



Internationalization Strategies of the Greek MNEs during the Pre-Crisis Period: An Econometric Research Based on the OLI Model

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Abstract

This study is an effort to explore the impact of various determinants on Greek Outward Foreign Direct Investment from 2001 till the outbreak of the debt crisis in Greece. The case of Greece is of great interest of how a small peripheral EU country in the southern neighborhood drove its internationalization path before the outbreak of the financial crisis. Specifically, investigating the way in which Greece's participation in the single market and the oncoming crisis affected the internationalization of Greek MNEs is of utmost importance.

A main contribution of this paper is that it examines ownership and location advantages at specific sectors of an economy. We do so by analyzing disaggregated firm level data and examining separately the sectors of trade and manufacturing.

We are building our theoretical framework on Dunning's eclectic paradigm which perceives firms' internationalization as a result of the combination of Ownership advantages, Location advantages and Internationalization advantages. This model allows us to link the internal micro-environment of the firm with the external macro environment of the host country and also to investigate specific motives of internationalization for each sector.

Our results indicate that there is a major and incontrovertible impact of the tax rate of the host country to the Greek MNEs. Moving forward at sector level analysis for the manufacturing and the trade sectors, we found that Dunning and Lundan's (2008) conceptualization on the motives of internationalization is validated.

JEL Classification: F23 Multinational Firms; International Business

Keywords: FDI, Multinational Enterprises, determinants, internationalization, Greece, debt crisis.

1. Introduction

The internationalization of multinational enterprises (MNEs) is universally recognized as the most typical expression of globalization. Moreover, during the last three decades the debate over the importance of inward and outward Foreign Direct Investment as a factor of growth has been brought to the spotlight.

This paper is an effort to explore the impact of various determinants on Greek outward Foreign Direct Investment (FDI) from 2001 till the outbreak of the debt crisis in Greece. The case of Greece is of great interest of how a small peripheral EU country in the southern neighborhood drove its internationalization path before the outbreak of the financial crisis. Specifically, investigating how Greece's participation in the single market and the oncoming crisis affected the internationalization of Greek firms is of utmost importance.

A main contribution of this paper is that it examines ownership and location advantages at specific sectors of an economy. We do so, by analyzing disaggregated firm level data, examining separately the sectors of trade and manufacturing.

We are building our theoretical framework on Dunning's eclectic paradigm which perceives firms' internationalization as a result of the combination of Ownership advantages, Location advantages and Internationalization advantages. This model allows us to link the internal micro-environment of the firm with the external macro environment of the host country and also to investigate specific motives of internationalization for each sector.

Specifically, we investigate the importance of motives of FDI according to Dunning and Lundan's (2008) taxonomy (i.e. resource seeking, market seeking, efficiency seeking and strategic asset seeking) on two major sectors of the economy. The manufacturing sector and the trade sector. We picked these two sectors because they concentrate the majority of parent firms and subsidiaries. Under this conceptualization, typically, firms of the trade sector are expected to seek big markets and thus market size is a major determinant. On the other hand, manufacturing firms tend to be more resource and efficiency seeking.

For our empirical research, we use an extensive database which monitors the investment positioning of Greek MNEs throughout a time series of ten years (2001-2010).

Our results indicate that there is a major and incontrovertible impact of the tax rate of the host country to the investment decisions of Greek MNEs. Moving forward to sector level analysis for the manufacturing and the trade sectors, we found that Dunning and Lundan's (2008) conceptualization on the motives of internationalization is validated.

The remainder of the paper is organized as follows. Initially, on section 2 we present the evolution of Greek MNEs internationalization during the last two decades. Section 3 discusses the theoretical framework and on section 4 we place our research hypotheses. On sections 5 and 6, we present our database and the explanatory variables used in our model. On section 7 we discuss the empirical results and finally, section 8 concludes the study and provides some policy recommendations.

2. Trends and Developments

Greek outward FDI is a rather new phenomenon since Greece had been a traditional FDI recipient, especially during its industrialization era between 1960 and 1980. The path for Greece, as an FDI investor, origins back in the early 1990s, after the collapse of the centrally

planned economies of Central and Eastern Europe (CEE) and the consequent opening up of their borders to foreign capital inflows. As a result, many Greek firms found a prolific territory to internationalize, taking advantage of the cheaper production factors and the extended emerging market of the CEE Countries.

In this respect, Greece quickly emerged as a key FDI player in Central-Eastern and South-eastern European countries in early 1990s and gradually, Greek firms expanded their operations to other countries as well.

The internationalization of Greek firms practically initiated with the opening of the CEE markets when Greek “migrant entrepreneurs” living there attempted to gain from the increasing demand in these markets and acted as intermediaries for promoting Greek exports. They actually paved the way for the first subsidiaries of Greek firms which were established there later (Kamaras, 2001).

These early internationalization efforts were followed in the mid-1990s by firms which relocated production processes in the neighboring countries in order to gain from the lower labor costs (Karagianni and Labrianidis, 2001) and survive. This happened as a reaction to the increasingly competitive domestic environment, including increasing labor costs and cheap imports. Many of these firms were part of “triangle-like industry networks”. Within these networks, firms from more developed core-EU countries were the buyers of Greek firms’ output while the latter channeled (usually labor-intensive) manufacturing processes in their neighboring Balkan countries (Labrianidis, 2003). This type of resource seeking FDI¹ probably still exists till today. For the period described above (1990-1997), Greek outward FDI stocks in terms of invested capital had been at a rather low and stable level, increasing from 2.882 million \$ in 1990 to just 3.068 million \$ in 1997².

The pre-crisis period is characterized by the maturity of Greek MNEs internationalization process with an increase in invested capital and an expansion of Greek owned subsidiaries to new markets (Giakoulas, 2015). It began around 1998 and lasted till the outbreak of the debt crisis. The major characteristic of this period is the entry of big enterprises of the tertiary sector and the huge increase of invested capital. These enterprises expanded their operations abroad (Bank of Greece), sometimes operating as proxies of other bigger European firms. The geographical expansion of Greek subsidiaries has also expanded. Though Cyprus and the CEE Countries continued to be the main destinations, Greek MNEs also expanded to more developed economies of the EU such as Germany, France, Italy, UK and Spain. Regarding the increase of outward FDI stocks after 1998, it is possible to distinguish 3 separate sub periods.

The first extends from 1998 to 2004, when Greece’s outward FDI stock³ had a remarkable increase of approximately 400% in seven years, reaching 10.074,6 million € in 2004.

The second period refers to the expansion of outward FDIs, ranging from 2005 to 2008 including 3 years of enormous amounts of outward flows between 2005 and 2007. More specifically, outward FDI stocks rose from 11.359,7 million € in 2005 to 26.916,2 million € in 2008. Outward stocks continued to rise even after the outbreak of the crisis but at a

¹ More information on different types of FDI, i.e., market seeking, resource seeking and efficiency seeking may be found in Dunning (1998).

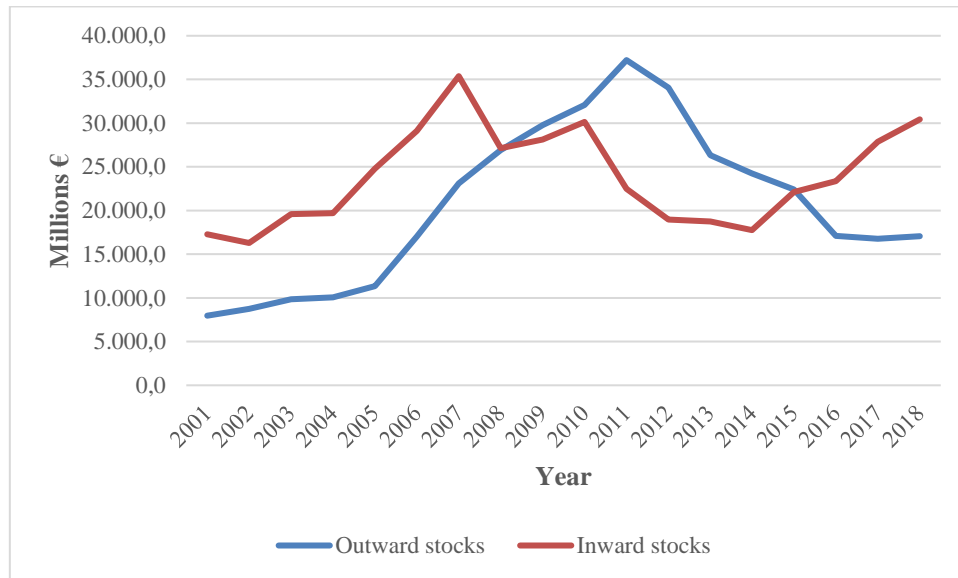
² Data retrieved from UNCTAD.

³ We generally use stocks instead of flows because FDIs are not (or should not be) treated as trade flows since initial sunk costs are very significant.

substantially slower pace reaching a peak of 37.215,6 million € in 2011. It's worth mentioning that by 2008 Greece seized (at least technically) to be a net FDI recipient country since outward FDI stocks surpassed its inward FDI stocks.

Finally, the third sub period refers to the collapse of Greek outward FDI, reaching its trough of 16.762,9 million € in 2017 and followed by a slight recovery in 2018. During this period Greek outward FDI subsided back on the level of 2006.

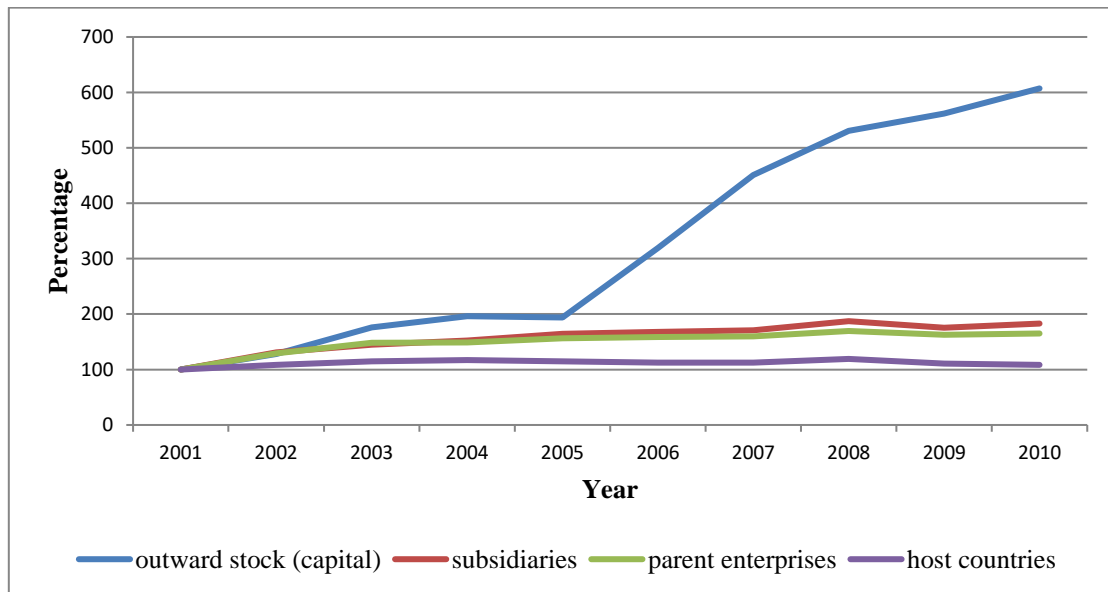
Graph 1. Greek inward and outward FDI stock



Source: Bank of Greece

The period under examination covers the decade from 2001 up to 2010, i.e. the pre-crisis period. Our analysis is based on firm level data retrieved from a unique, unpublished database maintained by the Department of Statistics of the Bank of Greece.

Graph 2. Greek FDI stocks expansion, base year = 2001



Source: Bank of Greece and authors' calculations

Graph 2 illustrates the expansion of Greek outward FDI for the period 2001-2010. We compare the outward stock in terms of, invested capital, number of subsidiaries, number of parent enterprises in Greece and number of host countries. In order to make these data comparable, we converted them to the same scale setting 2001 as the base year. As evidently shown in graph 2, the amount of invested capital grows disproportionately compared to the amounts of the other three variables, especially after 2005. In particular, from 2001 to 2005, the amount of invested capital grew by 193,7% while the respective number of subsidiaries grew by 164,7%, host countries by 114,9% and parent enterprises by 156,3%. Hence, one may observe a slight prevail of the rate of increase in invested capital over the rate of increase in the other 3 variables.

This pattern changes radically after 2005. From 2005 to 2010 the amount of invested capital grew by 313,4% while the numbers of subsidiaries, host countries and parent enterprises by 111,0%, 94,4% and 105,5% respectively. It seems that during this period, Greek MNEs strengthen their presence abroad, by further growing their established subsidiaries.

3. Theoretical framework

Dunning's eclectic paradigm, developed in 1981, provides a holistic approach to the internationalization decisions of MNEs by linking the internal (firm-level) and the external (country level) environment of the multinational enterprise (Dunning & Robson, 1987, p. 1; Estrella Tolentino, 2001, p. 191). Though highly criticized for not being a genuine FDI theory and failing to explain the strategies of individual firms, it is probably the most influential model for analyzing the internationalization strategies of MNEs (Cantwell & Narula, 2001).

According to Dunning's eclectic paradigm, a firm's decision about its internationalization mode, depends on factors (advantages) which can be categorized into three groups Ownership, Location and Internationalization, generating the acronym OLI (Dunning, 1981, 1998; Narula and Dunning, 2000).

Ownership advantages refer to any kind of advantages located in the internal environment of the firm (such as an innovative product or a cost reduction technology) that enhances its potential to expand its activities, compared to other firms that do not possess these advantages.

Location advantages refer to specific factors located in the host country (such as a big market, cheap resources or low taxation) that attract foreign firms' operations, compared to other alternative host countries.

The third category of advantages refers to internalization advantages which reflect the firm's decision on the extend that it will exploit its ownership advantages internally (through an FDI) or it will proceed to other international transactions such as exports, licensing, or joint venture in the foreign country.

We should rather address the OLI paradigm as a holistic context with its applicability varying across different firms, sectors and regions (Stoian & Filippaios, 2008) and also to different motives of FDI (Dunning, 2001, p. 176).

Dunning and Lundan (2008, p. 68-78) further progressed the above conceptualization by identifying a taxonomy of basic motives for internationalization. According to this taxonomy we can distinguish foreign direct investors based on their motives as:

a) resource seekers who tend to invest abroad in seek of cheaper production inputs such as raw materials, fuels, agricultural products and unskilled or skilled labor. Resource seekers are typically firms of the primary or the manufacturing sector investing in developing countries and gradually withdraw as the host country's level of growth rises (Chorell and Nilsson, 2005).

b) market seekers who invest abroad in order to cover the demand in foreign markets through their own subsidiaries rather through international trade. Specifically Dunning and Lundan (2008, p. 69-70) allege that market seeking FDI originate from firms that were priorly exporters to the host market. They choose to strengthen their position to the host market through FDI, either to protect themselves from international competition or to better adapt to local tastes, reduce exports transport costs, etc.

c) efficiency seekers who seek to reduce production costs and gain from economies of scale or scope and rationalize their production processes through building value chains among geographically dispersed operations. Efficiency seekers are usually big and diversified MNEs typically belonging to the manufacturing sector (Dunning and Lundan, 2008, p. 72).

d) strategic asset seekers who engage to FDI activities by establishing a new or (usually) acquiring/merging an established foreign company, in order to acquire, integrate and exploit strategic assets such as technology, brand name and distribution networks. Strategic asset seekers from developed countries typically acquire a foreign firm in order to exploit its ownership advantages in the host country. On the contrary firms from developing countries and emerging markets might acquire a foreign firm in order to obtain and incorporate these advantages in their value chain. (Cross and Voss, 2008).

Most of the relevant studies on FDI determinants use aggregate data in sectoral and geographical level because of the lack of analytical firm level data (see Campos & Kinoshita, 2003; Walsh & Yu, 2010; Botrić & Škuflić, 2006; Culem, 1988; Wheeler & Mody, 1992; Agiomirgianakis, Asteriou & Papathoma, 2006; Holland & Pain, 1998; Ma et al, 2000). The few studies using firm level data are usually based on a sample of firms or host countries (see Resmini, 2000; Crozet, Mayer & Mucchielli, 2004; Milner & Pentecost, 1996) and fail to give the big picture or do not include adequate time series in order to investigate the phenomenon dynamically. Some of the few studies using firm level data with extended time series are the following.

Buch, Kleinert and Toubal 2003, use extensive firm level data in time series collected from Deutsche Bundesbank's database Capital Links. Their dependent variable is the size of the subsidiaries in terms of invested capital. Their analysis is conducted in two levels. In the first level, data are grouped by sectors and destination country, resulting in a population of 238 destination countries and 38 industries, while in the second level, data are analyzed in terms of investment of each parent company, per host country. Their results indicate that German outward FDI are positively correlated with host countries' GDP, bilateral trade and common language and currency, while geographical and cultural distance, regulations, and country risk are negatively correlated.

Kottaridi, Giakoulas and Manolopoulos (2019), based on Dunning's eclectic paradigm, investigate escapism FDI from developed countries and particularly from countries that face regulatory weaknesses and high taxation. They use a database provided by the Bank of Greece ranging from 2001 to 2010 including the total of Greek MNEs. They complement the database with variables representing ownership and location advantages while their

dependent variable measures outward FDI stock of each parent firm. Their sample consists of 334 parent firms from 13 sectors grouped in 8 categories, which invest in varying destinations. Their results indicate that regulatory quality, lower taxation and knowledge accumulated through prior presence have a significant impact on the selection of host country and the volume of capital invested.

4. Research hypotheses

Based on trends and developments in Greek outward FDI and our theoretical framework we focus into investigating the following research hypotheses.

As mentioned above from late 1990s to mid-2020s there has been a change in the pattern of Greek firms investing abroad. Initially Greek outward FDI were mostly determined by low labor cost seeking motives. On the contrary during the maturity period of their internationalization, Greek MNEs were rather seeking for new markets and improving the overall efficiency of their domestic and international operations. These developments lead us to the following hypothesis:

H1. Greek MNEs are not anymore solely driven by resource seeking motives but rather by efficiency seeking and market seeking motives.

According to Dunning and Lundan (2008) FDI motives concept, MNEs from different sectors are affected by different motives. Especially for the trade sector, the size of the host country's market is a crucial factor. For the manufacturing sector, the motives vary on whether the MNE expands to the host country aiming at producing products for the local market or it uses it as an export platform. In any case, the trade sector is clearly more affected by market size than the manufacturing sector. So our next hypothesis is:

H.2 Firms of the trade sector will be more affected by market seeking motives compared to manufacturing sector's firms.

5. The database

The data are retrieved from an annual census survey which is applied on the total of Greek firms owning equity capital of at least 10% of an establishment abroad. The data provided by the Bank of Greece include a variety of variables concerning the demography of the parent firms and their subsidiaries' and the stock of FDI held by every parent firm in its subsidiary. On the above, we added some basic data concerning parent firms' size and efficiency, retrieved from their balance sheets. Finally, we included data quantifying the factors concerning the investment environment of the host countries according to the literature of FDI determinants. This database was originally created and used in Giakoulas (2015). Unfortunately, more recent data are not publicly available, and the Bank of Greece has maintained a very restrictive policy regarding the disclosure of sensitive data since 2013.

The primary and most analytical version of the database included 6.437 observations with analytical information for the parent firms and their subsidiaries. This version could not be applied to our econometric model so we proceeded to an aggregation at the level of the parent firm (i.e. every observation corresponds to a parent firm, investing at a specific host country, at a specific year). The main disadvantage of this aggregation is that we lose important information about the subsidiaries, such as their size, efficiency and sector. This happens

because usually a parent firm controls more than one subsidiary at a certain host country. This second version includes 5.195 observations.

In the table of Annex I, we present the grouping of observations we made at sectoral level, in order to have an adequate number of observations by grouped sector for the panel analysis. Sectors were grouped into 8 categories.

6. Explanatory variables

We have used the typical variables used in similar FDI determinants' studies.

Ownership advantages.

Firm size represents one major ownership advantage used in several studies. Relevant literature suggests that big firms are more likely to evolve into MNEs (Horst, 1972, p. 262-264; Wolf, 1977, p. 185; Lall, 1980, p. 102, 104; Yu & Ito, 1988, p. 451-452), as they have more ownership advantages such as brand name, production technology, intellectual property and the power to internalize them (Dunning, 1988). FDI's at their initial stages entail high sunk costs which can be better coped by big firms, since they have more capital and increased leverage. Additionally big firms tend to create scale economies which improve their competitiveness (Kinoshita, 1998, p. 2).

Some of the variables widely used to represent firm size are total turnover (Kinoshita, 1998, p. 8; Veugelers, 1997, p. 306) domestic sales and exports (Blomstrom & Lipsey, 1986, p. 4-5), gross profits (Dholakia & Deepak, 1999, p. 31), total assets (Kuo & Li, 2003, p. 224), number of employees (Mutinelli & Piscitello, 1998, p. 48 ; Ma, 2006, p. 15)⁴ and equity capital (Dang & Li, 2013, p. 7; Samuels & Smyth, 1968, p. 127).

In our study we used equity capital for measuring firm's size and the potential for creating an ownership advantage. Equity capital gives us a better measure of the firm's size since it is relatively less volatile of any business fluctuations (in contrast with turnover).

Leverage is one of the determinants of the degree of openness of the firm. Firms that have better access to lending, tend to be more internationalized, since they can better cope with the sunk cost of an FDI. In this respect, leverage is considered as an ownership advantage and many studies conclude that there is a positive relation between the level of leverage of the parent firm and its investment behavior (Dimelis & Louri, 2004, p. 242; Rowland, p. 35; Grasseni, 2007, p. 5). The most common indicator for measuring a firm's leverage, is the ratio of debt to equity and is the one used in this study. These data were retrieved from the parent firms' balance sheets.

Location advantages

Regarding Location advantages, Gross Domestic Product is the most common indicator for measuring the size of the host country market. Most studies indicate that there is a positive relation between the size of the economy and the attraction of FDI, as it reflects aggregate demand and the potential for economies of scale in the host country (Lipsey, 1999, p. 15; Braunerhjelm & Svensson, 1996, p. 836; Culem, 1988, p. 888; Barrell & Pain, 1996; Wheeler & Mody, 1992, p. 64; Mohamed & Sidiropoulos, 1999; Agiomirgianakis, Asteriou & Papatoma, 2006, p. 14). Data on GDP are provided by UNCTAD's database.

Labor cost is also one of the key location specific determinants of FDI but its effect varies on a case by case. Labor cost seems to affect more MNEs in labor-intensive sectors. Wheeler & Mody, who study the determinants of American FDI in the manufacturing sector, suggest that there is a positive relation with labor costs (p.66). Still, we should have in mind that firms also take into account labor productivity and thus reduced labor costs might reflect low productivity. In this respect low labor costs are attractive only under some very specific conditions (Culem, 1988, p. 889). Culem studied FDI flows between six developed

⁴ For an extensive review of the relevant literature on firm-size measurement see Dang & Li, 2013.

industrialized countries in the European Economic Community and didn't find any significant effect of labor costs on FDI (Culem, 1988, p. 888), while Schneider & Frey (1985, p. 170), who studied FDI in LDCs, found a negative impact of labor cost. Barrel and Pain (1999, p. 931) identified a positive impact of labor cost on American FDI in France and in the UK, and a negative impact on FDI in Germany. For the purposes of our study we couldn't find any consistent data on labor cost for the total of the host countries. Labor cost data from ILO's database are not comparable because of various inconsistencies such as discontinuous time series, missing values and especially different measurement methods (for some countries it measures daily rates and for others monthly or annual salaries). We therefore used UNECE's database with average wages per country. Although a small number of countries are not included in UNECE's database, these countries have very limited weight as host countries of Greek FDI.

Interest rate is used to measure the return of capital of an investment and also host country's risk. In this respect we examined interest rates as a location specific advantage. Many firms would take the risk to invest in a high-risk environment in order to benefit from the higher return of capital (Tripathi, Seth & Bhandari, 2012, p. 7; Billington, 1999; Wijeweera & Clark, 2006). Especially if high interest rates are combined with low inflation than the gains are even bigger (Cavallari & D'Addona, 2013, p. 2604). Yet, we should have in mind that a high interest rate might have a reverse impact if the firm plans to lend capital from the host country (Kyrkilis, 2003). In the latter case an increase in the lending interest rate would also increase the cost of the investment (Wong, 2005, p. 98). We thus highlight that the relation between the interest rate and the FDI is not always clear. Some scholars find a positive relation (Culem, 1988), some find a negative relation (Bénassy-Quéré & Fontagne & Lahreche-Revil, 2001) while some others find a non-significant relation (Chingarande et al, 2012). We assume that the actual effect is determined by the relation of the investor with the financial system of the host country. In this study we use the short term (1 year) deposit interest rate of the host country. The data were collected from the IFM International Financial Statistics database.

Tax rates are indisputably among the most influential location specific determinants of FDI. Tax rates are used as a tool from governments in order to boost entrepreneurship and attract FDI. The power of this tool can be realized if we considerate the race to the bottom on tax competition that has prevailed during the last decades, leading to a considerable decrease of the level of tax rates worldwide (Lagoa & Silva, 2011, p. 1). In almost all of the relevant studies (Slemrod, 1990, Silva & Lagoa, 2011), tax rates are found to have a negative impact on FDI. The only dispute is over the level of the impact (Matei & Pirvu, 2010, p. 63) and the tradeoff between FDI attraction and the welfare state (Hartman, 1984, p. 21-22; Davies, 2005). Devereux & Griffith (1998) studied the impact of the host's country tax rates on the investment choices of American MNEs. They conclude that tax rates have a major impact but only when the choice is between EU countries. When they also included non-EU countries in their model, tax rates lost their significance. This means that some other factors should be the preconditions for MNEs to invest, before taking into account the level of tax rates of a host country (Bjorvatn & Ecke, 2006, p. 1906). In our study we used the average corporate tax rate provided by the annual report «KPMG's Corporate and Indirect Tax Rate» including data for over 100 countries.

Our last location-specific advantage is human capital which is considered as an important determinant affecting FDI not only in terms of volume but also in terms of quality (Tavares & Teixeira, 2006, p. 3). MNEs invest in their employees to develop their skills and train them in order to introduce them to their production processes. Usually a minimum level of skills and

education is needed for the personnel to be trainable (Agiomirgianakis, Asteriou & Papathoma, 2006, p. 7). Other studies do not find any significant impact of education on FDI (Cheng & Kwan, 2000, p. 393; Cheng & Zhao, 1995). Gundlach (1995) suggests that this happens because education produces positive externalities and spillovers within the production process, that are impossible to be captured and measured with the commonly used indices.

For measuring education, a commonly used indicator is a person's total years of education (Holl, 2004; Arauzo-Carod, 2008; Bartik, 1985; Woodward, 1992) while other indices measure the proportion of the population who have completed secondary (Coughlin & Segev, 2000; Cheng & Stough, 2006) or tertiary education (Arauzo-Carod & Viladecans, 2009; Alañón et al, 2007; Smith & Florida, 1994). In this study we use the percentage of the population with secondary education. The data were retrieved from the World Bank.

7. Empirical analysis

We combined the data from the Bank of Greece with data from the balance sheets of the parent firms in Greece. Thus, we included firms' location, size, sector, FDI, leverage and efficiency.

Finally, we imported the determinants related to the economic and political environment of the host countries, according to the relevant literature as described above.

We used panel analysis for the empirical part, since it is a method widely used in social sciences when working with longitudinal data. For the selection of fixed effects or random effects regression we used the Hausman Test. Multicollinearity is controlled with the VIF test and heteroscedasticity effects are eliminated by using the Robust Standard Error.

We conducted the analysis in two separate levels.

- At country level, where the dependent variable is the sum of invested capital stock of Greek MNEs, in each host country, yearly and the independent variables are location determinants related to the host country.
- At firm level, with the dependent variable being the total invested stock of each parent firm, in each host country, yearly. The independent variables are factors both related to the parent firm and the host country respectively.

Given the number of countries participating in the population, we faced some problems regarding missing data for some of the variables for several host countries. Another problem was the multicollinearity effects among some of the variables. Given these limitations, our selection of independent variables was defined by the following criteria:

- The number of variables in the model should be relatively small, so as to avoid lack of observations and multicollinearity problems.
- The selected variables should cover the largest possible range of key categories of FDI determinants, according to Dunning's eclectic paradigm.

a. Host country level

Initially we investigated the impact of the independent variables on the sum of invested capital by the total of Greek firms in every host country. The independent variable here is the total of Greek outward FDI in the host country, yearly.

In this level of analysis, we used aggregate data (Table 1). Every observation corresponds to one host country per year. It is obvious that the independent variables “equity capital” and “ratio of debt to equity” are not used because they only correspond to parent enterprises which are not present in this level of analysis.

The sum of observations is 526 but because of missing data, especially for wages and lending interest rates in different observations, the model’s observations are limited to just 228. The analysis begins with pooled regression and the Hausman test led us to a random effects model.

Table 1. Panel analysis: Total of Greek outward FDI

Level of analysis: Host country				
Dependent variable: Aggregate of equity capital (including other liabilities) held by Greek firms in the host country by year.				
Time: 2001-2010	Pooled regression		Random effects model	
Independent variable	coef	Scale	coef	Scale
	(t)		(t)	
GDP	6.27***	10	2.14	10
	(4.18)		(0.41)	
Wages	6.73	10 ⁴	4,89	10 ⁴
	(1.31)		(0.84)	
Taxation	-5.89***	10 ⁷	-5.67***	10 ⁷
	(-4,21)		(-6.65)	
Lending interest rate	7,04	10 ⁶	-3.55***	10 ⁷
	-1,01		(-3.81)	
Secondary education	7,89***	10 ⁶	6,44	10 ⁶
	(2.10)		(1.48)	
constant	7,89**	10 ⁶	1,27	10 ⁹
	(2.48)		(2.50)	
	F statistic	5.63***	wald chi2	87.22***
	R ²	0.18	R ² (overall)	0.13
	Obs	228	Obs	228

***Statistically significant at 0,01 ** Statistically significant at 0,05 * Statistically significant at 0,10.

We found a positive and statistically significant relation for the GDP at the pooled regression model but when we tested the relation at the random effects model it was not statistically significant. The results for the GDP variable are not robust, probably because of the effect of Cyprus in our model. This happens because although Cyprus is a rather small economy it attracts the majority of Greek outward FDI.

The results also suggest that from the one hand Greek firms seek for new big markets to internationalize but also remain trapped in their neighboring markets which are mostly small.

The tax rate is found negative and statistically significant at the level of 1% in both models. This robust result is less than unexpected since most of the Greek outward FDI host countries and especially Cyprus have a relative low level of corporate taxation.

The lending interest rate is positively related but not statistically significant at the pooled regression model and negative and statistically significant at the level of 1% at the random effects model.

Finally, the education variable is found positively related and statistically significant at the level of 1% at the pooled regression model and positive but not statistically significant at the random effects model.

It should be noted that we did not expect to get robust results in this level of analysis since we compiled investments from all the sectors together. Considering that according to our theoretical framework investment motives differ from sector to sector, this makes sense. The results at this level of analysis are just a hint for our more inclusive research at sectoral level. However, the strong negative relation of taxation is the major clue at this level of analysis.

b. Parent firm level

We continued the empirical analysis at the level of the parent company. At this level we used the analytical version of our database, in which every observation corresponds a parent firm, per host country, yearly. The dependent variable here is the sum of equity capital (including net liabilities) held by each parent firm, on each host country yearly.

All the firms excluding financial institutions.

At this level of analysis, we removed the financial institutions from our model, following a practice commonly used in similar studies. We did so, because including financial institutions would have the following results:

- The extremely high stocks of invested capital by financial institutions would cause bias against investments from other sectors.
- The concentration of invested capital from financial institutions to specific countries such as Cyprus, Turkey and the Netherlands would undermine the importance of other countries (such as the CCE Countries) as host destinations.⁵
- The FDI motives for financial institutions are not fully determined by factors related to international production and in this respect, FDI determinants literature does not fully apply.

The analytical database included 5.196 observations but because of missing data the model's observation was reduced to 2.934.

We started the analysis with a pooled regression model and the Hausman test led as to a random effects model. As seen on table 2 below, the results are now by far more robust than in the previous model, using the aggregate database.

Equity capital, as expected, results positive and statistically significant at the level of 1%. This means that bigger firms tend to be more internationalized since they can cover the sunk costs of an FDI (Lall & Streeten, 1977, p. 28; Hood & Young, 1979, Chapter 2) but also because they probably possess more ownership advantages (Dunning, 1988).

⁵ Turkey and Cyprus do not actually consist real Greek outward investment destinations but appear on the first ranks because of extremely high investments by 2 Greek banks.

This finding is in line with the results of relevant studies on Greek FDI (Papanastasiou & Zanias, 2000; IOBE, 2007; Louri, Papanastasiou & Lantouris, 2000; Kalogerisis & Labrianidis, 2010; Giakoulas, Kontis & Kottaridi, 2012).

The ratio of foreign capital to equity results positive but non-statistically significant in the pooled regression model and negative and non-statistically significant in the random effects model. This shows that the leverage of the parent firm is not a significant determinant for the Greek outward FDI.

The GDP is found positive and statistically significant at the level of 1% in the pooled regression model and this relation is maintained in the random effects model although its significance drops at the level of 10%. This positive relation indicates that Greek FDI are to some extent market seeking. This result is aligned with the findings of other studies investigating Greek outward FDI motives (IOBE, 2007, Kalogerisis and Labrianidis, 2010, Giakoulas, 2015) and Giakoulas, Kontis and Kottaridi, 2012). Especially Kalogerisis and Labrianidis (2010), had clearly indicated this shift in Greek outward FDI. This conclusion is also aligned to the findings of relevant studies investigating FDI motives of MNEs from other countries (Lipsey, 1999, p. 15; Braunerhjelm & Svensson, 1996, p. 836; Culem, 1988, p. 888; Barrell & Pain, 1996; Wheeler & Mody, 1992, p. 64; Mohamed & Sidiropoulos, 1999; Agiomirgianakis, Asteriou & Papatoma, 2006, p. 14).

Wages do not have any significant impact on Greek outward FDI. Although the relation is negative in both models, it is non-statistically significant. This might seem as a paradox since most of the Greek subsidiaries are located in the Balkan region and also the news reports in Greece used to reproduce that Greek firms follow an exit strategy searching for markets with lower labor cost.

One reason for the non-significance of wages in this study is that our dependent variable does not reflect the number of subsidiaries but the stock of invested capital. In this respect, although there is a great number of Greek small and medium sized subsidiaries located in countries with low labor cost, these are not able to affect our results, because of their substantially lower stock of invested capital, compared to bigger investments located in countries with higher labor cost, such as Cyprus. This finding also confronts many other related studies of the 1990s which alleged that low labor cost is the main determinant of the Greek firms' internationalization decisions.

The most robust finding of the current study, is the negative impact of taxation on the stock of Greek outward FDI. This variable is found positive and statistically significant at the level of 1% in both models. The importance of taxation is widely accepted in the relevant literature especially when the home and the host country are in a similar level of development (Hartman, 1984; Slemrod, 1990). Cyprus ranks first as host country for Greek FDI, probably because of its low level of corporate taxation, while a great deal of international tax havens is also included in Greek FDI destinations.

The lending interest rate is not an important determinant since it is found positive but not statistically significant in both models. Similar findings are also met in Chingarande et al (2012).

Secondary education is positive and statistically significant in both models. According to relevant studies (Agiomirgianakis, Asteriou & Papatoma, 2006, p. 7), this relation implies that a minimum level of education of the labor force is necessary for an MNE to invest in a country. To the extent that this variable also reflects prosperity and demand conditions in an

economy, we could allege that this relation also highlights the impact of market seeking motives.

Trade and Manufacturing sectors.

We moved forward in investigating the impact of these determinants, in the trade and manufacturing sectors. Our observations for the two sectors are comprised by the grouping of similar subsectors, as seen in Annex I, in order to compile a sufficient number of observations for the panel analysis. We picked these two sectors because they concentrate the majority of parent firms and subsidiaries and according to the relevant literature, they are determined by different FDI motives.

Table 2. Panel analysis: All firms excluding financial institutions

Unit of analysis: Parent firm				
Dependent variable: Total equity (including other liabilities) held by Greek firms in the host country by year.				
Time: 2001-2010	Pooled regression		Random effects regression	
Independent variable	coef	Scale	coef	Scale
	(t)		(z)	
Equity capital	1.05***	10	9.96***	10 ³
	(6.36)		(14.51)	
Liabilities/ equity capital	1.28	10 ³	-6.09	10 ³
	(0.11)		(-0.07)	
GDP	2.43***	10	2.11*	10
	(3.08)		(1.92)	
Wages	-1.87	10 ²	-1.725	10 ³
	(-0,07)		(-0,69)	
Taxation	-1,40***	10 ⁶	-1,44***	10 ⁶
	(-3.83)		(-5.10)	
Lending interest rate	1,62	10 ⁵	2.62	10 ⁵
	-0,72		(0.77)	
Secondary education	4,95**	10 ⁵	4,86*	10 ⁵
	(2.70)		(1.66)	
Constant	-2,24	10 ⁷	-1,76	
	(-1,48)		(-0,67)	
	F statistic	9.56***	wald chi2	241.97***
	R ²	0.20	R ² (overall)	0.20
	obs	2934	Obs	2934

***Statistically significant at 0,01 ** Statistically significant at 0,05 * Statistically significant at 0,10.

Trade sector (retail and wholesale)

This sector initially included 704 observations but because of missing data the model limits them to 454. We started with pooled regression and the Hausman test led us to a random effects model (Table 3).

Equity capital is found positive and statistically significant at the level of 1% in both models, leading us to the conclusion that the size of the parent enterprise is obviously an important determinant.

The ratio of liabilities to equity capital is negative and statistically significant at the level of 1% in the first model and at the level of 10% in the second model. This negative relation suggests that firms of the trade sector tend to invest using their own funds. This probably happens because these are mostly medium sized firms with limited potential of access to funding. This negative impact of leverage on FDI is frequently met in relevant literature (Dimelis & Louri, 2004; Rowland & Grasseni, 2007).

Table 3. Panel analysis: Firms of the trade sector

Unit of analysis: Parent firm				
Dependent variable: Total equity capital (including other liabilities) held by Greek firms in the host country by year.				
Time: 2001-2010	Pooled regression		Random effects regression	
Independent variable	coef	Scale	coef	Scale
	(t)		(z)	
Equity capital	4.54*** (4.97)	10 ⁻²	4.83*** (8.44)	10 ⁻²
Liabilities/ equity capital	-3.10*** (-3.71)	10 ⁴	-2.87* (-1.69)	10 ⁴
GDP	2.58** (2.42)		4.03*** (3.22)	
Wages	2.78 (0.36)	10 ²	-6.47 (-0.87)	10 ⁵
Taxation	-2.55*** (-3.73)	10 ⁵	-2.25*** (-2.64)	10 ⁵
Lending interest rate	1.52*** (2.62)	10 ⁵	8.55 (1.09)	10 ⁴
Secondary education	8.26 (1.26)	10 ⁴	6.29 (0.86)	10 ⁴
Constant	-4.75 (-0.82)	10 ⁶	-1.73	10 ⁶
	F statistic	5.81***	wald chi2	85.55***
	R ²	0.23	R ² (overall)	0.22
	obs	454	Obs	454

***Statistically significant at 0,01 ** Statistically significant at 0,05 * Statistically significant at 0,10.

The GDP, as expected, is positive and statistically significant at the level of 1% in both models since the market seeking motive is prevalent in trade sector's investments. Greek outward FDI in terms of invested capital are not only concentrated in the Balkan region and Cyprus but also extend to bigger markets such as Austria, USA, Germany, Italy, Russia (regarding the wholesale sector) and in Hong Kong and Sweden (regarding the retail sector). In this respect, trade sector MNEs of the period under investigation differ from the respective firms of the 1990s which were basically motivated by the access to the markets of the CEE Countries.

Wages are found positive but not statistically significant in the pooled regression model and negative and not statistically significant in the random effects model. In this respect we cannot allege that they constitute of an important determinant for MNEs of the trade sector.

Taxation is negative and statistically significant at the level of 1% in both models.

Lending interest rate is positive and statistically significant at the level of 1% in the first model and positive but not statistically significant in the second model.

Finally, secondary education is found positive but not statistically significant in both models.

Manufacturing sector

The manufacturing sector initially included 2.262 observations in our database but because of missing data the model limits the observations to 1.412. We started with pooled regression and the Hausman test led us to a random effects model (Table 4).

Equity capital is found positive and statistically significant at the level of 1% in both models indicating that the size of the parent firm is an important factor for its internationalization.

The ratio of liabilities to equity capital results positive but not statistically significant in both models. This means that the leverage of the parent firm is not an important FDI determinant for the sector.

GDP turns out positive and statistically significant at the level of 10% in the first model and positive though not statistically significant in the second model. Greek MNEs of the manufacturing sector invest under a combination of motives, seeking for, efficiency, synergies, economies of scale, and networks. This finding contrasts the findings of the existing literature alleging that Greek manufacturing MNEs are mainly resource seeking since they concentrate in the neighboring small economies of the Balkan Region. Contrariwise we found that except from the food processing sector firms who indeed invest in the nearby Balkan economies, firms of the “heavy industry” such as plastics and metal are located in bigger economies such as Spain, Great Britain and Romania. Another characteristic which differentiates the allocation of heavy industries, is their relatively weak presence in Cyprus.

Wages are found negative but not statistically significant in both models. This not significant effect probably occurs because food processing MNEs that invest in small neighboring economies with relatively low wages, are less significant in our model, because of their lower stock of invested capital. At the same time, heavy industry MNEs make significantly bigger investments in economies with higher wages as reported above.

Taxation is negative and statistically significant at the level of 10% in the first model and at the level of 1% in the second model. Taxation is indisputably an important determinant for manufacturing FDIs, yet its effect gets weaker when compared to the trade sector. This probably highlights the importance of other determinants for the manufacturing sector such as strategic asset seeking.

The lending interest rate results positive but not statistically important in both models.

Finally, secondary education is found positive and statistically significant at the level of 1% in the first model and at the level of 10% in the second model.

The significance of education probably indicates the human capital seeking effect, since manufacturing activities need a minimum level of education and absorptive capacity. The human capital also represents other strategic asset seeking determinants such as production systems, production technologies etc. (Dunning & Lundan, 2008).

Table 4. Panel analysis: Firms of the manufacturing sector

Unit of analysis: Parent firm				
Dependent variable: Total equity capital (including other liabilities) held by Greek firms in the host country by year.				
Time: 2001-2010	Pooled regression		Random effects	
Independent variable	coef	Scale	coef	Scale
	(t)		(z)	
Equity capital	1.68***	10 ⁻¹	1.60***	10 ⁻¹
	(3.10)		(14.80)	
Liabilities/ equity capital	1.42	10 ⁵	4.37	10 ⁴
	(1.31)		(0.08)	
GDP	1.28*		8.89	10 ⁻¹
	(1.73)		(0.57)	
Wages	-1.72	10 ³	-2.20	10 ³
	(-0.44)		(-0.61)	
Taxation	-1.13*	10 ⁶	-1.09***	10 ⁶
	(-1.94)		(-2.60)	
Lending interest rate	3.50	10 ⁵	3.20	10 ⁵
	(0.84)		(0.60)	
Secondary education	7.71***	10 ⁵	7.96*	10 ⁵
	(2.96)		(1.92)	
Constant	-5.92	10 ⁷	-5.84	10 ⁷
	F statistic	3.65***	Wald chi2	233.02***
	R ²	0.21	R ² (overall)	0.21
	Obs	1412	Obs	1412

***Statistically significant at 0,01 ** Statistically significant at 0,05 * Statistically significant at 0,10.

8. Conclusions

The purpose of this study has been to explore the impact of traditional determinants of FDI on Greek MNEs during the pre-crisis period and further investigate the behavior of firms of the trade and the manufacturing sectors. Based on Dunning's eclectic paradigm and the concept of FDI motives (Dunning & Lundan, 2008), we investigated ownership and location advantages for the Greek MNEs of the trade and the manufacturing sectors and further attempted to speculate about their underlying motives.

Looking at the big picture, one of the main conclusions of this study is that taxation is the major determinant of the investment decisions of the Greek MNEs. Specifically, the models including the total of Greek MNEs (excluding the financial sector) resulted in a negative and statistically significant relation of the level of taxation of the host country with the stock of Greek FDI. This finding further strengthens the argument that Greek MNEs are mainly driven by efficiency seeking motives. Market size, which implies market seeking motives, is also a

significant determinant. Apparently, we did not find any robust results showing that labor costs do have a significant impact on Greek MNEs internationalization decisions.

These findings contradict the allegations of past studies, that Greek MNEs are basically motivated by resource seeking motives and specifically by low labor cost. In this respect our *H1* alleging that *Greek MNEs are not anymore solely driven by resource seeking motives but rather by efficiency seeking and market seeking motives* is validated.

Although taxation is one of the key determinants in the FDI literature, the question that arises is whether these FDI could be perceived as internationalization or as escapism from Greece.

It is also obvious that firm size directly affects firms' internationalization perspectives, since big firms are more likely capable of covering the sunk cost of an FDI and also more likely to possess some kind of ownership advantages.

The positive relation of secondary education reveals that Greek MNEs require a minimum level of educational and skills background for their employees and a minimum level of welfare which reflects the demand conditions in the host country.

Subsequently, we attempted to drive the analysis at the sectoral level in order to test the impact of specific FDI motives (resource seeking, market seeking, efficiency seeking and strategic asset seeking) for the manufacturing and trade sectors. Our findings are aligned with Dunning's eclectic paradigm, since trade sector MNEs are found to be more attracted to market size of the host country, which represents a typical market seeking motive, while FDI of the manufacturing sector are determined by a combination of efficiency seeking and strategic asset seeking motives. These findings validate our *H2* alleging that *firms of the trade sector will be more affected by market seeking motives compared to manufacturing sector's firms*.

The final conclusion of this study is twofold. Greek MNEs reached their maturity phase of internationalization pre-crisis, at least at regional level. They are basically big firms following the motives of market seeking, strategic positioning and increasing their efficiency over their competitors. They hardly presented any similarities with the smaller MNEs of the 1990s, which continue to exist and invest in the Balkan countries, but their significance is rather minimal.

Regarding their motives, we distinguished two major trends. The first trend is the internationalization under the motive of tax avoidance and the search for less risky environment for investment. This trend probably reflects escapism. The other trend includes growth strategies into new markets and the search for synergies and strategic partnerships. This trend is mainly followed by the heavy industries of the manufacturing sector and to a large extent by several MNEs of the trade sector.

Therefore, a key policy conclusion that can be drawn is the need for an immediate reform of the tax framework of the Greek economy. This will alleviate disinvestment from Greece caused by escapism FDI. In the same time more dynamic Greek MNEs searching for new markets and strategic assets will be able to improve their efficiency and further promote their internationalization strategies, with a positive impact for the Greek economy.

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Databases

Bank of Greece (<https://www.bankofgreece.gr/statistika/ekswterikos-tomeas/ameses-ependyseis>)

IMF - International Financial Statistics (<https://data.imf.org/?sk=4c514d48-b6ba-49ed-8ab9-52b0c1a0179b>)

UNCTADSTAT (<https://unctadstat.unctad.org/EN/>)

UNECE (<https://w3.unece.org/PXWeb/en>)

World Bank (<https://data.worldbank.org/>)

ANNEX I

Sector grouping			
Grouped sector	N	Original sector	N
Primary sector	307	Agriculture, livestock, hunting, forestry, fishing.	53
		Mining and quarrying except from oil and gas	254
Industry-manufacturing	2262	Food, beverages and tobacco	528
		Textiles, clothes and leather products	255
		Wood and paper products, publications and printing	161
		Production of coke, oil refinery and nuclear fuel	29
		Production of chemicals	155
		Medicines, chemical and herbal products	28
		Production of rubber and plastic products	323
		Production of primary metals and metallic products	540
		Production of machinery and equipment	57
		Production of electric machines and computers	34
		Production of vehicles	27
		Other industries	125
Constructions	254	Constructions	250
Trade	704	Trade and repair of vehicles	86
		Wholesale trade	432
		Retail trade	186
Telecommunications	157	Telecommunications	31
Transports	82	Road and pipeline transports	2
		Sea transports	37
		Air transports	10
		Couriers	33
Financial institutions	822	Banks	157
		Other financial intermediates	428
		Holding companies	4
		Insurance and pension funds (except from required social security)	313
		Life insurances	19
		Activities relating to insurances and insurance funds	24
Consulting and other services	463	Hotels and restaurants	34
		Information technology and related activities	190
		Consulting and management (holding companies included)	92
		Advertising	19
		Health and social work	31
		Entertainment, cultural and athletic activities	5
		Cinema, radio, television and other entertainment activities	6
		Other services	64
		Non classified	25
Missing	145		149
Total	5196		5196