Industrial restructuring and oligopolistic competition in a small open economy via cross-border acquisition: the case of Greece

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Abstract: In recent years, cross-border acquisitions have been placed in the centre of the present research agenda on Transnational Corporations (TNCs). In this context an important issue is the comparison between cross-border acquisitions and Greenfield investments. Another issue is the comparison between cross-border and domestic acquisitions. The evidence on the effects of these investment modes on industrial restructuring and competition is scarce and less than conclusive. The present study is designed to provide additional information for the case of a small open economy, using two logit regression models. The focus is on Greece and draws on both Industrial Organisation (IO) and oligopolistic Foreign Direct Investment (FDI) theory. The results indicate that the different investment forms do have multidimensional structural repercussions, which create multiple entrepreneurial gaps within the national industry. These results have important implications for industrial and competition policy.

Keywords: cross-border acquisition; Greece; Greenfield investment; oligopolistic competition; Transnational Corporations (TNCs).


Biographical note: Antonios Georgopoulos is currently Assistant Professor of Financial Economics at the Faculty of Business Administration, University of Patras, Greece. He is working on foreign direct investment, transnational corporations and mergers and acquisitions.

1 Introduction

In the analytical framework of internationalisation of production, TNCs have two strategic choices in order to utilise their specific ownership assets via FDI: Greenfield FDI and cross-border acquisitions. Both strategic instruments can be expected to result in benefits and costs for the host economy. In this study, the structural effects of these strategic choices on a small open economy are examined.

In the literature some general distinctions are drawn between the two FDI modes with respect to industrial growth, structure and competition. According to previous studies,
Greenfield FDI contributes to the creation of new resources. That is, by setting up a new foreign affiliate, net investment increases and additional national productive capacity, income, and employment are created (Hennart and Park, 1993; Barkema and Vermeulen, 1998; UNCTAD, 2000; Larimo, 2003). In contrast with this, cross-border acquisitions do not add to the existing capital stock at the time of entry but simply change ownership, control, and nationality (Hennart and Park, 1993; Newburry and Zeira, 1997; UNCTAD, 2000; Larimo, 2003). In addition, as TNCs are buying and selling companies across borders, they affect the structure of national and international industries and contribute to increased national and global oligopolistic competition (UNCTAD, 2000; 1997; OECD, 1988; Tichy, 2001a, b).

In the current context of FDI, cross-border acquisitions are the dominant form. Nevertheless, although there has been extensive and lengthy research on FDI, this has mainly taken place in the framework of the traditional FDI theory that is ‘foreign affiliates vs. domestic firms’. Relatively few studies distinguish between cross-border acquisitions and Greenfield investments, and most of this research has been undertaken from the perspective of the investing firm (e.g. Larimo, 2003; Harzing, 2002; Barkema and Vermeulen, 1998; Hennart and Park, 1993; Zejan, 1980). Surprisingly, the analysis of the structural implications of both FDI modes on a host economy has attracted much less research to date.

This study aims to fill this gap. Starting from the observation that a TNC has at its disposal two basic modes of entering a host economy by FDI, two important questions are raised:

- Does the mode of FDI entry, i.e. cross-border acquisitions or Greenfield FDI, make any difference to the industrial restructuring and competition in a small open economy such as Greece?
- Do the potential structural effects of cross-border acquisitions differ from the corresponding effects of domestic acquisitions?

In this study two hypotheses are tested empirically:

1. Greenfield FDI and international and national acquisitions exert different effects on the structure of Greek industry.

2. These effects differ according to the specific characteristics of the firms involved.

Greece is the focus of this study for two main reasons. First, Greece is a small open economy, which is subject to strong international competition. Therefore it is sensitive to the developments in global markets and to industrial restructuring. This is especially true from 1981 onwards when the country became a full member of the European Union (EU). Second, two post-war ‘generations’ of affiliates of TNCs can be observed in the Greek economy. The first generation is TNCs, which emerged from Greenfield FDI. This Greenfield FDI was important in the 1960s and 1970s (Georgopoulos and Preusse, 1992). The second generation is TNCs, which made cross-border acquisitions, which were a distinctive feature of TNC activity in the middle of the 1980s. During the latter period, some noteworthy domestic acquisitions also took place, comparable to the corresponding international ones (Table 1).
<table>
<thead>
<tr>
<th>Sector/ Industry</th>
<th>NACE</th>
<th>Total manufacturing</th>
<th>Greenfield FDI</th>
<th>Cross-border acquisitions</th>
<th>Greek acquisitions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Number of firms</td>
<td>Sales millions of Euro</td>
<td>Number of firms</td>
<td>Sales millions of Euro</td>
</tr>
<tr>
<td>Foods</td>
<td>15(151–158)</td>
<td>924</td>
<td>7,051.6</td>
<td>13</td>
<td>716.9</td>
</tr>
<tr>
<td>Beverages</td>
<td>15(159)</td>
<td>165</td>
<td>1,669.5</td>
<td>3</td>
<td>388.2</td>
</tr>
<tr>
<td>Tobacco</td>
<td>16</td>
<td>22</td>
<td>1,015.8</td>
<td>3</td>
<td>58.0</td>
</tr>
<tr>
<td>Textiles</td>
<td>17</td>
<td>380</td>
<td>1,826.1</td>
<td>8</td>
<td>125.0</td>
</tr>
<tr>
<td>Clothing</td>
<td>18</td>
<td>275</td>
<td>1,005.9</td>
<td>5</td>
<td>47.0</td>
</tr>
<tr>
<td>Leather-Footwear</td>
<td>19</td>
<td>97</td>
<td>215.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wood-cork</td>
<td>20</td>
<td>125</td>
<td>424.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paper</td>
<td>21</td>
<td>138</td>
<td>865.8</td>
<td>3</td>
<td>87.0</td>
</tr>
<tr>
<td>Printing-publishing</td>
<td>22</td>
<td>424</td>
<td>1,639.1</td>
<td>2</td>
<td>23.0</td>
</tr>
<tr>
<td>Petroleum and coal products</td>
<td>23</td>
<td>39</td>
<td>5,813.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical products</td>
<td>24</td>
<td>295</td>
<td>3,344.6</td>
<td>31</td>
<td>2,101.0</td>
</tr>
<tr>
<td>Rubber products and plastics</td>
<td>25</td>
<td>310</td>
<td>1,310.2</td>
<td>4</td>
<td>102.0</td>
</tr>
<tr>
<td>Non-metallic minerals</td>
<td>26</td>
<td>578</td>
<td>2,686.8</td>
<td>11</td>
<td>144.4</td>
</tr>
<tr>
<td>Basic metals</td>
<td>27</td>
<td>33</td>
<td>1,966.3</td>
<td>2</td>
<td>568.6</td>
</tr>
<tr>
<td>Metal products</td>
<td>28</td>
<td>518</td>
<td>2,559.6</td>
<td>7</td>
<td>262.9</td>
</tr>
<tr>
<td>Machines and equipment</td>
<td>29</td>
<td>198</td>
<td>401.3</td>
<td>6</td>
<td>59.5</td>
</tr>
<tr>
<td>Electrical machinery and appliances</td>
<td>31/32/33</td>
<td>242</td>
<td>2,350.4</td>
<td>22</td>
<td>814.8</td>
</tr>
<tr>
<td>Transportation</td>
<td>34/35</td>
<td>147</td>
<td>973.9</td>
<td>1</td>
<td>2.0</td>
</tr>
<tr>
<td>Furniture – other industries</td>
<td>30/36</td>
<td>457</td>
<td>1,256.6</td>
<td>2</td>
<td>90.5</td>
</tr>
<tr>
<td>Total Manufacturing</td>
<td>(15–36)</td>
<td>5,367</td>
<td>38,377.6</td>
<td>123</td>
<td>5,590.8</td>
</tr>
</tbody>
</table>
This study draws upon a broad sample of 279 manufacturing companies that include almost all instances of the above three investment forms. In particular, the sample consists of 123 Greenfield FDI, 39 cross-border acquisitions and 117 domestic acquisitions (Table 1). The information is drawn from field research.

The remainder of this paper is set out in three sections. The theoretical framework is elaborated in the next section. In the following section the hypotheses and the methodology are discussed. The last section presents the empirical results and the policy implications.

2 Conceptualisations

There are many theories, which seek to interpret the investment behaviour of TNCs. For example, one can cite internalisation theory which is based on concerns about the cost of TNC transactions (e.g. Buckley and Casson, 1976), IO theory which associates monopolistic advantages of enterprises with market imperfections, entry barriers, etc. (e.g. Hymer, 1960; Caves, 1971; Lall, 1980) and oligopolistic reaction theory of enterprises as developed by Graham (1974) and Knickerbocker (1973).

Our empirical analysis of Greece investigates the strategic behaviour of foreign TNCs, linking the IO approach to the oligopolistic theory of FDI. In the present study, this framework is extended by incorporating some aspects of the dynamics of cross-border acquisitions. In particular, IO theory can be used to explain oligopolistic circumstances and structural effects of FDI in a host economy. This is because IO theory takes into account the competitive interaction of foreign investors with domestic competitors, suggesting that the foreign company that engages in FDI has at its disposal certain firm-specific ownership advantages (Dunning, 2000).

Oligopolistic theory of FDI indicates that an increasingly competitive environment exerts more pressure on firms to redeploy (Capron et al., 1998), to augment their assets (Dunning, 2000), and to consolidate their operations in the long run (UNCTAD, 2000). Cross-border takeovers have a more immediate effect than Greenfield FDI, because the latter demands more time to build up specific ownership assets (Larimo, 2003; Angwin and Savill, 1997; Hennart and Park, 1993). International acquisitions are also advantageous compared to Greenfield FDI, because they provide access to strategic ownership of assets of other firms (UNCTAD, 2000).

Oligopolistic FDI theory also suggests that foreign TNCs are operating as oligopolistic actors and reactors in order to establish a market presence (UNCTAD, 2000; Angwin and Savill, 1997). In this dynamic context, acquisition activities are initiated by one company acting as the leader; this is usually a foreign TNC from a developed economy. Thereafter, the followers, in order to retain their relative market shares, tend to speed up their foreign productive activities via acquisitions (Larimo, 2003; Hennart and Park, 1993; Graham, 1974). This form of ‘follow-the-leader’ strategy (Knickerbocker, 1973) has also been called the ‘exchange of threat’ strategy (Graham, 1974; Dunning, 2000).

In this scenario, domestic firms (normally smaller enterprises) are likely to fear becoming an acquisition target themselves. Thus, they are faced by two options: ‘to buy or to be bought’ (Chudnovsky and López, 2000a, 67). Consequently, they react and attempt to resist competition from the foreign TNCs by building up their own
conglomerates through acquisitions. Domestic takeovers are used by companies as a means of creating the critical mass of resources needed to remain competitive at home (UNCTAD, 2000; Chudnovsky and López, 2000a). Vasconcellos and Kish (1998) hypothesise that firms which are large, and which occupy a monopolistic market position, are better placed to resist a takeover attempt, especially against hostile takeovers. Thus, international acquisitions compete against, and stimulate, domestic ones (Chudnovsky and López, 2000a; UNCTAD, 2000). National market concentration via acquisitions may also be a precondition for the penetration of new, non-domestic markets such as emerging markets. Recently, Greek companies have been augmenting their strategic ownership assets through domestic acquisitions and via takeovers in emerging Eastern European markets. Such takeovers can involve holding the majority or minority of stock, or take the form of joint ventures (Georgopoulos and Salavrakos, 2000). These acquisitions are the basis for the foundation of so-called ‘third world multinationals’, which might contribute to the formation of new competitive conditions worldwide (Chudnovsky and López, 2000a, b; Tichy, 2001b; UNCTAD, 2000).

The competitive cycle is completed by the potential oligopolistic reaction on the part of the leaders and followers that may try to acquire the newcomers. Tichy (2001b, 437–438) provides a perspective on this issue as follows:

“The multinational corporations have begun to respond strategically to competition from firms in countries entering the world market. They are already rather successful in acquiring these firms. The acquisition of Southeast Asian or Eastern European corporations by American and European market leaders in the car industry or the food-and-beverages industry are typical examples”.

As far as the acquisition targets are concerned, economic discussions traditionally contrast two main trends of thought (Harris and Robinson, 2002; Capron et al., 1998). First, according to the market for corporate control hypothesis (i.e. elimination of underperforming firms; Thompson, 1997), acquirers seek targets with a competitive weakness that the acquiring firm can overcome by its better management of underutilised resources. In this scenario, asymmetry of information and expectation between buyer and seller prevails. This view is often encountered in the literature (e.g. UNCTAD, 2000; Capron et al., 1998; Thompson, 1997; Ravenscraft and Scherer, 1989). Applying this hypothesis to the model of a small host economy suggests that, as consequence of international takeovers, an upgrading of domestic industrial competitiveness should be expected (Chudnovsky and López, 2000a; UNCTAD, 2000, 196).

Second, in contrast to the first hypothesis, it might be argued that acquirers seek targets with a competitive strength that can used and exploited to the advantage of the acquirer (Harris and Robinson, 2002; UNCTAD, 2000; Capron et al., 1998; Angwin and Savill, 1997; McGuckin and Ngayen, 1995; Bleeke et al., 1990). From this perspective, a strategic goal of TNCs searching for takeovers is to identify firms that exhibit key characteristics of economic success. Targets that are economically healthy prior to the acquisition in terms of relative firm size, large market share, good financial health, and high productivity, can be expected to perform more successfully after the takeover. The implications of this scenario for a small host economy are that the international takeovers are targeted upon the ‘national champions’ (UNCTAD, 2000, 178) and those domestic firms that occupy a dominant local market position.

Although the literature offers a number of approaches to acquisitions, the differences between the three investment forms and the way in which those forms function within the
host economy have not yet been investigated satisfactorily. Specifically, some studies are presented in the World Investment Report of 2000, which analyse the export intensity of affiliates established by means of the two FDI modes in Central and Eastern Europe (UNCTAD, 2000). In contrast with that, Chudnovsky and López, (2000b) compare foreign and domestic acquisitions, and also the performance of acquired and non-acquired firms in Argentina in terms of sales, export propensity, imports, employment, research and development expenditures, and productivity. Also, Chen and Su (1997) examine differences between foreign and domestic target characteristics such as technology, size, liquidity and profitability, but from the perspective of a large host economy such as the USA. No study brings together the insights offered by these various into a single framework.

The innovation offered the present study is that it utilises binomial logistic regressions to specify an econometric model and to select appropriate dependent variables, which are outlined below.

3 Methodology

3.1 Hypotheses and dependent variables

The basic assumption is that key, firm-specific characteristics are different across different types of investments. In particular, this applies to the two cases of:

- cross-border acquisitions as opposed to Greenfield investments
- cross-border acquisitions as opposed to domestic acquisitions.

3.1.1 Cross-border acquisitions vs. greenfield investments

Greenfield FDI is characterised by ‘step-by-step growth’ (Linowes, 1968). In Greece, it often takes place in new product markets and, thus, its development may be hindered by the small size of the domestic market. Stagnation of local demand may add to this problem. Cross-border acquisitions, on the other hand, may be accompanied by rapid growth and restructuring. They might take place in oligopolistic industries (UNCTAD, 2000), concentrate on particularly suitable targets (Jensen 1988) and not spread throughout the corporate sector (Mitchell and Mulherin, 1996). Consequently, acquisitions might offer ‘immediate market presence’ and ‘overnight results’ (Angwin and Savill, 1997, 426), so long as the target firms meet the criteria that make economic success likely. Thus, it can be hypothesised that foreign affiliates that come into being by acquisitions may outperform foreign affiliates produced by Greenfield investments. In order to test this hypothesis, a logistic regression is employed. In this binary logistic model, the type of investment is captured by a dummy variable, which takes the values unity for cross-border acquisition and zero for Greenfield FDI.

3.1.2 Cross-border acquisitions vs. domestic acquisitions

Based on the IO approach, there are good reasons to expect that targets of cross-border acquisitions may outperform those of domestic ones (UNCTAD, 2000, 139). This assumption is based upon differences in microeconomic parameters such as large
differences in ownership assets between domestic and foreign acquirers. It is also based on specific industry conditions (e.g. concentrated industries), which are mainly the outcome of ownership advantages. Specific businesses can present high barriers to entry for domestic businesses. Generally, in small economies, the differences in ownership advantages between domestic and foreign acquirers are extensive. Correspondingly, they can be expected to select different targets for acquisition. In the case of Greece, in particular, the specific differences were fully exposed when the country entered the EU.

In order to test the above assumption, a logistic regression model is employed. In this binary choice model, the dependent variable is a dichotomous one, taking the value of unity when acquisitions are international and zero when they are national.

3.2 Independent and control variables

Eight independent variables are used in the present study. The definitions are presented at the end of this section, but before that the variables are discussed in the context of previous research, and the hypotheses associated with the variables are presented.

SIZE: Firm size is not a unique type of ownership advantage. Trevino and Grosse (2002) argue that firm size is rather a measure of non-specific firm advantages. They also view size as a tangible resource that facilitates the extension of the firm’s capabilities and as an indicator of economies of scale (Gaba et al., 2002) and market power. Lall (1980) states that variables employed to denote the size of firms could be regarded more as the result of the various ownership advantages than a cause of them. Gaba et al. (2002) also underline that it is not the size of the firm per se that is important, but the significance of its effects. Such effects include the ability to deploy more resources for investments (Barkema and Vermeulen, 1998), erecting barriers to entry to product and factor markets, exploiting economies of scale and scope, reducing risk, and exercising strong bargaining power. Firm size, in this sense, constitutes a central element of the theory of IO (Baldwin, 1998; Caves, 1971) in both domestic and international environments. In this study firm size is used as an independent variable because it is an important firm characteristic with implications for market power, industry structure, and competition. In particular, we hypothesise that:

\( H1(a): \) Firm size is larger in the case of cross-border acquisitions in contrast with Greenfield FDI.

\( H1(b): \) Firm size is larger in the case of cross-border acquisitions in contrast with domestic acquisitions.

CAP: Capital intensity is related to oligopolistic competition and its effect is consistent with the IO theory. Higher capital intensity is commonly regarded as a ‘concentration-promoting factor’ (Lall, 1980) because it demands great resource commitment such as large minimum investments. Imperfect conditions in capital markets (i.e. better access to capital sources for firms with high capital intensity) may be another factor of this kind. High capital intensity might also contribute to productivity, because it permits a higher level of automation and raises technical standards (Zhou, Li and Tse, 2002). Thus, we hypothesise that:

\( H2(a): \) The capital intensity of cross-border acquisitions is higher than that of Greenfield FDI.
**H2(b):** The capital intensity of cross-border acquisitions is higher than that of domestic acquisitions.

**PDIF:** Product differentiation is closely related to the degree of concentration in an industry, whereas homogenous products are associated with a larger number of firms within a given industry (UNCTAD, 1997). Differentiated products, though their effectiveness as a barrier to entry is controversial (Lall, 1980), are often treated as a traditional firm-specific advantage (e.g. Caves, 1971). Drawing on these considerations, we hypothesise that:

**H3(a):** Product differentiation by cross-border acquisitions is higher than by Greenfield investments.

**H3(b):** Product differentiation by cross-border acquisitions is higher than by domestic acquisitions.

**EXPO:** Export orientation may reflect the exploitation of both efficiency and competitive advantages of a firm and location advantages of a host economy. Also, an increasing value of this variable might indicate a successful process of internal restructuring of firms’ economic resources. According to UNCTAD (2000), the evidence from the economies of Central and Eastern European provides a mixed picture with respect to export intensity of affiliates established by the two FDI modes. Chudnovsky and López (2000b) found for Argentina that export propensities of foreign acquisitions still remain quite low, although they have increased during the 1990s. In spite of scarce and mixed prior research results, we expect that cross-border acquisitions, which have been emerging as a ‘new generation’ of FDI after the integration of Greece in the EU, will show a greater export performance than Greenfield FDI (which has taken place earlier under the condition of inward–looking industrialisation) and domestic acquisitions. The rationale for this claim is that companies that have been acquired by foreign companies participate directly in the internal division of labour of their parent enterprises. That is, they have to venture into an environment of ‘rationalised or efficiency seeking FDI’ (Dunning, 2000). Free trade and low costs of transportation are essential for these kinds of FDI to flourish. The participation of Greece in the EU integration process has provided exactly this environment. Thus, we hypothesise that:

**H4(a):** Export intensity by cross-border acquisitions is higher than by Greenfield FDI.

**H4(b):** Export intensity by cross-border acquisitions is higher than by domestic acquisitions.

**PROF:** Financial ratios such as profitability may be volatile, and their effects appear to be non-robust. Moreover, using them as explanatory variables often introduces multicollinearity (Thompson, 1997). Nevertheless, these variables may still indicate another dimension of the competitive strength of a firm. Trevino and Grosse (2002) suggest that profitability may be the result of a heterogeneous set of competitive advantages and an ex post measure of sustained competitive advantages. Capron et al. (1998) state that ‘current profitability provides one common performance measure’. Analysing the issue from the viewpoint of the investing firm, Barkema and Vermeulen (1998) consider that highly profitable firms may use their ‘free cash flow’ for acquiring other companies more easily than their competitors. They do this to increase power and prestige. As suggested by Angwin and Savill (1997) profitability is a good pre-acquisition characteristic of a
target firm. Higher profitability expressed in the form of greater financial resources may encourage managers to accept higher risks. Here, we employ profitability as a proxy for a set of financial and non-financial, tangible and intangible, assets of the firm. Thus, we hypothesise that:

\( H_5(a): \) Profitability of cross-border acquisitions is higher than that of Greenfield FDI

\( H_5(b): \) Profitability of cross-border acquisitions is higher than that of domestic acquisitions.

LIQUI: Liquidity is another indicator of financial health. Thompson (1997) found that liquidity decreases the likelihood of being acquired (as in the case of profitability). In contrast, Hasbrouck (1985) found that liquidity characterises an attractive target firm. We assume that foreign TNCs seek to acquire companies with a high liquidity, because poor financial health could seriously damage the acquirer’s wealth (Angwin and Savill, 1997, 430). The hypotheses are:

\( H_6(a): \) Liquidity of cross-border acquisitions is higher than that of Greenfield investments.

\( H_6(b): \) Liquidity of cross-border acquisitions is higher than that of domestic acquisitions.

In addition to the six variables set out in the preceding section, we have collected data on two control variables, the industry type and time (control variables).

BRANCH: International acquisitions are, by definition, concentrated on the existing, most developed, branch and product activities (UNCTAD, 2000; Jensen 1988). Thus, we expect that these investments are attracted by those traditional domestic industries, which have been the most dynamic ones in the last two decades. Non-traditional up-grading industries, being still in a developmental process, may favour Greenfield investments; that is, they involve new product activities and firm operations from scratch (Barkema and Vermeulen, 1998; Hennart and Park, 1993). Thus, we hypothesise that:

\( H_7(a): \) Developed traditional industries attract cross-border acquisitions, while non-traditional (still less developed-branches that exhibit new investment opportunities) tend to promote Greenfield investments.

\( H_7(b): \) Developed traditional industries attract cross-border acquisitions as well as domestic acquisitions.

TIME: There are strong indications of an increasing importance over time of acquisitions compared to Greenfield FDI (UNCTAD, 2000). One reason for this development may be the increasing attractiveness of acquisitions in oligopolistic markets and in the highly risky environment of globalisation (Larimo, 2003; Zejan, 1980). Foreign TNCs – especially the followers – may prefer acquisitions to Greenfield FDI, in order to save the time that would be required to establish an entirely new plant. Pursuing this strategy would give them an opportunity to eliminate their competitive disadvantage when compared with the leaders. In the case of Greece, the variable ‘time’ is also associated with the European integration process. That is, the increase in the number of international and domestic acquisitions in Greece may be a response to the formation of the single European market. Apparently, regional integration schemes such as the EU, by offering efficiency advantages, help TNCs to built up regional networks. Often, this includes strategic activities resulting in acquisitions (Angwin and Savill, 1997; Vasconcellos and
Kish, 1998; European Commission, 1995). In contrast with the above situation, import–substituting industrial policies that were in place until 1980 favoured Greenfield investment projects. Thus, we expect that:

**H8(a):** The more recent the date of the FDI, the higher is the probability of a cross-border acquisition. On the contrary, the further in the past the FDI has taken place, the higher are the chances of a Greenfield investment.

**H8(b):** Both cross-border acquisitions and domestic acquisitions are expected to have taken place in the recent past.

The above six independent and two control variables have been operationalised as follows:

**SIZE:** The *firm size* of the companies is measured by sales (millions of Euro).

**CAP:** The *capital intensity* of the firms is measured as the ratio of fixed assets per employee (thousands of Euro). Since the annual change of this variable has been relatively unstable, the average CAP over a 3 years period (1999–2001) has been used.

**PDIFF:** The *product differentiation*. This dummy takes the value of 1 if the majority of the products of the firm (50%) is brand names; and 0 if it is not.

**EXPO:** The *export orientation* index of the firms is calculated as the percentage of exports to total sales.

**PROF:** The *profitability ratio* of the firms is measured as the return before taxes to equity capital (ROE). Because of the sensitivity of operating profits, the average ROE is calculated over the three years period.

**LIQUI:** The *liquidity ratio* of the firms is calculated as the ratio of current assets to short term liabilities. Due to the sensitivity of the variable, it is measured as the firm’s average liquidity over three years.

**BRANC:** The *type of industry* is captured by a dummy variable, which takes a value of 1 if the industry is non-traditional and 0 if the industry is traditional (NACE classification, Table 1). Traditional industries include foods, beverages, tobacco, clothing, leather-footwear, wood-cork, paper, printing-publishing, non-metallic minerals and furniture. Non-traditional industries include petroleum and coal products, chemical products, rubber and plastics products, basic metals, metal products, machines and equipment, electrical machinery and appliances, transportation equipment.

**TIME:** The *time* when the corresponding investment took place (2000 = 1 to 1950 = 50).

### 4 Results and policy implications

Starting with the model A we checked for multi-colinearity between the independent and control variables and ascertained that there is no such problem (Pearson correlation coefficients <0.5). A test was carried out for influential observations, which might
significantly affect the results and the goodness of fit and power criteria of the model. The most extreme observation was 141, therefore, it was removed from the model. The model had a correct cut-off value (0.5) for CCR application, since the values were aggregated on either side of 0.5. The values for the goodness of fit and power criteria were very satisfactory, namely a) Nagelkerke $R^2 = 0.848$ and b) CCR = 93.5% (Table 2). The most important variables are found to be SIZE, CAP, PDIF, BRANC and TIME.

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable: cross-border acquisitions vs. Greenfield FDI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$B$</td>
</tr>
<tr>
<td>Intercept</td>
<td>1.186</td>
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<tr>
<td>SIZE</td>
<td>0.049</td>
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<tr>
<td>CAP</td>
<td>0.045</td>
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<tr>
<td>PDIF</td>
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<tr>
<td>EXPO</td>
<td>0.031</td>
</tr>
<tr>
<td>PROF</td>
<td>-0.021</td>
</tr>
<tr>
<td>LIQUI</td>
<td>-0.940</td>
</tr>
<tr>
<td>Control variables</td>
<td></td>
</tr>
<tr>
<td>BRANC</td>
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</tr>
<tr>
<td>TIME</td>
<td>-0.333</td>
</tr>
</tbody>
</table>

Nagelkerke $R^2 = 0.848$.
Correct Classification Rate (CCR) = 93.5%.
$\chi^2 = 97.506$ & Sig. = 0.000.

In the model B we tested for multi-colinearity and ascertained that there is no such problem between the independent and control variables (Pearson correlation coefficients <0.5). A test was carried out for influential observations and cut-off value (0.5). We observed an extreme value of 44, which is due to the aggregation of the data rather than to a bad fit at that value (Ryan, 1997). Thus, it remained in the model. The goodness of fit and power criteria were very satisfactory (Nagelkerke $R^2 = 0.884$, CCR = 95.8%; Table 3). In this model the statistically significant variables were SIZE and LIQUI. The variable PDIF was found not to be statistically significant, a fact that may be due either to the existence of other variables or to a random error, which the logistic regression does not check for. However, the chi-square test for TYPE (dependent) and PDIF (independent) variables showed that these are significantly dependent ($p$ value = 0.000, all expected values >5; Table 4).

The results of this study would appear to be different from those of Chen and Su (1999) up to a point, and in particular in relation to the financial variables PROF and LIQUI. Chen and Su found that the targets of cross-border acquisitions in general terms presented worse financial performance than the targets of corresponding domestic acquisitions. In contrast with those previous results, in the present study PROF was not statistically significant while LIQUI was significant but with an opposite (positive) sign. A greater level of agreement between the results of Chen and Su and the present study can be seen in relation to the SIZE variable. Of course, it has to be noted that when
explaining financial variables one should be extremely careful because the specific variables are very volatile (Powell, 1997).

Table 3  

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Dependent variable: cross-border acquisitions vs. domestic acquisitions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( B )</td>
</tr>
<tr>
<td>Intercept</td>
<td>-12.593</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.149</td>
</tr>
<tr>
<td>CAP</td>
<td>-0.005</td>
</tr>
<tr>
<td>PDIFF</td>
<td>0.627</td>
</tr>
<tr>
<td>EXPO</td>
<td>-0.003</td>
</tr>
<tr>
<td>PROF</td>
<td>0.017</td>
</tr>
<tr>
<td>LIQUI</td>
<td>4.101</td>
</tr>
</tbody>
</table>

Control variables

| BRANC                 | -2.106  | 1.435 | 0.142 | 0.12 |
| TIME                  | 0.194   | 0.148 | 0.189 | 1.21 |

Nagelkerke \( R^2 = 0.884 \).
Correct Classification Rate (CCR) = 95.8%.
\( \chi^2 = 104.297 \) & Sig. = 0.000.

Table 4  

<table>
<thead>
<tr>
<th>PDIFF</th>
<th>TYPE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>117</td>
</tr>
<tr>
<td>85</td>
<td>32</td>
<td>117</td>
</tr>
<tr>
<td>71.25</td>
<td>45.75</td>
<td>117</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>39</td>
</tr>
<tr>
<td>23.75</td>
<td>15.25</td>
<td>39</td>
</tr>
<tr>
<td>Total</td>
<td>95</td>
<td>61</td>
</tr>
</tbody>
</table>

\( \chi^2 = 2.654 + 4.133 + 7.961 + 12.398 = 27.144 \).
DF = 1, \( p \)-value = 0.000.

The aforementioned econometric results indicate significant variety in the characteristics of firms that are involved in the various types of investment activity. We shall now discuss each of the independent variables and the implications of our findings for industrial policy.

In both models, our analysis strongly supports the firm size hypothesis. In particular, the targets of cross-border acquisitions were larger in size than the affiliates created via Greenfield investments and much bigger than the targets of domestic acquisitions. Consequently, the empirical investigation demonstrated that foreign TNCs bought primarily ‘national champions’. On the other hand, Greek entrepreneurs created their own economic groups, targeting smaller domestic operations (in relation to the targets of international takeovers). Under this strategy post-acquisition failure was relatively limited.
because the integration of new acquisitions could be managed effectively. With respect to competition policy, the results indicate that these rationalising activities of large domestic companies have contributed to the development and the preservation of concentrated domestic market structures.

The key analytical implication arising from these findings is the need to discriminate between four groups of companies, each one exhibiting distinct patterns of behaviour: First, foreign TNCs that appear as buyers of Greek firms and as a vehicle of Greenfield FDI; Second, large Greek enterprises that are both acquirers of domestic companies and targets of foreign TNCs; Third, SMEs, mainly of medium size, that are more attractive targets to domestic companies than to foreign TNCs; Fourth, SMEs, primarily small enterprises, that can neither attract the interest of Greek investors or of foreign acquirers. Low internal growth seriously limits their qualities as targets. Usually, they are unable to expand at high rates, simply because they lack the necessary resources.

In the first model, the distinctions between cross-border acquisitions and Greenfield FDI were also found to be significant in the case of capital intensity and product differentiation (though to a much lesser extent than in the case of the firm size). In the second model, the differences between cross-border acquisitions and domestic ones were also found to be significant in the case of liquidity and product differentiation (based on chi-square test for TYPE and PDIFF). So, as far as ownership is concerned, cross-border acquisitions appear to have deepened the entrepreneurial gaps of the Greek manufacturing sector.

In the first model, the different nature of the investment modes and the dissimilar preferences of investors towards specific branches (see the industry type hypothesis, BRANC) are the most compelling explanations for the inter-company differences relating to the variables firm size, capital intensity and product differentiation. For instance, the focus on Greenfield FDI in technology-intensive, mostly underdeveloped branches ‘produces’ relatively small-scale subsidiaries, which operate in small markets not favouring large capital investments. In the second model, microeconomic parameters such as large technological differences between foreign and Greek acquirers, and oligopolistic industry conditions which indicate high barriers to entry for domestic business, may explain the significant differences regarding the variables of firm size, liquidity, and product differentiation. In particular, this interpretation can be supported in theoretical terms by the approach taken by Hymer (1960). According to this approach, the success of TNCs in foreign markets derives from the fact that they possess monopolistic advantages with the result that they outperform their domestic competitors.

In both models, the hypothesis of export intensity was not confirmed. The export orientation of affiliates established through cross-border takeovers was not significantly different from that of Greenfield FDI and from the corresponding orientation of domestic acquisitions. In particular, the empirical results highlight the importance of rapid market access as a major determinant of international acquisition strategies. In this way, foreign TNCs instrumentalise takeovers in the Greek economy to ‘buy local market share’. Regarding the implications for export policy, the findings suggest that, even in the new environment of liberalisation and European integration, this specific FDI mode is not utilised as a vehicle for increasing the openness of Greek manufacturing industries, which retain much of their ‘inward-looking’ characteristics.

Finally, in the first model, we found that both control variables were significant at a high level of confidence. Specifically, with respect to the hypothesis of time, the evidence reveals that each of the two FDI channels represents a quite different ‘generation’ of
international investment in the Greek economy. The implication for the Greek FDI policy of these findings is that Greenfield FDI (which mainly took place during the period of the import substituting industrialisation) is not a realistic alternative to international acquisitions any more. The major reasons are the small size, the high concentration rate, and the openness of the domestic market. Consequently, cross-border acquisitions have a strong and increasing impact on the pattern of Greece inward FDI.

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