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**AN EVENT STUDY ANALYSIS OF OUTWARD FOREIGN DIRECT  
INVESTMENT: THE CASE OF GREECE**

by

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## ABSTRACT

The purpose of this paper is twofold: Firstly, by applying the event study methodology it provides detailed and updated evidence on the value generating effect of different modes of Foreign Direct Investment (FDI) entry. Secondly, this is the first paper to empirically evaluate the impact of FDI on the stock returns of Greek firms participating in the Athens Stock Exchange (ASE). In the case of Greece, the cross-section analysis revealed that a successful outward FDI project should be located in developed countries, performed in a high-technology sector and should be linked to horizontal integration.

**JEL:** F23, F30, G14, G34

**Keywords:** Multinational Corporations (MNCs), Foreign Direct Investment, Mergers & Acquisitions, Event Study

# **AN EVENT STUDY ANALYSIS OF OUTWARD FOREIGN DIRECT INVESTMENT: THE CASE OF GREECE**

## **INTRODUCTION**

In the literature, there is only a limited amount of studies that investigate the effect of multinationality on shareholder's wealth. Furthermore, their findings are contradictory. Some of these papers support that there is a strong positive effect of international expansion, through Foreign Direct Investment (FDI), on shareholder's value (Errunza and Senbet, 1981; Black and Rose, 1991). In this line of argument, seminal is the work of Doukas and Travlos (1988) who estimated the importance of factors, such as location, degree of multinationality and sectoral relatedness on the stock price returns of US firms involved in international acquisitions. Their results indicated that geographical expansion to developing markets is related to higher returns. This outcome is also verified in a recent work by Pantzalis (2001). Work by Conn and Connell (1990) and Harris and Ravenscraft (1991) concluded that FDI through acquisitions is a more profitable business than domestic acquisitions.

Equally, there is strong evidence that FDI has no effect on shareholder's wealth. Jaquillat and Solnik (1978) confirmed that multinationals are a poor substitute to international portfolio diversification. Brewer (1981) and Fatemi (1984) showed that there is little difference (which is not statistically significant) between the stock returns of US based Multinational Enterprises (MNEs) and Domestic Enterprises (DMEs).

This paper expands the existing literature in two significant ways: Firstly, by applying the event study methodology it provides detailed evidence on the value generating effect of different modes of FDI entry. Secondly, this is the first paper to empirically evaluate the impact of FDI on the stock returns of Greek firms participating in the Athens Stock Exchange (ASE). Why then Greece? Greece is, in our view, a typical example of how a small, peripheral economy upgraded its regional role through outward FDI. This itself constitutes an important step in our understanding of the emerging patterns of outward FDI from small peripheral economies in particular in the context of an expanded European Union (EU). Greece has been until very recently a recipient (and not a very successful) of inward FDI.

On the other hand outward FDI has been increasing rapidly. According to UNCTAD's (United Nations Conference on Trade and Development) World Investment Report (2003) Inward FDI in Greece was just 0,6% of its Gross Fixed Capital Formation (GFCF), whilst the Outward FDI was 2,1% of GFCF. More precisely, the opening up of Eastern European markets, in the early 1990s, offered Greek industry a dynamic alternative to revive and/or to augment profits. Statistical sources clearly show the importance of Greece as a key investor mainly in its neighbouring South-European countries. Indicative are the cases of Bulgaria where Greece is the top investor followed by Germany and Italy (BFIA, 2002); Albania, where

it was the second largest investor (after Italy) at the end of 2001; FYROM where it was the top investor followed by Cyprus and Germany (end of 2000); Yugoslavia where it was the third largest investor after the Netherlands and Germany (for the period 1996-98) and finally Romania where Greece was the 12<sup>th</sup> largest investor at the end of 2001 (WIIW, 2002).

At the same time, ASE provided investors with a key source of generating funds to finance their expansion strategies. Is no coincidence then, that leading Greek firms participating in ASE, domestic and subsidiaries of foreign multinational enterprises (MNEs), such as «3E» (a Coca-Cola soft drinks subsidiary), «DELTA» (dairy products, partner of DANONE), «INTRACOM» (telecommunications, a partner of Siemens), «COSMOTE» (telecommunications), «CHIPITA» (a PepsiCo food subsidiary) and many others started investing abroad.

The rest of paper is organized as follows: Next section provides the conceptual background and the methodology applied for the analysis. Section 3 provides a solid description of the sample, while section 4 focuses on the results from the event study methodology and the cross-sectional model. Finally, in section 5 we conclude.

## **CONCEPTUAL BACKGROUND AND METHODOLOGY**

Greek outward FDI is analysed in two stages: At a first stage we determine the abnormal returns generated by an investment decision, either foreign or domestic (here applied as a benchmark) and then at a second stage we estimate which parameters affect the size and direction (sign) of abnormal returns.

Understanding FDI requires an in depth analysis of a set of factors. Dunning's eclectic paradigm (known mostly as Ownership-Location-Internalisation (OLI) paradigm, Dunning 1977; 1988; 1993) has also emphasised that the returns to FDI, and hence FDI itself, can be explained by the competitive-ownership advantages of firms (O), indicating who is going to produce abroad «and for that matter, other forms of international activity» (Dunning, 1993, p.142), by locational factors (L) «influencing the where to produce» (p.143) and by the internalisation factor (I) that «addresses the question of why firms engage in FDI rather than license foreign firms to use their proprietary assets» (p. 145). Dunning's OLI provides the background for understanding and evaluating a country's growth through FDI. Thus, in a revised version of the Investment Development Path (IDP) theory Dunning and Narula (1996) identify five main stages of development at a country level. These stages are distinguished by the different growth rates in the stocks of inward and outward investments that eventually determine the net outward investment (NOI) position of a country<sup>1</sup>.

Thus, OLI advantages act both as an initiating signal as well as the mechanism of the accomplishment of an FDI project. The emerging question is then, the specification of goals, which a firm desires to pursue when becoming an MNE.

On one hand, neo-classical theory asserts that profit maximization is the sole and ultimate goal of firms and consequently in a corporation is reflected in the welfare of owners/shareholders. On the other hand, managerial theories are focusing in the interest of managers (see Shleifer A., and Vishny, R.W. (1997) for a survey on the relevant literature).

In this paper we assume that the primary goal of a firm, undertaking FDI, is to maximise shareholders' welfare. More formally we identify shareholders' interest with abnormal return, which in turn is then defined as the actual *ex post* return of a security minus the normal return. Normal return is the return that would have been expected if a specific event, in our case an FDI announcement, had not occurred. It is important here to make a clarification. By using abnormal returns we directly measure the impact of the decision to invest abroad on shareholder welfare. Application of Tobin's Q, or other measures on firm return including, Return on Equity, Return on Sales, or Return on Assets, evaluate the effect of international expansion on the overall performance of the firm. (Hitt et al. (1997), Tallman and Li (1996), Christophe (1997)). Taking the analysis a step further, financial theory relates the fundamental value of the price of the stock of a firm, in the absence of bubbles in the stock market, with the present value of future dividends. We also know that a firm has to equalize its sources of funds with its uses at each time period. There are two major sources of funds; the issuing of new equity and cash flows, and two major uses; dividends and new investment<sup>2</sup>. We assume that «growth» of a firm (g) comes only from new investment (i), irrespectively of the type of investment, i.e. new plants, research & development projects etc. (see Kumar et al., 2001 and Klette and Griliches, 1999).

$$g_t = f(i_t) \quad (1.1)$$

where t=time

Consequently, unexpected stock -price adjustments could then be either due to changes in the market – required rate of return ( $r_t$ ) or in the investment rate of return ( $i_t$ ). The announcement of a new investment project can influence both these rates in two ways: Firstly,  $r_t$  is related to a stock specific risk, which can be affected by a new investment project. Secondly,  $i_t \neq \omega_t$ , where  $i$  is the new undertaken investment and  $\omega_t$  is the portfolio of the different investment projects already undertaken by the firm (for a detailed mathematical model see Copeland and Weston, 1988, p.546-547).

These two effects may result in either positive or negative abnormal returns (Agmon and Lessard, 1977). Hence, the hypothesis put forth will then be that abnormal returns, generated by new investment announcements, are statistically different from zero:

$$H_0 : \varepsilon_{it}^* \neq 0 \quad (1.2)$$

Where  $\varepsilon_{it}^*$  is the estimated abnormal return of a stock  $i$  in time  $t$ .

In order to estimate the abnormal returns we apply the event study methodology as firstly introduced by Ball and Brown (1968) and Fama et al. (1969). We feel that event study is the most appropriate method of estimation as « methodologies based on the OLS market model and using standard parametric tests are well specified under a variety of conditions» (Brown and Warner, 1985). The excess expected stock returns are then calculated with the use of a market model:

$$r_{i,t_j^i} = a_{i,t_j^i-1} + \beta_{i,t_j^i-1} r_{m,t_j^i} + \varepsilon_{i,t_j^i} \quad (1.3)$$

where  $r_{i,t_j^i}$  is the realised excess return of a stock  $i$  in event time  $t_j^i$ ,  $r_{m,t_j^i}$  is the market excess return for the same period and  $\varepsilon_{i,t_j^i}$  the error term.

Then the abnormal returns are estimated by applying the following equation<sup>3</sup>:

$$\hat{\varepsilon}_{i,t_j^i} = r_{i,t_j^i} - \hat{a}_{i,t_j^i-1} - \hat{\beta}_{i,t_j^i-1} r_{m,t_j^i} \quad (1.4)$$

where  $\hat{a}_{i,t_j^i-1}$ ,  $\hat{\beta}_{i,t_j^i-1}$  are the estimated coefficient, using Ordinary Least Squares (OLS), of a market model for an estimation window one year before the announcement date in a weekly basis<sup>4,5</sup>.

The estimation and the event windows are illustrated in Figure 1 and are determined as follows: We define  $t_j^i$  as the  $j$ -th event date for firm  $i$  ( $j=1,2,\dots,J$ ). The event window is determined as  $t_j^i+1 - t_j^i$ . The period  $L=t_j^i-t_0$  is the length of the estimation window, in this study 52 weeks, and the event window length is 1, i.e. one week.

***Insert Figure 1 here***

At the second stage of this analysis, we define a set of specific factors stressed by the OLI paradigm. The application of the OLI framework will allow us to discern differences in the magnitude and direction of abnormal returns generated by an FDI announcement. To make things even more comprehensible we use as a benchmark domestic investment announcements. We then assume that OLI factors not only vary per individual investment but also the spectrum of OLI factors should lead to a non-negative, non-zero sum, which should maximise returns in order to engage in FDI. This is in the line with the notion that OLI advantages are resources able to generate income (Dunning, 1993, p. 77). At the same time and although other forms of international expansion, such as trade, require the existence of L and to some extent O advantages it is clear that for a firm to get involve in FDI it is that the combination of these advantages

must lead to maximisation of wealth compared to other alternative means of foreign market entry. Thus, as Dunning suggests ( p. 79), there is some sort of sequence in the decision to engage in FDI and therefore certain conditions must be satisfied. This sequence determines the choice of foreign market entry, e.g. trade versus FDI , where actually the firm decides to internalise or not according to the “*quality*” of its O advantages. The next three conditions should then hold:

$$[i_t = f(O_t, L_t, I_t)] \neq [\omega_t = g(O_t, L_t, I_t)] \quad (1.5)$$

$$\sum_i (O, L, I) > 0 \quad (1.6)$$

$$\sum_i (O, L, I) = \max(\text{returns}) \quad (1.7)$$

As analysed previously, estimated abnormal returns directly measure the value an FDI announcement generates to investors. In order to test for the above conditions we relate abnormal returns to a set of  $O_i, L_i, I_i$  characteristics. It is the configuration of these characteristics that distinguishes between different forms of strategic response to market opportunities as quantified by equation 1.7.

The governing hypotheses, for each of the variables tested in this analysis, are then formed as follows:

**CN** is a concentration index that represents the stock percentage held by shareholders possessing more than 10% of the investing company, i.e. the company initiating the investment decision. According to Dunning (1993) we can distinguish two types of O advantages; advantages that have to do with the possession of intangible assets and O advantages that derive from the ability of a firm to minimise the costs of international transactions, i.e. “ transaction cost minimising advantages” (p. 80). In our case, CN reflects a firm’s “organisational system” and indeed underlines that a particular ownership structure exposes diverse attitudes towards risk appraisal and consequently different strategic responses towards such risks (Dunning, 1993, p. 76). Data for each individual company can be found in the ASE daily Report. We expect a negative relationship with the dependent variable, as it would suggest risk aversion of the principal shareholders towards new investment projects (see Jensen and Meckling, 1976 and Morck and Yeung, 1991 for an extension of this argument by involving and analysing top management interests).

**LOC** is a dummy representing recipient countries, taking the value of 1 for low income, 2 for lower-middle income, 3 for upper-middle and 4 for high- income countries. Greece is classified as an upper middle-income country. Data were derived from the Annual report of the World Bank (1999). We anticipate a negative sign, as higher risk economies, i.e. developing countries, would be associated with higher returns. When it comes to locational factors, Doukas and Travlos (1988) used a country dummy capturing the development stage of the host country and Chongsithiphol and Schwarz (1994) related

locational factors like language, cultural context and development with the abnormal return generated by a cross-border acquisition.

**TA** stands for the logarithm of total assets of the investing firm and it is used as a measurement of size. Data were extracted from the firms' annual reports. Size is an obvious "transaction cost minimising O advantage (Dunning, 1993, Table 4.1. p. 81) which however is transformed into an I advantage as it depicts the continuous internalization of previously external markets under common governance and management (Dunning, 1993, p. 79). Empirically, size tends to favour multinationality (Horst, 1972) and we thus expect a positive relationship between AR and TA. Buckley and Pearce (1979) emphasise the role of size, arguing that large firms tend to service foreign markets through FDI rather than trade. Studies that have tested firm-level characteristics include that of Juhl (1979) and Grubaugh (1987) who also found that size favoured multinationality. However, Hoesch (1998) in a study on German investment in Central Eastern Europe (CEE) found that it is small German firms in employment terms that tend to penetrate through FDI CEE markets instead of other developed European markets.

**MNE** is a dummy taking the value of 1 when the firm is part of an MNE network and 0 when a firm is domestic. Data were derived from the ASE Daily report and the companies' annual reports. We hypothesize for a positive relationship between MNE and AR. Past experience on foreign investment and the economics of the multinational network should contribute to higher returns as these returns express the confidence of the market towards FDI initiated by already established MNEs. This argument is also developed by Meyer (2001) who asserts the positive impact of prior global and /or regional experience on a firm's expansion.

**PART** measures the ownership share of the new investment. Data were obtained from the ASE Daily Report. PART, is an approximation of internalisation advantages. The investing firm prefers to exploit the advantages of a new FDI project through ownership than through the external market, e.g. licensing or trade. In between there are different degrees of ownership, and as Buckley and Ghauri state "In terms of internalisation theory, internal markets become "open" rather than "closed" (2004, p.5)". They further elaborate their argument by analysing the creation of networks and the role of joint -ventures and they conclude: "The early phase of a joint venture provides important information that could not be obtained through investigation before the venture began. It affords an opportunity later on to buy more fully into a successful venture, an opportunity that is not available to those that have not taken any stake. It therefore provides greater flexibility than does either outright ownership or an alternative involving no equity stake" (p. 6). Building on the previous statement we argue that the greater the ownership share in a new investment would suggest that the firm wants to keep closer control and therefore secure its advantages from information leaking to others. On the other hand, minority ownership in the new investment might

signify risk aversion and thus indicating a negative relationship between PART and AR. A complementary to this argument idea on political or cultural risk connotation between the investor and the «target» project is also developed by Hennart and Larimo (1998).

**SECT** is a dummy representing the industrial sector of the parent company. It takes the value of 1 for labour-intensive industries and 0 for capital-intensive sectors<sup>6</sup>. Jeon (1992) noted that Korean firms in Heckscher-Ohlin type of industries tend to pursue FDI in LDCs. He also confirmed his hypothesis that as wage costs rise in labor-intensive industries there is an incentive to take advantage of cheaper labor costs in LDCs through FDI. We would predict a negative sign for low-technology sectors flows as high-technology sectors usually generate higher returns (Ozawa, 1994).

**DIV** is a dummy taking the value of 1 when the new investment denotes vertical integration and 0 when it presents horizontal integration. Following Caves (1996), we can distinguish the horizontal MNE whose subsidiaries produce the same range of products as the parent (similar to the multidomestic strategy defined by Porter, 1986), the vertically integrated, which is either related to the extractive MNEs (backward vertically -resource based) (Dunning & Pearce, 1988) or the more articulated type that internalises its markets for inputs such as cheap labour. Horizontal integration is strongly related to market-seeking strategies whilst vertical integration to resource-seeking strategies (Dunning, 1993). Data for this variable were collected from the Annual Reports of the firms participating in our sample. When the undertaken investment is in the same 2-digit SIC sector with the investing firm then we define this as horizontal integration. No prediction is made regarding the sign of this variable as both strategies, although different, can lead to return maximisation.

Finally, we estimate the following function.

$$AR_i = f(\bar{CN}, \bar{LOC}, \bar{TA}, \bar{MNE}, \bar{PART}, \bar{SECT}, \bar{DIV}) \quad (1.7)$$

expressed in the succeeding linear approximation,

$$AR_i = \alpha_0 + \alpha_1 CN + \alpha_2 LOC + \alpha_3 TA + \alpha_4 MNE + \alpha_5 PART + \alpha_6 SECT + \alpha_7 DIV + e_i \quad (1.8)$$

where  $e_i$  is the error term having the usual statistical properties because the investment announcements do not overlap (White 1980). To estimate regression (1.8) we apply OLS with robust standard errors.

## **SAMPLE DESCRIPTION**

It has already been stated that as event we consider, any formal investment announcement of the firm in the Daily Report of the ASE. In this paper the full sample consists of 177 manufacturing firms enlisted in the ASE both domestic and subsidiaries of foreign MNEs. For 54 of these companies an event or events (as defined above) were qualified for testing resulting to a total of 149 events. Of these 149 events, 76

were FDI announcements and 73 domestic direct investment announcements<sup>7</sup>. It is customary to apply cumulative abnormal returns of approximately 2 days before and after the formal announcement of the event in order to accommodate for information leakages. (See Campbell, Lo and MacKinlay, pp. 151 (1997) and Morse (1984)). For this reason, the estimation window for our market model is calculated on a weekly basis before the official date of the announcement. As market portfolio was applied an equally weighted index of the 177 firms included in the sample. The employment of such an index was necessary as the ASE value weighted index contains a huge amount of stocks of non-manufacturing companies. This can potentially create more variation in the calculated abnormal returns. As a robustness check however, we used the value-weighted index of ASE and the results remained unchanged<sup>8</sup>. Furthermore, one could argue that the appropriate market portfolio for truly multinational firms is the world market portfolio. We used two different specifications; a single index model with only the world market index<sup>9</sup> and a multi-index market model proposed by Agmon and Lessard (1977). In the first case the explanatory power of the market model is very low and in the second case the adjusted-R<sup>2</sup> is usually lower than that of the market model using the Greek index providing strong support for the use of the later in a single index market model. The world market portfolio might be the right portfolio for the parent companies or multinational subsidiaries established in mature financial markets like the US or/ and the UK but not always for other subsidiaries and in particular for subsidiaries located in peripheral European economies, such as Greece, which have only recently emerged as outward investors. In addition, the majority of Greek multinationals invest in the Balkan markets and not in developed markets. These developments suggest more flexible approaches and measurements which should reflect the heterogeneity encountered in today's global investment scene. Finally, the interest rate of the 3-month Treasury Bill of the Greek state is used as a benchmark for the risk-free return.

Tables 1 to 4 provide an overview of the main characteristics of our sample. We draw our attention to the following:

1. Food & Drink and Metals account for almost half of the events in foreign and domestic investments, whilst the two contingency tables reveal a statistically significant relation between time and mode of expansion and industry and mode of expansion.

*Insert Table 1 here*

*Insert Table 2 here*

2. More than half of Greek FDI is undertaken in the Balkans and Eastern Europe whilst on the other hand the investments in developed countries account for only 22,4 % of the sample. The impact of the host-country is verified in the two contingency tables, which provide evidence firstly for the existence of a statistically significant relationship between the timing of the investment announcement and the sector of the investor and location respectively. In addition, the timing pattern shows a consistent increase of FDI announcements in more recent years. Thus firms, either inexperienced in international markets or with limited mandates, turned their attention to Eastern Europe and mainly to the Balkan region apparently favoured by geographical proximity. In the mid-1990's onwards Greek based investors after having acquired experience and knowledge of their neighbouring markets injected capital more confidently in these economies. This is compatible with the theory of internationalisation (Johanson & Vahlne, 1977; 1990).
3. Acquisitions and joint ventures are the most commonly used entry modes.

*Insert Table 3 here*

4. Finally, firms involved in FDI are larger than those engaged in domestic investment in terms of assets and turnover.

*Insert Table 4 here*

## **RESULTS**

In this section we present the results of the two stages of econometric analysis. Results on the event study of abnormal returns (ARs) by mode of expansion are presented in table 5.

*Insert Table 5 here*

On average ARs are positive and statistically significant. Foreign mergers and acquisitions generate a higher AR compared to the other modes of expansion followed by domestic mergers and acquisitions. This is contrary to what Ding and Sun (1997) found for another emerging market, the Singapore, where FDI expansion produces higher returns than joint ventures or acquisitions. Our results seem to confirm Waheed's (1992) results where non-FDI modes of expansion increase the value of shareholders. On the other hand, greenfield investment (both domestic and foreign) does not show any statistically significant AR. To further examine the different modes of expansion we checked for differences among industrial sectors (Table 6). We do observe that international expansion yields high ARs in sectors such as chemicals, informatics and metals. FDI in a low technology sector i.e. textiles, produces the contrary outcome. However, the performed t-tests on the mean difference of ARs for different modes of entry and industrial Sectors do not turn out statistically different. Similar are the results in Harris and Ravenscraft

(1991), where a higher premium was found for investments in R&D intensive industries but the results are not statistically significantly different for foreign and domestic expansion.

*Insert Table 6 here*

In addition to the previous test, we split our sample across time. The two time periods were 1990-1996 and 1997-1999. The break point reflects the increased interest of Greek investors for the capital market, new government policies for investments and the accumulated expertise of Greek firms investing abroad. T-tests endorse the intertemporal stability of our results<sup>10</sup>.

In summarizing the event study results it is evident that the decision to invest abroad creates a positive reaction from the market, which results in higher returns. This strong positive relationship is also found in Errunza and Senbet (1981) and Black and Rose (1991). Our study deviates from those that found no difference in international or domestic expansion, i.e. Brewer (1981) and Fatemi (1984). Nevertheless, mode of entry does matter, as greenfield investment is the sole mode of entry that deteriorates the prospects of an FDI project. At the same time the market shows its assurance in domestic investment as well, suggesting (in our case) strong confidence on the potential of the Greek market. Domestic investment should not then be viewed as the outcome of an isolated and independent decision process, i.e. of a process that does not take into account international developments, thus, factors influencing FDI could potentially affect local investment decisions as well but not necessarily encompassing the same weight and impact. Consequently, it is important to point out that these two types of investment are not identical. In table 7 we present the results of the complete cross-section model and the two sub-samples by types of expansion, i.e. domestic expansion sample (DES) and foreign expansion sample (FES). Another possible breaking up of the sample is between domestic firms and multinationals. Although it is beyond the scope of this study, the results can be found in Appendix 4. The dependent variable is thus the abnormal return generated by the investment decision.

The result of the Ramsey -RESET test for omitted variables shows that our models are well specified and secondly the reported F-test supports that these two strategies are different (the null hypothesis that the two models are the same is rejected).

*Insert Table 7 here*

As it can be seen in Table 7 the overall performance of our models is also satisfactory in terms of Adjusted R<sup>2</sup> and F-statistic. Moreover, the values of both the Mean Variance Inflation Factor (MVIF)

and Condition Index (CI) indicate no signs of multicollinearity<sup>11</sup>. Discussing the results for the full sample, we emphasize that ARs are positively influenced by LOC. This underlines-contrary to our hypothesis- that a well balanced mix of advanced location characteristics in developed economies suits better the long-term character of FDI. This result is different from what Doukas and Travlos (1988) and Pantzalis (2001) found for US firms expanding abroad. For these firms and their shareholders, greater benefits existed when expanding to less developed markets. The negative sign on PART also supports a risk-averse strategy argument. Similarly, the negative sign on SECT emphasizes that the market rewards investments in capital-intensive sectors.

Looking closer at the two separate cross-section sub-samples, we see that FDI and domestic direct investment are indeed two different strategies. The positive sign for MNE in the FES model, suggests that a firm being a multinational is obviously considered, per se, as an advantage, which counterbalances the potential risks associated with FDI. This consequently turns the decision to invest abroad into a value generating strategy. The same does not hold apparently for domestic expansion. Thus, the market reacts negatively when an MNE further expands in the local market, disapproving the lack of diversification in the portfolio of investment projects. This argument is valid for firms coming from developed markets as well. Doukas and Travlos (1988) found similar results for the international geographical diversification of firms.

Regarding the rest of the explanatory variables, we notice that PART remains statistically significant (with a negative sign) in DES model, while SECT is negatively signed and statistically significant in FES model. DIV gains statistical significance only in the FES model. The negative sign for DIV states that horizontal integration is associated with higher ARs. A similar result is obtained by Markides and Ittner (1994) who apply in their analysis a «relatedness» factor, which suggests similar lines of business between the parent and the subsidiary.<sup>12</sup> As a final remark, a plausible explanation for the statistical insignificance of the two firm level variables, i.e. CN and TA, is that these variables are not directly related to the investment decision itself, in the sense that they represent characteristics of the investing firm that are already identified and thus incorporated in the market valuation of the firm<sup>13</sup>. In studies though, performed for developed markets, these variables usually are statistically significant, i.e. Morck and Yeung (1992). Quoting Campbell, Lo, MacKinlay pp. 174 (1997), “One must be very careful in interpreting the results of the cross-sectional regression approach. In many situations, the event-window abnormal return will be related to firm characteristics not only through the valuation effects of the event but also through a relation between the firm characteristics and the extent to which the event is anticipated. This can happen when investors rationally use firm characteristics to forecast the likelihood of the event occurring.” Moreover, similar evidence can be found in Malatesta and Thompson (1985) and

Lanen and Thompson (1988).

In concluding this section, we firstly demonstrated that subsidiaries of foreign MNEs as well as, newly established Greek MNEs enlisted in the ASE succeeded in gaining investors' confidence in their decision to invest abroad. This offers, in particular to foreign subsidiaries, the potential to upgrade their presence in regional markets. Extensive work by Pearce (1992), Taggart and Hood (1997), Hood, Young and Lal (1994), Young, Hood and Dunlop (1988), Birkinshaw and Morrison (1995) and Birkinshaw and Hood (2000) has provided a solid theoretical and applied framework for the understanding of the MNE group as a network of subsidiaries with evolving strategic priorities and roles. Secondly, the results of the cross-section model clearly demonstrated that different factors explain the generation of ARs in the case of FDI and domestic investment respectively. These results support the idiosyncratic nature of FDI sending a message to Greek investors that when FDI is linked to horizontal integration, developed countries and capital-intensive sectors then the more attractive the strategy is in terms of generating higher ARs.

## **CONCLUSIONS**

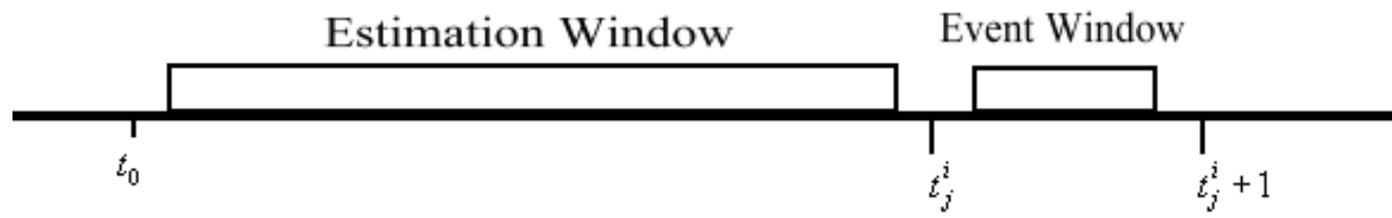
The purpose of this paper was twofold: Firstly, to show whether FDI is considered as a return generating strategy to investors, and secondly to determine which factors determine the excess market value of firms investing abroad. The analysis was focused on the experience of Greece based firms enlisted in ASE. Greece is among the small and peripheral countries of the OECD that have taken advantage of the opening up of the eastern European markets and have quickly emerged (in less than a decade) as dynamic outward investors. This event in itself constitutes a very important development in the analysis of outward FDI as we witness how -primarily almost exclusively- recipient FDI host-countries are turning into outward investors. The growth implications of such evolution are immense for both Greece as well as the host-countries of outward Greek FDI.

The event study results showed that outward FDI does generate excess market value to investors. In the case of Greece, the cross-section analysis revealed that a successful outward FDI project should be located in developed countries, performed in a capital-intensive sector and should be linked to horizontal integration. At the same time our results strongly suggested that domestic investment couldn't be viewed as the outcome of an isolated decision process. In our case Greece is an advance OECD economy, well integrated into the European economy and thus investing in Greece does create excess value to investing firms. An interesting implication of this analysis is the emerging potential of foreign subsidiaries located in Greece to upgrade their roles into more sophisticated regional representatives of their respective groups. Future research should look into this matter more closely. Finally, comparisons with other peripheral European economies should allow us to understand further the emerging outward FDI patterns

within Europe.

## **TABLES AND FIGURES**

Figure 1. Time line for the event study



**Table 1: Contingency Table of Time and Mode of Expansion**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Total
<b>Foreign Expansion</b>	0	0	3	1	6	9	10	9	26	12	<b>76</b>
	0,0	0,5	3,6	6,1	5,1	6,6	7,1	8,7	21,9	16,3	
<b>Domestic Expansion</b>	0	1	4	11	4	4	4	8	17	20	<b>73</b>
	0,0	0,5	3,4	5,9	4,9	6,4	6,9	8,3	21,1	15,7	
<b>Total</b>	<b>0</b>	<b>1</b>	<b>7</b>	<b>12</b>	<b>10</b>	<b>13</b>	<b>14</b>	<b>17</b>	<b>43</b>	<b>32</b>	<b>149</b>
<b>Chi-Square <math>X^2</math> (9) = 18.26*</b>											

Expected Values in parenthesis

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

**Table 2: Contingency Table of Sector Participation and Mode of Expansion**

	Foreign Expansion	Domestic Expansion	Total
<b>Food &amp; Drink</b>	23	15	<b>38</b>
Expected Value	19,4	18,6	
<b>Metals</b>	13	19	<b>32</b>
Expected Value	16,3	15,7	
<b>Pharmaceutical &amp; Cosmetics</b>	5	8	<b>13</b>
Expected Value	6,6	6,4	
<b>Chemicals</b>	5	4	<b>9</b>
Expected Value	4,6	4,4	
<b>Packaging</b>	7	0	<b>7</b>
Expected Value	3,6	3,4	
<b>Textiles</b>	6	6	<b>12</b>
Expected Value	6,1	5,9	
<b>Flour Mills</b>	6	5	<b>11</b>
Expected Value	5,6	5,4	
<b>Construction Materials</b>	5	2	<b>7</b>
Expected Value	3,6	3,4	
<b>Holding</b>	2	5	<b>7</b>
Expected Value	3,6	3,4	
<b>Informatics</b>	2	8	<b>10</b>
Expected Value	5,1	4,9	
<b>Various</b>	2	1	<b>3</b>
Expected Value	1,5	1,5	
<b>Total</b>	<b>76</b>	<b>73</b>	<b>149</b>
<b>Chi-Square <math>X^2</math> (10) = 17.15*</b>			

Expected Values in parenthesis

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

**Table 3: Analysis of the Sample by Host Region and Entry Mode**

<b>Analysis of the sample by Host Region</b>		
<b>Host Regions</b>	<b>Number of Firms</b>	<b>Percentage</b>
E.U. Countries	11	14.47%
<b>Total of Developed</b>	17	22.37%
Balkans	40	52.63%
<b>Total of Developing</b>	59	77.63%
<b>Total</b>	76	100.00%
<b>Analysis of the sample by Entry Mode</b>		
<b>Type of Investment</b>	<b>Number of Observations</b>	<b>Percentage</b>
Acquisition	31	40.79%
Greenfield Investment	18	23.68%
Joint Venture	25	32.89%
Other	2	2.63%
<b>Total</b>	76	100.00%

**Table 4: Firm Characteristics according to their Investment Activity**

	<b>Mean</b>	<b>St. Dev</b>	<b>Maximum</b>	<b>Minimum</b>
<b>Domestic Expansion</b>				
Concentration	42.189%	26.559%	90.810%	0.000%
Participation	64.359%	33.390%	100.000%	5.000%
Total Assets*	103.69	91.66	361.26	6.63
Turnover*	98.19	94.59	421.72	0.73
<b>Foreign Expansion</b>				
Concentration	53.913%	23.836%	83.170%	0.000%
Participation	67.368%	24.076%	100.000%	10.000%
Total Assets*	174.97	252.36	1684.52	10.84
Turnover*	166.32	232.46	1239.62	7.10
<b>Total Sample</b>				
Concentration	48.169%	25.800%	90.810%	0.000%
Participation	65.894%	28.955%	100.000%	5.000%
Total Assets*	140.05	194.01	1684.52	6.63
Turnover*	132.94	181.40	1239.62	0.73

\*In Millions of Euros.

**Table 5: Abnormal Returns by Mode of Expansion**

	Average AR	St. Dev.	Maximum	Minimum	N	t-stat
<b>Mode of Expansion</b>						
<b>1 Domestic Expansion Total</b>	3.915%	0.113	45.367%	-18.640%	73	2.970***
<b>1a Domestic Mergers&amp;Acquisitions</b>	3.982%	0.111	45.367%	-18.640%	69	2.905***
<b>1b Domestic Greenfield Investments</b>	2.761%	0.164	25.799%	-12.248%	4	0.337
<b>2 International Expansion Total</b>	3.430%	0.088	24.071%	-15.864%	76	3.391***
<b>2a International Mergers&amp;Acquisitions</b>	4.034%	0.089	24.071%	-13.555%	58	3.467***
<b>2b International Greenfield Investments</b>	1.486%	0.086	18.813%	-15.864%	18	0.730
<b>Total Sample</b>	3.668%	0.100573	45.367%	-18.640%	149	4.451***
<b>t-tests on the difference of means</b>						
<b>1 Domestic Expansion vs. International Expansion</b>						0.2930
<b>2 Domestic M&amp;A vs. International M&amp;A</b>						-0.0287
<b>3 Domestic Greenfield vs. International Greenfield</b>						0.2270

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

**Table 6. Tests on the mean difference of Abnormal Returns (AR) for different industrial Sectors.**

Sector	International Expansion- ARs	Domestic Expansion ARs	t-test
<b>Chemicals</b>	12.86%***	-3.90%***	3.441***
<b>Construction Materials</b>	1.24%*	4.40%***	-0.404
<b>Flour Mills</b>	-0.41%	-0.01%	-0.079
<b>Food &amp; Drink</b>	2.41%**	0.72%	0.890
<b>Holding</b>	3.65%***	2.22%**	0.165
<b>Informatics</b>	8.65%***	5.40%***	0.363
<b>Metals</b>	6.18%***	7.21%***	-0.197
<b>Pharmaceuticals &amp; Cosmetics</b>	2.71%**	3.12%***	-0.128
<b>Textiles</b>	-1.21%*	10.17%***	-1.461*

Standard Errors and number of observations where withheld for simplicity of the table.

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

**Table 7: Estimation Results of the Cross-Sectional Model.**

	<b>Full Sample</b>	<b>Domestic Expansion</b>	<b>Foreign Expansion</b>
<b>Intercept</b>	0.098 ( 0.989)	0.085 (0.554)	0.074 (0.540)
<b>CN</b>	-0.025 (-0.774)	-0.050 (-1.011)	-0.015 (-0.343)
<b>LOC</b>	0.019** (1.740)		0.032*** (2.837)
<b>TA</b>	-0.004 (-0.430)	0.001 (0.076)	-0.005 (-0.416)
<b>MNE</b>	0.008 (0.399)	-0.050** (-1.866)	0.058** (1.966)
<b>PART</b>	-0.060** (-1.914)	-0.075* (-1.638)	0.002 (0.053)
<b>SECT</b>	-0.047*** (-2.711)	-0.030 (-1.17)	-0.036** (-1.811)
<b>DIV</b>	0.004 (0.234)	0.027 (0.986)	-0.036* (-1.622)
<b>Obs.</b>	149	73	76
<b>Adj. R<sup>2</sup></b>	8.608%	13.474%	21.638%
<b>F-stat</b>	1.98*	1.713	2.76**
<b>Mean VIF</b>	1.15	1.27	1.34
<b>Condition Number</b>	1.6687	1.9532	2.0590
<b>Ramsey-RESET F-stat</b>	1.16	1.27	1.03
<b>H<sub>0</sub>: Model has no omitted variables</b>			
<b>F-stat H<sub>0</sub>: The two models are the same</b>			1.83*

OLS estimation with robust standard errors.

t- statistics are in parenthesis

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

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## APPENDIX 1:

### Correlation Matrix of the variables

	CN	DIV	LOC	TA	MNE	PART	SECT
CN	1.0000						
DIV	-0.0565	1.0000					
LOC	0.0359	0.2988**	1.0000				
TA	0.2406**	0.0457	-0.0622	1.0000			
MNE	0.0231	0.0472	-0.0830	0.3940**	1.0000		
PART	0.0837	-0.2608**	-0.0423	-0.0585	-0.0587	1.0000	
SECT	-0.1252	0.0927	0.0143	-0.0282	0.0389	-0.2097*	1.0000

\*\* Statistically significant at 1%

\* Statistically Significant at 5%

### Collinearity Diagnostics

Variable	VIF	Tolerance	Eigenvalue	Condition Index	R <sup>2</sup>
CN	1.10	0.9119	1.5137	1.0000	0.0881
LOC	1.12	0.8943	1.4904	1.0078	0.1057
TA	1.28	0.7839	1.1747	1.1352	0.2161
MNE	1.20	0.8328	0.8723	1.3173	0.1672
PART	1.12	0.8898	0.7970	1.3781	0.1102
SECT	1.06	0.9414	0.6084	1.5773	0.0586
DIV	1.19	0.8405	0.5436	1.6687	0.1595
<b>Mean VIF</b>	<b>1.15</b>		<b>Condition Number</b>		<b>1.6687</b>

## APPENDIX 2: Estimation of Abnormal

### Returns

Under the  $H_0$  that the event has no impact on both the mean and the variance of the return of the stock  $i$ , the abnormal returns should follow (for a detailed analysis on the statistical properties of the abnormal returns see Campbell, Lo and MacKinlay, 1997, p.158-160).

$$\widehat{\varepsilon}_{i,t_j^i} \sim N(0, V_{i,t_j^i}) \quad (2.1)$$

In order to draw overall inferences for the event of interest, i.e. FDI or domestic expansion, the estimated abnormal returns are aggregated along two dimensions:

1. For an individual security over time.

$$\widehat{\varepsilon}_i = \frac{1}{J} \sum_{j=1}^J \widehat{\varepsilon}_{i,t_j^i} \quad (2.2)$$

Where  $j=1,2,\dots,J$  are the events for each firm across time.

2. Across all firms. Given a sample of  $I$  firms, the sample average is calculated as:

$$\widehat{\varepsilon} = \frac{1}{I} \sum_{i=1}^I \widehat{\varepsilon}_i \quad (2.3)$$

The event windows do not overlap and so the covariances are set equal to zero. The following test is constructed in order to answer the question of whether the abnormal returns found are statistically significant or not.

$$S = \frac{\widehat{\varepsilon}}{\widehat{\sigma}} \sim t_{L-2} \left( 0, \frac{L-2}{L-4} \right) \quad (2.4)$$

Where  $\widehat{\sigma}$  is the estimated standard error of the abnormal returns corrected for the error of the market<sup>14</sup>.

### APPENDIX 3: Sectoral Breakdown of Sample

Table: Capital and Labour Intensive Sectors

<b>Capital Intensive</b>	<b>Labour Intensive</b>
Chemicals	Flour Mills
Construction Materials	Food & Drink
Holding	Textiles
Informatics	
Metals	
Packaging	
Pharmaceuticals & Cosmetics	
Various	

#### APPENDIX 4: Results for domestic and multinational firms.

**Table: Abnormal Returns by Type of Firm**

Type of Firm	Average AR	St. Dev.	Maximum	Minimum	N	t-stat
<b>1 Domestic Firms</b>	3.602%	0.106	45.367%	-18.640%	108	3.530***
<b>2 Multinational Firms</b>	3.839%	0.087	24.071%	-8.031%	41	2.824***
<b>Total Sample</b>	3.668%	0.101	45.367%	-18.640%	149	4.451***
<b>t-tests on the difference of means</b>						
Multinational Firms vs. Domestic Firms						0.1281

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

**Table: Estimation Results of the Cross-Sectional Model.**

	Full Sample	Domestic Firms	Multinational Firms
<b>Intercept</b>	0.098 (0.989)	0.071 (0.122)	0.023 (0.175)
<b>CN</b>	-0.025 (-0.774)	-0.049 (0.038)	0.047 (0.052)
<b>LOC</b>	0.019** (1.740)	0.008 (0.014)	0.041*** (0.015)
<b>TA</b>	-0.004 (-0.430)	0.002 (0.011)	-0.007 (0.013)
<b>MNE</b>	0.008 (0.399)		
<b>PART</b>	-0.060** (-1.914)	-0.074** (0.035)	0.042 (0.061)
<b>SECT</b>	-0.047*** (-2.711)	-0.047*** (0.019)	-0.032 (0.022)
<b>DIV</b>	0.004 (0.234)	0.018 (0.021)	-0.017 (0.027)
<b>Obs.</b>	149	108	41
<b>Adj. R<sup>2</sup></b>	8.608%	10.24%	24.10%
<b>F-stat</b>	1.98*	1.83*	1.59
<b>Mean VIF</b>	1.15	1.15	1.18
<b>Condition Number</b>	1.6687	1.6994	1.7406
<b>Ramsey-RESET F-stat</b>	1.16	0.70	3.18
<b>H<sub>0</sub>: Model has no omitted variables</b>			

OLS estimation with robust standard errors.

t- statistics are in parenthesis

\*\*\* Significant at 1% level.

\*\* Significant at 5% level.

\* Significant at 10% level.

## Notes

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<sup>1</sup> Greece could be classified as a stage three country. The key characteristics of this stage include the deterioration of comparative advantage in domestic labour intensive industries increase in domestic wages exceeding productivity and the advent of outward investment in stage one and stage two countries, which possess cheap labour and/or natural resources. Outward investment in this case could be either market seeking or resource seeking which could eventually suggest the creation of export-processing zones in the host economy (Dunning, 1993, p.57).

<sup>2</sup> If a firm makes no investment will still receive cash flows each year but it will not «grow».

<sup>3</sup> Pantzalis (2001) in his conclusions acknowledges that an extension of his paper would have been to incorporate the application of « standard event study methodology where abnormal stock returns around successful acquisitions announcements are related to the location factors described *in his work*», p. 149 .

<sup>4</sup> See Appendix 2 for a detailed analysis of the model and the statistical properties of abnormal returns.

<sup>5</sup> The one year period is a fair time window to avoid changes in the beta factor of the market model which may be unrelated to the particular investment decision.

<sup>6</sup> See Table in Appendix 3 for the Sectoral breakdown.

<sup>7</sup> At both stages of the analysis, we use abnormal returns generated by domestic investments as a benchmark.

<sup>8</sup> These results are available upon request from the authors.

<sup>9</sup> Two alternative world market indices were used. The World Market Index provided from Datastream and the FTSE World market index. As risk –free return we used the weekly yield of US Treasury bill.

<sup>10</sup> Results for the time dimension are available upon request from the authors.

<sup>11</sup> The full collinearity diagnostics accompanied by a correlation table of the variables are provided in the Appendix 1.

<sup>12</sup> LOC is dropped in DES as all investment decisions concern Greece.

<sup>13</sup> Further to this point, the insignificant sign of size (expressed in TA) and the equal dispersion of firms' value participating in the ASE, diffuses possible concerns regarding the efficient application of abnormal returns in the cross-section model rising from the augmented Fama French CAPM (1992).

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$${}^{14} \hat{\sigma} = \left[ V \left( 1 + \frac{1}{L} + \frac{(r_{m,t_j} - \bar{r}_m)^2}{\sum_{t_0}^{t_j} (r_{m,t_j} - \bar{r}_m)^2} \right) \right]$$