THE PRICE AND VOLUME EFFECTS OF EQUITY FINANCED STRATEGIC DECISIONS: EVIDENCE FROM THE ATHENS EXCHANGE (ATHEX)

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ABSTRACT

This paper examines the stock market reaction to seasoned equity offering announcements. In an attempt to better understand the behavioural response of investors to such equity issues, the study draws together two separate strands of literature and is the first to examine jointly the market value reaction and trading volume effect of equity offering announcements. Market value reactions have tended to be negative and significant in the US, while the effect is less clear cut in Europe with both negative and positive reactions present. In an attempt to provide a clearer picture, and drawing on prior theory, we account and control for the distinction between equity offers intended solely for capital re-structuring and those intended to finance strategic investment decisions. Using a sample of Greek rights offer announcements during the period 1998 to 2006, we find a significant negative share price reaction to announcements of equity financed strategic investment decisions and a -30% dilution, consistent with US results. The trading volume effect is also negative, with a significantly low abnormal volume following the announcement date. A cross-sectional analysis of abnormal price reactions indicates that past stock price performance and money market effects are more influential than firm and offering-related characteristics. We also reveal that abnormal volume is driven by firm, market and information content effects. Overall, the results are generally consistent with the *asymmetric information* and the *negative signaling* hypotheses.

Keywords: *Rights Offers; Strategic Investment Decisions; Market Reaction; Value Effect; Volume Effect,*

JEL Classification: *G*14*, G*30*, G*12

I. INTRODUCTION

Strategic investment decisions (SIDs) are managerial decisions about capital expenditures that are usually of large size, incorporate sources of risk, engage large corporate resources and cut across several functions within an organisation (Butler *et al.*, 1993, Mintzberg *et al.*, 1976, Hickson *et al.*, 1986). The importance of SIDs, as one of the major policy decisions in a corporation (McConnell and Muscarella, 1985) and the *value maximization hypothesis* in the neo-classical approach to corporate finance (Burton *et al.*, 1999), motivated a series of event studies, which examined the effect of such decisions on the market value of the firm (Woolridge and Snow, 1990, Jones *et al.*, 2004). In these studies, SIDs are usually financed using capital from retained earnings or through the issue of new debt. However, in many cases, especially when the necessary funds to undertake a sizeable investment are not sufficient within the organisation, cash is raised from the market through a Seasoned Equity Offering (SEO). However, SEOs do not always aim to raise cash for investment purposes; sometimes cash is requested to refinance debt, increase working capital and generally transform capital structure. Equity issues present a great deal of academic and practical interest as they affect firm leverage and capital structure (Masulis and Korwar, 1986). The valuation effect of SEOs has been studied by a number of researchers (Asquith and Mullins, 1986, Mikkelson and Partch, 1986).

The objective of this paper is to examine the market reaction to SEOs during the period around the announcement. The research contributes to the existing literature on the market reaction to SEOs in four distinct ways: 1) we investigate both market price and trading volume reactions, 2) we isolate the effect of institutional features by focusing on SEOs based on rights issues, 3) we investigate the causes of abnormal returns and volumes around the announcement date and 4) we investigate the impact of the intended use of the funds raised via SEO. We briefly motivate each of these contributions in turn.

While the share price reaction to a piece of information represents aggregate market expectations, the level of trading activity around the announcement period has been suggested to reflect the heterogeneous expectations of individual investors (Bamber, 1986), in other words the lack of consensus amongst the market participants (Yadav, 1992). In the equity issues context, the trading activity around the announcement date can act as a proxy for the extent to which individual investors agree with the conveyed signal. A relative

increase in volume after the announcement of a SEO means that the information was followed by contrasting interpretations from the shareholders, implying possible informational asymmetries between the well informed and the uninformed. On the other hand, a relatively low trading activity, suggests that any signal communicated by the management's decision to issue new stock is quite clear; the majority of the investors will be reluctant to trade at the existing share price levels, since their expectations are in agreement with the market. Therefore, examining the trading activity along with the value effect of public announcements is expected to provide a better insight into the information dissemination, interpretation and processing period (Morse, 1981). However, none of the relevant studies has so far attempted to measure the trading volume activity surrounding the announcement of equity issues along with the market reaction. This novelty is the *first contribution* of this paper and exhibits new directions towards deciphering the behavioral patterns of the investors.

The vast majority of the relevant studies examine US equity issues, where the prevailing flotation method is the firm-commitment underwritten public offering (Eckbo and Masulis, 1992) and the proceeds are guaranteed, since the underwriter undertakes the risks of the issue (Smith, 1977). In Europe, however, for the vast majority of the capital markets the established flotation method is the (insured or uninsured) rights issue offering (Jeanneret, 2005), where the company issues one tradable right for every existing share and enables the shareholders to buy new shares *pro-rata* (Slovin *et al.*, 2000). The shareholders also have the option of first refusal (pre-emption rights) to the new issue, by simply selling the rights. The principle of this flotation method is that, if all the issued rights are exercised, the existing shareholders are protected from the dilution of their control in a company (Jeanneret, 2005), while the new ones are prevented from potential wealth transfers (Tsangarakis, 1996) caused by *information asymmetries* (Myers and Majluf, 1984). However, while all the US studies agree that the value effects of SEOs are negative and significant, the relatively few empirical studies of European rights issues have come up with quite contradicting and puzzling results; evidence from Norway (Bohren *et al.*, 1997), Germany (Gebhardt *et al.*, 2001) and Ireland (Corby and Stohs, 1998) document positive (or non-negative) returns, while similar studies in the UK (Slovin *et al.*, 2000), France (Gajewski and Ginglinger, 2002) and Turkey (Adaoglu, 2006) reveal mostly negative market responses. The *second contribution* of the current research is that by studying the Athens Exchange, a European capital market where rights issues represent the exclusive

flotation method, it provides more empirical evidence on the equity issue - market reaction puzzle and improves our understanding of how the choice of flotation method can influence the market reaction.

The results of prior studies attempting to explain the abnormal security price reactions to SEOs have been, in most cases, contradictory. This is likely due to the disparate measures employed and hypotheses investigated. The use a broader range of measures, and their classification under just a few group-level effects, is expected to facilitate both the presentation and the explanation of the actual determinants of share price and trading activity abnormalities. Such a classification, if based on grounded theory, would in fact present a clear picture of the reality surrounding the studied events and would reveal which group of effects better explains the observed phenomena, namely the abnormal returns and volume reactions. The *third contribution* of this study is that it presents the results from a series of estimated models for abnormal returns and volumes, where the effects have been classified under four main groups: Firm-Level, SEO-Level, Market-Level and Macroeconomic- Level effects; the findings are presented separately for each group before being combined to estimate integrative models for price and volume reactions.

Although the value effect of equity issues has been investigated in a number of cases, only a few of the relevant studies (Masulis and Korwar, 1986, Slovin *et al.*, 2000, Corby and Stohs, 1998) distinguish between the offerings made for capital investments and the ones intended to reduce debt. Under the *free cash flow hypothesis* (Jensen, 1986), capital expenditures imply expected increases in the cash flow, conveying a positive signal for the shareholders. On the other hand, leverage decreases, especially through the sale of common stock, are generally seen as a very negative signal of managerial pessimism and increase the cash flow under the discretionary control of managers, hence the related *agency costs* of free cash flow (Jensen, 1986, Smith, 1986). Studying the value effect of SEOs without specifying the intended use of the proceeds may lead to erroneous conclusions and generalisations, especially when the theory predicts such contrasting reactions by the stock market. The current study's *fourth contribution* is that it accounts and controls for the above distinction.

Section II describes the background theory and the findings of the principal empirical studies in the field, while Section III presents the hypotheses. Section IV provides a description of the data and the methodology. The empirical results are presented in Section V and followed by a discussion of the findings and implications of the research in Section VI.

II. BACKGROUND

Theoretical Background

The Market Reaction

According to traditional corporate finance, a firm's market value is the discounted cash flow of the expected returns of the existing assets (Miller and Modigliani, 1961). Hence, when new investments take place, as in strategic investment decisions, the value of the firm is reassessed by the market participants. Three possible effects may take place after the announcement of such a decision.

The first possibility is that *the market value will increase*. The investors will study the SEO prospectus and will be convinced that the risk adjusted Net Present Value (NPV) of the suggested project/s is positive (Burton *et al.*, 1999). Under the v*alue maximization hypothesis* (Fama and Jensen, 1985, Woolridge and Snow, 1990) the management acts for the interest of the existing shareholders. When the issue is financed through insured (or uninsured) pre-emptive rights, the conveyed signal is that the share price is undervalued (or at least the same as the intrinsic value) and it is in the best interest of the existing shareholders to exercise the rights and buy the new shares at the discounted price, thus maintaining their control and wealth. Existing and new investors increase the demand for shares and after some trading activity in the securities and the rights market the value of the firm will increase to reflect the new level of the expected cash flows (Tobin and Brainard, 1977).

The second possibility is that *the market value will remain unchanged*. The investors will react neither positively nor negatively to this information, since the undertaking of positive NPV projects by the management is always expected, under the *rational expectations hypothesis* (Woolridge and Snow, 1990). Such an announcement does not comprise any new information for the efficient market (Asquith and Mullins, 1986), and any potentially positive NPVs have already been anticipated and incorporated in the current share price.

Finally, the third possibility is that *the market value will decrease*. In this scenario, the investors will presume one (or more) of the following:

a. Under the existence of *asymmetric information*, the managers hold superior information regarding the intrinsic value of the firm. The investors interpret the equity offering as a *negative signal*; since the management prefers to finance the SID with the issue of new stock, rather than using debt or retained earnings, the current market value of the firm must be overpriced (Myers and Majluf, 1984).
b. The change in the equity/debt ratio will lead to losses of tax benefits and changes in the risk profile of the company (Asquith and Mullins, 1986, Modigliani and Miller, 1963). In particular, when the issue proceeds are targeted to refinance debt and reduce leverage, the free *cash flow hypothesis* (Jensen, 1986) predicts a negative market reaction to the increase of managerial control of financial resources and the implied managerial pessimism.
c. Under the assumption of a downward-sloping demand curve for shares (Shleifer, 1986, Scholes, 1972), the issue of new shares will lead to a supply surplus, resulting in a (temporary or enduring) decline in the share price.
d. The equity issue transaction and brokerage costs, usually ranging from 4.03% to 6.09% of the new capital raised (Eckbo and Masulis, 1992), increase the cost of the investment; the expected NPV is actually lower than the implied.

The announcement of an equity issue will therefore decrease the wealth of the potential investors in favour of the existing ones. Selling forces will drive the share price down to a new level where the market expectations will be uniform again.

The Trading Activity

While share price changes reflect the aggregate evaluation of new information arriving in the market, trading volume has been argued to indicate the extent of consensus among investors regarding the corresponding prices (Beaver, 1968, Morse, 1980, Karpoff, 1987, Morse, 1981). More specifically, Beaver (1968) explains that the presence of trading activity is due to the fact that investors may interpret a new piece of information differently, while Morse (1980, p.1130) suggests that "…equilibrium prices are determined by aggregate demand, while trading is determined by changes in individual demand".

Individual demand for securities can be affected by factors other than heterogeneous expectations, such as the content and precision of information (Barron and Karpoff, 2004), the market microstructure (Garman, 1976), the existence of information asymmetries

(Morse, 1980) and the spot (and futures) market share prices (Karpoff, 1987). The announcement of an equity financed SID may have three possible effects on the trading activity of a share.

*The trading activity will increase***.** With the arrival of new information, the investors will revise their beliefs and change their individual demands; the greater the divergence between their own belief about the correct price and the actual price, the more they will be willing to trade. This scenario is also consistent with the hypothesis of asymmetric information, since informed traders will be willing to trade for as long as the demand of uninformed traders keeps the prices away from the "fair" price. Furthermore, this effect is in accord with a concurrent increase in the share price (Karpoff, 1987).

The trading activity will not change. In this scenario the new information has "no content" for the investors; the individual demand does not change, either because the information has been adapted in the share price, or because it really has no value. It could also be the case that the information is of so little importance that, under the transaction costs hypothesis (Barron and Karpoff, 2004), it is not worth trading more than would usually be the case, even with asymmetric information. This effect will be consistent with an unaffected market value.

The trading activity will decrease. In this final possible outcome the trading volume during the announcement period will be lower than would usually be the case, resulting in an abnormally low trading activity. The arrival of new information will lower the expectations and individual demands of the majority of the investors. Very few transactions will be enough to bring the share prices to a new equilibrium, at which most of the investors will be reluctant to trade. It is also possible that this event may follow a relatively more "active" trading period, during which informed investors with superior information sold their holdings in higher price levels. Such a course of action will be compatible with a synchronous decline in share prices; declining share prices are accompanied by low trading activity, due to the absence of short-sales and equity derivatives (Morse, 1980, Karpoff, 1987).

Empirical Studies

The Market Reaction

The effect of SIDs on corporate value has been examined in several studies (McConnell and Muscarella, 1985, Woolridge and Snow, 1990, Burton, 2005, Burton *et al.*, 1999). More specifically, McConnell and Muscarella (1985), used announcements from the Wall Street Journal (1975-1981) and price data from the ASE and AMEX, while Woolridge and Snow (1990) used very similar sources but a different time period (1972-1987). While the former investigate the relationship between the annual increase/decrease in capital expenditures of industrial and public utilities companies, the latter aim to reveal possible inferences to be drawn between the topic (type of decision) and the securities returns. In their investigation of the UK environment, Burton *et al.* (1999) studied the market reaction to 499 capital expenditure announcements, by disaggregating the announced investments into three classes (instant cash generating, non instant cash generating and joint ventures). More recent studies also examined the value effect of specific SID topics (Jones *et al.*, 2004, Vafeas and Shenoy, 2005, Burton, 2005). The general finding of all the above studies is that SIDs which are perceived to create value, by expanding the opportunities and boundaries of the firm, are followed by a positive market reaction. It is, however, noteworthy that in all these cases the announced capital expenditures were basically "statements of intended strategies" (Mintzberg and Waters, 1985), which may (or may not) finally be realized (Woolridge and Snow, 1990).

Since SIDs usually require a substantial capital investment, it is very common for external funds to be requested by the managers, through a SEO. The studies of Asquith and Mullins (1986) and Masulis and Korwar (1986) are probably the most important and complete empirical investigations of the market reaction to the announcement of SEOs in the US. Asquith and Mullins (1986) investigated 531 registered common stock offerings in the ASE and NYSE during the period 1963 to 1981 with announcement data from the *Moody's Industrial Manual* and the *WSJ*,. Their primary focus was the "*offering dilution"*, in other words the market value change as a percentage of the raised capital. The findings indicated significant negative excess returns and an average offering dilution of -31%. The study by Masulis and Korwar (1986) was similar to Asquith and Mullins in terms of time period, but investigated a larger sample of SEOs and focused on the relationship between the number of issued shares, the change in leverage, the risk profile, managerial signals and the market

reaction. The results (-3.25% two day abnormal returns for industrial offers) were consistent with Asquith and Mullins (1986), while the level of excess returns was negatively related to past stock price performance and positively related to the decrease of managerial shareholdings, supporting Myers and Majluf (1984).

Similar studies with conflicting results took place in the US and Europe. Mikkelson and Partch (1986) tested several characteristics of US equity offerings, to reveal that capital expenditure issues have a more favourable value effect than debt refinancing issues. However, Jeanneret (2005) studied the *long term* effect of French *'New Investment'* and *'Capital Structure'* SEOs separately to find that the former are followed by significant underperformance, while the latter experience no abnormal performance relative to the benchmark. Though the study did not specifically consider market reaction to equity offer announcements, it does provide supporting evidence that the purpose of the equity offer plays a role in the subsequent market reaction.

In the relatively small literature on European SEOs, where rights offerings are predominant, the relevant studies revealed very contradictory results. Rights offers in the Oslo Stock Exchange (Bohren *et al.*, 1997) from 1980 to 1993 were found to have a generally positive effect (from *+0.47%* for the whole sample to *+1.55%* for uninsured rights), similarly the issues of 129 German non-financial firms exhibited positive returns *(+0.64%)* during the period 1981-1990 (Gebhardt *et al.*, 2001). Positive two day share price effects *(+3.79%)* were also documented in Tsangarakis' (1996) sample of 59 rights issues in the Athens Exchange during the period 1981-1990, while Corby and Stohs (1998), in their investigation of 95 Irish rights equity offers, document no abnormal returns around the issue announcement dates. On the other hand, Slovin *et al*. (2000) report a significant negative *(-3.09%)* two day value effect from rights issues in the London Stock Exchange over the period 1986 to 1994. Evidence from 197 rights issues in the French stock market during 1986 to 1996 (Gajewski and Ginglinger, 2002) also revealed negative price effects (ranging from *-1.11%* for uninsured offers to *-0.74%* for standby offers). Finally, the most recent European study (Adaoglu, 2006) using data from 1994-1999 in the Istanbul Stock Exchange (ISE) reports a negative three-day market reaction to the 22 "unsweetened"[1] offers *(-7.3%)* and a positive one *(+2.03%)* to the 75 "sweetened" offers in the sample.

The Trading Activity

Although the share price reaction to numerous events has been the subject of many empirical studies, the trading volume reaction has only been investigated in a rather small number of cases (Strong, 1992, Yadav, 1992). In fact, none of the studies discussed above investigate what happens to the trading activity of a security when an equity offering is announced. In one of the first studies of trading volume reaction to corporate events, Beaver (1968) finds that trading volume is abnormally high during earnings announcement weeks, indicating the lack of consensus in individual demands for shares. Morse (1981) used a sample of 25 stock exchange traded securities and 25 over-the-counter (OTC) traded ones for a four year period, to conclude that significant excess trading volume and share price returns take place at T_{-1} and at T_0. In the above cases both the average return residuals and the abnormal volume were found to be positive, supporting the *information content hypothesis* and the precision of the signals conveyed by the public announcements (Bamber, 1986).

However, this approach is challenged by Barron and Karpoff (2004), who demonstrate that under the existence of transaction costs the relationship between absolute share price returns and volume will not always be monotonically positive; sometimes information may have too little content and the investors will prefer not to trade over an insignificant profit. In a survey of price changes and volume reaction, Karpoff had previously presented the "*asymmetric volume-price change relation"* (Karpoff, 1987, p.121), where the correlation between volume and positive (negative) price changes is positive (negative); this was attributed to the high costs of short selling.

An important feature of the current study is the simultaneous investigation of market value and trading volume reactions to equity offer announcements, thus drawing together two separate strands of literature.

III. HYPOTHESES

The above theoretical and empirical discussion leads one to conclude that the market value reaction is likely to be positive when the issue conveys positive information, presents a promising growth opportunity and protects the interests of the existing shareholders. On the

contrary, the value effect will be negative when the issue corresponds with the existence of informational asymmetries, communicates negative signals about the current market value of the issuer and aims to finance old debt, rather than exploit investment opportunities. Regarding the trading activity, the theory predicts that the volume will increase when an announcement contains information that is expected to create heterogeneous individual expectations and thus demand for shares, while it will decrease when the announcement contains information, which is either too clear to allow informational asymmetries or simply insufficient and of no value.

Premised on the above, we test the following set of hypotheses in the context of SID equity issues (omitting offerings intended solely for capital re-structure) drawn from the Greek capital market, where secondary issues are exclusively implemented through rights offers:

Hypothesis 1:

H_0: *the share price reaction (to pre-emptive rights issues, where a proportion of the proceeds are intended to finance capital investments) will be neutral or insignificant.*

H_1: *the share price reaction will be positive.*

H_2: *the share price reaction will be negative.*

Hypothesis 2:

H_0: *the trading activity reaction (to pre-emptive rights issues, where a proportion of the proceeds are intended to finance capital investments) will be neutral or insignificant*

H_1: *the trading activity reaction will be positive.*

H_2: *the trading activity reaction will be negative.*

IV. DATA DESCRIPTION AND METHODOLOGY

Data Description

This paper examines 149 extraordinary general assembly decision announcements concerning pre-emptive rights offers in the Athens Exchange (ATHEX) from 1998 to 2006. The principal source for the announcements was the official ATHEX website (www.athex.gr), where all the corporate announcements and the statements of the Board of Directors are posted as soon as they are published, under the *Securities and Exchanges Commission* directives. The general assembly date (rather than the invitation date used in some prior studies) is used as the *event date* (T_0) for several reasons: The invitation announcement is always a brief statement, which only contains the date and the venue of the meeting and no details about the offering, the budget or the use of the proceeds. Moreover, sometimes the necessary quorum (two thirds of the body of voting shareholders) may not be gathered and the meeting may have to be rescheduled. Finally, the assembly may not ultimately provide authorization for a SEO, if the majority of the shareholders disagree. For these reasons, therefore, using the invitation date as the event date (T_0) for our study, would not be the most appropriate; market reactions to the invitation announcement may be totally irrelevant to the purpose or the final decision of the assembly. On the other hand, during the general meeting most of the necessary information is presented in detail to the shareholders and the press before the vote, hence using the general assembly authorization date as the event date (T_0), increases the probability that any possible market reaction will be due to the information received and the outcome of the decision. The general meeting day has been used as T_0 in several other related studies (Gajewski and Ginglinger, 2002, Cooney *et al.*, 2003) where similar considerations had to be taken into account.

Daily share price quotes (adjusted for dividends, splits etc.) and traded volume were retrieved from DataStream for the period January 1998 – June 2006. Moreover, daily quotes for the ATHEX General Index were gathered from the same database for the same time period. Information about the total number of shares outstanding for each traded company (during the period surrounding the announcement) was collected from the *ATHEX Monthly Bulletins* (Jan 1998- June 2006).

For an announcement to be included in the database the following conditions had to be fulfilled:

a. The announcement should briefly describe the official decision of the general assembly; of course the announcement should clearly state that the SEO had been approved by the majority of the shareholders.
b. The SEO should include at least one capital investment project. Offerings exclusively for debt financing/refinancing/capital structure were excluded.[2]
c. The SID should be financed through the issue of new common equity only.
d. Price and volume data for each security had to be available for up to 110 days before T_0 and up to 10 days after T_0.

The above conditions guarantee that each of the selected cases represents a typical general assembly announcement about investment decisions that the directors committed to implement, once provided with the necessary financial resources. This is a different case than McConnell and Muscarela's and Woolridge and Snow's "intended" expenditures. In the case of general assembly authorized capital expenditures, the directors cannot deviate from the originally allocated budget/ resources by more than 20% without approval from a new general assembly. This provides extra assurance to the investors and obliges the directors to carefully consider their strategy beforehand and make sure that the SID can be implemented within the specified resources. Once authorised, equity financed SIDs are very unlikely to be abandoned or downsized, except in rare cases.

The final sample is drawn from an eight-year period (Figure 1) and includes announcements of companies from various industries. We chose the selected time period to include all the phases of the most recent capital market cycle (Burton *et al.*, 1999). The superior market performance during 1998-1999, supported by the general optimism in the light of the EU accession and the Olympic Games, was followed by a prolonged share price correction period (2000-2002), before entering a phase of stability and growth from 2003 to 2006. Our sample includes 61 SEOs in the first phase, 55 in the second and 33 in the third and therefore captures all the behavioural patterns of the investors as the market moves through different phases. Finally, none of the above announcements took place on the same day, thus removing the effect of liquidity considerations from market value and trading volume reactions.

[Insert Fig.1 about here]

The total amount of raised cash for the companies within the sample was €8.046 billion as presented in Table 1. Of that amount approximately €3.2 billion was raised in the first phase (1998-1999), another €4.06 during the second (2000-2002) and €0.74 during the third (2003-2006).

[Insert Table 1 about here]

Methodology

The value effect of the SEO announcements is measured using a market model of abnormal/ unsystematic returns (Sharpe, 1964), which assumes a linear relationship between the logarithmic returns of a security price and the logarithmic returns of the market index (in our case the Athens General Index). This is the most popular event time methodology (Strong, 1992) and, according to Beaver (1981), it presents several advantages versus the alternatives (mean adjusted returns):

a. It can generate a transformation of the share price return for each individual share and day within the event window.
b. It can generate residuals that are uncorrelated with the overall market return, thus capturing all the firm-specific effects
c. It results in smaller residual variances, increasing the statistical power of the significance tests

Moreover, according to Brown and Warner (1980) the methodology is sufficient for most event studies and more complicated approaches were not found to deliver better results.

To calculate the abnormal returns (AR) for each security (i) across time (t), we regress the logarithmic returns of a security (R_{it}) against the logarithmic returns of the General Index

(Rm_t) for an estimation period of 100 days *(T_{-110}, T_{-11})* prior to the announcement day T_0, such that :

$$AR_{it} = R_{it} - (\alpha_i + \beta_i Rm_t) \ , \tag{1}$$

Following Beaver (1968) and Morse(1980,1981) we construct a comparable model for the estimation of the abnormal/ excess trading volume (AV) for the period *(T_{-110}, T_{-11})*:

$$AV_{it} = V_{it} - (\gamma_i + \delta_i Vm_t) \tag{2}$$

The details of the methodology and the employed statistical significance tests are described in Appendix A.

We also calculate the 'offering dilution' ratio as defined in Asquith and Mullins (1986), in order to measure the market value losses relative to the new cash raised during the announcement period.

$$OD_{it} = \frac{MV_{it} - MV_{it-1}}{CR_i} \tag{3}$$

Where MV_{it} denotes the Market Value of company *(i)* at day *(t)* and CR_i is the cash raised from the offering.

V. EMPIRICAL RESULTS

A summary description of the dataset and the estimated parameters from the OLS regressions is presented in Table 2. The average R^2 is 28.2% and 11.2% for the return model and the volume model, respectively, both higher than the those reported in comparable studies (e.g. Morse, (1981)), while the median return and volume *betas* are very close to the unitary *(market beta)*, as expected. Moreover, there seems to be a sharp decline in average returns R_{it} and volume V_{it} during the event period (T_{-10}, T_{+10}), relative to the estimation period (T_{-110}, T_{-11}). A first observation of average returns indeed gives an indication of how the market may react; while the average daily return of all the securities in the sample is approximately *0.22%* from T_{-110} to T_{-10}, the same figure drops to *-0.04%* for the event period T_{-10} to T_{+10}. A similar decline is observed for the average volume, which drops from *0.61%* in the 110 days pre-announcement period to *0.46%* during the 21 day announcement window.

In the presentation of the results we focus initially on returns to allow us to draw comparisons with prior studies concerned with market reaction to SEOs and SIDs, and then turn our attention to how the market reacts with respect to trading volume.

[Insert Table 2 about here]

Market Reaction

The Average Abnormal Returns (AAR) and the Average Cumulative Abnormal Returns (ACAR) during the period around the announcements are presented in Table 3. The standardised estimates of the above measures (as presented in Section IV) are reported under the columns ASAR (Average Standardised Abnormal Returns) and ACSAR (for the Average Cumulative Standardised Abnormal Returns). The non-parametric binomial sign test results are presented in the last two columns. Since the sign of the standardised and non- standardised averages is (by definition) always the same, we only ran this test once for the simple averages (AAR and ASAR) and once for the cumulative averages (ACAR and ACSAR). Table 3 also presents (in Panel B), a set of results for the abnormal cumulative returns of various intervals, using several base days (as the starting point of the intervals) and time periods.

In the period preceding the announcement day T_0, the observed share price reactions (AAR) appear to be insignificant and rather random, with the slightly positive returns from T_{-5} to T_{-1} cancelling out the negative ones from T_{-9} to T_{-6}. The cumulative (ACAR) and standardised average returns (ASAR) are also insignificant at the 95% level of confidence and none of the tests can reject the null hypothesis. The AAR on day T_0 is -0.40% and rather insignificant according to the *T* and *z* tests. However, the non parametric sign test rejects the null (H_0) and the positive (H_1) alternate hypotheses, but does not reject the negative alternate (H_2), suggesting that the market reaction on the announcement day is actually slightly negative at the 99% level of confidence. The average return on day T_{+1}, (AAR_{T+1}) is also negative (-0.79%) and significant at the 99.0% level of confidence, as indicated by all the tests (T-Statistic is -3.111, z-Statistic is -2.694, while the sign test returned a statistic of 2.376). Similar are the results for the T_{+3} and T_{+4} average daily returns; for the T_{+2} average daily returns, although negative (-0.46%), we cannot reject the null. The market reaction following T_{+4} presents again a rather random behaviour, just like before the announcement, and the null cannot be rejected by any of the tests, suggesting that after T_{+4} all the announcement effects have been incorporated in the share prices (Markides and Ittner, 1994). We find some evidence, therefore, of a significant share price reaction in the four days immediately after the announcement.

[Insert Table 3 about here]

The cumulative abnormal returns (ACAR) are generally negative but insignificant from T_{-10} to T_0. One day after the announcement the (11 day) ACAR is -1.38% and significant ($p<0.05$) based on the sign test. In the period following the announcement the ACAR is generally significant, especially after the third day (T_{+3}), reaching a maximum of -3.83% at the fifth day after the announcement with a T-Statistic of -3.057 and a z-Statistic of -2.879. An illustration of the above is presented in Figure 2, where average abnormal returns (*AARt*) are plotted against time within the event period, and Figure 3, where the cumulative abnormal returns ($ACAR_t$) from T_{-10} to T_{+10} are also plotted. For comparability purposes we are also presenting the calculated two day abnormal returns. While several researchers have used the (T_{-1}, T_0) period, we are using the (T_0, T_{+1}) as the most appropriate period for our study. Unlike most corporate announcements, extraordinary general assembly decisions take place after the market has closed on day T_0; hence the first opportunity for someone to trade after the announcement is given the morning of day T_{+1}. The average two-day

abnormal return (T_0, T_{+1}), presented in Panel B, was found to be -1.20% and highly significant ($p<0.005$), while the three (T_0,T_{+2}) and six (T_0,T_{+5}) day returns were -1.66% and -3.65%, both significant at the 0.05 level of confidence. This evidence of negative market reactions to SEO announcements can be compared with the results of Asquith and Mullins (1986) and Masulis and Korwar (1986) in the US and Slovin (2000), Gajewski and Ginglinger (2002) and Adaoglu (2006) in Europe. However, our findings completely differ from other European studies of rights offers; Bohren *et al*. (1997) in Norway and Gebhardt *et al.* (2001) in Germany reported positive two day effects, while Corby and Stohs (1998) found that Irish stock offerings cause no effects in firm market value.

Surprisingly, our results are also different from Tsangarakis (1996), who found rights offers to have a positive (+3.96%) and significant (*t-statistic*: 4.117) two-day value effect in Greece during the period 1981 to 1990. However this dissimilarity can be explained once we carefully review the changes in the institutional setting of the ATHEX during the period between the two studies. The information disclosure legislation which was introduced in 1992 (Tsangarakis, 1996), requires the publication of a detailed offering prospectus, obliges the managers to disclose enough information about the suggested use of the proceeds and gives the opportunity to shareholders to carefully study it and better identify potentially overvalued or unpromising projects. Moreover, equity rights were not tradable during the period 1981-1990 and the shareholders were not given the ability to opt out from equity issues without losing the value of their rights; hence negative signals from rights sellers could not be conveyed in the market. Finally, similar to the Irish market during 1987-1994 (Corby and Stohs, 1998), the lack of a long term corporate debt market in Greece during 1981-1990 allowed the managers to violate the *pecking order* (Myers, 1984) and finance their capital expenditures directly from the capital market without issuing debt. In the period 1998-2006 examined in our study this violation does not go "unpunished" and the issue of equity is perceived as a *negative signal* by the market and is followed by a decline in share prices.

[Insert Fig. 2 about here]

[Insert Fig. 3 about here]

Asquith and Mullins (1986) report an average Offering Dilution of -31% (and a median of -28%) of the funds raised after a seasoned offering announcement is made. Table 4 presents the mean and median offering dilution for the first 10 days following the announcement (T_{+1} to T_{+10}). Although the observed average dilution for our dataset is much smaller than Asquith and Mullins' for the announcement day (-9.7%), it increases after day T_{+3} and reaches approximately -44.0% at T_{+5}, before returning to an average of -34.0% thereafter (Figure 4).

[Insert Table 4 about here]

[Insert Fig. 4 about here]

Trading Volume Reaction

The effect of the announcement of the same equity financed SIDs on the securities' trading activity is exhibited in Table 5. Similarly to the corresponding table for the abnormal returns, Table 5 presents all the Average Abnormal Volume (AAV) and Average Cumulative Abnormal Volume (ACAV) and the respective standardised measures (ASAV and ACSAV) of abnormal volume activity during the event period and the results of the appropriate test statistics.

Negative and significant abnormal volume is observed during most of the days prior to and after the event day. More specifically, a rather significant average of around -0.18% is revealed from days T_{-9} to T_{-3}, although the z-test does not always reject the null hypothesis, while at day T_{+3} the AAV_t is -0.22% with a T-statistic of -2.99 $(p<0.01)$ and a z-statistic of -2.478 $(p<0.05)$. The standardised cross sectional residual test does not reveal any significant volume reaction during the days close to the announcement (T_{-2} to T_{+2}), but some significant abnormal volume reactions take place during T_{-7}, T_{-3}, and T_{+6}.

[Insert Table 5 about here]

Almost all the non-standardised cumulative averages $(ACAV_t)$ present a negative volume reaction, yet the standardised z- test $(ACSAV_t)$ only rejects the null for the days T_{-8} to T_{+4}. The overall indication is that during the event period (T_{-10} to T_{+10}) there is a negative abnormal volume reaction to the announcement, which is basically translated to reduced

trading activity on the specific securities. The size of the effect is on average -0.15%, which means a 25.0% decrease in the actual trading activity.[3] Figures 5 and 6 present an illustration of the above findings, using the standardised measures ($ASAV_t$) and ($CASAV_t$).

[Insert Fig. 5 about here]

[Insert Fig. 6 about here]

Cross Sectional Analysis: A model for abnormal returns

To further analyse the observed abnormal returns from announcements of equity financed strategic decisions, and identify the factors which affect them, we perform a cross sectional analysis. This investigation is expected to reveal causal relationships between several groups of variables and the abnormal returns of common stock; the better understanding of these relationships is of importance to investors, policy makers and issuers of shares. As a dependent variable, we employ the six-day cumulative abnormal returns, $CAR_{(0,5)}$. Within this window, according to Table 3, the average cumulative returns were found to exhibit the greatest and most significant departures from zero[4]. By using such a 'noisy' measure, we expect to reveal the most significant determinants and we also allow for any possible slow market responses, which are typical in emerging and developing markets like the *ATHEX* was during the examined period 1998 – 2006 (Antoniou *et al.*, 2005).

Variable Definitions

As regressors, we employ a mixture of continuous variables and indicator (dummy) variables which relate to the firm, the offering characteristics, the share price and stock market performance and the money market conditions.

The effects of four *firm-level* variables are tested: *PERF*, as a measure of financial performance, defined by the assets turnover ratio (Sales Revenue/Total Assets) during the year prior to the offer, *LOGMCAP*, a firm size measure, calculated by the natural logarithm of the market capitalisation one day prior to the announcement, *IDUM*, an industry dummy, which equals 1 for industrial companies (manufacturing, constructions etc.) and 0 for all

the rest (services, retail etc.) and finally *LOGNRSHRS,* calculated by the logarithm of the number of shares outstanding prior to the announcement.

The second group of variables aims to investigate possible *SEO-level* effects and consists of *RELSIZE*, a measure of the SEO size, calculated by the ratio of the Proceeds/ Total Assets of the year prior to the announcement and *TDUM* a dummy for the intended use of funds, which is equal to 1 when the majority of the proceeds are intended for capital expenditures (Inputs) and 0 when the majority are intended to finance debt or working capital (Outputs).

The third group of explanatory variables are intended to capture *market-level* effects. We test the past share price performance effect on the six-day abnormal returns using *RUNUP*, the 90 days cumulative share price return and *EXSRUNUP*, the 90 days cumulative abnormal return. While the former measure intends to test for the existence of *pricing effects*, the latter, being equal to the error terms from the market model, represents the "unexplained" share price behaviour prior to the announcement. Furthermore, *VAR* and *MVAR* are the variances of the share price returns and the ATHEX General Index respectively during the 90 days prior to the announcement of a SEO. Finally, *BDUM* is a "market cycle" dummy which equals 1 (Bull Market) if the 30 day Moving Average of the ATHEX General Index is lower than the ATHEX General Index price at T0 and 0 (Bear Market) for the opposite.

The fourth group of explanatory variables capture *money-market* level effects, and include *GRBOND*, the return of the Greek Government Bond during the period of the announcement and *EUROUSD,* the Euro/ USD exchange rate at the day of the announcement. These measures are expected to identify whether the existence of safer[5] domestic or cheaper[6] international alternative investments explains part of the abnormal returns after the announcement of SIDs.

Summary Statistics

Summary statistics for the dependent and explanatory variables are presented in Table 6. The mean value of the six day abnormal returns CAR_{05} is -3.65% and significant at the 99.0% level of confidence. With regards to the explanatory variables, the mean 90-day

cumulative return *(RUNUP)* for the 149 securities in our sample is 15.87%, while the median is 7.71%. During the period of the study the Greek bond yield ranges from 3.44% to 8.45% with an average yield of 5.69%. The Euro/USD rate ranges from 0.845 to 1.351 with an average near the unit (1.036). Finally, the mean ratio of SEO Proceeds/Total Assets *(RELSIZE)* is 0.183 or 18.3%. In Table 7 we are using several dichotomisations of the sample and present summary statistics of the six-day abnormal returns CAR_{05}. The sample is split into SEOs which took place during Bull and Bear markets, into SEOs which mainly intended to finance Input and Output decisions, into SEOs by Industrial and Non-industrial firms, etc. We observe that market reactions tend to be less adverse during Bear Markets, when financing predominantly Output (investment) decisions and for Non-Industrial firms. Abnormal share price declines are also moderated for Low Performance and Large Capitalisation firms, as well as for relatively Large Size SEOs. However, the implemented T-tests for means do not confirm any statistical significance between these differences, except in the case of Large versus Small Capitalisation firms, where the mean abnormal returns are 2.66% higher for small firms.

[Insert Table 6 about here]

[Insert Table 7 about here]

Model Estimation

The six day abnormal returns model is estimated through the following multiple linear regression:

$$CAR_{05} = \alpha + \beta_1 \cdot PERF + \beta_2 \cdot LOGMCAP + \beta_3 \cdot IDUM + \beta_4 \cdot LOGNSHRS + \beta_5 \cdot RELSIZE + \beta_6 \cdot TDUM + \beta_7 \cdot RUNUP + \beta_8 \cdot EXSRUNUP + \beta_9 \cdot MVAR + \beta_{10} \cdot BDUM + \beta_{11} \cdot VAR + \beta_{12} \cdot GRBOND + \beta_{13} \cdot EUROUSD + \varepsilon_i$$

[Insert Table 8 about here]

We estimate six different models, regressing each time a different set of variables, in order to examine the effect of each group-level separately.

In the first model we investigate the effect of firm-level variables on the abnormal returns. The coefficient estimates for the four variables in this group and the respective T-Test results are presented in the first column of Table 9. The employed financial performance measure *(PERF)* presents a negative coefficient, significant at the 0.10 level, suggesting that higher asset turnover ratios are seen as negative, since they indicate that firms are already operating close to capacity and are usually associated with low profit margins and high competition within the industry (Brealey and Myers, 2000); these characteristics may turn investors away from engaging in long term investments. The size effect *(LOGMCAP)* is also negative and significant at the 0.05 level of confidence, confirming the findings of Jones *et al.* (2004). This result is however different than the majority of event studies, where small size firms present positive abnormal returns (Strong, 1992) and also different from Tsangarakis (1996), who in a similar study reveals a positive relationship between firm size and abnormal returns. We attribute this difference to the *asymmetric information* hypothesis, which best explains how security overpricing can be more obvious for a small firm (with very few and specific projects and assets), than for a large one. The industry dummy *(IDUM)* presents with a negative, yet insignificant coefficient, suggesting that the market reactions will not significantly differ between Industrial and Non-Industrial companies, despite the fact that, similar to Bohren *et al.* (1997), non-industrial offers in our sample were found to have less adverse effects on securities prices (Table 7). Finally, the number of shares *(LOGNRSHRS)* is positively related to the abnormal returns and significant, suggesting post-SEO announcement returns are higher for companies with larger numbers of shares. This behaviour is best explained by the fact that, despite having no valuation effects whatsoever, larger numbers of outstanding stock are perceived to increase marketability and ownership base and reduce liquidity risks (Baker and Gallagher, 1980).

The coefficients of the *SEO-level* effects, namely the size *(RELSIZE)* and topic *(TDUM)* variables are reported in the second column and are found to be positive, yet insignificant. These results are consistent with Bohren *et al* (1997) and Corby and Stohs (1998) who found no evidence to support any significant offering size effects on security returns. However, the results differ from the ones reported by Asquith and Mullins (1986), who reported negative offering size effects in the NYSE, Jones *et al* (2004), who presented positive ones in the UK and Slovin *et al.* (2000), who found no offer-size effects for UK

insured rights offers, but positive ones for placements. The evidence for our sample also suggests that the intended use of the proceeds does not significantly affect the market reaction, although abnormal returns were found to be less adverse for capital expenditures, than they were for debt reduction. These findings suggest that share price reactions to SEO announcement may not necessarily be attributed to offer-specific characteristics, but rather to more generic effects, associated with the overall stock market behaviour of securities.

To test the above hypothesis, we estimate a M*arket-level* effects model. As presented in the third column of Table 8, this model exhibits the highest explanatory power (R^2=18.6%). The coefficient of the *RUNUP* variable is negative and highly significant, confirming the existence of the valuation effect in our setting; negative cumulative returns will be followed by a positive market reaction as investors are encouraged by the offering announcement and see the low price as an investment opportunity. On the other hand, shareholders are evidently discouraged when returns have been positive before a SEO announcement and the share price drops, as the security is seen as overvalued. This finding is consistent with the majority of the studies in the field, (Asquith and Mullins, 1986, Bohren *et al.*, 1997, Masulis and Korwar, 1986, Gajewski and Ginglinger, 2002). However, this is not the case for shares with abnormal performance; the coefficient of *EXSRUNUP* is positive and significant at the 0.01 level, suggesting that an abnormally positive performance will be followed by abnormal excess returns, while an underperforming share will keep performing poorly after the offering announcement. This finding adds to what we know so far about the market reaction to SEOs in the sense that it accounts for the unexplained share price returns and justifies the existence of positive abnormal returns in our dataset, despite the fact that, on average, abnormal returns are negative.

The coefficients of *BDUM* and *MVAR* are insignificant, providing no support for the market cycles and the market volatility effects. Finally, the 90 days return variance *(VAR)* coefficient is negative and significant at the 0.10 level, supporting the *price pressure hypothesis*, consistent with the findings of Loderer *et al.* (1991). According to these findings, investors will require higher compensation in order to tie up a large portion of their cash to the equity offer. For the security to yield high returns after the offer, the price will initially decline and will be inversely related to the recent price variance.

In the fourth model the estimated coefficients of the *GRBOND* and *EUROUSD* variables are negative and significant, supporting the hypothesis that investors examine the environment of alternative investments, both domestic and international, and act according to their best interests. This is the second best model in terms of explanatory power, since R^2 is around 10%. The negative sign on the *GRBOND* coefficient supports the expectation that share prices will experience declines, if the bond market is prosperous and offers safer alternatives with high returns. This finding is also consistent with Jones *et al.* (2004). Similarly, we test the hypothesis that shareholder value will be inversely related to foreign exchange rates (*EUROUSD)*. At any time, the suppliers of funds seek to exploit domestic and international investment opportunities; therefore we expect an inverse relationship between the exchange rates and the return of the domestic capital market. The coefficient of EUROUSD is indeed negative and significant, suggesting that the macroeconomic environment has a significant effect on the wealth of domestic shareholders; a strong EURO is therefore associated with negative abnormal returns, while a strong USD is related to positive ones. This finding is similar to the conclusions of Markides and Ittner (1994), who tested the effect of the USD strength on the abnormal returns following international acquisitions.

Models five and six are described as "Full" and "Selected" respectively. In the full model we are estimating the coefficients of all the explanatory variables, while the selected model only includes the ones which are kept, after a stepwise regression process. Both models however are very similar and explain approximately 23% of the variance of the dependent variable. In these models the *RUNUP*, *VAR*, *GRBOND* and *EUROUSD* have a negative effect on abnormal volume, while *EXSRUNUP* and *MVAR* have a positive one. The remaining effects are insignificant and are dropped by the stepwise regression in the "selected" model six.

Cross Sectional Analysis: An abnormal trading volume model

The finance literature lacks empirical evidence on the volume effect of SEOs and on the factors that affect it. Such evidence would be highly beneficial to policymakers, issuers of common stock and individual and institutional investors, whose holdings in the issuing companies are significant. In this section we report on a cross sectional analysis of the volume effect of SEOs, evaluating the effect of relevant variables on the trading activity.

We employ the six day cumulative abnormal volume CAV_{05} as a dependent variable, for comparability with the CAR_{05} dependent variable used in the cross sectional model of returns reported above.

Variable Definitions

To examine the factors that affect the trading activity of a security after the announcement of a SEO, we use *Firm, Market, SEO and Volatility* related measures. The employed *Firm-level* variables are: *LOGNSHRS*, the logarithm of the number of shares outstanding and *LOGMCAP*, the logarithm of the Market Capitalisation prior to the announcement. To account for *market* related effects on abnormal trading activity, we use CAR_{05} the cumulative abnormal return of a security from the announcement day T_0 to T_{+5}, *BDUM*, a market cycle dummy which equals 1 for bullish periods and 0 for bearish ones and *VRUNUP*, a historical trading activity measure, equal to the 90 days cumulative volume as a percentage of the number of shares outstanding. Two *SEO*-related variables, namely *LOGNEWSH* and *RELSIZE* are also used to capture effects associated with offering characteristics. The former is the natural logarithm of the number of the number of new shares to be issued as a result of the offer while the latter accounts for the offer size, calculated as a ratio of the SEO Proceeds/ Total Assets of the year prior to the announcement. In addition, we incorporate two volatility measures: $VAR_{05,}$ which is the six day variance of the security returns from the announcement day T_0 to T_{+5} and *ΔINDAY,* which measures the change in the intraday security price volatility after the announcement and is calculated as in Garman and Klass (1980):

$$\Delta INDAY = \frac{1}{6} \cdot \sum_{T=-0}^{5} \left(\frac{H_T - L_T}{C_{T-1}} \right) - \frac{1}{90} \cdot \sum_{T=-90}^{-1} \left(\frac{H_T - L_T}{C_{T-1}} \right)$$

where $H_{T,}$ L_T are the T day high and low prices, while C_{T-1} is the T_{-1} day closing price.

Summary Statistics

Panel B in Table 6 presents the summary statistics of the additional dependent and explanatory variables used in the cross sectional model of abnormal volume. The mean six-day cumulative abnormal volume is -0.95% and significant ($p<0.01$). The average CAR_{05} is,

as seen in the previous section, -3.65%, while the mean 90 days cumulative volume is 2.72% and ranges from 0.02% to 31.4%. The mean six day price variance, VAR_{05}, is 0.2% and the observed intraday volatility is, on average, calculated to be 0.2% higher before the SEO announcements and the difference $\Delta INDAY$ ranges from -3.5% to 4.6%. Preliminary analysis of the abnormal trading activity CAV_{05} is shown in Table 9, which reports that for a set of selected dichotomisations (Bull/Bear Markets, Large/ Small Capitalisation firms, Positive/Negative CARs and Large/Small SEOs), the trading activity is generally lower after the announcement, but with the mean differences between most groups being insignificant. The only exception occurs when we split the sample into SEOs which exhibit Positive and Negative abnormal price returns; the volume activity increases with positive returns and decreases with negative ones.

[Insert Table 9 about here]

Model Estimation

For the six-day abnormal volume we estimate the following using ordinary least squares regression:

$$CAV_{05} = \alpha + \beta_1 \cdot LOGNSHRS + \beta_2 \cdot LOGMCAP + \beta_3 \cdot CAR_{05} + \beta_4 \cdot BDUM + \beta_5 \cdot VRUNUP + \beta_6 \cdot LOGNEWSH + \beta_7 \cdot RELSIZE + \beta_8 \cdot VAR_{05} + \beta_9 \cdot \Delta INDAY + \omega_i$$

We begin by constructing four individual models, one for each group of explanatory variables/effects discussed previously. The first model (Table 10) tests the effect of two *Firm-level* variables: the number of shares and the market capitalization. Both effects are found to be significant at the 0.01 level, with the coefficient of the former *(LOGNSHRS)* being positive and that of the latter *(LOGMCAP)* being negative. The first finding suggests that securities with a smaller number of shares will experience low abnormal trading activity after the announcement of a SEO and confirms the low marketability perception discussed previously. Furthermore, the trading volume is abnormally low for large size companies and the opposite for smaller ones. This can be attributed to the fact that corporate announcements by large companies not only have a smaller value effect in general, but are also expected to be more comprehensive and clear and are communicated

more systematically, leading to higher levels of consensus regarding the value effect of the event (Jones *et al.*, 2004).

The *Market-level* model coefficients are presented in the second column of Table 10. The share price returns *(CAR_{05})* are found to have a positive and significant effect on trading volume, supporting the price –volume relationship (Morse, 1980, Karpoff, 1987) while the market cycle effect is rather insignificant. The coefficient of the volume run-up (*VRUNUP)* is negative and significant, suggesting that high trading activity will be followed by low volumes, after a SEO announcement and vice versa. This is also consistent with the price – volume hypothesis.

The third column presents the estimated coefficients for the *SEO-level* model. The new issue size effect (*RELSIZE),* is rather insignificant, yet the number of issued shares *(LOGNEWSH)* is positively and significantly related to the observed abnormal trading volume, confirming the evidence from Baker and Galagher's (1980) survey, which suggested that increases in the outstanding stock are perceived to improve security marketability and trading activity. The more shares a company issues, the higher the abnormal volume reaction will be. The volatility measures coefficients *(VAR05)* and *(ΔINDAY)* do not seem to be significant at this stage, and are not found to trigger any volume reactions.

The regression of all the aforementioned effects together versus the cumulative six-day volume gives the full model coefficients, described in the fifth column of Table 10. In this model the LOGNSHRS, CAR05 and ΔINDAY have a positive effect on abnormal volume, while LOGMCAP and VRUNUP have a negative one. The remaining effects are insignificant and are dropped by the stepwise regression in the "selected" model six. It is noteworthy that in models five and six, the *(ΔINDAY),* namely the change in the intraday volatility, is significant and positively related to abnormal volume reactions. When the volatility increases, the volume reaction is abnormally high. Indeed, if volatility relates inversely to the information content of an announcement[7] (Yadav, 1992), it will decrease if the information of the SEO announcement does not contain any surprises. The trading activity will be low, since individual investors have reached a certain level of consensus regarding the interpretation of the information and the fair price of the security. The opposite will occur if the announcement contains little information or surprises; individual

investors will interpret the new information set in heterogeneous ways, driving volatility and volume higher. The variables that "survive" in the last model explain approximately 28% of the variation of the dependent variable.

[Insert Table 10 about here]

CONCLUSIONS – DISCUSSION

We report evidence of a significant, negative abnormal market reaction to the announcement of equity financed Strategic Investment Decisions. Despite the fact that we examined capital expenditure and restructuring related SEOs, both together (Table 3) and separately (Table 7), the findings were no different to those of previous studies, which did not make that distinction. Furthermore, although we studied rights offers only, which are supposed to protect shareholders and prevent information asymmetries, our findings were in contrast to those of a number of other European studies, which documented a positive (or non-negative) market reaction. Our findings also contrast those presented in a previous study of SEOs in the *ATHEX* (Tsangarakis, 1996), suggesting that the changes which took place in the institutional setting during the past decade have affected the investment behaviour of the market participants.

Our results are generally consistent with the *asymmetric information* and the *negative signaling* hypotheses (Myers and Majluf, 1984). The best explanation is that investors believe the securities to be overpriced and the issue decision communicates unfavourable information about the company's prospects. Although the observed abnormal negative returns in our dataset are smaller than the ones in past studies (Masulis and Korwar, 1986, Asquith and Mullins, 1986), the calculated offering dilution is very similar to what Asquith and Mullins have reported. In our case, for every million Euros of new cash raised to finance SIDs, (with the issue of new common stock) the shareholders sacrifice, on average, approximately 340 thousand Euros in Market Value. The relatively smaller, and slower, share price reaction in our dataset can be explained by the fact that the *ATHEX* is indeed a small market, where the majority of the participants are less sophisticated (and/or informed) and does not respond immediately with the arrival of information (Antoniou *et al.*, 1997,

Antoniou *et al.*, 2005). This finding has important implications for the design of investment strategies of international investors who wish to participate in similar capital markets. SEOs in these markets, similarly to the ones in more developed exchanges, usually lead to a loss of market value.

In our cross sectional model of abnormal returns the F*irm-level* effects are found to be significant. However, when regressed along with the *Market* and *Money market -level* effects, the size and performance effects are eliminated. While previous research has mainly focused on *firm* and *SEO* specific characteristics to explain the share price reaction, in a cross sectional analysis, where market performance and economy variables are included, the findings suggest that firm characteristics (size, profitability) and offer features (size, topic) are less significant than stock market related variables (past share price performance, variance) and economy level features (currency and interest rates). It is therefore clear that firm and offering characteristics, whilst supported to be significant in several previous studies, when examined along with stock and macroeconomic effects, they become nonetheless insignificant.

Our findings also document a significant decrease in trading activity, especially during the days before the announcement, but also at T_{+3} and T_{+6}. The low trading activity prior to the announcement can be partly explained by the fact that a significant number of shares are blocked from trading or deposited to a designated institution for a certain period before the general assembly. However this does not explain why abnormally low trading activities are observed three (or even six) days after the announcement. The fact that trading activity is up to 25% lower during the announcement period has very important implications for domestic and international (individual and institutional) investors, who should always take into account the possibility that SEO announcements may be accompanied by relatively low liquidity and thin trading, which are causes of serious market inefficiencies. This is an important finding for policymakers and the administrators of the capital markets, who should consider new ways of eliminating such inefficiencies during SEO announcement periods. This could be implemented by improving depository systems and procedures, resulting in shorter share blocking periods.

While there is no prior empirical evidence to compare with our findings, at least three conclusions are drawn from our cross sectional analysis of abnormal volume activity:

The results confirm the *contemporaneous declining price –volume hypothesis* (Morse, 1980), which is a special case of the positive price-volume relationship, as also evidenced by Richardson *et al* (1986) and Harris (1986). Our findings are not only consistent with the above studies supporting a positive relationship of returns $|\Delta p|$ and volume V, but also indicate that this relationship is also present between *abnormal* measures of returns CAR_t and volume CAV_t. This means that the positive price-volume relation will be resistant during certain special events, like equity offering announcements. An additional finding of this study confirms the *positive volume-volatility relationship*, which can be seen as two alternative measures of consensus. The significant effect of the change of intraday volatilities on the trading activity after the announcement of a SEO exhibited in this study, suggests that the information content of the announcement is a major determinant of the volume activity and announcements with low information content were found to be associated with high abnormal volume reactions. Finally the above analysis provided evidence on the importance of the *outstanding stock*: Although the number of shares outstanding was found to affect the price reactions only in the firm level model, it exhibited a persistent positive effect on trading activity both in the firm level and the full model. This finding highlights the importance of the number of issued shares for the marketability of a security, especially during special events, when investors are unwilling to trade. In our sample, the high post-announcement volume activity, experienced by certain securities, is among others, partly explained by the existence of large outstanding stocks.

It is prudent at this point to acknowledge potential limitations of the current study and to suggest future areas for research. While the sample used is by no means small, taking into account the size and the relatively short history of the *ATHEX*, a larger sample would increase our conviction that certain weak relationships are indeed insignificant and not due to the degrees of freedom. Moreover, while the explanatory variables employed are clearly appropriate, the availability of other related data (i.e. on ownership structures, analyst forecasts etc), would allow us to test more hypotheses and possibly reveal further causalities. Future research on the topic should focus on testing such hypotheses, on examining the effect in more markets and on the long term effect of equity financed investment decisions on firm profitability and stock market performance. We conclude with a final lesson; the fact that our results are contrary to those reported in a previous study of the same stock exchange, but at a different point in time, indicates that changes in

the institutional settings of capital markets sometimes necessitate the update of previous research with “fresh” data.

TABLE 1

SEASONED EQUITY OFFERINGS (SEOS) ANNOUNCEMENTS AND TOTAL BUDGET PER YEAR

YEAR	NUMBER OF SEOS	TOTAL BUDGET (€ MIL)
1998	3	65.97
1999	58	3,178.82
2000	29	3,179.00
2001	13	168.05
2002	13	712.45
2003	11	164.57
2004	10	246.20
2005	8	307.24
2006	4	24.53
Total	**149**	**8,046.84**

Notes: *The sample includes only rights offers where the proceeds were aimed to finance Capital Expenditure projects. Debt reduction/refinancing issues are not included in the sample. All the events are "clean", uncontaminated by synchronous announcements about profits, dividends, ownership changes etc. and refer to the issue of common stock. Data for at least 110 days before and 10 days after the event day (T_0) had to be available. No announcements took place on the same day.*

TABLE 2

SUMMARY DESCRIPTION OF THE ESTIMATION MODELS AND THE DATA SAMPLE

	SHARE PRICE MODEL	**TRADING VOLUME MODEL**
N=149	$R_{it} = \alpha_i + \beta_i Rm_t + \varepsilon_{it}$	$V_{it} = \gamma_i + \delta_i Vm_t + \omega_{it}$
Mean Intercept	0.15%	0.08%
Mean Beta Coefficient	1.040	1.758
Mean R^2	28.2%	11.2%
Mean *SE*	0.031	0.006
Median Intercept	0.12%	0.04%
Median Beta Coefficient	1.058	0.936
Median R^2	26.5%	7.1%
Median *SE*	0.030	0.004
Mean R_{it} (T_{-110}, T_{-11})	0.22%	-
Mean R_{it} (T_{-10}, T_{+10})	-0.04%	-
Mean V_{it} (T_{-110}, T_{-11})	-	0.61%
Mean V_{it} (T_{-10}, T_{+10})	-	0.46%

Notes:

Ri,t (Vit) : Estimation models for the abnormal price (volume) effect of the SEO of company i

εit,(ωit) : Estimated abnormal return (volume) of the security i on day t

The Mean and Median coefficients and statistics are calculated from 149 Price models and 149 Volume models

TABLE 3

AVERAGE ABNORMAL RETURNS AND AVERAGE CUMULATIVE ABNORMAL RETURNS

Panel A: Abnormal returns estimates for each day of the announcement period

DAYS	AAR	ACAR	ASAR	ACSAR	SIGN TEST A(S)AR	SIGN TEST AC(S)AR
T_{-10}	0.14%	0.14%	0.07	0.07	0.573	0.573
	(0.541)	*(0.541)*	*[0.918]*	*[0.918]*		
T_{-9}	-0.40%	-0.25%	-0.10	-0.02	1.065	0.573
	(-1.722)	*(-0.665)*	*[-1.401]*	*[-0.217]*		
T_{-8}	-0.11%	-0.37%	-0.01	-0.02	0.573	1.065
	(-0.452)	*(-0.779)*	*[-0.159]*	*[-0.268]*		
T_{-7}	-0.23%	-0.59%	-0.09	-0.05	2.376 **	1.884 ***
	(-1.008)	*(-1.076)*	*[-1.219]*	*[-0.766]*		
T_{-6}	-0.22%	-0.81%	-0.07	-0.05	0.246	1.557
	(-0.819)	*(-1.271)*	*[-0.82]*	*[-1.016]*		
T_{-5}	0.11%	-0.70%	-0.01	-0.03	0.410	0.737
	(0.448)	*(-0.992)*	*[-0.116]*	*[-1.003]*		
T_{-4}	-0.21%	-0.90%	-0.05	-0.03	1.720 ***	1.065
	(-0.819)	*(-1.242)*	*[-0.568]*	*[-1.164]*		
T_{-3}	0.08%	-0.82%	0.04	0.00	0.901	0.901
	(0.329)	*(-1.067)*	*[0.467]*	*[-0.928]*		
T_{-2}	0.43%	-0.39%	0.13 ***	0.05	1.720 ***	0.901
	(1.748)	*(-0.464)*	*[1.707]*	*[-0.315]*		
T_{-1}	0.21%	-0.18%	0.11	0.05	0.082	0.082
	(0.724)	*(-0.204)*	*[1.142]*	*[0.122]*		
T_{0}	-0.40%	-0.59%	-0.13	-0.02	2.703 *	1.393
	(-1.51)	*(-0.596)*	*[-1.413]*	*[-0.339]*		
T_{+1}	-0.79% *	-1.38%	-0.24 *	-0.08	2.376 **	2.212 **
	(-3.111)	*(-1.315)*	*[-2.694]*	*[-1.083]*		
T_{+2}	-0.46%	-1.84%	-0.12	-0.06	1.884 ***	2.867 *
	(-1.251)	*(-1.638)*	*[-1.052]*	*[-1.333]*		
T_{+3}	-0.92% *	-2.76% **	-0.27 *	-0.09 **	3.195 *	2.376 **
	(-3.276)	*(-2.405)*	*[-3.066]*	*[-2.064]*		
T_{+4}	-0.66% *	-3.41% *	-0.20 **	-0.07 **	2.212 **	2.867 *
	(-2.719)	*(-2.792)*	*[-2.511]*	*[-2.512]*		
T_{+5}	-0.41%	-3.83% *	-0.13	-0.05 *	1.557	2.867 *
	(-1.545)	*(-3.057)*	*[-1.42]*	*[-2.789]*		
T_{+6}	0.40% ***	-3.43% *	0.14	0.02 **	0.246	2.867 *
	(1.653)	*(-2.66)*	*[1.661]*	*[-2.319]*		
T_{+7}	-0.02%	-3.44% **	0.00	0.00 **	0.737	3.031 *
	(-0.075)	*(-2.545)*	*[-0.056]*	*[-2.24]*		
T_{+8}	0.24%	-3.21% *	0.06	0.02 **	0.737	2.376 **
	(0.842)	*(-2.293)*	*[0.679]*	*[-2.043]*		
T_{+9}	0.08%	-3.13% *	0.00	0.00 **	1.065	2.540 **
	(0.315)	*(-2.163)*	*[-0.017]*	*[-1.988]*		
T_{+10}	0.39%	-2.73% ***	0.12	0.03 ***	0.246	2.376 **
	(1.537)	*(-1.88)*	*[1.47]*	*[-1.667]*		

Panel B: Cumulative abnormal returns estimates for various intervals within the announcement period

INTERVAL	ACAR		ACSAR		SIGN TEST AC(S)AR	
$(T_{-5,}T_{+5})$	-3.02%	*	-0.878	*	1.884	
	(-2.815)		*[-2.583]*			
$(T_{-2,}T_{+2})$	-1.02%		-0.254		1.065	
	(-1.378)		*[-1.098]*			
$(T_{-1,}T_{+1})$	-0.99%	**	-0.266		2.867	*
	(-1.859)		*[-1.586]*			
$(T_{-5,}T_{0})$	0.23%		0.095		0.409	
	(0.292)		*[0.395]*			
$(T_{-2,}T_{0})$	0.24%		0.112		0.409	
	(0.456)		*[0.718]*			
$(T_{0,}T_{+1})$	**-1.20%**	*	**-0.375**	*	**3.850**	*
	(-2.824)		***[-2.587]***			
$(T_{0,}T_{+2})$	-1.66%	*	-0.497	**	3.031	*
	(-2.687)		*[-2.513]*			
$(T_{0,}T_{+5})$	-3.65%	*	-1.105	*	4.341	*
	(-4.856)		*[-4.686]*			
$(T_{0,}T_{+10})$	-2.55%	**	-0.785	**	1.228	
	(-2.552)		*[-2.442]*			

Notes:

Panel A presents the estimated Average Abnormal Returns (AAR), Average Cumulative Abnormal Returns (ACAR), Average Standardised Abnormal Returns (ASAR) and Average Cumulative Standardised Abnormal Returns (ACSAR) of the 149 SEO announcements in our sample for each day of the announcement period (T_{-10} to T_{+10}). The base day for all the cumulative averages is T_{-10}, hence all the ACAR and ACSAR values estimate the average accumulated abnormal returns from the beginning of the announcement period.

Panel B presents the estimated (ACAR) and (ACSAR) for several intervals within the announcement period. Average accumulated abnormal returns are estimated for several base days and for various intervals in order to provide comparability with previous empirical studies. Because general meetings take place in the afternoon after the market is closed on T_0, our two day announcement period is (T_0, T_{+1}).

To test the null hypothesis, for the non- standardised averages we are using the two tail T-Test presented in Brown and Warner (1980) and Corrado (1989). For the standardised averages, we are using the z-Test described in Patell (1976) and Boehmer et al. (1991). The Sign Test is the Non-Parametric Binomial Test used by Boehmer et al. (1991). Since the sign of the standardised and non- standardised averages is (by definition) always the same, we only run this test once for the simple averages (AAR and ASAR) and once for the cumulative averages (ACAR and ACSAR).

The two tail T-Test results are presented in brackets (...) and the z-Test results in square brackets […]

****,**,* : Significant at 90.0%, 95.0%, 99.0% respectively*

TABLE 4

OFFERING DILUTION IN THE ATHEX DURING THE PERIOD AFTER SEO ANNOUNCEMENTS

	MEAN OFFERING DILUTION	MEDIAN OFFERING DILUTION
$\mathbf{T_{+1}}$	-9.7%	-12.0%
$\mathbf{T_{+2}}$	-13.0%	-11.0%
$\mathbf{T_{+3}}$	-32.2%	-18.8%
$\mathbf{T_{+4}}$	-38.5%	-19.9%
$\mathbf{T_{+5}}$	-44.0%	-21.4%
$\mathbf{T_{+6}}$	-41.4%	-17.7%
$\mathbf{T_{+7}}$	-38.8%	-21.3%
$\mathbf{T_{+8}}$	-34.2%	-23.2%
$\mathbf{T_{+9}}$	-34.7%	-14.4%
$\mathbf{T_{+10}}$	-34.9%	-13.0%

Notes:

The table presents the Mean and Median Offering Dilution of 149 equity issues as defined in Asquith and Mullins (1986):

$$OD_{it} = \frac{MV_{it} - MV_{it-1}}{CR_i},$$

where MV_{it} denotes the Market Value of company (i) at day (t) and CR_i is the cash raised (proceeds) from the offering.

TABLE 5

AVERAGE ABNORMAL VOLUME AND AVERAGE CUMULATIVE ABNORMAL VOLUME

Panel A: Abnormal volume estimates for each day of the announcement period

DAYS	AAV	ACAV	ASAV	ACSAV	SIGN TEST A(S)AV	SIGN TEST AC(S)AV
T_{-10}	-0.06%	-0.06%	-0.14 **	-0.14 *	5.325 *	5.325 *
	(-1.13)	*(-1.13)*	*[-2.04]*	*[-2.04]*		
T_{-9}	-0.15% *	-0.20% **	-0.13	-0.18 ***	5.653 *	4.833 *
	(-3.334)	*(-2.48)*	*[-1.144]*	*[-1.791]*		
T_{-8}	-0.16% *	-0.37% *	-0.17 **	-0.25 **	4.833 *	5.161 *
	(-3.926)	*(-3.493)*	*[-2.037]*	*[-2.036]*		
T_{-7}	-0.18% *	-0.55% *	-0.26 **	-0.35 *	6.472 *	5.980 *
	(-4.281)	*(-4.281)*	*[-5.438]*	*[-2.953]*		
T_{-6}	-0.16% **	-0.71% *	-0.16 **	-0.38 *	5.489 *	6.144 *
	(-2.485)	*(-4.289)*	*[-2.188]*	*[-3.082]*		
T_{-5}	-0.17% *	-0.88% *	-0.15 ***	-0.41 *	5.325 *	6.308 *
	(-3.289)	*(-4.359)*	*[-1.956]*	*[-3.182]*		
T_{-4}	-0.17% *	-1.05% *	-0.16 **	-0.44 *	4.833 *	6.144 *
	(-3.402)	*(-4.459)*	*[-2.107]*	*[-3.181]*		
T_{-3}	-0.18% *	-1.23% *	-0.19 *	-0.48 *	6.308 *	6.144 *
	(-2.905)	*(-4.402)*	*[-2.619]*	*[-3.358]*		
T_{-2}	-0.14% **	-1.37% *	-0.13	-0.49 *	4.833 *	5.817 *
	(-2.166)	*(-4.206)*	*[-1.601]*	*[-3.281]*		
T_{-1}	-0.15% **	-1.52% *	-0.04	-0.48 *	4.506 *	5.980 *
	(-2.421)	*(-4.058)*	*[-0.35]*	*[-2.92]*		
T_{0}	-0.13% ***	-1.65% *	-0.10	-0.49 *	3.850 *	5.980 *
	(-1.862)	*(-4.056)*	*[-0.875]*	*[-2.85]*		
T_{+1}	-0.11% ***	-1.75% *	0.10	-0.44 **	3.523 *	5.161 *
	(-1.997)	*(-3.944)*	*[0.831]*	*[-2.423]*		
T_{+2}	-0.16% **	-1.92% *	-0.06	-0.44 **	4.997 *	5.489 *
	(-2.173)	*(-3.833)*	*[-0.735]*	*[-2.368]*		
T_{+3}	-0.22% *	-2.14% *	-0.17 **	-0.47 **	5.489 *	5.817 *
	(-2.998)	*(-3.814)*	*[-2.129]*	*[-2.478]*		
T_{+4}	-0.19% *	-2.32% *	-0.14	-0.49 **	6.144 *	5.980 *
	(-3.058)	*(-3.815)*	*[-1.437]*	*[-2.508]*		
T_{+5}	-0.14% ***	-2.47% *	0.48	-0.35	4.670 *	5.161 *
	(-1.867)	*(-3.752)*	*[0.802]*	*[-1.395]*		
T_{+6}	-0.20% *	-2.66% *	-0.18 **	-0.39	6.144 *	4.833 *
	(-3.797)	*(-3.809)*	*[-2.515]*	*[-1.507]*		
T_{+7}	-0.16% *	-2.82% *	-0.16 ***	-0.41	5.653 *	4.997 *
	(-3.183)	*(-3.859)*	*[-1.927]*	*[-1.587]*		
T_{+8}	-0.14% **	-2.96% *	-0.12	-0.43	5.817 *	4.833 *
	(-2.39)	*(-3.84)*	*[-1.096]*	*[-1.612]*		
T_{+9}	-0.14% *	-3.10% *	-0.13	-0.45	5.489 *	4.506 *
	(-2.601)	*(-3.937)*	*[-1.561]*	*[-1.682]*		
T_{+10}	-0.07%	-3.17% *	-0.06	-0.45	3.687 *	4.506 *
	(-1.151)	*(-3.992)*	*[-0.708]*	*[-1.686]*		

Panel B: Cumulative abnormal volume estimates for various intervals within the announcement period

INTERVAL	ACAV		ACSAV		SIGN TEST AC(S)AV	
$(T_{-5,}T_{+5})$	-1.77%	*	-25.135		5.653	*
	(-3.332)		*[-1.744]*			
$(T_{-2,}T_{+2})$	-0.69%	*	-9.688	***	4.833	*
	(-2.826)		*[-1.825]*			
$(T_{-1,}T_{+1})$	-0.38%	*	-3.738	**	4.342	*
	(-2.474)		*[-2.4]*			
$(T_{-5,}T_{0})$	-0.94%	*	-12.238	**	5.653	*
	(-3.498)		*[-1.992]*			
$(T_{-2,}T_{0})$	-0.42%	*	-5.326	***	5.489	*
	(-2.745)		*[-1.942]*			
$(T_{0,}T_{+1})$	-0.24%	*	-1.666		4.178	*
	(-2.137)		*[-1.122]*			
$(T_{0,}T_{+2})$	-0.40%	*	-4.775	**	4.342	*
	(-2.694)		*[-2.298]*			
$(T_{0,}T_{+5})$	**-0.95%**	*	**-13.31**	*	**4.342**	*
	(-3.049)		***[-1.756]***			
$(T_{0,}T_{+10})$	-1.67%	*	-17.021	**	5.325	*
	(-3.55)		*[-2.369]*			

Notes:

The Table presents the estimated Average Abnormal Volume (AAV), Average Cumulative Abnormal Volume (ACAV), Average Standardised Abnormal Volume (ASAV) and Average Cumulative Standardised Abnormal Volume (ACSAV) of the 149 SEO announcements in our sample for each day of the announcement period (T-10 to T+10). The base day for all the cumulative averages is T-10, hence all the ACAV and ACSAV values estimate the average accumulated abnormal volume from the beginning of the announcement period.

Panel B presents the estimated ACAV and ACSAV for several base days and intervals within the announcement period.

To test the null hypothesis, for the non- standardised averages we are using the two tails T-Test and for the standardised averages, the z-Test described in the methodology section. The Sign Test is the Non-Parametric Binomial Test. Since the sign of the standardised and non- standardised averages is (by definition) always the same, we only run this test once for the simple averages (AAV and ASAV) and once for the cumulative averages (ACAV and ACSAV).

The two tail T-Test results are presented in brackets (...) and the z-Test results in square brackets [...]

****,**,* : Significant at 90.0%, 95.0%, 99.0% respectively*

TABLE 6

SUMMARY STATISTICS OF THE VARIABLES USED IN THE CROSS SECTIONAL MODELS

Panel A: Variables used in the Market Reactions Models

VARIABLE	MEAN		MAX	MEDIAN	MIN	ST. DEV.	T-TEST
CAR_{05}	-3.65%	*	17.85%	-3.37%	-41.64%	0.092	-4.856
RUNUP	15.87%	*	159.92%	7.71%	-105.76%	0.573	3.380
LOGNSHRS	1.329	*	2.557	1.289	0.519	0.420	38.673
LOGMCAP	2.124	*	3.924	2.141	0.757	0.683	37.940
EXSRUNUP	-1.21%		53.00%	0.00%	-51.00%	0.193	-0.762
VAR	0.0015	*	0.0042	0.0013	0.0002	0.0009	21.033
MVAR	0.0004	*	0.0008	0.0004	0.0000	0.0002	21.275
BDUM	0.383	*	1	-	0	0.488	9.576
GRBOND	5.686	*	8.450	6.020	3.440	1.017	68.221
EUROUSD	1.036	*	1.351	1.031	0.845	0.117	108.484
PERF	2.05		200.59	0.66	0.00	16.38	1.529
RELSIZE	18.3%	*	194.0%	12.0%	1.0%	21.9%	10.194

Panel B: Additional variables used in the Volume Reactions Models

VARIABLE	MEAN		MAX	MEDIAN	MIN	ST. DEV.	T-TEST
CAV_{05}	-0.95%	*	8.80%	-0.34%	-24.25%	0.038	-3.049
VRUNUP	2.72%	*	31.42%	1.65%	0.02%	0.036	9.253
LOGNEWSH	0.396	*	2.066	0.340	-0.716	0.548	8.828
VAR05	0.002	*	0.029	0.001	0.000	0.003	7.371
ΔINDAY	0.2%		4.6%	0.1%	-3.5%	0.015	1.315

Notes:

The table presents the summary statistics of the variables used in the cross sectional analyses. In Panel A CAR_{05} is the six day cumulative abnormal return observed after the announcement of a SEO. LOGNSHRS is the logarithm of the number of shares outstanding and LOGMCAP is the logarithm of the Market Capitalisation prior to the announcement. RUNUP is the 90 days cumulative (actual) share price return, while EXSRUNUP is the 90 days cumulative (abnormal) return. VAR and MVAR are the variances of the share price returns and the ATHEX General Index respectively during the 90 days prior to the announcement of a SEO. BDUM is a market cycle dummy variable which equals 1 (Bull Market) if the 30 day Moving Average of the ATHEX General Index is lower than the ATHEX General Index price at T_0 and 0 (Bear Market) for the opposite. GRBOND is the return of the Greek Government Bond during the period of the announcement and EUROUSD is the Euro/ USD exchange rate at the day of the announcement. PERF is a measure of financial performance given by the ratio Sales Revenue/ Total Assets during the year preceding the SEO. Finally, RELSIZE is a measure of the SEO size, calculated as a ratio of the SEO Proceeds/ Total Assets of the year prior to the announcement.

In panel B CAV_{05} is the six day cumulative abnormal volume (as a percentage of the number of shares outstanding) observed after the announcement of a SEO. VRUNUP is the 90 days cumulative (actual) volume (as a percentage of the number of shares outstanding). LOGNEWSH is the logarithm of the number of new shares to be issued as a result of the offer. VAR_{05} is the six day variance of the security returns from the announcement day T_0 to T_{+5} and ΔINDAY is a measure of the change in the Intraday Volatility of a security price.

****,**,* : Significant at 90.0%, 95.0%, 99.0% respectively*

TABLE 7

SUMMARY STATISTICS OF THE DEPENDENT VARIABLE (CAR_{05}) FOR VARIOUS SUB-GROUPS WITHIN THE SAMPLE

	N	MEAN		MAX.	MEDIAN	MIN.	ST. DEV.	POSITIVE	NEGATIVE	T-TEST	T -TEST FOR MEANS	
ALL SEOS	149	-3.65%	*	17.85%	-3.37%	-41.64%	0.092	48	101	-4.856		
BULL MARKETS	57	-5.07%	*	15.18%	-5.43%	-41.64%	0.096	16	41	-3.991	-1.466	
BEAR MARKETS	92	-2.77%	*	17.85%	-2.48%	-33.74%	0.088	32	60	-3.004		
INPUT DECISIONS	35	-5.39%	*	10.17%	-4.21%	-33.74%	0.088	10	25	-3.615	-1.316	
OUTPUT DECISIONS	114	-3.12%	*	17.85%	-2.97%	-41.64%	0.093	38	76	-3.596		
INDUSTRIAL	110	-3.74%	*	17.85%	-3.22%	-41.64%	0.095	35	75	-4.134	-0.211	
NON-INDUSTRIAL	39	-3.40%	**	13.71%	-3.73%	-20.28%	0.083	13	26	-2.543		
HIGH PERFORMANCE	75	-4.35%	*	13.71%	-3.44%	-41.64%	0.082	19	56	-4.607	-0.934	
LOW PERFORMANCE	74	-2.94%	**	17.85%	-2.97%	-33.74%	0.101	29	45	-2.505		
LARGE CAP.	74	-4.99%	*	10.17%	-4.31%	-33.74%	0.082	19	55	-5.254	-1.787	***
SMALL CAP.	75	-2.33%	**	17.85%	-2.37%	-41.64%	0.099	29	46	-2.027		
LARGE SEOS	77	-2.86%	*	15.18%	-2.74%	-33.74%	0.091	29	48	-2.762	1.086	
SMALL SEOS	72	-4.50%	*	17.85%	-4.17%	-41.64%	0.093	19	53	-4.119		

Notes:

The table presents the summary statistics of the dependent variable CAR_{05}, namely the six days cumulative abnormal return observed after the announcement of a SEO for several sub-groups within the sample. An observation is categorised under BULL MARKETS if the 30 day Moving Average of the ATHEX General Index is lower than the ATHEX General Index price at T0 and under BEAR MARKETS for the opposite. Also, SEOs are seen as INPUT DECISIONS when the majority of the proceeds are intended to finance debt or working capital and as OUTPUT DECISIONS when they are intended for capital expenditures. INDUSTRIAL SEOS are the ones announced by industrial companies (manufacturing, constructions etc.) while NON-INDUSTRIAL refer to all the rest (services, retail etc.). HIGH PERFORMANCE firms are the ones which present a Sales/Total Assets ratio above the median. LARGE CAP. are the ones which present a Market Capitalisation above the median and LARGE SEOs are the ones which were above the median in terms of SEO Proceeds/ Total Assets of the year prior to the announcement

****,**,* : Significant at 90.0%, 95.0%, 99.0% respectively*

TABLE 8

COEFFICIENTS ESTIMATED FROM LEAST SQUARES REGRESSIONS OF ABNORMAL RETURNS

	MODEL 1 FIRM	MODEL 2 SEO	MODEL 3 MARKET	MODEL 4 ECONOMY	MODEL 5 FULL	MODEL 6 SELECTED
INTERCEPT	**-0.013**	**-0.063** *	**-0.010**	**0.326** *	**0.236** **	**0.260** **
	(-0.376)	*(-3.565)*	*(-0.586)*	*(3.283)*	*(2.02)*	*(2.371)*
PERF	**-0.001** ***	-	-	-	**-0.001**	-
	(-1.657)				*(-0.654)*	
LOGMCAP	**-0.044** **	-	-	-	**-0.005**	-
	(-2.439)				*(-0.158)*	
IDUM	**-0.007**	-	-	-	**0.005**	-
	(-0.392)				*(0.252)*	
LOGNSHRS	**0.056** ***	-	-	-	**0.009**	-
	(1.942)				*(0.254)*	
RELSIZE	-	**0.037**	-	-	**-0.003**	-
		(1.039)			*(-0.082)*	
TDUM	-	**0.026**	-	-	**0.015**	-
		(1.413)			*(0.831)*	
RUNUP	-	-	**-0.060** *	-	**-0.042** *	**-0.046** *
			(-4.432)		*(-2.657)*	*(-3.278)*
EXSRUNUP	-	-	**0.115** *	-	**0.098** *	**0.098** *
			(3.104)		*(2.586)*	*(2.671)*
MVAR	-	-	**33.073**	-	**92.267** ***	**96.491** **
			(0.894)		*(1.903)*	*(2.089)*
BDUM	-	-	**-0.009**	-	**-0.008**	-
			(-0.569)		*(-0.471)*	
VAR	-	-	**-16.686** ***	-	**-15.929**	**-17.558** **
			(-1.872)		*(-1.638)*	*(-1.976)*
GRBOND	-	-	-	**-0.031** *	**-0.027** **	**-0.028** **
				(-3.898)	*(-2.071)*	*(-2.459)*
EUROUSD	-	-	-	**-0.182** *	**-0.135** ***	**-0.139** **
				(-2.649)	*(-1.796)*	*(-1.974)*
R^2	0.061	0.018	0.186	0.101	0.233	0.223
Adjusted R^2	**0.034**	**0.005**	**0.158**	**0.088**	**0.159**	**0.190**
F	2.320	1.365	6.540	8.158	3.156	6.783

Notes:

The table presents the estimated coefficients from an Ordinary Least Squares regression:

$$CAR_{05} = \alpha + \beta_1 \cdot PERF + \beta_2 \cdot LOGMCAP + \beta_3 \cdot IDUM + \beta_4 \cdot LOGNSHRS + \beta_5 \cdot RELSIZE + \beta_6 \cdot TDUM + \beta_7 \cdot RUNUP + \beta_8 \cdot EXSRUNUP + \beta_9 \cdot MVAR + \beta_{10} \cdot BDUM + \beta_{11} \cdot VAR + \beta_{12} \cdot GRBOND + \beta_{13} \cdot EUROUSD + \varepsilon_i$$

CAR_{05} is the six day cumulative abnormal return observed after the announcement of a SEO. PERF is a measure of firm performance given by the ratio Sales Revenue/ Total Assets during the year preceding the SEO, while LOGMCAP is the logarithm of the Market Capitalisation prior to the announcement. IDUM is a dummy variable, equal to 1 for industrial companies (manufacturing, constructions etc.) and 0 for all the rest (services, retail etc.). LOGNSHRS is the logarithm of the number of shares outstanding and RELSIZE is a measure of the SEO size, calculated as a ratio of the SEO

Proceeds/ Total Assets of the year prior to the announcement. TDUM is a dummy variable, equal to 1 when the majority of the proceeds are intended for capital expenditures and 0 when they are intended to finance debt or working capital. RUNUP is the 90 days cumulative (actual) share price return, while EXSRUNUP is the 90 days cumulative (abnormal) return. VAR and MVAR are the variances of the share price returns and the ATHEX General Index respectively during the 90 days prior to the announcement of a SEO. BDUM is a market cycle dummy variable which equals 1 (Bull Market) if the 30 day Moving Average of the ATHEX General Index is lower than the ATHEX General Index price at T_0 and 0 (Bear Market) for the opposite. GRBOND is the return of the Greek Government Bond during the period of the announcement and EUROUSD is the Euro/ USD exchange rate at the day of the announcement.

****, **, * : Significant at 90.0%, 95.0%, 99.0% respectively*

TABLE 9

SUMMARY STATISTICS OF THE DEPENDENT VARIABLE (CAV05) FOR VARIOUS SUB-GROUPS WITHIN THE SAMPLE

	N	MEAN		MAX.	MEDIAN	MIN.	ST. DEV.	POSITIVE	NEGATIVE	T-TEST	T -TEST FOR MEANS	
ALL	149	-0.95%	*	8.80%	-0.34%	-24.25%	0.038	50	99	-3.049		
BULL MARKETS	57	-1.01%		8.80%	-0.19%	-24.25%	0.052	24	33	-1.463	-0.137	
BEAR MARKETS	92	-0.91%	*	5.07%	-0.36%	-15.41%	0.026	26	66	-3.377		
LARGE CAP.	74	-1.13%	**	7.79%	-0.45%	-24.25%	0.043	24	50	-2.251	-0.576	
SMALL CAP.	75	-0.77%	**	8.80%	-0.28%	-15.41%	0.032	26	49	-2.069		
POSITIVE CAR	48	0.22%		8.80%	-0.09%	-3.35%	0.022	21	27	0.687	3.247	*
NEGATIVE CAR	101	-1.50%	*	7.79%	-0.55%	-24.25%	0.042	29	72	-3.562		
LARGE SEOS	67	-0.97%	***	8.80%	-0.20%	-20.79%	0.040	23	44	-1.951	-0.053	
SMALL SEOS	82	-0.93%	**	7.79%	-0.46%	-24.25%	0.036	27	55	-2.350		

Notes:

The table presents the summary statistics of the dependent variable CAV05, namely the six days cumulative abnormal volume (as a percentage of the number of shares outstanding) observed after the announcement of a SEO for several sub-groups within the sample. An observation is categorised under BULL MARKETS if the 30 day Moving Average of the ATHEX General Index is lower than the ATHEX General Index price at T_0 and under BEAR MARKETS for the opposite. LARGE CAP are the firms which present a Market Capitalisation above the median and LARGE SEOs are the offers which were above the median in terms of the ratio: SEO Proceeds/ Total Assets of the year prior to the announcement. Finally, POSITIVE SEOs are the Seasoned Equity offer announcements which were followed by positive six day Cumulative Abnormal Returns.

****,**,* : Significant at 90.0%, 95.0%, 99.0% respectively*

TABLE 10

COEFFICIENTS ESTIMATED FROM LEAST SQUARES REGRESSIONS OF ABNORMAL VOLUME

	MODEL 1 FIRM	MODEL 2 MARKET	MODEL 3 SEO	MODEL 4 VOLATILITY	MODEL 5 FULL	MODEL 6 SELECTED
INTERCEPT	**-0.023** **	**0.002**	**-0.013** *	**-0.010** *	**-0.007**	**-0.007**
	(-2.184)	*(0.502)*	*(-3.118)*	*(-2.663)*	*(-0.403)*	*(-0.644)*
LOGNSHRS	**0.044** *	-	-	-	**0.029** ***	**0.027** **
	(3.779)				*(1.724)*	*(2.446)*
LOGMCAP	**-0.022** *	-	-	-	**-0.014** ***	**-0.013** ***
	(-2.979)				*(-1.75)*	*(-1.846)*
CAR05	-	**0.141** *	-	-	**0.141** *	**0.131** *
		(4.582)			*(4.49)*	*(4.325)*
BDUM	-	**0.010**	-	-	**0.009**	-
		(1.615)			*(1.454)*	
VRUNUP	-	**-0.370** *	-	-	**-0.355** *	**-0.318** *
		(-4.578)			*(-4.297)*	*(-4.064)*
LOGNEWSH	-	-	**0.016** **	-	**-0.004**	-
			(2.329)		*(-0.276)*	
RELSIZE	-	-	**-0.015**	-	**-0.006**	-
			(-0.897)		*(-0.26)*	
VAR05	-	-	-	**-0.243**	**-0.567**	-
				(-0.194)	*(-0.501)*	
ΔINDAY	-	-	-	**0.345**	**0.574** *	**0.536** *
				(1.612)	*(3.011)*	*(2.895)*
R^2	0.090	0.220	0.037	0.018	0.295	0.280
ADJUSTED R^2	**0.077**	**0.204**	**0.024**	**0.005**	**0.249**	**0.255**
F	7.140	13.580	2.793	1.302	6.450	11.082

Notes:

The table presents the estimated coefficients from an Ordinary Least Squares regression:

$$CAV_{05} = \alpha + \beta_1 \cdot LOGNSHRS + \beta_2 \cdot LOGMCAP + \beta_3 \cdot CAR_{05} + \beta_4 \cdot BDUM + \beta_5 \cdot VRUNUP + \beta_6 \cdot LOGNEWSH + \beta_7 \cdot RELSIZE + \beta_8 \cdot VAR_{05} + \beta_9 \cdot \Delta INDAY + \omega_i$$

CAV_{05} is the six day cumulative abnormal volume (as a percentage of the number of shares outstanding) observed after the announcement of a SEO. LOGNSHRS is the logarithm of the number of shares outstanding and LOGMCAP is the logarithm of the Market Capitalisation prior to the announcement. CAR_{05} is the cumulative abnormal return of a security from the announcement day T_0 to T_{+5}. BDUM is a market cycle dummy variable which equals 1 (Bull Market) if the 30 day Moving Average of the ATHEX General Index is lower than the ATHEX General Index price at T_0 and 0 (Bear Market) for the opposite. VRUNUP is the 90 days cumulative (actual) volume (as a percentage of the number of shares outstanding). LOGNEWSH is the logarithm of the number of new shares to be issued as a result of the offer. RELSIZE is a measure of the SEO size, calculated as a ratio of the SEO Proceeds/ Total Assets of the year prior to the announcement. VAR05 is the six day variance of the security returns from the announcement day T_0 to T_{+5} and ΔINDAY is a measure of the change in the Intraday Volatility of a security price.

****,**,* : Significant at 90.0%, 95.0%, 99.0% respectively*

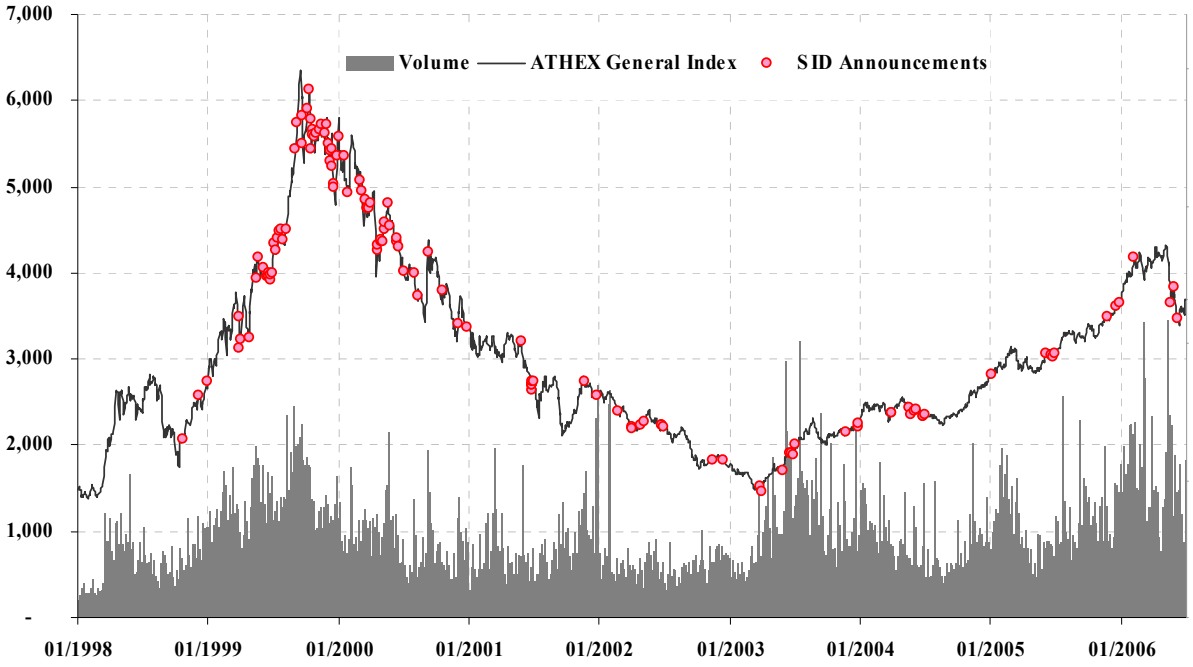

FIG. 1. ATHEX GENERAL INDEX & SEO ANNOUNCEMENTS (1998- 2006)

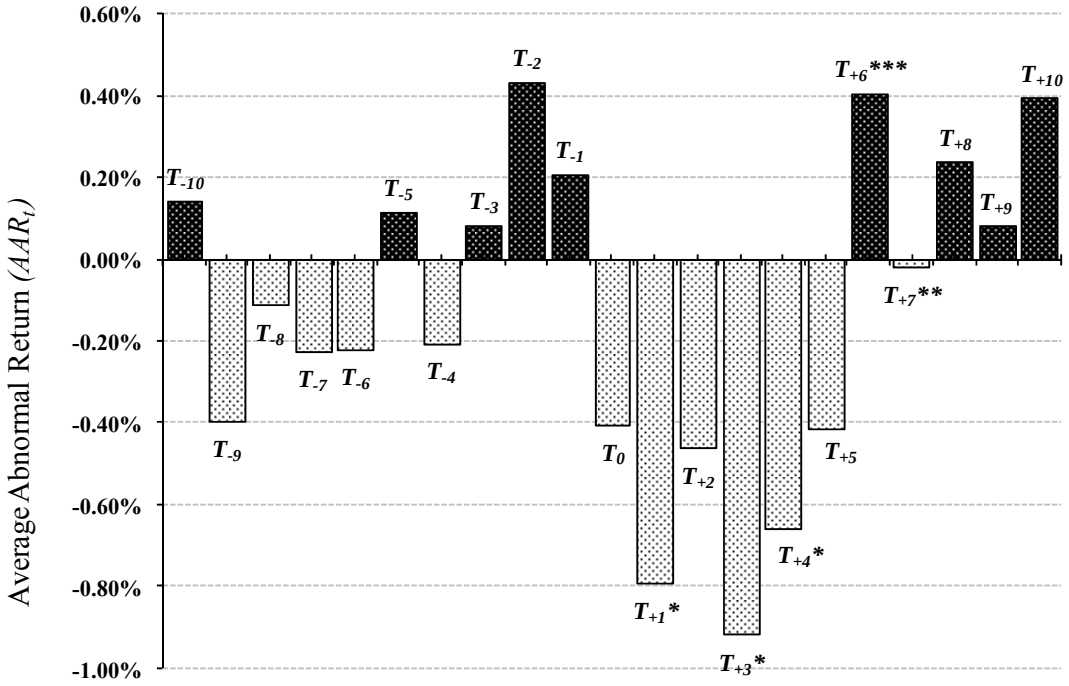

FIG. 2. AVERAGE ABNORMAL RETURNS (AAR) SURROUNDING SEO ANNOUNCEMENTS

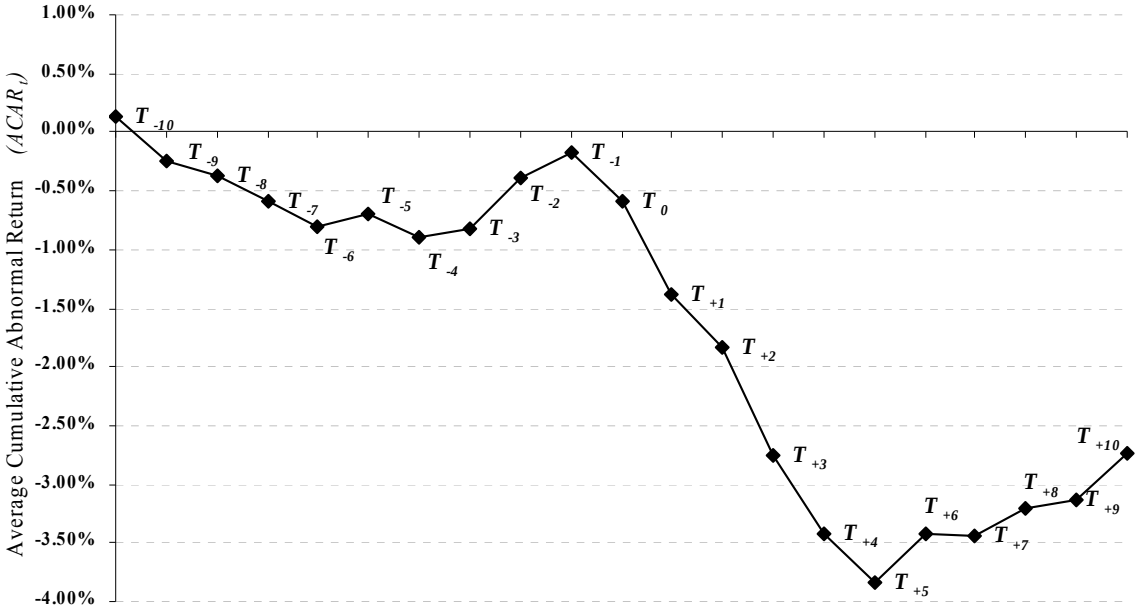

FIG. 3. AVERAGE CUMULATIVE ABNORMAL RETURNS (ACAR) SURROUNDING SEO ANNOUNCEMENTS

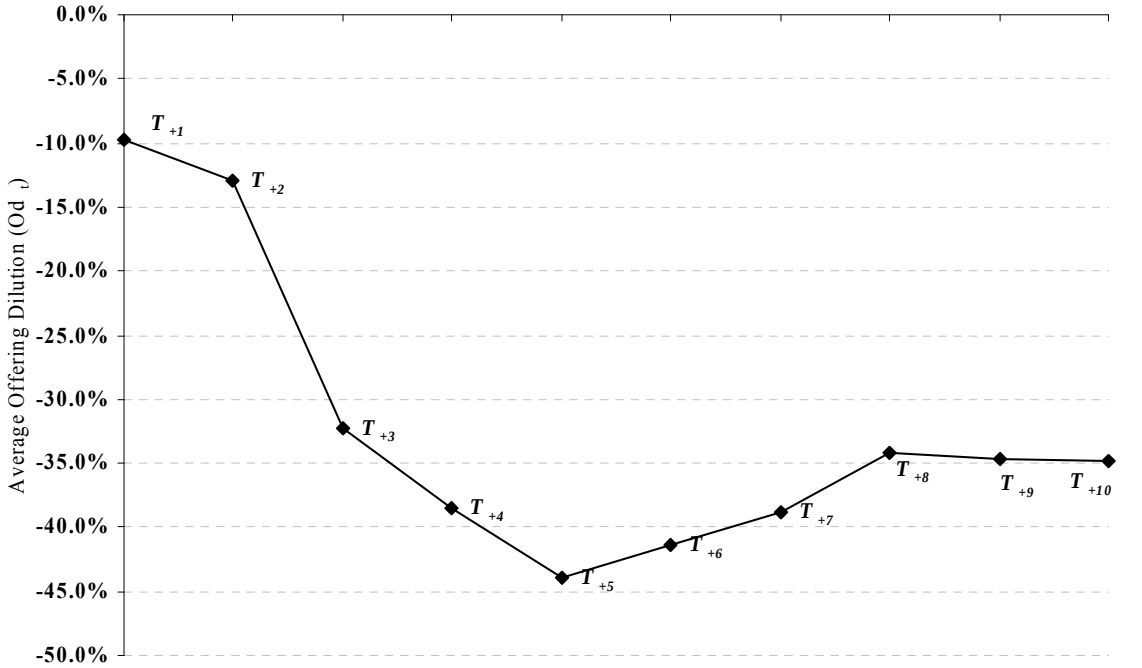

FIG. 4. AVERAGE OFFERING DILUTION (OD) SURROUNDING SEO ANNOUNCEMENTS

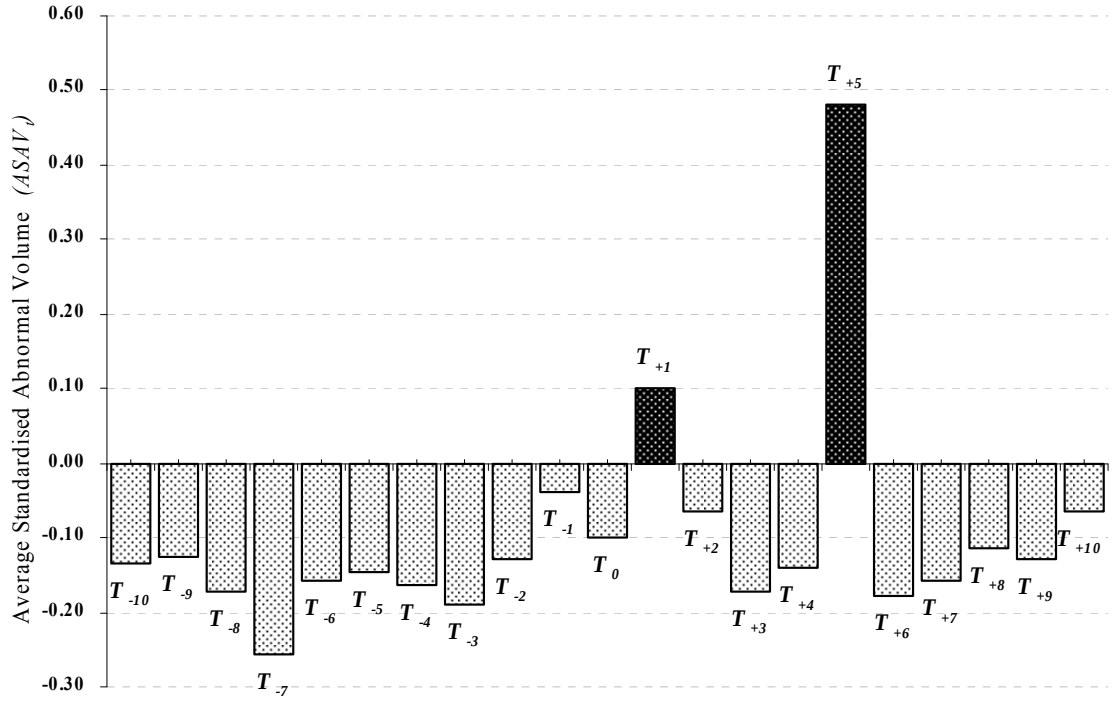

FIG. 5. AVERAGE STANDARDISED ABNORMAL VOLUME (ASAV) SURROUNDING SEO ANNOUNCEMENTS

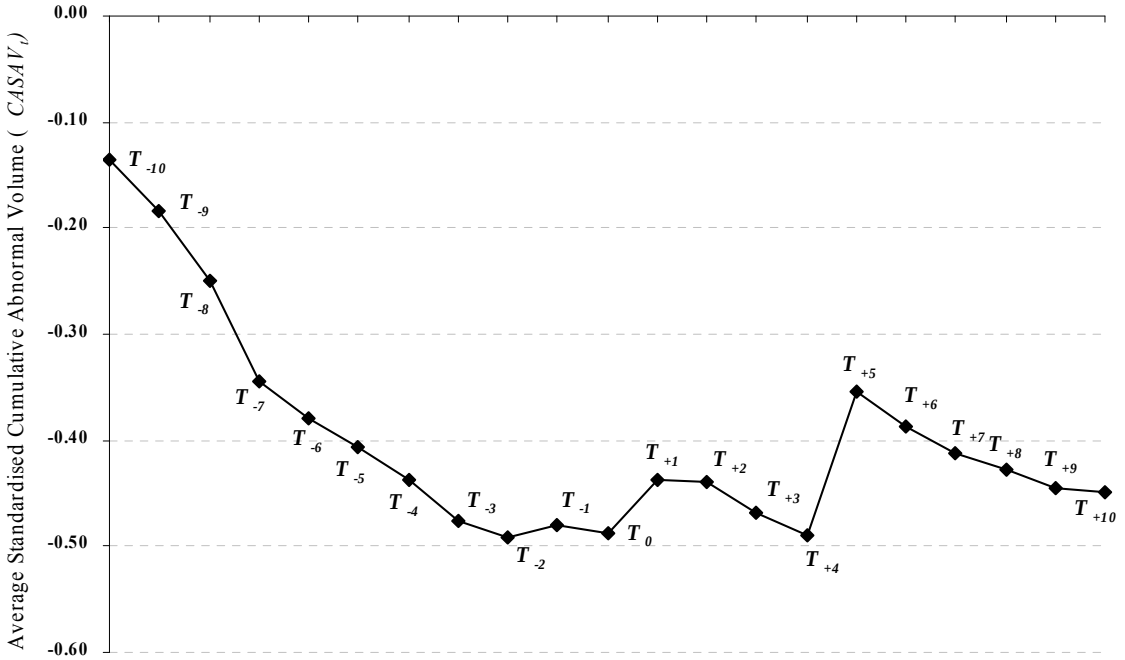

FIG. 6. AVERAGE CUMULATIVE STANDARDISED ABNORMAL VOLUME (ACSAV) SURROUNDING SEO ANNOUNCEMENTS

APPENDIX A

The current appendix describes the details of the methodology used to estimate the size and the significance of the abnormal shape price returns and volume. Moreover, the statistical significance tests employed are also described in detail.

Estimation of the abnormal/ excess returns for the period (T_{-110}, T_{-11}):

$$R_{it} = \alpha_i + \beta_i Rm_t + \varepsilon_{it} \ , \qquad (1)$$

Where:

$R_{it} = ln\left(\frac{Pi(t)}{Pi(t-1)}\right)$, $P_{i(t)}$: the price of security *(i)* at day *(t)*

$Rm_t = ln\left(\frac{Pm(t)}{Pm(t-1)}\right)$, $Pm_{(t)}$: the price of the General Index at day *(t)*

α_i, β_i : the regression constant and coefficient determined by OLS regression

$\varepsilon_{it} = AR_{it}$: the abnormal return for security *(i)* at day *(t)*, such that $E[\varepsilon_{it}]=0$ and $Var(\varepsilon_{it})=\sigma^2\varepsilon$

Substituting $\varepsilon_{it} = AR_{it}$ and rearranging (1) gives the final equation for the calculation of the unsystematic/ abnormal returns during the event period (T_{-10}, T_{+10}):

$$AR_{it} = R_{it} - (\alpha_i + \beta_i Rm_t) , \qquad (2)$$

Estimation of the abnormal/ excess trading volume for the period (T_{-110}, T_{-11}):

$$V_{it} = \gamma_i + \delta_i Vm_t + \omega_{it} \qquad (3)$$

Where:

$V_{it} = \left(\frac{VOL_{i(t)}}{NSO_{i(t)}}\right)$, $VOL_{i(t)}$: the traded volume of security *(i)* at day *(t)*, $NSO_{i(t)}$: the number of security *(i)* shares outstanding at day *(t)*

$V_{mt} = \left(\frac{VOL_{m(t)}}{NSO_{m(t)}}\right)$, $VOL_{m(t)}$: the traded volume of all ATHEX securities at day *(t)*, $NSO_{m(t)}$: the number of all ATHEX shares outstanding at day *(t)*

γ_i, δ_i : the regression constant and coefficient determined by OLS regression

$\omega_{it} = AV_{it}$: the abnormal volume for security *(i)* at day *(t)* , such that $E[\omega_{it}]=0$ *and* $Var(\omega_{it})=\sigma^2\omega$

Substituting $\omega_{it} = AV_{it}$ and rearranging (3) gives the final equation for the calculation of the unsystematic/ abnormal volume during the event period (T_{-10}, T_{+10}):

$$AV_{it} = V_{it} - (\gamma_i + \delta_i Vm_t) \tag{4}$$

Using the above models (2) and (4) we calculate the return and volume residuals for the period T_{-10} to T_{+10} for all the 149 securities in our sample. Furthermore, we calculate the Average Abnormal Returns (AAR_t) and Average Abnormal Volume (AAV_t), the Cumulative Abnormal Returns (CAR_{it}) and Cumulative Abnormal Volume (CAV_{it}) and their respective averages $(ACAR_t)$ and $(ACAV_t)$ as follows:

$$AAR_t = \frac{1}{149} \cdot \sum_{i=1}^{149} AR_{it} \tag{5}$$

$$AAV_t = \frac{1}{149} \cdot \sum_{i=1}^{149} AV_{it} \tag{6}$$

$$CAR_{it} = \sum_{t=T-10}^{T} AR_{it} \Rightarrow ACAR_t = \frac{1}{149} \cdot \sum_{i=1}^{149} CAR_{it} \tag{7}$$

$$CAV_{it} = \sum_{t=T-10}^{T} AV_{it} \Rightarrow ACAV_t = \frac{1}{149} \cdot \sum_{i=1}^{149} CAV_{it} \tag{8}$$

Four sets of Hypotheses will be tested, in order to reveal whether the value and volume effects of the SID announcements are non-negative and significant:

Average Abnormal Return	$H_0: AAR_t = 0$	$H_1: AAR_t > 0$	$H_2: AAR_t < 0$
Average Abnormal Volume	$H_0: AAV_t = 0$	$H_1: AAV_t > 0$	$H_2: AAV_t < 0$
Average Cumulative Abnormal Return	$H_0: ACAR_t = 0$	$H_1: ACAR_t > 0$	$H_2: ACAR_t < 0$
Average Cumulative Abnormal Volume	$H_0: ACAV_t = 0$	$H_1: ACAV_t > 0$	$H_2: ACAV_t < 0$

To evaluate the statistical significance of our findings we are using three tests:

1. The *traditional two-tailed T-Test*, (Brown and Warner, 1980, Corrado, 1989) to test the significance of a possible non-zero AAR_t, AAV_t, $ACAR_t$, $ACAV_t$ etc.

$$T(AAR_t) = AAR_t / \sqrt{Var(AR_{it})} \tag{9}$$

2. The *Standardised Cross Sectional (SCS) Test* (Saleh, 2007, Boehmer *et al.*, 1991, Chung *et al.*, 1998), which is basically a hybrid of the Patell Standardised Residual (PSR) Test (Patell, 1976), since it adjusts the residuals for forecast error and prevents large variance observations from dominating the test, but is more robust when event induced variance is present. The test for day *(t)* is:

$$Z_t = \frac{ASAR_t \cdot}{\sqrt{Var(ASAR_t)}} \tag{10}$$

Where $ASAR_t$ denotes the Average Standardised Abnormal Return for the day *(t),* with $t \in [T-10, T+10]$, N denotes the number of securities (149), SAR_{it} is the Standardised Abnormal Return for security *(i)* at day *(t)*, and $\overline{R}_{mt}$ is the mean market return during the whole period (T_{-110}, T_{+10}), *while* $\overline{R}_{mt*}$ denotes the mean market return during the estimation period (T_{-110}, T_{-11})

$$ASAR_t = \frac{1}{149}\sum_{i=1}^{149} SAR_{it},$$

$$SAR_{it} = \frac{AR_{it}}{\hat{\sigma}_{it}},$$

$$\hat{\sigma}_{it} = \hat{\sigma}_i + \frac{1}{100} + \frac{(R_{mt} - \overline{R}_{mt})^2}{\sum_{t*=-110}^{-11}(R_{mt*} - \overline{R}_{mt*})^2},$$

The appropriate test statistic for the Abnormal Cumulative Standardised Returns for a period (*L)* within the event period is:

$$Z_{L} = \frac{ACSAR_t \cdot}{\sqrt{Var(ACSAR_t)}} \tag{11}$$

Where:

$ACSAR_t = \frac{1}{149}\sum_{i=1}^{149} CSAR_{it}$ and $CSAR_{it} = \frac{1}{\sqrt{L}}\sum_{t=1}^{L} SAR_{it}$, L = the number of days within the period

3. The *Non Parametric Binomial Sign- Test (Boehmer et al., 1991),* to test whether the frequency of the positive residuals equals one half. The two-tailed test is:

$$ST_t = |P - 0.5| \cdot \left[\frac{(0.5)^2}{N} \right]^{-1/2} \quad (12)$$

Where: $P = \frac{Positive\ Residuals}{149}$, $N=149$

REFERENCES

Adaoglu, C. (2006) Market reaction to "unsweetened" and "sweetened" rights offerings in an emerging European stock market. *Journal of Multinational Financial Management,* **16,** 249-268.

Antoniou, A., Ergul, N. & Holmes, P. (1997) Market Efficiency, Thin Trading and Non-linear Behaviour: Evidence from an Emerging Market. *European Financial Management,* **3,** 175-190.

Antoniou, A., Galariotis, E. C. & Spyrou, S. I. (2005) Contrarian Profits and the Overreaction Hypothesis: the Case of the Athens Stock Exchange. *European Financial Management,* **11,** 71-98.

Asquith, P. & Mullins, D. W. (1986) Equity Issues and Offering Dilution. *Journal of Financial Economics,* **15,** 61-89.

Baker, H. K. & Gallagher, P. L. (1980) Management's View of Stock Splits. *Financial Management,* **9,** 73-77.

Bamber, L. S. (1986) The Information-Content of Annual Earnings Releases - a Trading Volume Approach. *Journal of Accounting Research,* **24,** 40-56.

Barron, O. E. & Karpoff, J. M. (2004) Information precision, transaction costs, and trading volume. *Journal of Banking & Finance,* **28,** 1207-1223.

Beaver, W. H. (1968) The Information Content of Annual Earnings Announcements. *Journal of Accounting Research,* **6,** 67-92.

Beaver, W. H. (1981) Econometric Properties of Alternative Security Return Methods. *Journal of Accounting Research,* **19,** 163-184.

Boehmer, E., Musumeci, J. & Poulsen, A. B. (1991) Event-Study Methodology under Conditions of Event-Induced Variance. *Journal of Financial Economics,* **30,** 253-272.

Bohren, O., Eckbo, B. E. & Michalsen, D. (1997) Why underwrite rights offerings? Some new evidence. *Journal of Financial Economics,* **46,** 223-261.

Brealey, R. & Myers, S. (2000) *Principles of Corporate Finance*, Mc Graw-Hill.

Brown, S. J. & Warner, J. B. (1980) Measuring Security Price Performance. *Journal of Financial Economics,* **8,** 205-258.

Burton, B. (2005) Concurrent capital expenditure and the stock market reaction to corporate alliance announcements. *Applied Financial Economics,* **15,** 715 - 729.

Burton, B. M., Lonie, A. A. & Power, D. M. (1999) The Stock Market Reaction to Investment Announcements: The Case of Individual Capital Expenditure Projects. *Journal of Business Finance & Accounting* **26,** 681-708.

Butler, R., Davies, L., D Pike & Sharp, a. J. (1993) *Strategic investment decisions : theory, practice, and process,* London, Routledge,.

Chung, K. H., Wright, P. & Charoenwong, C. (1998) Investment opportunities and market reaction to capital expenditure decisions. *Journal of Banking & Finance,* **22,** 41-60.

Cooney, J. W., Jr., Kato, H. K. & Schallheim, J. S. (2003) Underwriter Certification and Japanese Seasoned Equity Issues. *Review of Financial Studies,* **16,** 949-982.

Corby, C. E. & Stohs, M. H. (1998) Investment opportunities and Irish equity offerings. *The European Journal of Finance,* **4,** 357 - 367.

Corrado, C. J. (1989) A nonparametric test for abnormal security-price performance in event studies. *Journal of Financial Economics,* **23,** 385-395.

Eckbo, B. E. & Masulis, R. W. (1992) Adverse selection and the rights offer paradox. *Journal of Financial Economics,* **32,** 293-332.

Fama, E. F. & Jensen, M. C. (1985) Organizational forms and investment decisions. *Journal of Financial Economics,* **14,** 101-119.

Gajewski, J.-F. & Ginglinger, E. (2002) Seasoned Equity Issues in a Closely Held Market: Evidence from France. *European Finance Review,* **6,** 291-319.

Garman, M. B. (1976) Market Microstructure. *Journal of Financial Economics,* **3,** 257-275.

Garman, M. B. & Klass, M. J. (1980) On the Estimation of Security Price Volatilities from Historical Data. *The Journal of Business,* **53,** 67.

Gebhardt, G., Heiden, S. & Daske, H. (2001) Determinants of Capital Market Reactions to Seasoned Equity Offers by German Corporations *Working Paper Series: Finance and Accounting. Ghoethe University of Frankfurt*

Harris, L. (1986) Cross-Security Tests of the Mixture of Distributions Hypothesis. *Journal of Financial and Quantitative Analysis,* **21,** 39-46.

Hickson, D. J., Butler, R., Cray, D., Mallory, G. & Wilson, D. (1986) *Top decisions: Strategic Decision-Making in Organizations,* Oxford, Blackwell.

Jeanneret, P. (2005) Use of the Proceeds and Long-term Performance of French SEO Firms. *European Financial Management,* **11,** 99-122.

Jensen, M. C. (1986) Agency Costs of Free Cash Flow, Corporate-Finance, and Takeovers. *American Economic Review,* **76,** 323-329.

Jones, E., Danbolt, J. & Hirst, I. (2004) Company investment announcements and the market value of the firm. *The European Journal of Finance,* **10,** 437 - 452.

Karpoff, J. M. (1987) The Relation Between Price Changes and Trading Volume: A Survey. *The Journal of Financial and Quantitative Analysis,* **22,** 109-126.

Loderer, C., Cooney, J. W. & Drunen, L. D. V. (1991) The Price Elasticity of Demand for Common Stock. *The Journal of Finance,* **46,** 621-651.

Markides, C. C. & Ittner, C. D. (1994) Shareholder Benefits from Corporate International Diversification - Evidence from United-States International Acquisitions. *Journal of International Business Studies,* **25,** 343-366.

Masulis, R. W. & Korwar, A. N. (1986) Seasoned Equity Offerings - an Empirical-Investigation. *Journal of Financial Economics,* **15,** 91-118.

McConnell, J. J. & Muscarella, C. J. (1985) Corporate Capital Expenditure Decisions and the Market Value of the Firm. *Journal of Financial Economics,* **14,** 399-422.

Mikkelson, W. H. & Partch, M. M. (1986) Valuation Effects of Security Offerings and the Issuance Process. *Journal of Financial Economics,* **15,** 31-60.

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

Mintzberg, H., Raisinghani, D. & Théorêt, A. (1976) Structure of Unstructured Decision-Processes. *Administrative Science Quarterly,* **21,** 246-275.

Mintzberg, H. & Waters, J. A. (1985) Of Strategies, Deliberate and Emergent. *Strategic Management Journal,* **6,** 257-272.

Modigliani, F. & Miller, M. H. (1963) Corporate Income Taxes and the Cost of Capital: A Correction. *The American Economic Review,* **53,** 433-443.

Morse, D. (1980) Asymmetrical Information in Securities Markets and Trading Volume. *The Journal of Financial and Quantitative Analysis,* **15,** 1129-1148.

Morse, D. (1981) Price and Trading Volume Reaction Surrounding Earnings Announcements - a Closer Examination. *Journal of Accounting Research,* **19,** 374-383.

Myers, S. C. (1984) The Capital Structure Puzzle. *The Journal of Finance,* **39,** 575-592.

Myers, S. C. & Majluf, N. S. (1984) Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics,* **13,** 187-221.

Patell, J. M. (1976) Corporate Forecasts of Earnings Per Share and Stock Price Behavior: Empirical Test. *Journal of Accounting Research,* **14,** 246-276.

Richardson, G., Sefcik, S. E. & Thompson, R. (1986) A Test of Dividend Irrelevance Using Volume Reactions to a Change in Dividend Policy. *Journal of Financial Economics,* **17,** 313-333.

Saleh, W. (2007) Investors reaction to dividend announcements: parametric versus nonparametric approach. *Applied Financial Economics Letters* **3,** 169 - 179.

Scholes, M. S. (1972) Market for Securities - Substitution Versus Price Pressure and Effects of Information on Share Prices. *Journal of Business,* **45,** 179-211.

Sharpe, W. F. (1964) Capital-Asset Prices - a Theory of Market Equilibrium under Conditions of Risk. *Journal of Finance,* **19,** 425-442.

Shleifer, A. (1986) Do Demand Curves for Stocks Slope Down? *The Journal of Finance,* **41,** 579-590.

Slovin, M. B., Sushka, M. E. & Lai, K. W. L. (2000) Alternative flotation methods, adverse selection, and ownership structure: evidence from seasoned equity issuance in the U.K. *Journal of Financial Economics,* **57,** 157-190.

Smith, C. W. (1977) Alternative methods for raising capital : Rights versus underwritten offerings. *Journal of Financial Economics,* **5,** 273-307.

Smith, C. W. (1986) Investment banking and the capital acquisition process. *Journal of Financial Economics,* **15,** 3-29.

Strong, N. (1992) Modelling Abnormal Returns: A Review Article *Journal of Business Finance and Accounting,* **19,** 533-553.

Tobin, J. & Brainard, W. C. (1977) Assets, Markets and the Cost of Capital, in *Economic Progress, Private Values and Public Policy, (Essays in Honour of William Felner)* (Ed.) Nelson, R. & Balassa, B.(Eds.), Amsterdam: North-Holland

Tsangarakis, N. V. (1996) Shareholder Wealth Effects of Equity Issues in Emerging Markets: Evidence from Rights Offerings in Greece. *Financial Management,* **25,** 21-32.

Vafeas, N. & Shenoy, C. (2005) An empirical investigation of capital expenditure announcements. *Applied Economics Letters,* **12,** 907 - 911.

Woolridge, J. R. & Snow, C. C. (1990) Stock-Market Reaction to Strategic Investment Decisions. *Strategic Management Journal,* **11,** 353-363.

Yadav, P. K. (1992) Event studies based on volatility of returns and trading volume: A review. *The British Accounting Review,* **24,** 157-184.

NOTES

1. Unsweetened offers in the ISE are the plain issues, without simultaneous distribution of free shares, while sweetened are the ones which provide the shareholders with free "bonus" shares, financed through special revaluation reserves (Adaoglu, 2006).
2. To this end 6 SEOs were excluded, thus our sample accounts for in excess of 96% of SEOs during the time period.
3. In Table 2, the average *Vit* during the estimation period was approximately 0.61%. $\frac{-0.15\%}{0.61\%} = -24{,}59\%$
4. In models where the *CAR(0,1)*, *CAR(0,2)* and *CAR(0,10)*, were used as dependent variables the signs of all the explanatory variable coefficients were the same with the ones finally reported, although the coefficients were not always equally significant.
5. The aim is to investigate whether the observed negative reactions are actually associated with increases in *risk- free* asset returns, such as Bonds and T-bills; such a relationship would suggest that negative returns are partly due to price /risk adjustments under the CAPM hypotheses.
6. We examine whether part of the share price drops from the announcement of a SEO can be explained by the foreign currency being relatively cheap and investors having the opportunity to replace their holdings with similar international alternatives.
7. This is based on the assumption that "security prices rationally reflect fundamental values" and "there is no event induced change in the security prices noise levels…" (Yadav, 1992: p.158)