory dividend can be considered as unexpected. There is a difference between the unexpected definition using dividends compared to the previous years and the unexpected definition in comparison to the mandatory dividend, in cases of a mandatory dividend regime. Depending on the earnings level and until 2007 the stock capital, the mandatory dividend might be higher than that of the previous year and hence a below minimum mandatory dividend higher than previous year mandatory dividend. This would qualify as an increase in a definition of difference between consecutive years dividends but a decreased dividend using the mandatory comparison , since the higher earnings level are incorporated in the calculation of the mandatory dividend requiring a higher dividend as expected.

It must be also noted that decoding the signal of dividend in the case of a mandatory dividend, unless the dividend's category mandatory above mandatory, below mandatory is mentioned, requires extensive knowledge of corporate laws by the

investors. As a result a dividend payment below the minimum might not be considered a bad signal by the majority of investors.

The summarized results of the current study are presented in tables 3-10 along with their t-statistics in including only results statistically significant at the 1% (denoted with **) and 5 % level (denoted with *) regarding the event period of -10 to +10 days around the event. Results are presented with both methods used, Market Model and Mean- Approach Adjusted. Tables 11 and 12 refer to the overall period 2002-2012.

The overall analytical results independently of level of significance including the whole event period -20 to +20 days around the event with both methods used Market Model and Mean- Approach Adjusted are available upon but not presented analytical in this thesis.

4.1. Results for the period 2002-2007

Table 3 presents the results for the same period 2002-2007 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Market Model.

Regarding the category Above Mandatory there are significant abnormal returns positive at day -8^* , positive at day -5^* and then we have negative abnormal returns at day $+1^{**}$ and negative at day $+2^{**}$. The cumulative abnormal returns are positive for days $[-20,0]^{**}$, positive for days $[-10,0]^{**}$ and then turns into negative for days $[0,2]^{**}$, negative for days $[0,5]^{**}$, negative for days $[0,10]^{**}$ and finally negative for days $[0,20]^{**}$.

As we can see there are strong significant negative abnormal returns statistically significant at the 1% at days $+1$ and $+2$, confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative. By looking at the significant negative CAR for days $[0,10]^{**}$ we can assume that investors reactions are not reversed, the market has not efficiently responded with a correction.

Regarding the category Mandatory there are no significant abnormal returns positive at day -10^* , and negative at day $+7^*$. In the case of mandatory dividend there are no abnormal returns noted at the event day, or close to the event day. There are no significant cumulative abnormal returns at any level

Regarding the category below Mandatory there are significant abnormal returns positive at day -7^* , positive at day $+7^{**}$ and positive at day $+8^{**}$. There are no statistically significant cumulative abnormal returns at any level.

As we can see in the case of below mandatory there are strong significant positive abnormal returns statistically significant at the 1% at days $+7$ and $+8$. On the assumption of accepting the positive effect noted 7-8 days after the event as a

somewhat delayed market reaction, the latter reaction confirms the information content of the announcement and identifies it as good news since the abnormal returns of the stocks were positive, although it takes some time for the effect to appear.

Table 4 presents the results for the same period 2002-2007 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Mean-Adjusted-Return Approach.

Regarding the category Above Mandatory there are significant abnormal returns positive at day -6*, positive at day -1* and then we have negative abnormal returns at day +1** and negative at day +2*. The cumulative abnormal returns are positive for days [-20,0]**, positive for days [-10,0]** and then turns into negative for days [0,2]**, negative for days [0,5]** and negative for days [0,10] .

As we can see there are strong significant negative abnormal returns statistically significant at the 1% at day +1 and negative at 5% level at day +2 confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative. This effect can be explained by the studies linking firms announcing increased dividends with the lack of investment opportunities. By looking at the significant negative CAR for days [0,10] we can assume that investors reactions are not reversed, the market has not efficiently responded with a correction.

Regarding the category Mandatory there are significant abnormal returns positive at day -10* and positive at day -5* and negative at day +7**. In the case of mandatory dividend there are no abnormal returns noted at the event day, or close to the event day. There are no significant cumulative abnormal returns at any level.

Regarding the category Below Mandatory there are significant abnormal returns negative at day +1**, positive at day +7** and positive at day +8** .There are significant cumulative abnormal levels positive at [0,20]* and positive at [5,10]** .

As we can see there are strong significant positive abnormal returns statistically significant at the 1% at days +7 and +8 . On the assumption of accepting the positive effect noted 7-8 days after the event as a somewhat delayed market reaction, the latter reaction confirms the information content of the announcement and identifies it as good news since the abnormal returns of the stocks were positive, although it takes some time for the effect to appear. This positive effect can be explained by the opposite side of the previous used argument, linking the below mandatory dividend announcement with the belief of investors for the existence of investment opportunities for the firm in this case.

However with this model we note the appearance of a negative significant at a 1% level abnormal return at day +1 and the absence of the positive and significant at a 5% level abnormal returns noted at day -7 previously produced by the use of the Market Model.

Combining the results from the two models for the period 2002-2007 we conclude that there are strong negative abnormal returns in days +1, +2 in the case of Above Mandatory dividends, no abnormal returns near the event day in the case of Mandatory dividends and finally strong positive abnormal returns at days +7, +8 in the case of Below Mandatory dividends.

4.2. Results for the period 2008-2012

Table 5 presents the results for the period 2008-2012 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Market Model.

Regarding the category Above Mandatory there are significant abnormal returns positive at day 0* and then we have negative abnormal returns at day +1** and negative at day +2*. The cumulative abnormal returns are positive for days [-20,0] **, positive for days [-10,0]** and then turns into negative for days [0,5]* and negative for days [0,20]*.

As we can see there are strong significant negative abnormal returns statistically significant at the 1% at day +1 and negative at 5% level at day +2 confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative.

Regarding the category Mandatory there are no significant abnormal returns at any day of the period -10 to +10 and also no significant cumulative abnormal returns at any level.

In the case of mandatory dividend there no significant abnormal returns noted during the whole period of -10 and +10 days around the event day 10 and also no significant cumulative abnormal returns at any level.

In the category Below Mandatory there are also no significant abnormal returns at any day of the period -10 to +10 and also no significant cumulative abnormal returns at any level.

This is a significant difference to the results of the previous period where significant positive reaction was established a week after the announcement. The absence of such a delayed positive reaction in the period 2008-2012 can be explained as reluctance on

the part of investors to acknowledge signals for the existence of investment opportunities during the crisis period where investment opportunities are limited.

Table 6 presents the results for the period 2008-2012 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Mean-Adjusted-Return Approach.

Regarding the category Above Mandatory there are significant abnormal returns negative at day +2* and negative at day +4*. The cumulative abnormal returns are positive for days [-20,0]** and then turns into negative for days [0,2]*, negative for days [0,5]** and negative for days [0,10]*.

As we can see there are significant negative abnormal returns statistically significant at the 5% at day +2 and negative at 5% level at day +4 confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative. By looking at the significant negative CAR for days [0,10]* we can assume that investors reactions are not reversed, the market has not efficiently responded with a correction.

Regarding the category Mandatory there are significant abnormal returns negative at day -4* and with no significant cumulative abnormal returns at any level.

In the case of mandatory dividend it seems that the latter in the crisis period and at a 1% significant level is considered as expected, thus no abnormal returns are showing up, while in the period 2002-2007 a statistical significant at a 1% level negative abnormal return appeared at day +7**.

In the category below Mandatory there are also no significant abnormal returns at any day of the period -10 to +10 and also no significant cumulative abnormal returns at any level.

This is a significant difference to the results of the previous period 2002-2007 where significant positive reaction was established a week after the announcement. It seems

that the Below Mandatory dividend in the crisis period, considered in this study as an unexpected decrease, causes the results that an expected dividend as a mandatory would cause. That was not the case in the period 2002-2007.

Combining the results from the two models we conclude that while in the case of Above Mandatory there is still a strong negative abnormal return at days +1 depicted by the Market Model at the 1% significant level, in the cases of Mandatory and Below Mandatory dividends no abnormal returns appeared.

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ

4.3. Results related to ownership structure

Table 7 presents the results regarding high individual ownership concentration (HOIC) for the period 2002-2007 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Market Model.

Regarding the category Above Mandatory there are significant abnormal returns negative at day +1**. The cumulative abnormal returns are negative for days [0,2]**, negative for days [0,5]**, negative for days [0,10]** and negative for days [0,20]*.

As we can see there are significant negative abnormal returns statistically significant at the 1% at day +1** confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative. By looking at the significant negative CAR for days [0,10]** we can assume that investors reactions are not reversed, the market has not efficiently responded with a correction.

Regarding the category Mandatory there are no significant abnormal returns and no significant cumulative abnormal returns at any level.

In the case of mandatory dividend it seems that the latter is clearly considered as expected, thus no abnormal returns are showing up.

In the category Below Mandatory there are significant abnormal returns positive at day +7**. There are significant cumulative abnormal levels positive at [5,10]*.

Table 8 presents the results regarding high individual ownership concentration (HOIC) for the period 2002-2007 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Mean-Adjusted Return Approach.

Regarding the category Above Mandatory there are significant abnormal returns negative at day +1** . The cumulative abnormal returns are positive for days [-20,0] * and then turns into negative for days [0,2]** and negative for days [0,5]** .

As we can see there are significant negative abnormal returns statistically significant at the 1% at day +1** confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative. By looking at the significant negative CAR for days [0,5]** we can assume that investors reactions are not reversed , the market has not efficiently responded with a correction during that period.

Regarding the category Mandatory there is a significant abnormal return at day +1* and no significant cumulative abnormal returns at any level. There are no significant abnormal returns at an 1% level.

In the category Below Mandatory there are significant abnormal returns positive at day +7** and there are significant cumulative abnormal levels positive at [5,10]**.

As we can see in the case of below mandatory there are significant positive abnormal returns statistically significant at the 1% at days +7, confirming the information content of the announcement and identifying it as good news since the abnormal returns of the stocks were positive, although it takes some time for the effect to appear.

Combining the results from the two models we conclude that while in the case of Above Mandatory there is still a strong negative abnormal return at days +1**, there is no significant at a 1% level abnormal return in the case of Mandatory dividend and there is a significant positive abnormal return at +7** for Below Mandatory dividends.

Table 9 presents the results regarding absence of high individual ownership concentration (NHOIC), as this was previously defined, for the period 2002-2007 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Market Model.

Regarding the category Above Mandatory we notice significant abnormal returns positive at day -6*, positive at day -5* and then negative at day +1**, negative at day +2*. The cumulative abnormal returns are positive for days [-20,0]**, positive for days [-10,0]** and then turns into negative for days [0,2]**, negative for days [0,5]** and negative for days [0,10]**.

As we can see there are strong significant negative abnormal returns statistically significant at day +1** and day +2 confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative.

By looking at the significant negative CAR for days [0,10] we can assume that investors reactions are not reversed, the market has not efficiently responded with a correction.

Regarding the category Mandatory there are no significant abnormal return at the 1% level at any day of the period -10 to +10 and no significant cumulative abnormal returns at any level. There are significant abnormal returns however at a 5% level positive at day -2* and negative at day +7

In the category Below Mandatory there are significant abnormal returns positive at day -7*, negative at day +1* and positive at day +8*. This category is different than the previous case of HOIC where there was a significant positive effect at +7**. It is obvious that there is a significant change to the content of the Below Mandatory dividend as in the cases of HOIC firms the announcement is good news since the abnormal returns of the stocks were positive, although it takes some time for the effect to appear, while in the case of NHOIC there is no significant abnormal return post the announcement at a 1% level.

Table 10 presents the results regarding absence of high individual ownership structure (NHOIC), as this was previously defined, for the period 2002-2007 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Mean-Adjusted-Return Approach.

In the category Above Mandatory we notice significant abnormal returns positive at day -6*, positive at day -1* and then negative at day +1**. The cumulative abnormal returns are positive for days [-20,0] **, positive for days [-10,0] and then turns into negative for days [0,2]**, negative for days [0,5]** and negative for days [0,10]* .

As we can see there are strong significant negative abnormal returns statistically significant at day +1** confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative.

Regarding the category Mandatory we notice significant abnormal returns positive at day -10*, positive at day -2* and negative at day +7**. There are no significant cumulative abnormal returns at any level.

In the category Below Mandatory there are significant abnormal returns negative at day +1** , positive at day +8** a positive significant cumulative abnormal return at [0,20]*.

Combining the results from the two models we conclude that there are strong negative abnormal returns in days +1 and +8 in the case of Above Mandatory dividends, no significant abnormal returns in the case of Mandatory dividends while in the case of Below Mandatory dividends there is a negative reaction noted at day +1 and a positive at day +8 but at a level of 1% only according to the Mean-Adjusted-Return Approach which we consider not as strong as the Market Model.

Table 11 presents the results regarding high individual ownership concentration (HOIC) for the period 2008-2012 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Market Model.

Regarding the category Above Mandatory there are significant abnormal returns positive at day 0*, negative at day +2** and positive at day +7*. The cumulative abnormal returns are positive for days $[-20,0]^*$ and positive for days $[-10,0]$.

As we can see there are significant negative abnormal returns statistically significant at the 1% at day +2** confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative.

Regarding the category Mandatory there are no significant abnormal returns and no significant cumulative abnormal returns at any level.

In the case of mandatory dividend it seems that the latter is clearly considered as expected, thus no abnormal returns are showing up.

In the category Below Mandatory there are significant abnormal returns positive at day -6*.

Table 12 presents the results regarding high individual ownership concentration (HOIC) for the period 2008-2012 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Mean-Adjusted Return Approach.

Regarding the category Above Mandatory there are significant abnormal returns negative at day +8*. There is a significant cumulative abnormal return negative at $[0,5]^*$.

Regarding the category Mandatory there are no significant abnormal returns and no significant cumulative abnormal returns at any level.

Combining the results from the two models we conclude that while in the case of Above Mandatory there is still a strong negative abnormal return at days +2**, there is no significant at a 1% level abnormal return in the case of Mandatory or Below mandatory dividend.

Table 13 presents the results regarding absence of high individual ownership concentration (NHOIC), as this was previously defined, for the period 2008-2012 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Market Model.

Regarding the category Above Mandatory we notice significant abnormal returns negative at day +1** . The cumulative abnormal returns are positive for days [-20,0]**, positive for days [-10,0]** and then turns into negative for days [0,5]* and negative for days [0,20]* .

As we can see there are strong significant negative abnormal returns statistically significant at day +1** confirming the information content of the announcement and identifying it as bad news since the abnormal returns of the stocks were negative.

Regarding the category Mandatory there are no significant abnormal and no significant cumulative abnormal returns at any level.

In the category Below Mandatory there are no significant abnormal and no significant cumulative abnormal returns at any level.

Table 14 presents the results regarding absence of high individual ownership structure (NHOIC), as this was previously defined, for the period 2008-2012 along with their t-statistics for both average cross sectional abnormal returns and cumulative abnormal returns using the Mean-Adjusted-Return Approach.

In the category Above Mandatory we notice significant abnormal returns negative at day +1*, negative at day +4** and then negative at day +10**. The cumulative

abnormal returns are positive for days $[-20,0]$ ** and then turns into negative for days $[0,5]^*$, negative for days $[0,10]^*$ and negative for days $[0,20]^*$.

Regarding the category Mandatory we notice significant abnormal returns negative at day -4^* . There are no significant cumulative abnormal returns at any level.

In the category Below Mandatory there are no significant abnormal and no significant cumulative abnormal returns at any level.

Combining the results from the two models we conclude that there are strong negative abnormal returns in days $+1$ in the case of Above Mandatory dividends, and no significant abnormal returns in the case of Mandatory or Below Mandatory dividends.

5. Conclusions

This thesis explored the effect of dividend announcements on the returns of stocks in the case of Greek firms of Athens Stock Exchange in the context of an event study.

The impact of dividend announcements on stock prices has been studied by numerous researchers in the last decades but still remains a subject of intense debate. The empirical results of various studies often lead to controversy results supporting opposite theories and effects of the dividend announcement on stock prices.

The results for the period 2002-2007 suggest that an **above mandatory** dividend announcement has a **negative effect** on the returns of stocks on the first trading day the information is available statistically significant at the 1% by both methods used.

A **mandatory dividend** announcement has **no effect** on the returns of stocks. A **below mandatory** dividend announcement has **no effect** on the returns of stocks. There is a positive effect on day +7 and +8 after the event day, statistically significant at 1% by both methods, which could indicate a somewhat delayed market reaction to the stock dividend announcement. Through the Greek press and ASE publications there was no obvious particular event discovered 7-8 days after the announcement.

The results for the period 2008-2012 suggest that an **above mandatory** dividend announcement has a **negative effect** on the returns of stocks on the first trading day the information is available, statistically significant at the 1% with the market model method and also a negative effect on the second day statistically significant at the 5% by both methods used. A **mandatory dividend** announcement has **no effect** on the returns of stocks. A **below mandatory** dividend announcement below mandatory has **no effect** on the returns of stocks. There was no positive effect noted on a longer period after the event as in the previous case of 2002-2007.

During both periods an **above mandatory** dividend announcement is considered **bad news**. This effect can be explained by the studies linking firms announcing increased dividends with the **lack of investment opportunities**. A mandatory dividend

announcement has no information content and also a below mandatory announcement has no information content.

On the assumption of accepting the positive effect noted 7-8 days after the event as a somewhat delayed market reaction, for the period 2002-2007, then this positive effect can be explained by the opposite side of the previous used argument, linking the **below mandatory** dividend announcement with the belief of investors for the **existence of investment opportunities** for the firm in this case. The absence of such a delayed positive reaction in the period 2008-2012 can be explained as reluctance on the part of investors to acknowledge signals for the existence of investment opportunities **during the crisis period where investment opportunities are limited**.

A further aspect of firms' announcements was studied regarding firms with High Individual Ownership Concentration (HOIC). For the period 2002-2007 the results at a 1% significant level were differentiated only in the case of below mandatory dividend were for HOIC firms there was a positive reaction noted on the +7 day, but not noted for the rest of the firms. For the period 2008-2012 the results were differentiated only in the case of the above mandatory dividend announcement were for HOIC firms there was as negative reaction noted on the second trading day the information was available instead of the first trading day for the rest of the firms.

References

- Asimakopoulou, P., Lambrinouidakis, C., Tsangarakis, N., Tsiritakis, M. 2007, "Signaling with mandatory dividends: the case of the Greek Stock Market", Working Paper.
- Bhattacharya, S. (1979), 'Imperfect information, Dividend Policy, and "The Bird in the Hand" Fallacy', *The Bell Journal of Economics*, Vol. 10, pp. 259-270.
- Brav, A., J. R. Graham, H. R. Campell and R. Michaely (2005), "Payout policy in the 21st century", *Journal of Financial Economics*, 77: 483-527.
- Dasilas, A., Leventis S. 'Stock market reaction to dividend announcements: Evidence from the Greek stock market', Working Paper.
- DeAngelo, H., L. DeAngelo (2006), "The irrelevance of MM dividend irrelevance theorem, *Journal of Financial Economics*, 79: 293-315.
- Eckbo, B. Espen, *Handbook of Corporate Finance, Volume 1_ Empirical Corporate Finance (Handbooks in Finance)-North Holland (2007), Chapter I, Econometrics of event studies* Kothari, S.P. and Jerold, B. Warner
- Fama, F., Fisher, L., Jensen, M., Roll, R., "The adjustment of stock price to new information", *International Economic Review*, Vol. 10, No.1 (Feb 1969), pp. 1-21
- Grullon, G., R. Michaely, and B. Swaminathan, 2002, "Are dividend changes a sign of firm maturity?", *Journal of Business* 75 (July): 387-424
- Harada, K. and P. Nguyen, 2005, Dividend change context and signaling efficiency in Japan, *Pacific Basin Finance Journal* 13, 504-522.
- Hawawini, A., Swary, I. *Handbook, "Mergers and Acquisitions in the U.S Banking Industry"- North Holland (1990).*
- Jensen, M. (1986). Agency costs of free cash flow, corporate finance and takeovers. *American Economic Review*, 76, 323-329.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R.W (2000), 'Agency Problems and Dividend Policies around the World', *Journal of Finance*, Vol. 55, pp. 1-33.

Lonie ,A.A, Abeyratna,G Power , D.M. Sinclair, C.D. 1996, The stock market reaction to dividend announcements, *Journal of Economic Studies* 23,32-52.

Miller, M.H. Modigliani, F. (1961), 'Dividend Policy, Growth, and the Valuation of Shares', *The Journal of Business*, Vol. 34, pp. 411-433.

Miller, M., Scholes, M. (1978), 'Dividends and taxes', *Journal of Financial Economics* 6, 333-364.

Miller, M., and K. Rock (1985), "Dividend Policy under Asymmetric Information", *Journal of Finance*, 40 (4):1031-1051

Thanatawee, Y. (2012), 'Ownership Structure and Dividend Policy: Evidence from Thailand', *International Journal of Economics and Finance*: Vol. 5, pp. 121-132

Tirol, J. (2006), "The theory of corporate finance", Princeton University Press.

Travlos N., L. Trigeorgis, N. Vafeas (2001), "Shareholder wealth effects of dividend policy changes in an emerging stock market: The case of Cyprus", *Multinational Finance Journal* : 87-112.

Tables

TABLE 1

	Announcement Year													
	2002	2003	2004	2005	2006	2007	2002-2007	2008	2009	2010	2011	2012	2008-2012	2002-2012
Above Mandatory	130	118	112	95	89	78	622	58	39	36	17	9	159	781
Mandatory	37	28	32	38	24	24	183	32	23	10	6	8	79	262
Below Mandatory	46	45	53	56	56	65	321	56	31	23	9	7	126	447
No Cash Announcements	46	38	50	58	69	62	323	73	82	83	67	53	358	681
Losses	64	94	77	84	90	90	499	90	126	138	177	177	708	1207
Total	323	323	324	331	328	319	1948	309	301	290	276	254	1430	3378

	2002	2003	2004	2005	2006	2007	2002-2007	2008	2009	2010	2011	2012	2008-2012	2002-2012
Above Mandatory	40%	37%	35%	29%	27%	24%	32%	19%	13%	12%	6%	4%	11%	23%
Mandatory	11%	9%	10%	11%	7%	8%	9%	10%	8%	3%	2%	3%	6%	8%
Below Mandatory	14%	14%	16%	17%	17%	20%	16%	18%	10%	8%	3%	3%	9%	13%
No Cash Announcements	14%	12%	15%	18%	21%	19%	17%	24%	27%	29%	24%	21%	25%	20%
Losses	20%	29%	24%	25%	27%	28%	26%	29%	42%	48%	64%	70%	50%	36%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

	2002	2003	2004	2005	2006	2007	2002-2007	2008	2009	2010	2011	2012	2008-2012	2002-2012
Cash Announcements	213	191	197	189	169	167	1126	146	93	69	32	24	364	1490
No Cash Announcements	46	38	50	58	69	62	323	73	82	83	67	53	358	681
Losses	64	94	77	84	90	90	499	90	126	138	177	177	708	1207
Total	323	323	324	331	328	319	1948	309	301	290	276	254	1430	3378

	2002	2003	2004	2005	2006	2007	2002-2007	2008	2009	2010	2011	2012	2008-2012	2002-2012
Cash Announcements	66%	59%	61%	57%	52%	52%	58%	47%	31%	24%	12%	9%	25%	44%
No Cash Announcements	14%	12%	15%	18%	21%	19%	17%	24%	27%	29%	24%	21%	25%	20%
% of Losses	20%	29%	24%	25%	27%	28%	26%	29%	42%	48%	64%	70%	50%	36%

TABLE 2

	Announcement Year							2008	2009	2010	2011	2012	2008-2012	2002-2012
	2002	2003	2004	2005	2006	2007	2002-2007							
Above Mandatory	130	118	112	95	89	78	622	58	39	36	17	9	159	781
Mandatory	37	28	32	38	24	24	183	32	23	10	6	8	79	262
Below Mandatory	46	45	53	56	56	65	321	56	31	23	9	7	126	447
No Cash Announcements	46	38	50	58	69	62	323	73	82	83	67	53	358	681
Total	259	229	247	247	238	229	1449	219	175	152	99	77	722	2171

	Announcement Year							2008	2009	2010	2011	2012	2008-2012	2002-2012
	2002	2003	2004	2005	2006	2007	2002-2007							
Above Mandatory	50%	52%	45%	38%	37%	34%	43%	26%	22%	24%	17%	12%	22%	36%
Mandatory	14%	12%	13%	15%	10%	10%	13%	15%	13%	7%	6%	10%	11%	12%
Below Mandatory	18%	20%	21%	23%	24%	28%	22%	26%	18%	15%	9%	9%	17%	21%
No Cash Announcements	18%	17%	20%	23%	29%	27%	22%	33%	47%	55%	68%	69%	50%	31%
Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Cash Announcements	213	191	197	189	169	167	1126	146	93	69	32	24	364	1490
No Cash Announcements	46	38	50	58	69	62	323	73	82	83	67	53	358	681
Total	259	229	247	247	238	229	1449	219	175	152	99	77	722	2171

TABLE 3

2002-2007 Market Model

Cross-Sectional Abnormal Returns				Cumulative Abnormal Returns			
Day	Abnormal Returns	t-Statistic		Time Period	CARs	t-Statistic	
Above Mandatory	-8	0,326%	2,587 *	[-20,0]	1,867%	3,322 **	
	-5	0,328%	2,113 *	[-10,0]	1,284%	3,179 **	
	+1	-0,972%	-8,717 **	[0,2]	-1,434%	-7,092 **	
	+2	-0,366%	-2,710 **	[0,5]	-1,764%	-6,331 **	
				[0,10]	-1,514%	-4,482 **	
				[0,20]	-1,624%	-2,979 **	
Number of Announcements: 365							
Mandatory	-10	0,549%	2,152 *				
	+7	-0,554%	-2,546 *				
Number of Announcements: 112							
Below Mandatory	-7	0,393%	2,148 *				
	+7	0,563%	3,044 **				
	+8	0,558%	2,608 **				
Number of Announcements: 196							

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 4

2002-2007 Mean-Adjusted-Return Approach

	Cross-Sectional Abnormal Returns				Cumulative Abnormal Returns		
	Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic	
Above Mandatory	-6	0,287%	2,584 *	[-20,0]	2,887%	4,741 **	
	-1	0,226%	2,068 *	[-10,0]	1,257%	3,113 **	
	+1	-1,055%	-9,134 **	[0,2]	-1,466%	-7,167 **	
	+2	-0,319%	-2,354 *	[0,5]	-1,430%	-5,287 **	
				[0,10]	-0,827%	-2,996 **	
	Number of Announcements: 365						
Mandatory	-10	0,600%	2,426 *				
	-5	0,525%	2,074 *				
	+7	-0,667%	-2,954 **				
	Number of Announcements: 112						
Below Mandatory	+1	-0,396%	-2,645 **	[0,20]	2,281%	2,461 *	
	+7	0,643%	3,516 **				
	+8	0,638%	3,129 **	[5,10]	1,735%	3,649 **	
	Number of Announcements: 196						
** Statistically significant at the 1% level							
* Statistically significant at the 5% level							

TABLE 5

2008-2012 Market Model							
Cross-Sectional Abnormal Returns				Cumulative Abnormal Returns			
Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic		
	0	0,519%	2,060 *	[-20,0]	4,136%	3,888 **	
	+1	-0,677%	-2,707 **	[-10,0]	2,718%	3,412 **	
	+2	-0,623%	-2,462 *	[0,5]	-1,465%	-2,230 *	
Above Mandatory				[0,20]	-2,512%	-2,063 *	
	Number of Announcements: 114						
	No significant Abnormal Returns						
Mandatory							
	Number of Announcements: 56						
	No significant Abnormal Returns						
Below Mandatory							
	Number of Announcements: 83						

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 6

2008-2012 Mean-Adjusted-Return Approach								
Cross-Sectional Abnormal Returns				Cummulative Abnormal Returns				
Day	Abnorma l Returns	t- Statisti c	*	Time Period	CARs	t- Statistic	**	
Above Mandator y	+2	-0,604%	-2,365	*	[-20,0]	3,049%	2,612	**
	+4	-0,576%	-2,149	*	[0,2]	-0,960%	-2,246	*
					[0,5]	-1,593%	-2,716	**
					[0,10]	-1,546%	-2,064	*
Number of Announcements: 114								
Mandator y	-4	-0,868%	-0,279	*				
Number of Announcements: 56								
Below Mandator y	No significant Abnormal Returns							
	Number of Announcements: 83							
** Statistically significant at the 1% level								
* Statistically significant at the 5% level								

TABLE 7

2002-2007 HOIC Market Model

Cross-Sectional Abnormal Returns				Cumulative Abnormal Returns			
Day	Abnormal Returns	t-Statistic		Time Period	CARs	t-Statistic	
Above Mandatory	+1	-0,999%	-5,332 **	[0,2]	-1,269%	-3,984 **	
				[0,5]	-1,761%	-3,837 **	
				[0,10]	-1,474%	-2,739 **	
				[0,20]	-2,000%	-2,345 *	
Number of Announcements: 135							
No significant Abnormal Returns							
Mandatory							
	Number of Announcements: 33						
Below Mandatory	+3	-0,860%	-2,267 *	[5,10]	1,348%	2,268 *	
	+7	1,226%	3,882 **				
Number of Announcements: 70							

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 8

2002-2007 HOIC Mean-Adjusted-Return Approach

	Cross-Sectional Abnormal Returns			Cumulative Abnormal Returns		
	Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic
Above Mandatory	+1	-1,089%	-5,712 **	[-20,0]	2,458%	2,582 *
				[0,2]	-1,329%	-4,257 **
				[0,5]	-1,177%	-2,954 **
	Number of Announcements: 135					
Mandatory	+1	-1,237%	-2,426 *			
	Number of Announcements: 33					
Below Mandatory	+3	-0,803%	-2,089 *	[5,10]	3,220%	3,804 **
	+7	1,532%	4,754 **			
	Number of Announcements: 70					

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 9

2002-2007 NOT HOIC Market Model

	Cross-Sectional Abnormal Returns			Cumulative Abnormal Returns		
	Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic
Above Mandatory	-6	0,292%	2,068 *	[-20,0]	2,274%	3,025 **
	-5	0,446%	2,047 *	[-10,0]	1,517%	-2,789 **
	+1	-0,956%	-6,897 **	[0,2]	-1,531%	-5,881 **
	+2	-0,408%	-2,118 *	[0,5]	-1,766%	-5,035 **
				[0,10]	-1,537%	-3,547 **
Number of Announcements: 230						
Mandatory	-2	0,701%	2,146 *			
	+7	-0,641%	-2,449 *			
Number of Announcements: 79						
Below Mandatory	-7	0,346%	2,041 *			
	+1	-0,397%	-2,322 *			
	+8	0,548%	2,057 *			
Number of Announcements: 126						

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 10

2002-2007 NOT HOIC Mean-Adjusted-Return Approach

	Cross-Sectional Abnormal Returns				Cumulative Abnormal Returns			
	Day	Abnormal Returns	t-Statistic		Time Period	CARs	t-Statistic	
Above Mandatory	-6	0,336%	2,512	*	[-20,0]	3,138%	3,994	**
	-1	0,362%	2,561	*	[-10,0]	1,594%	2,875	**
	+1	-1,035%	-7,130	**	[0,2]	-1,546%	-5,767	**
					[0,5]	-1,579%	-4,397	**
					[0,10]	-1,067%	-2,558	*
Number of Announcements: 230								
Mandatory	-10	0,514%	1,994	*				
	-2	0,726%	2,102	*				
	+7	-0,772%	-2,889	**				
Number of Announcements: 79								
Below Mandatory	+1	-0,583%	-3,150	**	[0,20]	2,794%	2,454	*
	+8	0,619%	2,606	**				
Number of Announcements: 126								

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 11

2008-2012 HOIC Market Model

Cross-Sectional Abnormal Returns				Cummulative Abnormal Returns		
Day	Abnormal Returns	t-Statistic		Time Period	CARs	t-Statistic
0	1,108%	2,187 *		[-20,0]	3,605%	2,195 *
+2	-0,968%	-2,628 **		[-10,0]	2,689%	2,032 *
+7	1,020%	2,162 *				
Above Mandatory						
Number of Announcements: 44						
No significant Abnormal Returns						
Mandatory						
Number of Announcements: 15						
-6	1,385%	2,366 *				
Below Mandatory						
Number of Announcements: 29						

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 12

2008-2012 HOIC Mean-Adjusted-Return Approach

	Cross-Sectional Abnormal Returns			Cummulative Abnormal Returns		
	Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic
	+2	-1,229%	-3,259 **			
	+7	1,101%	2,275 *			
Above Mandatory						
	Number of Announcements: 44					
	+8	-1,662%	-1,976 *	[0,5]	-4,405%	-2,391 *
Mandatory						
	Number of Announcements: 15					
Below Mandatory						
	Number of Announcements: 29					

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 13

2008-2012 NOT HOIC Market Model

	Cross-Sectional Abnormal Returns			Cumulative Abnormal Returns		
	Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic
Above Mandatory	+1	-0,959%	-2,851 **	[-20,0]	4,469%	3,221 **
				[-10,0]	2,736%	2,743 **
				[0,5]	-2,121%	-2,205 *
				[0,20]	-3,376%	-2,045 *
	Number of Announcements: 70					
Mandatory	No significant Abnormal Returns					
	Number of Announcements: 41					
Below Mandatory						
	Number of Announcements: 54					

** Statistically significant at the 1% level

* Statistically significant at the 5% level

TABLE 14

2008-2012 NOT HOIC Mean-Adjusted-Return Approach

	Cross-Sectional Abnormal Returns			Cumulative Abnormal Returns		
	Day	Abnormal Returns	t-Statistic	Time Period	CARs	t-Statistic
Above Mandatory	+1	-0,825%	-2,495 *	[-20,0]	3,751%	2,512 *
	+4	-0,926%	-2,791 **	[0,5]	-2,225%	-2,534 *
	+10	-0,866%	-2,817 **	[0,10]	-2,489%	-2,438 *
				[0,20]	-3,429%	-2,493 *
	Number of Announcements: 70					
Mandatory	-4	-0,884%	-2,006 *			
		Number of Announcements: 41				
Below Mandatory						
		Number of Announcements: 54				

** Statistically significant at the 1% level

* Statistically significant at the 5% level

Charts

Chart1

Evolution of Cash Announcements

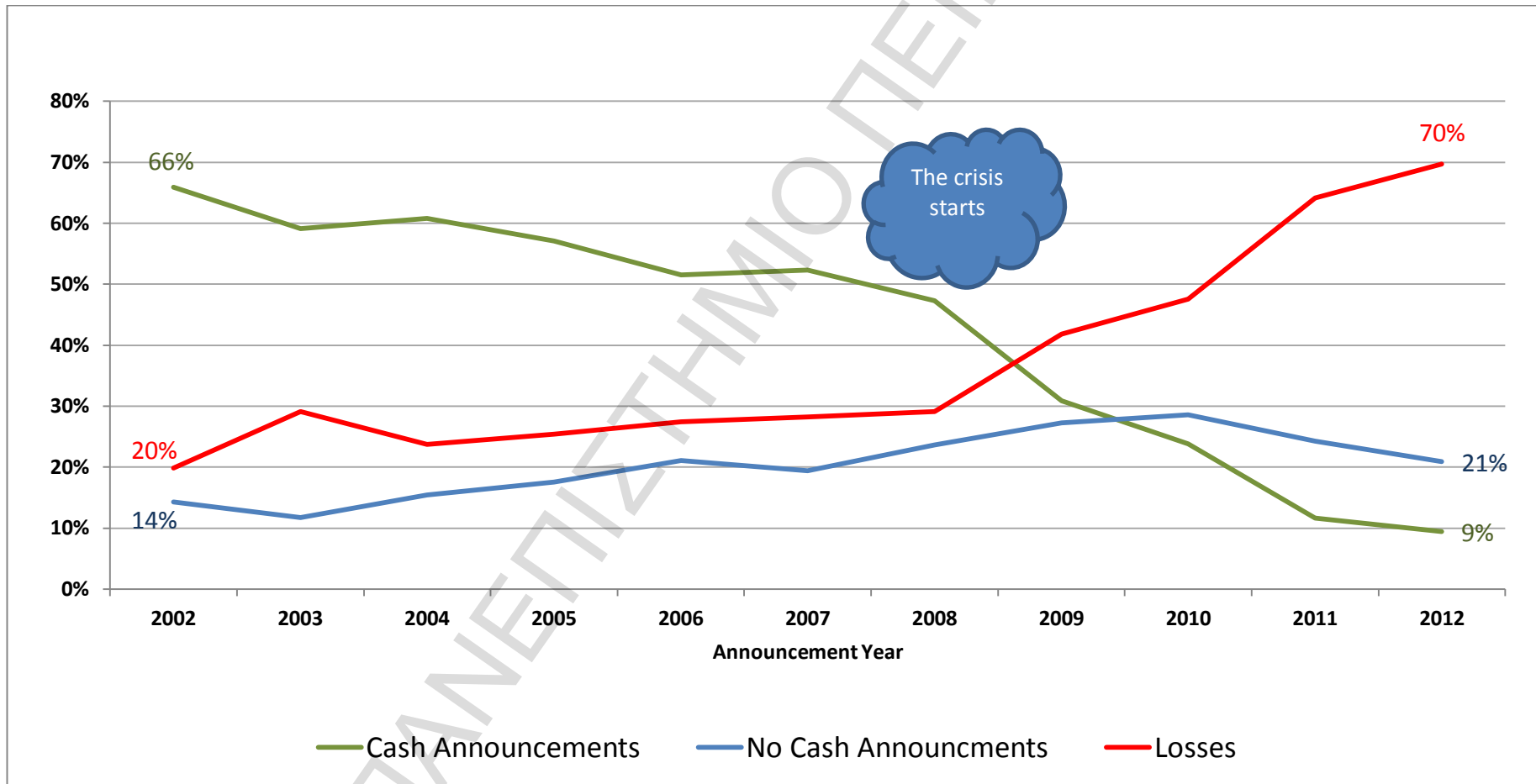


Chart2**Evolution of Announcements 'Category**