

THE DETERMINANTS OF INTERNATIONAL DIRECT INVESTMENT : A critical evaluation *

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Introduction

The purpose of this paper is to survey and critically evaluate the relevance of the received theory in identifying the factors that influence the origin and growth of international production. In interpreting the various explanations of the origin and growth of the international operations of enterprises, one is very conscious of the particular interests of the researcher. This is shown both in the type of questions asked, and the approach and techniques used to answer them. The questions «why do firms invest overseas?» «where do firms locate their foreign activities?» and «what determines the amount and composition of international production?» are similar, but not identical. Each is concerned with the determinants of the behaviour of firms, but, while the first draws on the techniques of micro-investment theory, the second is a matter for the location theorist, and the third needs a knowledge of international trade and industrial organisation theory. Moreover, each of the questions may be tackled from a positive or a normative viewpoint and with national or cosmopolitan interest in mind.

a. The Survey approach

The character and the extent of the foreign operations of firms may be explained in several ways. One approach is simply to ask the firms themselves to

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identify the reasons for their behaviour. But it is observed that the reasons cited by firms are often inter-dependent of each other, e.g. higher productivity and lower cost of production; neither are they directly comparable, as they range from the very general, e.g. inflation or diversification, to the quite specific, e.g. «the existence of local engineering facilities», or to «much a rival's investment»¹.

The most important reasons prompting international operations given by these surveys, are political stability, the host country's attitude to foreign investment and the prospects of the growth of the market. Fear of losing an existing market, limitations imposed on foreign ownership, exchange rate fluctuations and barriers to trade come next in line; but lower production costs are not generally important, except in the case of labour - intensive firms setting up plants in the less developed countries.

According to Dunning, these studies may be criticised on various grounds. Rarely do they distinguish between the motives for, and determinants of investment. Neither do they tell us the way in which the determinants may vary with the geographical or industrial compositions of the investment; or help us to understand why increases in investment (as opposed to the initial stake) occur.

b. Capital Theory

The traditional theory of international capital movements predicts that such movements arise because of interest rate differentials between countries. Normally, capital will flow across national boundaries, if the margin by which the expected yield exceeds the cost of capital is greater than that of projects at home. But while the allocation of the stock of assets held at home and abroad depends on the level of interest rates and risk evaluations, changes in this allocation i.e. capital flows, will depend on changes in interest rates². According to this view, an increase in foreign interest rates will have a two-fold effect. First, it will cause a shift in the stock of portfolio towards foreign assets - the «stock-shift» effect. Second, there will be a reallocation of portfolios at the margin towards foreign assets — the «continuing Flow» effect.

Models of the kind described which essentially are designed to explain international movements in portfolio investment fail to explain international direct investment, mainly, because direct investment usually involves the migration of other factors of production than money capital which are determined by different considerations, and may be influenced by different goals.

Another approach of capital theory is more micro-oriented. Here it is argued that a firm's foreign investment decision is an extension of the theory of portfolio distribution. Firms allocate their direct investment expenditures so as to maximise a utility function positively related to expected returns and negatively related to the variance of the firm's portfolio of investment. John Mellors, for exam-

ple, has shown that the geographical allocation of direct investment, by U. K. firms, in response to post-tax rates of return, provides some support to the portfolio model³. According to Dunning and Stevens the standard investment theory is supported by another group of studies designed to explain the geographical composition of international direct investment. The approach here discussed demonstrates that expenditure by U.S. firms on foreign plant and equipment is highly correlated with either the sales of U.S. foreign affiliates or some measure of output for the area or industry in question⁴.

Other studies have suggested that as a result of the formation of the European Economic Community, U.S. direct investment flows to EEC countries would significantly increase⁵. This *ex ante* prediction was based on the assumption, that profit rates on capital within the EEC would rise due to the expansion of internal markets as a consequence of declining internal tariffs, and because of «trade-diversion» effects between the EEC and the United States. But there is little evidence that, in itself, the formation of the EEC had a substantial effect on the level or direction of investment flows. The time series data lend support to the cross sectional data when the capital stake is taken as the dependent variable, that the market variable showed up better than the profit rate⁶.

c. Location Theory

The received doctrine on location theory tends to confine its attention to the spatial allocation of resources and trade of firms within national boundaries. Yet, the theory of location would seem central to answering the question «Why international production?».

Location theory is concerned with both supply and demand oriented variables influencing the siting of production processes, research and development and administration. Assuming a certain size and distribution of markets, and that each firm is a profit maximiser operating in a price-taking situation, production will be located where costs are lowest. On the other hand, the approach of demand oriented theories assumes production cost to be independent of location and asserts that the distribution of markets and the location of competitors will govern the siting of production units⁷. The theories of spatial interdependence are essentially an extension of the principles of monopolistic competition and oligopoly. Each location guarantees a firm a certain element of spatial monopoly the extent of which will depend *inter alia* on the character of the market, the locational strategy and the efficiency of its competitors.

Evaluating these factors as they affect the location of production by multinational enterprises the picture is more complicated but not significantly different⁸. From the supply side, a multinational enterprise is faced with the same type of cost decisions as a national enterprise. However, its purchasing and mar-

keting options may be wider, and in the evaluation of foreign investment, additional variables e.g. the possibility of exchange rate fluctuations, have to be considered. From the demand side, one observes the structure of competition and hence markets served may be somewhat different. According to the «product cycle» thesis, the production of new products and processes first discovered in one country, is later transferred, to another by a variety of means one of which is through affiliates of the innovating firms⁹. This assumes that the innovating firm both creates new markets, and supplies these markets first from a domestic and then from a foreign location. In so doing, they may induce a certain response from other firms (particularly in an oligopolistic situation), and in so doing may create a market structure which may influence future locational decisions. Kindleberger, for example, distinguishes between leading and following firms, as the market size and structure are both dynamic concepts¹⁰.

In a price-taking situation, all profit maximising firms will aim to produce an output at which marginal cost equals price. To do this, firms may require to produce in one or more locations, depending on the relationship between production costs as output increases and transport costs as distance increases. There are no leaders or followers. In an imperfect market, the firm may influence the character of its market and therefore its optimal location. As far as producing overseas is concerned, the firm may do so to gain an advantage over existing producers, or to forestall new competition, or to protect its market share even though the rate of return on new investment may be very small. That means the choice between exports and foreign production will not be taken purely on cost criteria.

According to the product cycle model, the determinants of locational strategy of multinational enterprises will vary according to the stage of the product cycle in which they are in. In the initial phase of innovational oligopoly and in the subsequent phase of mature oligopoly, their behaviour accords most closely with the interdependence model, which examines how the location decisions of firms are modified by competition with other firms. The main pre-occupation of the model is to demonstrate how uncertainty through interdependencies influences the location choice of firms. Oligopoly is the prevalent form of market structure in the field of international business, and uncertainty through interdependencies is the principal characteristic of such markets. In the intermediary phases of «oligopoly with some degree of genuine price competition», cost considerations are likely to be more important.

A rather different approach is taken by Stephen Hymer. Hymer employed the distinction made by Chandler¹¹ on the three levels of business administration in order to show that the location of personnel and facilities involved in these levels of administration is influenced by different kinds of factors. The location of level three operations (the lowest ones concerned with the managing of the day-to-day operations of the firm) is geographically dispersed on the basis of the

relative pull of raw materials, labour or markets. The location of level two operations (i.e. those engaged in co-ordinating the managers at level three) tend to concentrate on a limited number of locations, which offer advantages of communications, access to linked activities etc. The location of the level one operations tend to concentrate in a small number of large cities. The locational advantages of these cities are access to specialised professional personnel, specialised capital markets, and similar. Hymer argues that such a pattern of location has important implications for the structure of the world economy¹².

d. The Trade Approach

The trade approach which is relevant to answering the question why firms invest abroad belongs to international Economics. It stems from the inability of the standard theory, classical or neoclassical, to explain recent trends in the level and composition of trade. In the classical model of static comparative advantage, there is no room for the multinational enterprise. With completely free movement of goods, but complete immobility of factors of production and with all firms competing under a price-taking situation, there is no incentive for international direct investment. But, with production by firms outside their national boundaries now thought to account for 15 % of the world's output, there is no longer reasonable assumptions. Standard theory, classical or neo-classical, makes no allowance for trade in factor inputs, largely because the conditions necessary to such trade are assumed not to exist.

The standard theory has been subjected to criticism as to the static assumptions on which it has been built and to the fact that it takes no account of the role of multinational enterprises influencing international utilisation. Changes in factor productivity, technological innovation and external economies are all ignored in the standard theory.

This inability of the standard theory has led to reconstruction of trade theory in recent years, so that to incorporate into the analysis changes in technology¹³.

In the standard theory, innovations are not taken into account because production functions are assumed to be constant and identical throughout the world and where innovations are introduced, for example, in a comparative static situation, the benefits were assumed to be instantaneously and freely transferable. However, under conditions of imperfect competition this assumption is unrealistic; information is costly to produce and the imposition of barriers on the dissemination of knowledge by governments, affect the patterns of trade and resource allocation, e.g. by the patent system.

The various models that have been constructed by trade theorists have sought to determine the factors that condition the initial location of new products and processes in the innovating country, and how innovations in one country may

affect the comparative advantage of countries, that is, to explain the process of the transference of production from the country of innovation to the imitating country¹⁴. This neo-technology theory of trade also shows how market constraints induce the means by which barriers to the transference of technology may be overcome. Of these models, the «product cycle» has come to recognise the important role played by multinational firm in the process of the transference of production technology from the innovating centers to other countries.

The «product cycle» model further suggests that there is a relationship between comparative advantage which countries enjoy at different stages of their development and the phases of the cycle*. Accordingly, its country will tend to have a comparative advantage in products containing a high proportion of inputs which are available in relative abundance to the local industry and a low proportion in inputs which are relatively scarce. Therefore, the comparative advantage of the developing countries lies in nature phase products of the cycle whose production process requires a high proportion of cheap and unskilled labour input which can be found in relative abundance.

But, there are some qualifications as to whether the conditions of the product cycle theory explain the inflow of international direct investment, especially, in Greek manufacturing. The experience of Greece can be found at variance with the third phase of the product cycle model. There has been an important contribution of direct foreign investment of the modern multinational corporations, in mobilising factor inputs and overcoming the barriers to the transference of production¹⁵.

In general, the contribution of trade theory to the explanation of why firms invest abroad lies on the conditions under which the foreign markets can be best exploited, that is, through the subsidiaries of multinational companies producing in those foreign markets (direct investment), or by exports. The trade approach has also tended to emphasise the possible consequence of these conditions on trade patterns. According to the product cycle theory production will be initially located in the country of innovation. It will also be sold in the innovating country. Then, depending on demand and supply conditions in the importing centers exports follow, and indigeneous production may become profitable. In this point the product cycle model gives an explanation as to what determines whether the output will be supplied by subsidiaries of firms of the innovating country or by local firms. This will depend on the barriers to entry facing the two groups of firms and their relative efficiencies. For example, the technological gap caused by the lag in the international dissemination of technology is one of the barriers to entry

* The product cycle is divided into three phases each of which describes a distinct part of the life-span of a new product, from its introduction in the market to its maturity : 1) The introductory phase, 2) The growth phase and 3) The maturity phase.

which indigenous firms face. It is particularly stressed by the technological gap-trade theory. The strategy of multinational firms towards their foreign operations and the type of market structure in which they compete play also a part. Emphasis is also given on market constraints.

The product cycle model focuses attention on the multinational firm as a means to overcome the various barriers to entry.

e. Industrial Structure Approach

Instead of asking «What causes firms to produce abroad?», the industrial structure approach asks «Under what conditions will particular markets be supplied by the foreign affiliates producing in the market rather than by indigenous firms or imports?». Its main contribution, as outlined in various contributions by Caves¹⁶ is to recognise that the unique feature of international direct investment is not the transference of capital from one country to another, but rather the fact that ownership and a control of production units in one country by a firm domiciled in a different country, confers certain distinct advantages on such units vis a vis their indigenous competitors.

These advantages are usually classified into four groups: (I) a better access to knowledge; (II) a better access to factor inputs and/or markets; (III) the economies of size and integration, explained in terms of monopolistic competitive theory (i.e. firms of different nationality but producing in the same location), and (IV) product differentiation. Equally important may be the advantages of multinationalism in terms of economies external to the particular production unit but internal to the Multinational enterprise, particularly in industries which are research - intensive.

Some of these advantages may be enjoyed by all branch plants, irrespective of the nationality of the investing firm, and are to do with the internal economies of size and specialisation. Others arise because the affiliate is part of a foreign company or because the affiliate is part of an integrated multinational complex of operations.

Whereas location theory concentrates on location specific advantages, those just described are enterprise - specific, i.e. they are not transferable between firms, and are a function of their character and ownership. Sometimes these reflect their industrial characteristics; in other cases their country of origin. For example, small countries e.g. Greece may possess distinctive advantages in particular industries e.g. pharmaceuticals, or spawn firms with distinctive advantages within industries, which cross flow in both trade and investment.

In an extreme situation international production (by country A's firms in country B) arises because of two absolute barriers: (a) the export of goods

from country A to B, and (b) the inability of indigeneous firms in country B to produce a competitive product.

Now examine the opposite extreme. Suppose transport costs are zero and that there are no barriers to production facing firms in either country. Since Knowledge is freely and instantaneously transferable, production functions will be the same in both countries. In this situation, input prices will determine relative costs. Suppose these strongly favour country B. Then, in a perfectly competitive situation, it could well be that all production will be concentrated in country B and that country B's firms will supply country A's market through exports. Since production is zero in country A, there will be no firms in country A which would wish to invest in country B, because of the additional risks and costs of operating in a different political and economic environment at a distance from its decision-taking Centre. It is, however, possible for firms in country A to invest in country B's firms, but the investment would be a portfolio kind.

There are a host of intermediary situations in between the above two extreme cases, each of which will reflect a combination of the ease or difficulty at which firms of different ownership will supply a market with a product or group of products from alternative locations or from the same location.

Of the various theories of international direct investment, the industrial structure theory has been subjected to the most extensive empirical testing¹⁷. Generally speaking, the results have been encouraging in explaining the industrial distribution of international direct investment, although of the various firm-specific advantages, size of firm comes out as the most significant.

f. The Industrial structure of international direct investment in Greek manufacturing

The industrial structure of international direct investment can be seen in table 1, from which certain conclusions can be deduced. First, the degree of penetration of foreign capital in the Greek industry has reached significant proportions, but this penetration varies considerably among industry sectors. One-seventh of the total number of manufacturing firms operating in Greece are foreign affiliates (have capital stock which is 10 per cent foreign-held or more), but their assets comprise a 34.4 per cent of the total assets which represents a 25.6 per cent of foreign control. Second, there is considerable variation among industries. The concentration of direct investment is quite high in industries which can be called 'technologically advanced', the rapid development of which has occurred after the second world war, such as Petroleum, transportation equipment, Petrochemicals and Basic Metals; while the relative significance of direct investment in traditional industries is very low for example, textiles, food processing, beverages, clothing, footwear and tobacco, with the exception of paper. In the paper

TABLE 1
Industrial Pattern of foreign investment in Greek manufacturing and the
extent of foreign control
(in million drs. 30 drs - \$ 1)

Sector of industry I.S.I.C.	2.		3.		4.		5.		6.		7.		8.	
	Sector Total	No. of firms	Foreign Affiliates	Assets in 1967 sector total	Foreign Affiliates	Foreign affilits : firms' assets as percentage of sector total assets	Foreign Affiliates	Foreign Affiliates assets	Foreign con- trolled assets as a percenta- ge of Sector total assets					
20 Food	127		6	5,928	285	4.8	142	2.4						
21 Beverages	25		1	2,221	148	6.7	30	1.3						
22 Tobacco	5		—	1,845	—	—	—	—						
23 Textiles	158		9	10,199	611	6.0	425	4.2						
24 Clothing-footwear	27		4	460	64	14.0	60	13.1						
25 Wood and Cork	18		3	724	261	36.0	146	20.1						
26 Furniture	10		1	238	6	2.8	6	2.7						
27 Paper	23		3	2,832	584	20.6	580	20.5						
28 Printing-Publishing	24		—	465	—	—	—	—						
29 Leather	11		—	512	—	—	—	—						
30 Plastics and Rubber	43		6	1,476	676	45.7	548	37.0						
31 Chemicals	101		28	12,401	4,060	32.6	3,530	28.0						
32 Petroleum	6		2	1,595	1,085	68.0	1,082	67.9						
33 Non-metallic minerals	53		10	4,872	1,202	24.7	555	11.4						
34 Basic Metals	16		8	9,807	9,167	93.4	6,405	65.4						
35 Metal articles	56		10	2,652	317	12.0	210	7.9						
36 Non-electrical machinery	31		5	855	47	5.5	34	4.0						
37 Electrical Equipment	39		12	3,499	1,883	54.5	1,119	32.4						
38 Transport Equipment	23		3	3,081	2,125	68.2	1,826	59.2						
39 Other	9		3	185	143	77.0	129	69.8						
TOTAL	805		114	65,847	22,662	34.4	16,828	25.6						

Source: Data on all manufacturing companies in Greece column (2) and (4) are taken from tabulations contained in Federation of Greek Industries, The State of Greek Industry, in 1967, Athens 1968, p. 86. Foreign affiliate firms have been defined as all firms in which there is a 10 per cent or more foreign equity capital. The number of foreign firms in the sense used here in each industry, column (3) and their total gross assets column (5) are based on data provided by I.C.A.P. Column (6), therefore, shows what percentage of industry assets belongs to foreign firms. The assets owned or controlled by foreign shareholders Col. 7 are the sum of each foreign firm's gross assets multiplied by the percentage of foreign-held stock. Column (8) shows for each industry the percentage of assets owned by foreign shareholders.

industry the three largest projects are foreign investments. The foreign-controlled assets here account for 20.5 of the sector's total assets.

The relative magnitude of the foreign commitment in the former four industries is due to the disproportionate largeness, in the Greek context, of the major projects : the Esso - Pappas group, Aluminium de Grece and Hellenic Shipyards, which together represent a foreign control of more than 15 per cent over total manufacturing assets.

But the foreign share is significant even without these projects, notably in plastics, rubber and electrical equipment. And it becomes more noticeable at lower levels of aggregation. The products of 36 of the 114 firms in column (3) of the table appear to be manufactured only by foreign affiliates. Most of the remaining firms operate in product markets in which two or three units manufacture all or nearly all of the output with foreign affiliates usually dominant. The exceptions, about twelve firms, are the companies engaged in fruit processing, textile spinning and weaving, and the manufacture of ready-made clothing, and pharmaceuticals.

The 36 firms and the products which, as far as could be determined, they manufacture are presented in the following table 2.

TABLE 2

Products manufactured by foreign affiliates which were not produced before the establishment of the foreign subsidiaries.

Esso - Pappas industrial complex : five firms manufacturing solvents, caustic soda, P.V.C., antiknock compounds and sheet steel products; Dow Hellas : Polystyrene; Ideal Standard, Viohalko Vitrouvit; Royal Sphinx : vitreous china sanitary ware; Filtech : Electronic components; Viofial, Cylindric : LPG cylinders; Electrochimique de Grece : caustic soda; Aluminium de Grece : alumina, aluminium; Sulfur : ground sulfur : Larco : ferro-nickel; Malikoutis : laminating and printing of aluminum foil; Bimetal : steel drums; Sheet Steel Co : sheet steel products; Neopak : processing and printing of cellophand : Xelopan : harboard; Thessaliki : straw pulp; Aevol : organic fertilizers; Hellenic Industry for building materials : asbestos cement pipe and sheet; Columbia : phonograph records; Halioprint : photocopy paper; ITT : telecommunications equipment; Philips, Siemens : telecommunications equipment; Fulgor : electric cables; Viohalko callodia; electric cables; Pirelli, Good Year : rubber tyres; Linder : fuses, porcelain electrical parts.

Source : The main source of this table is the questionnaire utilized and the instrument of approval for each investment project issued by the Greek Ministry of Coordination.

Two interesting possibilities are suggested by the above findings. First, where foreign subsidiaries have pioneered new products; this is the case of 36 subsidiaries in which output is manufactured exclusively by foreign affiliates. The second, is where foreign affiliates compete in local markets in which there already were existing locally-owned firms prior to the establishment of direct international

investments. Since in this latter case foreign affiliates predominate in an also monopolistic setting, in both these cases the industrial specialization and the concentrated nature of these industries are evident.

The high concentration of production in only a few manufacturing units that exist in most of the markets in which foreign affiliates operate, has important implications for technology transfer. However, the question is what is the relationship between direct international investment and an imperfect market structure, and what is the impact of this relationship on the country's technological position.

The presence of imperfect competition is conducive to direct international investment. One of the purposes of this paper is to illustrate that the industrial pattern of direct foreign investment in a developing country, such as Greece, has certain features consistent with the hypothesis of the industrial structure theory. According to the theory «international operations of firms» or direct foreign investments occur in certain industries in all countries, rather than in all industries and in some countries. In other words, there is a tendency for direct investment to be concentrated in selected industries, and that the industries in which international direct investments are important are the same in all countries. Tables 1 and 5 bear out this expectation.

Of course, the rationale of the industrial structure theory is that international direct investment is a phenomenon of the production behaviour of firms in contrast to portfolio capital movement. The latter is motivated by interest rate differentials, whereas the impetus for the former arises from the desire to exploit an economic advantage which a firm may possess over its competitors, the firm's specific - knowledge.

One of the main causes of direct investment is the possession of an advantage which a firm may exploit in a foreign market. Firms are by no means equal in their ability to operate in a industry, and the possession of an advantage over firms of all other countries, in a certain line of activity, may cause them to have extensive foreign operations, of one kind or another. There are as many kinds of advantages as there are functions in making and selling a product. The firm's advantage may take the form of ownership of a patented cost-reducing technology, or of acquiring factors of production at a lower cost than other firms, or of a raw material source of access for developing country investment, or the firm may have better distribution facilities, or a differentiated product. Therefore, unequal ability of firms is a sufficient condition for international direct investment. This means that where direct investment occurs perfect competition is not likely to apply.

The other main cause of direct investment is the removal of conflict between enterprises in different countries which either sell to each other or sell in the same

market. This conflict stems from the impurities of the market and would not arise in competitive industries.

With regard to the first main cause of direct investment, which is more appropriate to our purposes, the firm usually has the alternative of licensing the advantage instead of itself establishing foreign operations. Many of the reasons for choosing not to license arise from the imperfect nature of the market for the advantage. These market imperfections prevent the appropriation of all the returns to the advantage.

When, on the other hand, there are many buyers of the advantage, many of the reasons for establishing a foreign subsidiary disappear and the alternative of licensing becomes more attractive.

How do these considerations apply to our case? The first group of subsidiaries which pioneer new products to Greece refers to the possibility that the structure of the host country's market was an attractive environment for the entrance of the foreign firm to fully appropriate the returns to its advantage. All the reasons for choosing not to license were evident, since the products of 36 enterprises in this particular case appear to be exclusively manufactured only by foreign affiliates.

The second case involves all the remaining firms that operate in product markets in which two or three units manufacture all, or nearly all, of the output with foreign affiliates usually dominant.

Thus, the structure of the market was conducive for the foreign firms to undertake local production rather than to license to Greek firms.

In the case of the first group of subsidiaries, there was no possibility at all to license to a Greek investor. There was no similarity in the structure of national firms and foreign firms. And foreign firms with advantages often license abroad in areas where they operate at home.

In the second case mentioned, licensing by the foreign firm would take place provided the host country's market was either perfectly competitive or monopoly. If there were many firms, the possibility of licensing to local producers could be almost certain, provided that conflict of evaluations and uncertainty would not make difficult an achievement of a satisfactory licensing contract.

But for the foreign firm a problem could arise if there were only a few firms. In this situation cooperation through a licensing agreement should be difficult because a bilateral monopoly problem could be involved.

I gave an insight into the market structure in which international direct investment occurs, because, the market Structure of Greece influences the choice of a firm of foreign nationality to either operate directly or license its specific advantage to host country's (Greek) firms.

The empirical evidence appearing in table 1 is plentiful and does illustrate rather than suggest this hypothesis. However, it is possible to make some head-

way in the argument by illustrating some of the main features of the table. It was shown from table 1 that direct investment in Greek manufacturing is associated with concentrated industries, and seldom occurs in industries where there is a large number of firms. Furthermore, foreign affiliates are larger than their locally-owned counterparts. The size distribution of foreign subsidiaries as opposed to purely Greek firms is presented in table 3 below. An also striking feature about

TABLE 3
Distribution of Greek and Foreign affiliate enterprises by size of total net assets in December 31, 1967

Size mill drs.	All firms		Foreign affiliates	
	Number	Percent	Number	Percent
Up to 1	27	3.4	0	0
1.1 - 5	152	19.2	8	8.2
5.1 - 10	124	15.7	9	9.2
10.1 - 20	145	18.4	18	18.4
20.1 - 30	79	10.0	9	9.2
30.1 - 50	91	11.5	17	17.3
50.1 - 75	61	7.7	8	8.2
75.1 - 100	26	3.2	8	7.1
100.1 and over	80	10.8	23	22.4
	793	100.0	100	100.0

Sources: Federation of Greek Industries, *The State of Greek Industry in 1967*, Athens, 1968, pp. 86- I.C.A.P. 1968, *Financial Directory of Greek Companies*, Athens, 1968.

the data of this table is the relatively high percentage of large firms which are foreign controlled. Of the 80 firms in Greek manufacturing with over 100 million drachmas assets in December 1967, nearly one-third are foreign affiliates.

Table 5, shows that foreign affiliates account for a large and, in some instances, the major share of the output, especially in those industries where the requisites of scale make technically difficult the operation of small-size plants. This phenomenon reveals the tendency among foreign affiliates to take advantage of internal economies, usually associated with large-scale production.

It would be desirable in this instance to possess an index of the extent to which large firms enjoy economies of large scale production. Such an index could be constructed, for example, by dividing the labour productivity of the largest 10 per cent of the establishments of a given industry in a given year, with the labour productivity of the remaining 90 per cent of the industry. But, unfortunately, it was not possible to acquire data of this kind for each individual firm.

The distribution of direct foreign investment in Greek manufacturing is by no means equal among industry sectors. Relative to sector total assets, foreign investment is high in Petroleum, Basic Metals, Transportation equipment, Plastics and Rubber, Electrical equipment, and in heavy Chemicals. While it is low for other industries.

Since a few firms account for so much, and since these firms are in only a few industries, it is to be expected that they are firms which are likely to possess specific advantages which they exploit in the new location. Such advantages may be derived from their size, or from the firm's specific knowledge.

One of the striking features of the table 1 is the high percentage of foreign affiliates' assets in the five industries in which foreign affiliates are heavily concentrated as compared to the sector total assets. For example, in the petroleum industry two firms out of six are foreign affiliates and account for 68.0 per cent, or nearly one-third, of the sector total assets with a foreign control of 67.9 per cent. In basic metals eight firms out of sixteen are foreign affiliates and account for 93.4 per cent of the sector total assets, with a foreign control 65.4 per cent. In transport equipment three firms out of twenty-three operating in the industry, the share of assets come to 68.2 per cent of the sector total assets, with a foreign control of 59.2 per cent. Again, in chemicals more than one-fourth of the firms operating in this industry (28 out of 101) are foreign subsidiaries. Their share in the sector total assets is 32.6 per cent, with a foreign control of 28.0 per cent. In electrical equipment the percentage of direct foreign investment is also high. Twelve firms out of thirty-nine operating in the industry are foreign affiliates. These, again, share more than half (54.5) of the sector total assets with a foreign control of 32.4 per cent.

The concentration is also important in Plastics and Rubber where six out of forty-three firms are foreign subsidiaries. Their assets come to nearly half of the total assets of the industry in which they operate, with a share of foreign controlled assets of 37.0 per cent.

The possibility that is suggested by the above findings is that it is conceivable that this group of foreign investments (36) has certainly resulted in an increase of the country's technological resources. The increase in the country's technological resources is principally related to the establishment of foreign subsidiaries in the production of commodities not previously manufactured in the country.

For the remaining foreign investments, 36 out of 114, the most of which did not involve the manufacture of products new to Greece may conceivably have not involved any technological transference, since the same variety or quality of products were previously produced by local firms. However, this may not be true from the viewpoint of managerial resource transfer. Even for these 36 foreign subsidiaries where this conclusion may seem encouraging, it overlooks the fact that once one or more foreign subsidiaries have been established in particular

industries or product lines, the subsequent entry by additional firms, mainly local firms, is impeded by the small size of most of the host country's markets. However, 15 out of 54 foreign subsidiaries in our sample, export all or most of their output and do not compete with local firms. Only certain export industries, such as aluminium smelting and fruit processing, may be able to support a limited number of firms with the available supply of raw materials. The importance of this question is diminished when one looks at the extent, to which foreign subsidiaries have pioneered new industries; have entered into minority equity participations with local firms, and have interested themselves primarily in exports or entered markets in which there were substantial imports that could be replaced.

As far as it has been possible to determine from various statistical sources, surveys of Greek manufacturing and directories¹⁸ and from the interviews carried out with top executives of the firms under study, about sixteen of the 78 remaining affiliates competing with local firms seem to have been involved in enterprises manufacturing new products. The extent to which these firms are in competition with indigenous Greek firms was determined by the degree of substitutability of their products to those produced by the Greek firms. The remaining 62 of the foreign affiliates in manufacturing appear to have been involved in industries in which some production by Greek firms had been undertaken. These 16 foreign subsidiaries are joint ventures in which the foreign investor has accepted 70 per cent or less of the total equity capital (see Table 4). Thus, it is reasonable to assume that these projects are technologically significant and have been willingly accepted by the Greek participants; and since they represent either the formation of a new enterprise or the expansion of an existing one, it is highly probable that technological benefits in the industries affected will be positive.

We turn again to the structure of foreign affiliates in Greek manufacturing. It is possible to make some further progress in illustrating this argument in spite of data deficiencies. Before proceeding to an analysis and explanation of the findings of the table 5 below, I think it necessary to briefly describe the results of some of the empirical work so far done.

There has been a good deal of descriptive analysis and casual empiricism, mainly contained in case studies of countries and industries to test the type of hypotheses that the industrial structure approach suggests. There have been also some hints from related studies on technology¹⁹. However, there have been, as yet, few attempts to systematically test these hypotheses. Lack of progress in this field of inquiry primarily is due to data limitations. Nevertheless, the most rewarding attempt to pinpoint the special characteristics of multinational enterprises (MEs) has been made by Vaupel²⁰ who examined the 491 largest U.S. companies as listed by Fortune. Vaupel classifies these companies into three groups: (a) national enterprises (NEs) — i.e. these which manufacture only in the United States; (b) transnational enterprises (TNEs) — i.e. those which manufacture in at least

TABLE 4

Distribution of direct investment in manufacturing by percentage of foreign equity capital

Per cent of foreign ownership	No of firms
10 - 29	12
30 - 49	17
50	11
51 - 69	13
70 - 99	25
100	36
Total	114

Source: The questionnaire utilized.

one foreign country but in fewer than 6; and (c) multinational enterprises (MEs) — i.e. those which manufacture in at least 6 foreign countries. For the year 1964 there were 125 NEs, 194 TNEs and 172 MEs. He found that MEs had certain distinctive characteristics; for example, they funded 2.5 per cent of their sales on research and development, compared with 1.6 per cent for TNEs and 0.6 per cent for NEs; they spent 2.5 per cent on advertising compared with 1.9 per cent for TNEs and 1.7 per cent for NEs; they earned net profits of 8.9 per cent on invested capital for the period 1960 - 64 compared with 7.3 per cent for TNEs and 6.7 per cent for NEs; their average sales were \$ 460 m. compared with \$ 200 m. for TNEs and \$ 160 m. for NEs; they were more diversified in their product structure and recorded a higher exports - sales ratio.

From the angle of the recipient countries, a number of studies have looked at the industrial structure and efficiency of foreign affiliates.

Dunning, for example, in a recent research on United States investment in the United Kingdom industry has attempted to analyse and explain the industrial distribution of the largest 500 U.S. manufacturing affiliates²¹. Dunning compared the industrial distribution of American affiliates with that of U.K. firms and found that U.S. affiliates have certain distinctive characteristics and classified these characteristics by four groups according to their concentration ratios. His results confirm the general pattern of the industrial structure approach: U.S. affiliates tend to be more concentrated in faster growing and export oriented industries. They are also attracted to the technologically advanced industries and to those where both capital and advertising expenditure is slightly above average. There is, however, no evidence in the Dunning research to suggest that their share of industries which benefit from economies of scale is greater than that of U.K. companies, and their market structure is only slightly more oligopolistic.

The industrial distribution of foreign affiliates appearing in the following table reveals the importance of distinctive advantages in determining the flow of direct investment in Greece.

Table 5 presents some details of the distribution of sales of foreign affiliates in all sectors of Greek manufacturing in 1969 and their concentration coefficient. The concentration coefficient is derived by calculating the percentage of sales of all foreign affiliates accounted for by a particular industry divided by the percentage of sales of all Greek manufacturing enterprises accounted for by that industry.

A concentration coefficient of more than one then shows that foreign affi-

TABLE 5

Industrial Distribution of International Direct Investment in
Greek Manufacturing in 1969

Sector of Industry I.S.I.C.	Number of firms		% of Sales of Foreign Affiliates	% of Total Sales	Foreign Affiliates Sales concentration coefficient
	Sector Total	Foreign Affiliates			
20 Food	130	9	1.60	19.54	0.08
21 Beverages	25	1	—	—	—
22 Tobacco	5	—	—	—	—
23 Textiles	159	9	2.09	13.36	0.15
24 Clothing - footwear	28	5	0.68	3.22	0.21
25 Wood and Cork	18	3	0.44	1.86	0.23
26 Furniture	10	1	—	—	—
27 Paper	24	4	0.69	3.30	0.20
28 Printing - Publishing	24	—	—	—	—
29 Leather	11	1	—	—	—
30 Plastics and Rubber	44	7	3.15	3.40	0.92
31 Chemicals	101	28	9.30	8.27	1.12
32 Petroleum	6	2	8.28	4.68	1.76
33 Non - Metallic Minerals	53	10	6.17	6.30	0.97
34 Basic metals	16	10	31.67	7.79	4.06
35 Metal articles	56	10	15.50	5.34	2.90
36 Non - electrical machinery	31	5	4.75	1.57	3.02
37 Electrical Equipment	39	12	9.63	5.62	1.71
38. Transport Equipment	23	3	6.04	1.56	3.87
39 Other	9	3	—	—	—
Total Manufacturing	813	123			

Sources: Data on foreign affiliates are taken mainly from our questionnaires supplemented by interviews carried out with top executives. Data on all manufacturing companies in Greece are taken from tabulations contained in the Annual Industrial Survey for the year 1969, National Statistical Service of Greece, L : 25 Industry, Athens 1970.

liates are rather more concentrated in that industry than for all industry; a concentration coefficient of less than one would suggest the reverse.

The data in the table are impressive and the high concentration coefficient of several industries shows the concentrated nature of foreign affiliates in Greek manufacturing.

The table emphasizes a marked concentration of international direct investment in the sectors that can be described as research-intensive or technologically advanced sectors of the industry²². In this context, it is worth noting that foreign affiliates in Greece have been operating, in particular, in those industries where import substitution has entailed the mobilization of considerable amounts of capital such as heavy chemicals, electrical equipment, transport equipment, non-electrical machinery and petroleum. It is in these sectors that foreign affiliates of multinational corporations have been especially active in Greek manufacturing, as well as in those sectors where trade names play an important part in buyer acceptance, namely in drugs.

Essentially, the activities of foreign affiliates in Greek manufacturing can be classified into the following categories: Firstly, there are few investments in extractive industry, namely in bauxite (backward vertical investment). Secondly, there are subsidiaries which import parts and components manufactured by the parent organization or other affiliates mainly to assemble or mix or package the products. Thirdly, there are subsidiaries which manufacture products similar to those produced by the parent corporation or slightly modified or differentiated from those of the parent due to adaptations (horizontal investment) and to a certain extent to export.

The majority of foreign affiliates and nearly all of the sample firms (of the 54 affiliates in our sample only one belongs to the first category) belong to the second and third categories. However, difficulty does exist to disentangle the firms in that the firms which manufacture, import components to a certain degree, and the firms in which assembly is dominant, undertake one or two stages of production before the final assembly manufacturing.

An important number of the existing affiliates seem to have been gradually changing their operations from the second to the third category, that is, from packaging and assembling to manufacture, partly in response to the import substitution policy followed by the government and partly in response to adaptation of the technology transferred.

Concluding Remarks

The conclusion of this paper is that the approaches of capital theory, location theory and trade theory do not seem to have the power to adequately explain the factors that influence multinational firms in the location of their international operations.

Of the approaches developed, capital theory is dealing with one factor input viz capital or changes in capital viz investment and is an extension of the received capital theory.

The contribution that capital theory offers to the explanation of the determinants of international investment can be considered as inadequate. Capital theory assumes foreign investment to exist and the focus of the theory is concentrated on the extent to which the allocation of foreign direct investment or capital formation is influenced by profit rates or market growth and not to the explanation of international investment per se. Capital theory dealing with one factor input, capital, underestimates the importance of labour-intensive international direct investment. Dunning evaluating the studies based on capital theory argues that they are deficient in their choice of variables. Of the independent variables, for example, the profit rate earned by affiliates may inadequately explain their contribution to the parent corporation in cases where there is product or process specialisation between subsidiaries. On the other hand, the importance of market size or market potential of the country in which production is undertaken, is diminishing when a multinational company integrates vertically or horizontally its international operations in a considerable degree. The decisions of such a company which adopts a policy of global or regional horizontal or vertical specialisation are influenced by different considerations.

The various explanations given by location theory, including the more recent attempts by economists to incorporate the activities of multinational firms into the general framework of received location theory, do not seem adequate to the understanding of the international operations of firms. The answer given by location theory is based also on costs, market structure and market size considerations.

Location theory is concerned with the explanation of the location of single product national firms. However, with the multinational enterprise are associated specific advantages, for example the firm's specific knowledge, and its ability to transfer these advantages to foreign countries at low or zero cost. Many of these unique advantages are not brought out within the analysis of location theory.

In the resource based industries a multinational firm can itself affect the distribution of resources by its exploitation policies or its pricing policies, particularly, in operations in the less developed countries. Within the analysis of location theory the distribution of resources is treated as fixed and this is another reason according to which it can only give a partial explanation to the international operations of firms.

Commenting on the trade approach one observes that the product cycle theory is micro-oriented and differs from received theory, because it is more concerned with the behaviour of firms rather than of countries and it is a particular rather than a general model as it tends to endow innovating firms and countries with special economic characteristics and in consequence, patterns of production and

trade. Vernon himself has maintained that the product cycle sequence is not satisfactory to explain the territorial distribution of production of multinational corporations, especially those which integrate their international operations.

There is also some doubt as to whether the process of the product cycle model adequately explains the sequence of events when innovations originate from countries with low incomes and wage costs or small markets.

The preceding analysis revealed that the most helpful apparatus to the understanding of the determinants of international direct investment is the approach of industrial organisation theory. As shown, the approach recognises that the unique advantages that multinational firms possess are the main determinants for their international investments. The ownership and the control associated with international direct investment confers on the affiliates of multinational firms a certain economic distinctiveness which their indigenous competitors lack. It suggests that further lines of research should be focussed on a more systematic analysis both of the distinctiveness of multinational enterprises and alternative forms of market penetration, by country and industry and also on the dynamics of multinational enterprises and comparative studies.

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